XXXII ANNUAL CONGRESS OF INDIAN SOCIETY FOR VETERINARY SURGERY AND NATIONAL SYMPOSIUM ON

"Newer concepts in farm animal surgery in augmenting Health Production and Rural economy"

6 - 8th November, 2008

Compendium of Invited Papers & Abstracts and Souvenir



DEPARTMENT OF VETERINARY SURGERY AND RADIOLOGY
VETERINARY COLLEGE AND RESEARCH INSTITUTE, NAMAKKAL - 637002
TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY
TAMIL NADU

2008

XXXII Annual Congress of Indian Society for Veterinary Surgery and National Symposium on

"Newer concepts in farm animal surgery in augmenting Health, Production and Rural economy"

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Department of Veterinary Surgery and Radiology

Veterinary College and Research Institute, Namakkal - 637002

Tamil Nadu Veterinary and Animal Sciences University

Tamil Nadu

2008

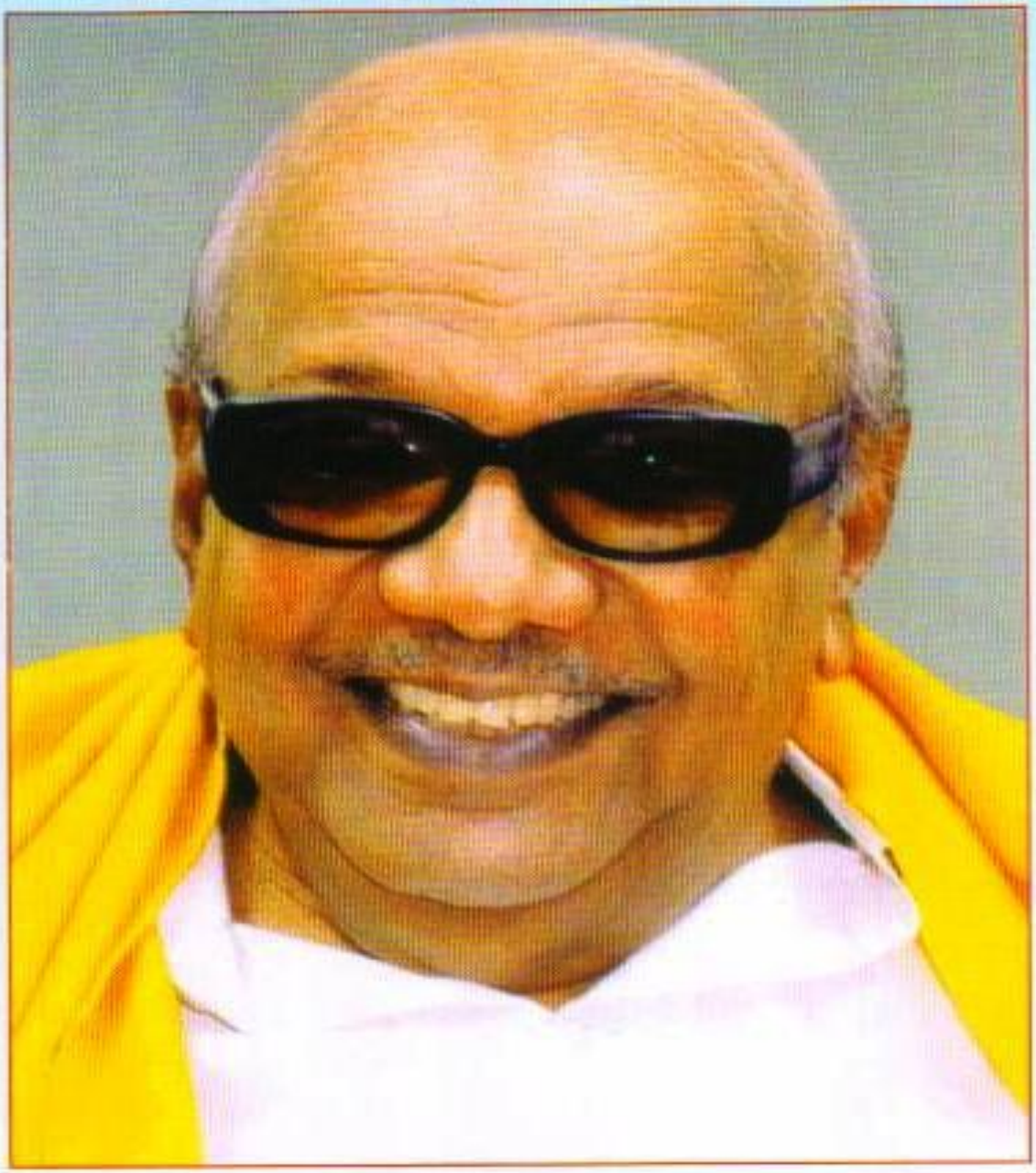
Thanks to our beloved Chancellor

His Excellency the Governor of Tamil Nadu

Thiru. SURJIT SINGH BARNALA

for continued inspiration and guidance for the growth and accomplishments of Tamil Nadu Veterinary and Animal Sciences University

Our Sincere Thanks to



Hon'ble Chief Minister of Tamil Nadu

KALAIGNAR Dr. M. KARUNANIDHI

for his extraodinary vision and brilliance in starting the first Veterinary and Animal Sciences University in India

PONGALUR N. PALANISAMY
MINISTER FOR RURAL INDUSTRIES
AND ANIMAL HUSBANDRY

SECRETARIAT
CHENNAI - 600 009

Date 16.7.2008

MESSAGE

I am glad to know that Indian Society for Veterinary Surgery is organizing a National Symposium on "Newer Concepts in Farm Animal Surgery in Augmenting Health, Production and Rural Economy" during November 6th – 8th, 2008 at Veterinary College and Research Institute, Namakkal.

The theme of the symposium is more relevant to the present context of animal-agriculture wherein various factors like natural vagaries, arising bio-security threats, fragile socio-economic condition of farmers act as deterrent for optimum production and health of the farm animals.

As livestock is the back bone of rural economy, veterinarians play a vital role in buffering the economy of individual house hold by safe guarding their only movable assets. Accurate diagnosis and appropriate intervention is an art that every veterinarian has to inculcate to shorten the span of suffering of both animal and its holder. It is high time that, advanced surgical facilities reach rural areas on wheels to attend the problems at the door steps of the farmers.

This symposium offers a great opportunity for the experts in the area of surgery and related disciplines who have come from all over the Nation to interact and discuss the new ways and techniques of surgical interventions in farm animals for augmenting the health, production and in turn boost the rural economy.

I wish 32nd Annual Congress of ISVS and National symposium all the success.

Date : 24-10-2008
Place : Chennai – 600 009

Hon'ble MINISTER,
FOR RURAL INDUSTRIES AND
ANIMAL HUSBANDRY.

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

Dr. P. THANGARAJU
VICE-CHANCELLOR

Madhavaram Milk Colony
Chennai - 600 051

MESSAGE

I am delighted to learn that the 32nd Annual Congress of ISVS in collaboration with Department of Veterinary Surgery and Radiology, Veterinary College and Research Institute, Namakkal is organizing a national symposium on "Newer Concepts in Farm Animal Surgery in Augmenting Health, Production and Rural Economy" from 6th – 8th November, 2008 at Veterinary College and Research Institute, Namakkal.

As animals health is nation's wealth lot of impetus need to be given to scientific and technology advancement for alleviation of animal suffering and put them back on production. Recent advances in Veterinary surgery coupled with frontier sciences like bio-technology and assisted reproductive technology have tuned the cardinal characters of farm animals to the futuristic needs. These surgical procedures also serve as animal model to evolve advanced surgical procedures in human being for implants of bio-active molecules and stem cells which acts as wonder bullets for target healing.

In the present era of globalization the role of veterinarians has shifted from individual animal treatment to herd health care to optimize their health and production. I am glad that this symposium is organized in this University which has state-of-art infrastructure and well trained faculty with many *first's* in the country for novel surgical intervention.

I hope this symposium will deliberate on field problems and surgical means to alleviate the same to benefit the stakeholders at large. On behalf of the university, I welcome the delegates and wish the symposium a grand success.

24.10.08

(P. THANGARAJU)
VICE-CHANCELLOR

Place : Chennai – 51
Date : 24.10.2008

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INDIAN SOCIETY FOR VETERINARY SURGERY

Prof. S.M. JAYADEVAPPA
President, Karnataka Veterinary Council
President, I.S.V.S

Message

I am happy to know that Department of Veterinary Surgery and Radiology, Veterinary College and Research institute, Namakkal, Tamilnadu is organizing 32nd Annual congress of Indian Society for Veterinary Surgery and National symposium on "Newer concepts in farm animal Surgery in augmenting Health, production and rural economy" from 6th to 8th of November 2008.

Livestock are the essential part of Mother Nature and the country. Any country's progress depends basically on animal wealth and the same needs to be conserved by way of proper Veterinary health care that includes proper diagnosis, timely surgical intervention and proper post operative care. India is largely dependent on agriculture and Animal husbandry & Veterinary services for food production and care of animals either in field operations or in food production. The role of Veterinary Surgeons to meet this challenge is vital especially in invention of newer concepts in farm animal surgery in augmenting health, production & rural economy.

I am sure that the national symposium will help to share the treatment of Animals, technologies and appliances in their specialized services.

On this auspicious occasion, I wish all the success to the Convention / Symposium.

Place: Bangalore
Date:10.10.2008

(Prof.S.M.Jayadevappa)

DEPARTMENT OF ANIMAL HUSBANDRY

Government of Tamil Nadu

P.R. Sampath, I.A.S.,
Commissioner,
Animal Husbandry and
Veterinary Services

MESSAGE

I am happy to note that the Department of Surgery, Veterinary College and Research Institute, Namakkal is organizing a National Symposium on "Newer Concepts in Farm Animal Surgery in Augmenting Health, Production and Rural Economy" along the side of 32nd Annual Congress of ISVS during November 6th – 8th, 2008.

Farm animal surgery is a broader topic that deals with comparative diagnostic imaging in all food animals, appropriate surgical considerations including anaesthesia, adequate fluid therapy and post operative management in field condition. Institutionally developed advanced and life saving surgical procedures need to reach the field hospitals / Dispensaries in appropriate module to fit in to the available infrastructure. In other words it is high time to propagate field tested surgical procedures for farm animals.

I am sure that, this National Symposium will offer an excellent opportunity to bring together national expertise from Academicians, Professionals, Scientists, Field Veterinarians and Farmers on a single platform and facilitate sharing of experiences, recent global development in the area of Farm Animal Surgery for promoting production and health among small animal, equine, ruminant, avian, wild and zoo animals.

I wish the organizers for successful conduct of this congregation.

COMMISSIONER,
ANIMAL HUSBANDRY AND
VETERINARY SERVICES.

Date : 24-10-2008
Place : Chennai

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY
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NAMAKKAL 637 001 Tamil Nadu

Dr. K.Viswanathan, Ph.D.,
DEAN

MESSAGE

I am happy to note that the Department of Veterinary Surgery and Radiology, Veterinary College and Research Institute, Namakkal in association with the Indian Society for Veterinary Surgery (ISVS) is organizing their 32nd Annual Congress of ISVS and National symposium on "Newer Concepts in Farm Animal Surgery in Augmenting Health, Production and Rural Economy". The topic chosen for the symposium is very appropriate and pertinent in the present context. I am sure the deliberations in this 3 day symposium will largely benefit the Academicians, Scientists, and Professionals, Field Veterinarians and farmers as well.

The Department of Veterinary Surgery and Radiology is making all efforts to keep up to date our profession and address challenges ahead especially in large animal surgery.

I thank our University for giving us the permission to host this National Symposium in the Veterinary College and Research Institute, Namakkal.

I wish the National Symposium a grand success.

(K.VISWANATHAN)

Namakkal,
21.10.2008

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TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

Dr.D. KATHIRESAN, M.V.Sc., Ph.D.
Director of Clinics

Madras Veterinary College Campus
Chennai – 600 007.

Dated : 23.10.2008

MESSAGE

I am happy to know that the Department of Veterinary Surgery and Radiology, Veterinary College & Research Institute, Namakkal is organizing the XXXII Annual Congress of Indian Society for Veterinary Surgery and National Symposium on "Newer concepts in farm animal surgery in augmenting health production and rural economy" from 6th to 8th November 2008. The topic chosen for the symposium is the need of the hour as it gives a focus for research activities as well as indicates the need to train in surgical skills of veterinarians in the area of newer diagnostic and surgical techniques in farm animals for augmenting the health production and rural economy. This is a special occasion and this scientific gathering is not only important but essential for exchange of scientific ideas between institute personnel, apart from helping to motivate the students and young scientists to further their research pursuits.

I am very confident that the deliberations and recommendations that come out of the symposium would be very useful for building up the National economy through livestock sector.

I wish the XXXII Annual Conference of Indian Society for Veterinary Surgery and the National Symposium all success.

Director of Clinics
TANUVAS
Madras Veterinary College
Chennai – 7.

Phone : Off.044-25369406 (Dir) 25381506/7 (Ext.235) Mobile : 9344131680 Fax: 044-25369406

From the desk of

Organizing Secretary . . .

At the outset, I wish to thank the executive committee of Indian Society for Veterinary Surgery (ISVS) for providing an opportunity and I feel much honored to be associated with the organization of National Symposium on "Newer Concepts in Farm Animal Surgery in Augmenting Health, Production and Rural Economy" and 32nd Annual congress of ISVS.

The promotion of farm animal health and management of livestock are the important key factors to improve the economy of livestock farmers. The intervention of recent development in surgical techniques and different steps of diagnostic methods will improve the farm animal health and production.

Being a veterinary surgeon, I look forward to this seminar, as yet another opportunity for many of us to serve the cause of Indian Veterinary Surgeons, by bringing together on one platform, the experts in various disciplines of veterinary surgery as well as the leading lights of veterinary surgery from India, for an interface, with the main aim of identifying the bottle necks in the growth of veterinary surgical field.

During the deliberations of symposium, one just hopes that the experts try to look for solutions to the problem coming in the way of development of veterinary surgery field. This seminar is expected to improve the health and management of farm animals.

The organizing Committee is highly indebted to the Honorable Vice Chancellor for his best wishes and all the support to extend host the National Symposium at this institute. The encouragement and unfathomable support of Dr.K.Viswanathan, Dean i/c., Veterinary College and Research Institute, Namakkal is duly acknowledged.

I also extend my gratitude to all our sponsorers and those who have directly and indirectly helped in organizing the symposium..

I also thank all the staff of Department of Surgery, Veterinary College and Research Institute, Namakkal for having contributed in many ways in the organizational efforts of the committee.

Last but not least, I sincerely thank all the delegates for the overwhelming responses to our invitation. I extend a warm welcome and wish them all a pleasant stay at Namakkal.

Namakkal
Date : 30-10-2008

(N. RAJENDRAN)

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DEPARTMENT OF VETERINARY SURGERY AND RADIOLOGY

VETERINARY COLLEGE AND RESEARCH INSTITUTE, NAMAKKAL - 637002

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CONTENTS

INVITED PAPERS

BOVINE ABDOMINAL SURGERY: AN INDIAN PERSPECTIVE

SIMRAT SAGAR SINGH
Dean, COVS,
GADVASU, Ludhiana - 141 004.

Bovine surgery is a challenging task for the veterinarian. In early times bovine surgeries were limited to draining an abscess, cyst, treating wounds, amputations etc. There was limited knowledge of anatomy, patho-physiology / disease process, anesthesia, and surgical procedures. But in the modern era major surgeries in bovines have become a reality and are considered to be a very successful, if not especially rewarding.

The major abdominal surgeries which are encountered under Indian conditions are classified under following heads:

- Digestive System
- Hernias
- Urinary System

Digestive System

Surgery for the stomach disorders is among the most common surgeries which are performed in the bovine. As is well known the stomach in ruminants has four compartments: rumen, reticulum, omasum and abomasum. Collectively these occupy more than 3/4th of the abdominal cavity and are very much prone to various infections. In India especially during the dry / summer season, when there is shortage of green fodder, impaction of the rumen, omasum and abomasum are encountered. To relieve the impaction it is imperative to perform rumenotomy for flushing of rumen, omasum and / or abomasum. Rumenotomy is a routine procedure for many diseases in bovine, such as, traumatic reticuloperitonitis; ingestion of toxic plants, chemicals, spoiled roughage, fetal membranes after parturition; acute and recurrent bloat; placement of a temporary or permanent rumen cannula to relieve bloat; creation of a permanent rumen fistula and Impactions. Other reasons include ingestion of materials such as plastic bags that are obstructing the reticulo-omasal orifice, foreign bodies lodged in the distal oesophagus/ reticulum, and rumen overload. Rumenotomy can also be used for the diagnosis of intraruminal diseases other than those associated with foreign bodies like reticular abscess and reticular diaphragmatic hernia. The recommended techniques for rumenotomy are suturing the rumen to the skin, prior to rumenotomy , or using fixation devices, such as, a Weingarth's ring . An alternative technique for rumenotomy involves the use of stay sutures. The technique selected depends on the personal preference of the veterinarian.

The surgical treatment of reticular abscess is debatable and many methods have been described for the treatment of reticular abscess like percutaneous drainage of abscess using suction, abdominal approach and intra-luminal drainage of the abscess by giving a stab incision from inside of the reticular wall into the lumen during rumenotomy. To my experience intra-luminal drainage of the reticular abscess is safe for treating the condition and provides good results.

Omasal and abomasal impaction can be relieved by flushing of the organs via a small diameter pipe passed through the reticulo-omasal/abomasal orifice which in turn is connected to a larger diameter water pipe using water under moderate pressure. Some kneading of the omasum/ abomasum may be required to relieve the impaction. The contents can be flushed back into the rumen and drained out.

Abomasal displacement is uncommon in Indian conditions and a lot of literature is available on the treatment of left or right displacement of abomasum. The surgical treatment involves abomasopexy / omentopexy after relocating the displaced abomasum subsequent to its decompression.

Intestinal obstruction can be due to faecoliths , intussusceptions , torsions and very rarely tumours. The surgical treatment involves right flank laparotomy and enterotomy/enterectomy as per the requirement of the individual case. Many techniques for intestinal anastomosis have been proposed and the choice of the technique depends upon the surgeon. The prognosis of intestinal surgery in bovine is generally good to fair. Another important condition which is common in buffaloes is caecal impaction. This can be diagnosed easily by auscultation and rectal examination. The surgical technique again involves right flank laparotomy and caecotomy / typhlotomy as per the condition of the caecum. A Weingarth's ring can be used to fix the caecum to the abdominal wall as in rumenotomy and the caecum can then be evacuated by flushing with running tap water.

During surgery, the rectum and colon can be flushed in a retrograde fashion by inserting a water pipe into the rectum so that the water comes out from the caecum. This would ensure the patency of the large intestine.

Rectal tears are not very common but can be encountered after accidents/ fall. The tear if near the anus is sutured by pulling out the rectum from the anus under epidural anesthesia. If the tear is located deep into the abdominal cavity then laparotomy is indicated to suture the tear. Cases with rectal tear and intestinal evisceration through the tear have been reported at GADVASU.

Para rectal / supra rectal abscess are not very common but if present can cause a lot of discomfort to the patient with severe straining during defecation. Diagnosis is usually done by rectal examination/ ultrasonography. The abscess is drained by giving a stab from within the lumen and following the principles of treating a normal abscess.

Hernias

Diaphragmatic hernia (DH) is a serious digestive disorder of buffaloes, with high prevalence reported especially from north India. As compared to buffaloes its occurrence in cattle is very low. The disorder involves a rupture in the diaphragm at the musculotendinous junction with subsequent herniation of the abdominal organs into the thoracic cavity. Invariably reticulum and part of omentum get herniated into the thoracic cavity. In some cases partial involvement of omasum, abomasum, spleen, some loops of intestine and liver have also been reported. In buffaloes, mostly herniation occurs through right ventro-medial part of the diaphragm, which ruptures from musculo-tendinous junction. In majority of the cases, typical clinical signs are persistent anorexia, suspended rumination, tympany not responding to conventional treatment, scanty pasty faeces, progressive weakness, gradual decrease in the milk yield and development of dehydration. If untreated, death is imminent. The less frequent symptoms include intermittent constipation or diarrhoea, respiratory distress and brisket oedema. Treatment of DH requires surgery in two stages. The first stage involves a laparo-rumenotomy that enables the surgeon to assess the location and extent of herniation, retract and remove foreign bodies, if any, and evacuate the rumen contents. Evacuation of the rumen contents facilitates manoeuvres during hemiorrhaphy and helps to avoid regurgitation. After 24 to 48 hours of laparorumenotomy, repair of diaphragm is done. During this period, animals are strictly kept off-feed and water but adequate intravenous fluid therapy is given using normal saline and dextrose saline. During the second stage of surgery, the repair of the diaphragmatic defect is done under general aneasthesia alongwith controlled ventilation. The paracostal, paramedian abdominal and the lateral thoracic approaches have been used successfully. An abdominal approach with the an in supine position is preferred due to the advantag being less cumbersome, results in minimal haemorr and is less time consuming. Moreover, it is easier to b the adhesions and to make the hernial ring clearly vis from the abdominal side. After breaking the adhes the hernial rig is closed using double braided silk No a continuous lockstitch pattern. It is important to cr negative pressure inside the thoracic cavity befor complete closure which is usually done by hyperinfla the lungs to flush out the residual air in the thorax.

Other types of hernia like umbilical, inguinal, ven lateral, perineal etc are routinely encountered and treated surgically by following the basic principles general surgery.

Another important condition encountered in bo is the prepubic tendon rupture. The prepubic tendo the tendon of insertion of the two rectus abdominis mus but also furnishes attachment for the external and inte obliqus, the gracillis and pectini muscles. It is attac to the anterior borders of the pubic bones. Occasion during advanced gestation / parturition this tendon r rupture. The abdomen becomes pendulous and the ud almost touches the ground. Surgery is performed un general anaesthesia after placing the animal in do recumbency and approaching the abdomen just cra to the udder. The ruptured tendon is sutured using absorbable suture material preferably silk No 2 (Dou in overlapping/horizontal mattress suture patte Sometimes the muscles are too fragile to hold the sutu The surgery is fairly successful in early cases bu delayed cases and bilateral rupture of prepubic ten the success rate is significantly lower.

Urinary System

Urolithiasis is a common affection in cattle a buffalo, which leads to urinary blockage. Urolithia appears to affect both sexes, but urinary blockage is important problem mainly in males. Urinary cal formation usually results from a combination physiologic, nutritional and managemental factors. mainly attributed to excessive or imbalanced intake minerals. Clinical symptoms of urinary tract obstruct may be associated with partial or complete urethr occlusion. Animals suffering from partial obstruction drib blood-tinged urine after prolonged, painful attempts urination. With complete obstruction, animals exh tenesmus, tail twitching, weight shifting, col inappetence, depression, and urethral pulsation ven to the anus. The common sequel of complete urethr obstruction is rupture of the urinary bladder and/or urethra resulting in death of the animal due to uremia to 7 days. Diagnosis of urolithiasis and rupture of urinary bladder and urethra in cattle, sheep and goa

based mainly on the clinical symptoms, and increase in the peritoneal concentration of createnine 1.5 - 2 times than in serum. Surgical treatment include post scrotal urethrotomy, removal of calculi and passage of catheter into the urethra. In many instances there is rupture of the urinary bladder and cystorrhaphy is performed from the ventral left flank laparotomy incision.

In some instances rupture of the urethra with an intact urinary bladder can be encountered. In such cases urine accumulation can be seen on the in the subcutaneous area of ventral abdomen. Surgical management involves exploring the urethra, finding the site of rupture, catheterization from the ruptured site and suturing of the urethral rupture. The condition usually resolves and the prognosis is generally good.

Reproductive surgeries like caesarean section is fairy commonly performed in cows and buffalo with fair degree of success. Caesarean section can be performed in the standing or lateral recumbency depending upon the condition of foetus.

Under Indian conditions bovine abdominal surgery has progressed very well over the years and all the surgeons/clinicians who are/have contributing/contributed in one way or the other to the cause of developing major bovine abdominal surgeries need to be complimented.

RUMENOTOMY, TRANSFAUNATION AND SYNBIOTICS IN BOVINES

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Rumenotomy in bovines is a routine procedure for treatment and diagnostic purposes. Rumenotomy is the desired line of therapy in cases of severe or persistent ruminal impaction, severe frothy bloat, for removal of phytobezoars, trichobezoars or any other foreign bodies from the rumen, removal of ruminal contents prior to surgical repairs of diaphragmatic hernia and in cases of exploratory surgery.

Apart from these a number of workers have also reported high incidence of Traumatic Reticulo-peritonitis and impaction in India for which rumenotomy and exploratory surgeries are undertaken.

The prime objective of rumenotomy is correction of the abnormality or obstruction which inhibits the normal digestion, rumination and regurgitation. Restoration of ruminal normalcy after performing rumenotomy is a major concern of Veterinarians as the process involves removal of the ruminal cud. This procedure may at times involves several hours of workout and provides an entry path to air into the Ruminant Gastrointestinal tract.

The removal of contents disturbs the ruminal environment and entry of oxygen further aggravates the condition as rumen is widely considered to be anaerobic, rumen gas contains 0.5 - 1.0% Oxygen. Oxygen is toxic to all anaerobic bacteria and ruminal microflora is predominantly anaerobic in nature. Entry of Oxygen inhibits growth of these rumen bacteria. In order to correct the same and for effective restoration of normal ruminal microflora, ruminal cud is introduced into the animal from the donor after rumenotomy

Rumen is widely considered to be anaerobic, rumen gas contains 0.5 - 1.0% Oxygen. Oxygen is toxic to all anaerobic bacteria and ruminal microflora is predominantly anaerobic in nature. Entry of Oxygen inhibits growth of these rumen bacteria. In order to correct the same and for effective restoration of normal ruminal microflora, ruminal cud is introduced into the animal from the donor after rumenotomy.

Ruminal cud introduction is primarily targeted towards effective restoration of lost ruminal microflora and restoration of appetite. This ruminal cud is usually obtained from slaughtered animals or regurgitated feed from live animals. This ruminal cud is although a need of Surgery but has low potency because of exposure to external contamination which delays restoration. A possible alternative to enhance this process of restoration is addition of probiotics, intraruminal along with the cud followed by oral feeding for minimum five days postoperatively.

Importance of Microbes in Ruminants

Ruminant animals depend on microbial degradation of their feed rather than on direct enzyme degradation. The animal then absorbs volatile fatty acids from the rumen for glucose formation in the liver and the protein digested in the gastric stomach (the abomasums) is largely microbial. In a normally functioning rumen little or none of the sugars and proteins originally present in the feed are directly incorporated in the animal, they are first processed by bacterial fermentation in the rumen. Thus these ruminal microbes are vital for digestion in animals.

Probiotics

Probiotics are an attractive alternative for chemical agents used for various ailments in livestock industry. The

preparations contain micro-organisms that have been used for many years in food production and thus are generally accepted as safe by both the Vets. farmers and the final customer.

Fuller (1989) defined probiotics as the live microbacterial feed supplement which beneficially affects the host animal that optimising the colonisation and composition of the gut microflora in both animals and humans. Probiotics also stimulate the digestive process and immunity. In production animals such as cattle and chickens these probiotics are referred as Direct Fed Microbials (DFM).

The mode of inhibitory action of probiotics against pathogens is mediated by competition of receptors on the gut mucosa, competition for nutrients, the production of antibacterial substances, and the stimulation of immunity (Piard & Desmazeaud, 1991; Freter, 1992; Perdigon & Alvarez, 1992). Probiotics influence digestive processes by enhancing the population of beneficial microorganisms, by enhancing microbial enzyme activity, by improving digestibility of foodstuffs and facilitating effective utilisation of feed (Burgstaller et al. 1984). Optimisation of digestive processes is demonstrated by improved growth and higher weight gains.

Prebiotics

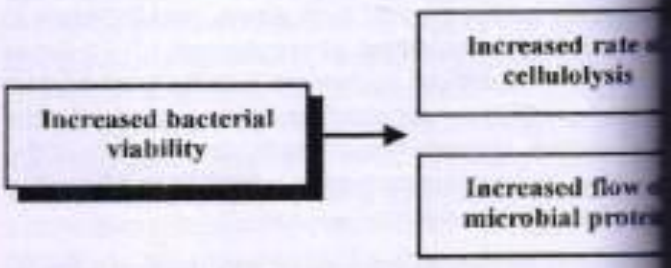
Fructo-oligosaccharides (FOS) are naturally occuring oligosaccharides mainly of plant origin and are classified as Prebiotics as they aid in improved survival of the probiotic bacteria together with a stimulating effect of the oligosaccharide on the growth and /or activity of both the exogenous (probiotic) and endogenous bacteria (Roberfroid, 1998)

Synbiotic

Synbiotic is a combination of Probiotics and Prebiotics which offers the exclusive benefits of probiotics along with improved and enhanced microfloral viability of existing and introduced once due to prebiotics. Prebiotics like FOS also serves as a growth media for the microfloral growth and development.

Importance of Probiotics in Rumenotomy

1. Feeding of probiotics is reported to have an increase in the number of total culturable bacteria that can be recovered from the rumen. This increase in culturable bacteria reflects an actual increase in biomass and increase in bacterial cell viability within the rumen. Kumar et.al (1994) reported that S cerevisiae increased viability of bacterial cells within the rumen of buffalo by 50%, leading to increased cellulolysis and increased flow of microbial protein.



Probiotic feeding not only increases the total v bacteria, but also increases in the cellulolytic bac population (Walllance and Newbold, 1993). Incl of Probiotics as a postoperative care measur increase the viability of both the existing an donated ruminal microflora and will also incr cellulolysis.

2. Probiotics especially Yeast is documen worldwide as a good oxygen scaven Rumenotomy and introduction of donor cud ch the ruminal environment which can be effect corrected by probiotics. Rose (1987) suggested the probiotic activity of yeast is at least par derived from its ability to remove potentially har oxygen from the rumen.

3. Probiotics inclusion in post operative care of an reduces the incidence of pathogenic bacteria may have gained entry during surgery. Probi feeding is reported with reduction in coliform bac in the faeces of diary calves fed with Lactobac (Ellinger et.al, 1980). The results suggest tha probiotic has rendered the intestinal environmen favourable for the growth of coliforms.

4. Probiotics have earlier been documented to alle transport and heat induced stress in anim Feeding of animals with yeast culture or A ory was found to reduce stress and cause reductio rectal temperature in stressed animals and the e appeared to be the resultant of the animals physio rather than any effect on rumen fermentation.

5. Feeding of Saccharomyces cerevisiae in rumin is also associated with controlling the incidence bloat and acidosis because of S cerevisiae w competes with Streptococcus bovis, the main la acid producer in the rumen. (Chaucheyras e 1997)

6. Probiotics inclusion also provides Vitam (especially thiamine) to support growth of rum microflora (Chaucheyras et.al, 1995)

7. Probiotics viz. Lactobacillus spp is reported to red the incidences and intensity of diarrhoea

Conclusion

Existing data suggests that there is no aspect of cattle production which cannot be improved by the correct use of a probiotic preparation. The subject of probiotic use in cattle has been active at least from last fifty years, sustained by the regular reports of successful applications.

During rumenotomy, the prime objective of the Vet involved is correction and restoration of rumen activity and Synbiotic combination would be an ideal choice of therapy for post-operative use. Before closing the incision it would be ideal to introduce 8 boli of Synbiotic preparation along with the cud followed by 3-4 boluses daily via oral route. Inclusion of same in operative and postoperative therapy will lead to increased viability of ruminal flora, increased cellulolysis, establishment of anaerobic environment, reducing operative stress and restoration of early normalcy

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RECENT TRENDS IN THE ANAESTHETIC MANAGEMENT OF CRITICALLY ILL ANIMALS

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General anaesthesia is required for a variety of surgical and diagnostic procedures in small animal practice. Although anaesthetic mishaps occur occasionally, their incidence can be minimized by the adoption of a protocol designed to ensure the appropriate level of preoperative, intraoperative and postoperative care. An anaesthetic protocol will provide guidelines which enable the veterinary surgeon to:

1. ensure adequate preanaesthetic preparation.
2. Identify poor risk patients prior to anaesthesia.
3. standardize techniques in order to minimize technical error.
4. provide optimum intraoperative supportive therapy.
5. monitor patients and assist in the early detection of potential complications.
6. ensure adequate postoperative care.

Preanaesthetic evaluation and preparation

The physical examination of a surgical patient is the first step in determining the potential anaesthetic risk. The evaluation of cardiopulmonary, hepatic and renal function is of particular importance at this time. When the initial examination reveals an abnormality, a more detailed investigation is warranted. This often involves the use of ancillary diagnostic tests.

Classification of patients physical status

Category	Physical condition
Class I- minimal risk	Normal healthy animals no underlying disease
Class II- slight risk	Animals with slight to mild systematic disturbances, animal able to compensate no clinical signs of disease
Class III- moderate risk	Animal with moderate systematic disease or disturbances mild clinical signs
Class IV- high risk	Animal with pre-existing systematic disease or disturbances of a severe nature
Class V- grave risk	Surgery often performed in desperation all animals with life-threatening systematic diseases or disturbances not often correctable by an operation. Includes all moribund animals not expected to survive 24 hours. Little need for general anesthesia as the moribund' state renders the animal oblivious to pain.

Patients in class III often need to be stabilized p to anaesthesia and different techniques may be indica Class IV and V patient require intensive physiolo support and monitoring throughout the anaesthetic per In all instances good anaesthetic practice will decre perianaesthetic morbidity and mortality. The anaesth record should be started prior to or at the time premedication. Agents used for premedication, induc and maintenances of anaesthesia in addition to their d rates and routes of administration, should be recorded this form. Food should be withheld from the hea patients from 8-12 hour prior to the induction anaesthesia. In very young animals, a shorter perio fasting has been recommended. Prolonged fast depletes liver glycogen reserves and renders the ani less capable of withstanding the stress of surgery a anaesthesia. Fluids need only be withheld approximately 2 hours. Water deprivation for excess period of time is undesirable since it can lead dehydration and hypovolaemia.

Premedication

Atropine is used preoperatively for its an sialogouge and vagolytic effects. Sedatives are norma given intramuscularly at least 15 minutes prior to t induction of anaesthesia. The actual premedicant chos depends on:

1. the species and temperament of the patients
2. the nature and duration of the procedure
3. the anaesthetic techniques
4. anticipated complications

Acipromazine is probably the agent of choice in mo instances since it produces a useful degree of sedati in the majority of patients. It is normally a safe agent, b can cause problems in certain conditions:

1. in low cardiac output state (Most types of shoc acepromazine can cause a serious fall in bloo pressure and venous return by alpha- adrener blockade.
2. acepromazine lowers the ictal threshold and ma precipitate seizures in susceptible individuals. It shou not be used in these patients or in patients undergoi myelography.

In brachycephalic dogs, which often have elevated vagal tone, acepromazine can cause syncope associated with bradycardia. This reaction, which particularly common in boxers can be avoided by using a low dose rate of acepromazine and the simultaneous administration of atropine.

Xylazine is a potent sedative analgesic which can be used for premedication of small animals. Even at a low dose rate it produces profound sedation which is of value for chemical restraints of vicious patients. The two most well documented side effects are bradycardia and emesis. Both can be ameliorated by premedication with atropine. Xylazine also cause a significant fall in cardiac output and has been reported to sensitize the myocardium to the arrythmogenic effects of circulating catecholamines. Medetomidine, a compound with a similar action to xylazine, but with longer duration, has been available recently. Both xylazine and medetomidine can be reversed with a specific antagonist, atipamezole, if quick recovery is desired or an adverse reaction occurs.

Induction

A standard strength of theopentone solution should be used on all occasions to avoid confusion. A 2.5% solution is advisable. This concentration is considerably less irritant to the tissues than a 5% solution and will be associated with a lower incidence of perivascular sloughs. If thiopentone is inadvertently injected perivascularly, then lignocaine (lidocaine) should be used to infiltrate the area. It precipitates and dilutes the perivascular thiopentone. Additional dilution with normal saline may be useful.

Methohexitone can also be used for the induction of anaesthesia in dogs and cats. It has the great advantage of being rapidly metabolized so that full recovery from its effects is quick. It should be used for induction of anaesthesia in out-patients and in animals expected to have a prolonged recovery following thiopentone. The latter group would include immature animals upto four months of age, geriatric animals and animals with impaired hepatic function.

In dogs, induction agents are best administered via an intravenous catheter. The catheter should remain in place through out the period of anaesthesia and into the recovery period. This will minimize accidental perivascular injections and facilitate the intraoperative and postoperative administration of fluids and drugs.

In cats either saffan (alphaxalone/ alphadolone) or thiopentone is commonly used for induction of anaesthesia. Saffon appears to be the agent of choice. The advantages of saffan include its high therapeutic index, excellent duration of action, lack of accumulation, minimal physiological depression, and little or no tissue toxicity.

Ketamine is used to induce anaesthesia in cats in some practices. It can be administered intravenously, subcutaneously or intramuscularly. The type of anaesthesia produced has been described as dissociative. The eyes remain open, pharyngeal and laryngeal reflexes persist, and muscle tone and salivation are increased. Ketamine can be used as the sole anaesthetic for minor procedures, but full recovery from its effects may take several hours. It should not be used alone for major surgery including laparotomy, as visceral analgesia is incomplete at the advocated dosage.

Animals less than 2 months of age should be induced with an inhalational agent. Owing to their body composition and immature metabolism, these animals have a reduced ability to deal with drugs which rely on either redistribution or metabolism to terminate their action. This can result in a considerable delay in recovery from their effects. When a face mask is used for inhalation induction, a bland eye ointment should be instilled into the conjunctival sacs to protect the eyes.

A lubricated endotracheal tube of appropriate diameter should be inserted immediately after the induction of anaesthesia in all but the shortest of anaesthetics. In cats, a lignocaine spray should be used to desensitize the larynx and upper airway prior to intubation. Endotracheal tubes with high volume, low pressure cuffs are generally recommended in canine anaesthesia. Cuffs should only be inflated to the point where they prevent escape of air around the tube when a minimal pressure (5-10 cm water) is applied to the system. Non-cuffed tubes are recommended for use in cats. Most cats will require a 4.5-5.0 mm internal diameter endotracheal tube.

Maintenance of anaesthesia

Maintenance of general anaesthesia with thiobarbiturates for anything but the shortest procedures cannot be condoned. Continuous administration of these agents will result in lengthy and unpleasant recoveries. Maintenance of anaesthesia in cats by the intermittent injection (or constant infusion) of saffan is acceptable. The steroid combination is rapidly metabolized by the liver and is therefore non-cumulative.

In general, the patient should be connected to an anaesthetic machine as soon as possible after induction of anaesthesia for maintenance with inhalational agents. The most popular inhalational agent at this time is halothane. A 1-2% inspired vapour concentration (in oxygen) is sufficient for most procedures. If 60-70% nitrous oxide is used in the in background mixture then the inspired halothane concentration may be reduced by 22%. Isoflurane, an inhalational agent with similar potency to halothane, is rapidly gaining popularity as it has several advantages to offer over halothane. Its flexibility, related to its low blood: gas solubility, relative resistance to metabolism (hence minimal toxicity) and lack of myocardial sensitization to the arrhythmogenic effects of adrenaline are some of the advantages to be gained from its use. Whatever agent is selected to maintain

anaesthesia, it should be administered by the appropriate breathing system.

Intravenous fluids should be administered to all animals under general anaesthesia. A rate of infusion of 5-10 ml/kg/h is adequate on most circumstances. Blood loss of less than 20% of the total blood volume may be replaced using a balanced electrolyte solution.

All animals should be kept in heating pad or circulating hot water blanket during anaesthesia to help prevent hypothermia. The following parameters should be monitored on a routine basis:

1. Heart rate (use an oesophageal stethoscope)
2. Respiratory rate and depth
3. Capillary refill time
4. Colour of mucus membranes
5. ECG (on oscilloscope)
6. Drugs given during anaesthesia
7. Rectal temperature
8. Depth of anaesthesia

Recovery

The patient should be allowed to breathe oxygen for as long as possible after the anaesthetic is discontinued. This offsets the cardiopulmonary depressant effects of the anaesthetic and the increased oxygen consumption caused by shivering. Keeping the patients connected to a properly scavenged breathing circuit during recovery also minimizes operating room pollution.

Endotracheal tubes should be de-cuffed on exit from the surgery. This will help minimize the time during which the tracheal mucosa is compressed and its blood flow compromised by the inflated cuff. As the tube is de-cuffed, the animal should have its lungs inflated so that any material which has accumulated above the cuff is blown into the pharynx. The endotracheal tube should be withdrawn only after the animal has regained control of its laryngeal and pharyngeal reflexes. Withdrawal of the tube should be at the end of inspiration so that expiration or a cough is the only possible respiratory maneuver.

The alleviation of post operative pain should be a prime concern. This is particularly important when painful orthopaedic or thoracic procedures have been performed.

Anaesthesia for the traumatized patients

Traumatized animals comprise upto 10% of the caseload in some small animal hospitals. The most common injuries in dogs and cats are those to the head (32-47%), the pelvis (13%), the thorax (11%) and abdomen (9%). The incidence of airway and pulmonary trauma was reported to be 30% in patients requiring orthopaedic treatment. Of these 40-50% had pulmonary contusion, 15% had pneumothorax and 10% had pleural effusion. Approximately 5% of dogs and cats die as a resu their injuries. Haemorrhage, respiratory insufficiency injury to the central nervous system have been implic as factors commonly contributing to death.

Respiratory System

Respiratory dysfunction following trauma comm results from pulmonary contusion, pneumothorax pleural effusions. Other causes of post-traum respiratory insufficiency include airway obstruction, c wall injuries, diaphragmatic hernia and pulmonary oede Pulmonary oedema may result from direct lung injur from CNS injury. The primary mechanism of neurog pulmonary oedema is unknown, but may be associ with increased sympathetic activity, which cause sudden redistribution of blood into the pulmon circulation.

Traumatic injury to the respiratory system freque results in hypoxaemia and respiratory acidosis altho pain, anxiety and the action of vasoactive peptide pulmonary J- receptors may induce respiratory alka in some patients.

Preliminary assessment of the airway and ventila status is based on evaluation of the colour of the muc membranes, auscultation of the chest and observatio the rate, depth and character of ventilation. Ventila function can be difficult to assess clinically and b gas analysis may be needed to make a defini determination.

Where emergency treatment for ventilatory failu required, a patent airway should be establishe endotracheal intubation or tracheostomy. Alve ventilation should be assisted by intermittent pos pressure ventilation (IPPV) using an Ambu bag o anaesthetic circuit. The chest wall should be stabi and open thoracic wall wounds sealed with petrola soaked dressing, sutures or towel clamps. When t is a pneumothorax or haemothorax, lung expansion be improved by aspiration of free air or fluid from the pl space by a tube thoracostomy and suctioning, or by d needle aspiration.

Cardiovascular system

Traumatized patients frequently present with s of peripheral circulatory failure. Traumatic shock re from a combination of haemorrhage, plasma loss damaged tissues and pain -mediated inhibition of vasomotor centre which reduces peripheral vascular and venous return. Mean arterial pressure (MAP) cardiac output (CO) are maintained until a 10% vol deficit is incurred.

Rapid administration of intravenous fluids is mainstay of therapy in traumatic shock. Rapid infus large volumes of crystalloids will cause signif haemodilution. When the serum total solids concentra falls below 3.5 g/dl, colloid solutions such as dextra

should be administered to maintain the vascular volume and colloid osmotic pressure. Dextran should be given at doses of upto but not exceeding with in 24 hour period. Blood transfusions are when the haematocrit falls acutely below 20% when 20% or more of the blood volume has been lost. Transfusions of cross- matched fresh whole blood are in order to maintain adequate oxygen carrying and provide replacement clotting factors. Fresh blood is administered at a dose of upto 40-60ml/kg until the oxygen carrying capacity of the blood is Blood should be administered in conjunction a balanced electrolyte solution in a ratio of 1 volume blood with between 2 and 6 volumes of electrolyte

Dexamethasone at doses of 2-6 mg/kg iv over 2-3 or predinisolone sodium succinate at doses of mg/kg iv over 2-3 minutes every 8 hours have been recommended. Alpha adrenoreceptor antagonists may capillary flow, overcome capillary sludging, and venous return, providing fluid deficits have been Phenoxybenzamine and phentolamine have successfully used in patients with severe shock and vasoconstriction.

nervous system

Probably the most common and concerning of head injury for the anesthetist is increased cranial pressure (ICP). This may result from cranial haemorrhage or cerebral oedema. There are pathognomic signs for increased ICP but, in man, associated symptoms and signs includes headache, nausea, papilloedema, unilateral papillary and oculomotor and abducens palsy. Changes level of consciousness and irregular respiratory denote marked elevations in ICP. Elevation of perpetuates and exacerbates neuronal damage by neural ischemia, anoxia and oedema. Head may also have detrimental effects on the and cardiovascular systems. Depending on and severity of the lesion, direct trauma to the stem may cause anyone of a number of respiratory abnormalities including Chyne-stokes respiration, hyperventilation, hyperventilation or irregular respiratory Studies in man indicates a 25% incidence of hypoxaemia associated with head trauma. Aetiological involved in the development of hypoxaemia include aspiration pneumonia, iatrogenic fluid overload, acute respiratory distress syndrome and neurogenic pulmonary oedema. Hypoventilation causes hypercapnea. This, in increase cerebral blood flow by causing intracranial dilatation and results in further elevation in ICP.

Other sequelae of head trauma which have been reported in man include disseminated intravascular coagulation, pituitary disorders, non- ketotic hyperglycemia and gastrointestinal haemorrhage.

Spinal injuries are associated with physiological sequelae which may pose serious anaesthetic problems. Respiratory disturbances and failure has been reported as a major cause of morbidity and mortality in human patients with acute spinal injury. The degree of respiratory impairment is related to the site of injury and is greatest when the cervical cord is damaged. The diaphragm, which generates the majority of the inspiratory force, is innervated by the phrenic nerve. This nerve is formed by the union of the fifth, sixth and seventh cervical nerves in dogs and damage to these nerves may result in ventilatory failure. Injury to the lower cervical cord and upper thoracic cord may remove abdominal and intercostal ventilatory support, reduce the expiratory reserve capacity and leave the patient with little or no ability to cough. These patients usually develop hypoxaemia or atelectasis secondary to hypoventilation or pneumonia. Gastric dilatation caused by autonomic dysfunction associated with spinal injury and aspiration may impair ventilatory function further in patients with spinal cord damage.

Spinal injury may induce cardiovascular derangements. Elevation in serum concentration of potassium and calcium are common findings in humans with acute spinal cord injury and are common findings in humans with acute spinal cord injury and these electrolyte disturbances have serious implications for cardiac function and anaesthetic management.

Spinal shock sometimes occurs as a reaction to spinal trauma. In this syndrome, spinal cord damage interrupts the path of facilitatory impulses from higher centres to neurons belowthe site of injury. Without tonic input, the activity of neurons below the site of injury is temporarily subdued and hypotension, bradycardia and delayed gastric emptying are among the possible seqeulae.

The principles of management of patients with neurological damage are to prevent secondary damage to intact nervous tissue and to support vital functions under the physiological control of damaged tissue. Therapy to minimize nervous tissue damage is directed towards reducing intracranial volume (in the case of head trauma) and neural edema, and eliminating hypoxaemia. Preoperatively, oxygenation, hyperventilation and mannitol therapy should be instituted when neural damage is suspected. Mannitol should only be used after the blood volume has been replenished in order to avoid dehydration and hypotension which would otherwise result from its diuretic effects. Other adverse effects of mannitol administration include vomiting, polydypsia, hyponatraemia, pulmonary edema, and congestive heart failure.

Anaesthesia

The nature and extent of trauma influence the selection of anaesthetic agents and techniques.

Premedication

The purposes of premedication are to produce a cooperative patient at induction and to reduce the dose requirement of induction and maintenance agents. For trauma patients, it is also often important to provide adequate analgesia. Excessive doses of premedicants should be avoided because of associated cardiopulmonary depression. Animals in severe shock or those which have respiratory insufficiency may be experiencing a degree of cerebral hypoxia and may appear anoxious. In these cases, oxygen supplementation alone will sometimes reduce anxiety and further sedation may be may be unnecessary.

Opioid agents provide analgesia and some degree of sedation with minimal cardiovascular depression and are useful in traumatized patients despite of their mild respiratory depressant effects. Specific antagonist agents should be available in case of complications. Morphine (0.5-1.0 mg.kg im), pathedine (3.0-5.0 mg/kg im), oxymorphone (0.05-0.1 mg/kg im) or butorphanol (0.1-0.4 mg/kg im) may be used. Use of an anticholinergic agent in conjunction with opioid agents will help to prevent opioid- induced bradycardia.

Low doses of alpha- adrenoceptor antagonists such as acepromazine and droperidol may be employed as sedatives in traumatized patients providing the blood volume of the patients has been repleted. The antidysrhythmic properties of acepromazine are beneficial when dysrrhythmias are present or anticipated.

Ketamine may be used as a premedicant in cats except where neurological or urinary system damage has been sustained. Use of xylazine is in traumatized patients is avoided because of its profound respiratory and circulatory depressant effects.

Induction

Volatile anaesthetic agents are relatively safe for induction of general anaesthesia in traumatized, hypovolaemic patients since these agents can be titrated to effect permitting a relatively rapid response to changing haemodynamic circumstances. Of the available agents, isoflurane causes the least reduction in cardiac output and has the added advantage of not sensitizing the heart to the dysrrhythmic action of adrenaline. Disadvantages of inhalation induction techniques include excitement and stress at induction and increased risk of vomition with aspiration.

In patients with respiratory insufficiency and limited respiratory reserve, it is important to avoid excitement or struggling which may result in hypoxaemia and catecholamine release. Under these circumstances, intravenous induction techniques are preferable to inhalation techniques. Barbiturates are suitable induction agents for haemodynamically stable patients but in hypovolaemic patients these agents have been desc as ideal agents for euthanasia. Barbiturates are pro best avoided in shock because of their low safety m Where cardiovascular stability is a concern in c patients, the induction of narcosis with an opioid should be considered.

The administration of diazepam (0.2mg/k immediately following the first increment of opioid will improve muscle relaxation and supp hypersensitivity of the patient to noise. Once induct complete, the patient should be intubated and ins gases supplemented with oxygen.

Maintenance

Inhalation agents are commonly used maintenance of anaesthesia in traumatized patients maximal patient support, inhalational anaesthetic a may be supplemented by nitrous oxide and m relaxants in a balanced anaesthetic regimen. Nitrous provides analgesia and reduces the requirement for inhalational gases.

The non-depolarizing agents atracurium vencuronium have little or no adverse effects o cardiovascular system and should be well tolerate patients in shock.

Supportive therapy

Intermittent positive pressure ventilation integral part of maximal support techniques.

Special considerations

Central nervous system

Comatose patients may not require any anaest agents. In other patients, diazepam may be adminis as a premedicant with or without a lose dose of o agents. For induction of anaesthesia, thiobarbiturate preferred for cardiovascularly stable patients since are preferred for stable patients since they are consid to have protective effects against hypoxic neu damage and will lower ICP and cerebral blood Isoflurane has been advocated as the inhalational a of choice because it causes less cerebral vasodilat than halothane or enflurne.

Anaesthetic agents which significantly incre ICP, such as ketamine, are best avoided. F administration should restore normal hydration wi over hydration. Dextrose containing solution should be used because hyperglycemia may enhance ischemic neurological damage. Large volumes of lact Ringer's solution may also cause problems since solution is relatively hypo-osmolar and may increase in patients that have received osmotic diuretics. An osmotic solution such as normal saline has been c as the preferred crystalloid volume replacement solu

ular trauma

When anaesthetizing patients with ocular trauma, ...cautions must be taken to avoid raising intraocular ...ure (IOP) such that eyeball rupture does not occur. ...ingly, ketamine and suxamethonium ...ylcholine) should not be employed since these ...are known to increase IOP significantly.

...diac trauma

...Attempts should be made to resolve dysrhythmias ...peratively. When a patient has to be anaesthetized ...the cardiac rhythm disturbance can be resolved, ...aesthetic protocol should be designed to minimize ...ession of cardiac contractility and agents which are ...likely to aggravate the dysrhythmia should be ...yed. In this respect, low doses of acepromazine or ...oid agents are satisfactory for premedication and ...tenance of anaesthesia.

...dominal trauma

...Rupture of the liver and spleen The liver and spleen ...been reported to be most commonly injured ...minal organs following trauma. Rupture of either organ ...be associated with massive blood loss into the ...minal cavity. Aggressive shock therapy and ...oring is required and blood transfusion is often ...ssary. The anaesthetic protocol should cause ...imal cardiovascular depression. Phenothiazines ...ld be avoided in favour of opioid agents or ...leptanalgesic combinations when sedation or ...gesia is required. Induction of anaesthesia or narcosis ...volatile or opioid agent with subsequent maintenance ...anaesthesia using an inhalational agent is the preferred ...nique. Barbiturates should be avoided in patients with ...ic trauma because splenic engorgement and may ...cerbate hypotension by causing a sudden decrease ...asomotor tone.

...Trauma of the urinary tract 62% of animals with renal ...damage had a ruptured bladder, 20% had a ...tured ureter or urethra and 13% had a ruptured kidney. ...instances of trauma to the urinary system are not ...threatening and the patient often can be stabilized ...to anaesthesia.

...Rupture of the urinary tract is often accompanied by ...mia, hyperkalemia, hyponatremia and hypochloremia. ...anaesthetic stabilization of these patients involves ...sion of 2.5 % dextrose with 0.45 % sodium chloride ...rrect the electrolyte imbalance and any fluid deficits.

...Trauma of gastrointestinal tract Reports of ...intestinal injury, although rare, may occur as a result ...penetrating wounds and blunt blows which cause ...bosis, avulsion or torsion of the blood supply to the ...stine.

Orthopaedic trauma

Most cases of orthopaedic trauma do not require immediate surgery and should undergo thorough preoperative assessment and stabilization. Premedication, induction and maintenance of anaesthesia do not need to vary substantially from standard protocol once cardiopulmonary stability is established. Preoperative use of an opioid agent to provide analgesia and allay apprehension is desirable.

Postoperative analgesia is an important consideration in orthopaedic cases. Opioid analgesic agents are of value for this purpose and are best administered before the return of consciousness. Lumbosacral epidural administration of an epidural preparation of morphine (0.1mg/kg), mepivacaine (2.0% at 1ml / 4.5 kg) or bupivacaine (0.5% at 1 ml/4.5 kg) have been used safely to provide several hours of postoperative analgesia in dogs.

Burn

Animals with extensive burns are occasionally encountered in veterinary practice. Specific problems which may affect these patients include pain, cardiovascular depression, a hypermetabolic state, loss of body heat, sepsis, glottic edema and gastrointestinal bleeding. There is no entirely satisfactory method of pain relief for burn victims. Systemic administration of opioid agents may ease acute pain and low doses of keatamine have been reported to provide effective pain relief.

Peripheral circulatory failure is mediated by vasoactive agents which cause increased capillary permeability throughout the body. Large quantities of intravascular fluid, electrolytes and plasma proteins are lost to the extra vascular space and a reduction in cardiac output and pulmonary oedema may result.

The generalized increase in capillary permeability lasts for approximately 24 hours and it has been suggested that during this time only crystalloid solutions be administered at 10 ml/kg/hour. Colloid solutions may be introduced after this period. Burn injuries may induce haemolysis, reduce red cell survival time and microthromboembolism.

Hypothermia results from significant evaporative losses from large areas of exposed surface and adds to patient stress. Exposed body surfaces should be covered, the room heated and intravenous fluids warmed. Glottic edema may follow inhalation of steam, smoke and other toxic substances and cause airway obstruction or make intuabtion difficult. Sepsis is due to loss of the protective epidural barrier, impairment of the immune system and the presence of avascular burned tissue which provides a good culture medium. Suitable antibiotic therapy should be initiated. Gastrointestinal bleeding may occur as a result of gastric or duodenal mucosal ischemia.

The selection of anaesthetic agents for bum patients is not critical if it is performed on a rational basis. Barbiturates should not be used in hypovolemic patients. Incorporation of opioid agents into anaesthetic protocol is desirable because of their analgesic properties and their ability to reduce the requirement for inhalational anaesthetic agents. All inhalational agents are suitable. Adequate arterial oxygenation should be enured before administering nitrous oxide, because oxygen consumption and pulmonary shunt fraction are often increased in burn patients.

Sensitivity to suxamethonium (succinylcholine) is increased in proportion to the size of the burn. Large quantities of potassium area released into the circulation and cardiac arrest may result. The risk of this occurring is gratest in the period of 5 days to 3 months after the injury is sustained.

Patients with respiratory insufficiency

Premedication

Sedative agents, such as acepromazine are relatively safe to be use in patients with mild respiratory conditions, but they should be avoided when there is preoperative carbon dioxide retention or when partial pressure of oxygen is low. Opioid agents, such as morphine can be useful for the premedication of dogs with mild respiratory insufficiency. It should be remembered that opioid drugs are potent ventilatory depressant.

The mixed agonist /antagonist, butorphanol, is a useful agent for premedicating dogs with respiratory disorders since it ahs been shown to produce only minimal changes in cardiopulmonary function.

Neuroleptanalgesic mixtures (droperidol/fentanyl, acepromazine/ pethidine, acepromazine/ etorphine) can be used with reasonable safety in dogs with mild to moderate respiratory insufficiency and may be the safest agents for controlling dogs.

The synergistic effect of the two agents produces more profound sedation or narcosis than is possible using the same dosage of either agent alone. This permits effective sedation at a lower dose rate and helps to minimize adverse side effects. Oxygen should probably be administered by face mask as the drugs take effect. The same precaution and contraindications apply to the use of such mixtures as when the agents are administered independently.

Anticholinergic agents, such as atropine and glycopyrronium (glycopyrrolate), area useful in many forms of obstructive respiratory disorders, both to reduce salivation and prevent excessive secretion from glands of the tracheobroncheal tree.

Induction

Preoxygenation is a useful adjunct to anaesthetic induction in any debilitated animal and particularly valuable in patients with respiratory disease. In general intrav induction with a thiobarbiturate is satisfactory. This m of induction has the advantage of allowing rapid cor airway. In keeping with the principles of good anaes practice, when thiobarbiturates are used they sho administered at the minimum effective dose rate. doses of barbiturates cause marked respir depression and are ill-advised, particularly in patien moderate to severe respiratory insufficiency.

Maintenance

Halothane or isoflurane are probably then best a to select in most instances. Both of these agen particularly useful when there is bronchospastic di as they prevent allergic and non-all bronchoconstriction.

Sometimes, nitrous oxide may be use supplement the more potent volatile anaesthetic in to reduce the dose requirement of the latter. For ex the inspired halothane concentration may be reduc 22% when nitrous oxide is employed. Nitrous oxide s not be used when there is a pneumothorax since diffuse into the intrapleural gas pocket and cause expand. It ahs been shown experimentally in dogs pneumothorax can double in size in 10 minute whe 80% nitrous oxide is respired. If nitrous oxide is care should be taken to ensure that the inspired fra of oxygen is sufficient to maintain appropriate bloo tissue oxygen tensions. When there is any doubt a ability of the patient to m aintain normal oxygen leve is probably best to avoid nitrous oxide.

Patients with cardiac disease

Premedication

First selection of preanaesthetic agent shou aimed at reducing preoperative anxiety, or pain or t Adequate control of stress reduces sympathetic ner system activity and minimizes excessive catechola release. Second, preanaesthetic agents shou selected to avoid further deterioration of the pat haemodynamic status.

Glycopyrronium (glycopyrrolate) may be a s agent to use in theses circumstances as it has fe adverse cardiovascular effects than atropine w administered at recommended dosages. Phenothia is the most commonly used group of tranquilizers in s animal practice. Hypotension can be anticipated to fo administration of phenothiazine as a result of alp adrenergic blockade.

The use of ketamine or injectable combinat containing ketamine in small animal patients with h disease has been advocated. Neurolaptanalge combinations may be used for induction of anaesth in cardiac patients. These drugs combinations h minimal effects on cardiac contractility, cardiac outpu blood pressure.

Face mask inductions with an inhalational anaesthetic are recommended for patients with severely compromised cardiovascular function, unless excessive struggling or excitement in anticipated.

Maintenance

Maintenance of general anaesthesia may be accomplished using either a single agent or a combination of inhalational and injectable agents. Intermittent positive pressure ventilation may be performed either manually of mechanically. The use of mechanical ventilators if available is preferable.

Halothane and isoflurane area examples of inhalational anaesthetic agents, which area suitable for maintenance of anaesthesia in patients with cardiac disease. Halothane itself produces a dose-dependent depression of ventricular performance and heart rate, while moderately reducing peripheral vascular resistance. Depression of cardiac output is greater with halothane than with isoflurane. Isoflurane when administered at a clinically useful concentrations, has minimal effect on ventricular performance or cardiac output. It does, however, reduce peripheral resistance and systemic blood pressure to a greater extent than halothane. Isoflurane has one great advantage over halothane is that it does not sensitize the myocardium to the effects of circulating catecholamines.

Recovery

Monitoring and supportive therapy of the cardiac patient must be continued into the recovery period. Core body temperature should be monitored. Hypothermia should be corrected when identified. Shivering can increase whole body oxygen requirement 400%. Oxygen supplementation is highly recommended during the period when the patient is attempting to reestablish a normothermic state. Other conditions which may necessitate postoperative oxygen supplementation include pulmonary atelectasis, fever, sepsis and pain. Postoperative oxygen therapy is indicated for the majority of cardiac patients through out the recovery period. Adequate control of postoperative pain by the judicious use of systemic or local analgesic agents is indicated in all patients recovering from anaesthesia.

Conclusion

The use of a standard, well conceived anaesthetic protocol in small animal practice will result in improved patient care. A protocol such as the on described, when followed faithfully, Will ensure smooth, rapid and atraumatic techniques with minimal stress and risk to the patients.

NEWER RADIOGRAPHIC AND IMAGING TECHNIQUES IN FARM AND PET ANIMALS : AN INDIAN PERSPECTIVE

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The perception and order of pet and farm animal owners in India is on the ascend. In the Indian metropolitan area this is obviously evident for veterinarians in Companion animal practice. Traditionally in India, pets and farm animals have significant role in family and society. It's only natural that an Indian is emotionally attached to animals. So when it comes to treating of sick and ailing animals the hope from a veterinarian are high. Veterinary Surgeons in the city and to limited extent in rural areas have responded to this demand by practicing further sophisticated medicine. Each Veterinary doctor has a vision of aspiring to be the finest either in his preferred locality of practice or in his/her area of interest. In perusing this endeavor he tries to progress upon his diverse facets of practice. So as to progress his diagnostic capability and improving the ratio of contented animal owners. An article (Indian Vet Journal, December 2004) has pointed out that pet owners are concerned in learning more about their pets from the pet clinician. Pet owners also consider the veterinarian to give them pragmatic picture of their pets own health, not an exaggeratedly optimistic one. Pet owners are also getting more and more knowledgeable and Question the veterinarian about the use of available technology. However to offer such high quality medicine, general practioner must prevail over the high cost of new technology and equipment, their personal inadequate experience diagnosing and treating complicated illnesses. Disproportionate time, labor and stress are essential for care for critically ill patients. One most common reason given for not using this technology is Affordability. It is true but other important aspect is awareness and accessibility to this technology. The future in Veterinary Radiology and Imaging will depend on few important factors

1. Probable potential Growth in Veterinary Sector along with any social and structural changes that take place in India
2. Extent of Invasion of technology in veterinary field.
3. Awareness and availability of technology among veterinary professionals.
4. Demand of newer technology by Animal owners.

Technological inventions and developments have shaped new possibilities and breakthroughs in veterinary medical diagnostics. Gadgets are getting faster, better and more patient friendly. The classic example is the discovery of X-rays by W.C.Roentgen, one hundred years ago. The application and commercial success of new diagnostic methods depends chiefly on three prima factors: sensitivity, specificity and cost effectiveness. T first two determine the added clinical value, in compari with existing methods. Biomedical imaging has seen tr exciting advances in recent years. Medical imaging often perceived to designate the set of techniques t produce images of the internal aspect of the body (with having to open it). In this restricted sense, medical imag can be seen as mathematical form of image. Traditiona in India, a veterinary surgeon examined the patient's rays and relied on his wealth of knowledge and skil perform the procedure. The surgeon was limited by what he could make out on the x-ray and 2) the anato exposed by surgically opening the patient.

This was barely image-guided surgery, as it acknowledged nowadays. This might be compared driving a car. You have been trained how to drive safe (knowledge, skill), you know the neighborhood (anatom but you don't actually know what is ahead until you g there (e g tumor).

The health care technology has evolved and advanc to such an extent that disease can be detected early and at a juncture that is treatable. Formerly Compani Animal Clinician was anticipated to make an acceptab diagnosis and correct the deformity. In future clinician be expected to do better such as replacement surge As more and more institution initiate internatio accreditation the imaging protocol and documentation get only better. Diagnostic imaging is broadly divided in two main categories anatomical imaging (X-rays, CT, a MRI) and functional imaging (Positron emiss technique).

Plan of companion animal surgeon should be merge the knowledge gained and to devise a fe judgments so that in devising various treatments for t patient, we do right thing at the right time. Get it right fi time should be the slogan. This is still quite a test, b this is what makes our job enthralling and motivating

Ultrasound: In the case of ultrasonography the prob consists of ultrasonic pressure waves and echoes insi the tissue show the internal structure. Medic ultrasonography uses high frequency sound waves between 2.0 to 10.0 megahertz that are reflected by tissu to varying degrees to produce a 2D image, traditiona on a monitor. Other important uses include imaging t

abdominal organs, heart, male genitalia, and the veins of the leg. While it may provide less anatomical information than techniques such as CT or MRI, it has several advantages which make it ideal as a first line test in numerous situations, in particular that it studies the function of moving structures in real-time. It is also very safe to use, as the patient is not exposed to radiation and the ultrasound does not appear to cause any adverse effects, although information on this is not well documented. It is also relatively cheap and quick to perform. Ultrasound scanners can be taken to critically ill patients or on the field or farm, avoiding the danger caused while moving the patient to the imaging department. The real time moving image obtained can be used to guide drainage and biopsy procedures. Doppler capabilities on modern scanners allow the blood flow in arteries and veins to be assessed.

Projection radiography: Radiations are absorbed to a different extent in different tissue types such as bone, muscle and fat.Images are produced on a radiation sensitive film by passing radiation waves through the body to form a picture. Electronically readable, large-area x-ray detectors that promise rapid access to the image for diagnosis are now being used. Improved image quality relative to that of screen-film radiography, reduced patient examination time, a reduction of consumable agents, and possibilities for reduced patient exposure will soon be commercially available for digital radiography. While these devices will certainly create many new opportunities in diagnostic imaging, it is critical that radiologists recognize that these new self-scanning digital radiographic systems are not interchangeable commodities and can, in fact, produce images with very different image quality.

Fluoroscopy produces real-time images of internal structures of the body in a similar fashion to radiography, but employs a constant input of x rays. Contrast media, such as barium, iodine, and air are used to visualize internal organs as they work. Fluoroscopy is also used in image-guided procedures when constant feedback during a procedure is required.

Computer Aided Tomography (CAT): The next generation diagnostic aid after the x-ray was the "cat-scan" which is essentially x-ray images enhanced with computers. It combines ordinary" X-ray technology with sophisticated computer signal processing; it is possible to generate an image of the tissues of the body which is unobscured by other organs. A beam of x-rays passes through the brain and is detected according to the density of the tissue encountered. Detectors positioned around the circumference of the scanner collect attenuation readings (acquires a number of projections) from multiple angles. Then, these different views through the patient must be combined using a computerized algorithm to reconstruct the three-dimensional object. An ordinary X-ray system takes pictures by passing X-rays through the body and recording the interference patterns onto a photograph. The different tissues in the body absorb the X-ray beams to varying degrees, and the film responds to the intensity of the X-rays received. The resulting photograph displays the accumulated absorption patterns to the tissue. Tomos is Greek for slice. The standard slice orientation in most brain imaging is transaxial or "axial". Other standard planes of view are coronal and sagittal.

Magnetic resonance imaging (MRI) is a noninvasive procedure that does not use ionizing radiation (x-rays). An MR image measures the ability of hydrogen nuclei to absorb radio frequency energy. A Magnetic Resonance Imaging instrument uses powerful magnets to polarize and excite hydrogen nuclei in water molecules in human tissue, producing a detectable signal which is spatially encoded resulting in images of the body. MRI does not involve the use of ionizing radiations and is therefore not associated with the same health hazards; for example there are no known long term effects of exposure to strong static fields, and therefore there is no limit on the number of scans to which an individual can be subjected. However, there is well identified health risks associated with tissue heating from exposure to the RF field and the presence of implanted devices in the body, such as pace makers. These risks are strictly controlled as part of the design of the instrument and the scanning protocols used. CT and MRI being sensitive to different properties of the tissue, the appearance of the images obtained with the two techniques differ markedly. In CT, X-rays must be blocked by some form of dense tissue to create an image, therefore the image quality when looking at soft tissues will be poor. An MRI can detect hydrogen based objects, so bone, which is calcium based, will be a void in the image, and will not affect soft tissue views. This makes it excellent for peering into the brain and joints. In brief, MRI involves the use of three kinds of electromagnetic field, a very strong (of the order of units of tesla) static magnetic field to polarize the hydrogen nuclei, called the static field; a weaker time-varying (of the order of 1 kHz) for spatial encoding. General anesthesia is necessary, since the MRI generates considerable noise and requires that the animal remain still for 10-60 minutes. MRI is not indicated in acutely traumatized patients, since life support systems can not be safely used in the magnetic field. Artifacts in images are generally caused by motion or deformations in the magnetic field from implanted metallic objects. The images produced are so exact, that differences in tissue makeup as small as millimeters can be identified. The scans are so clear that you believe you are looking at photographs of dissected sections. We can now diagnose brain tumors and lesions, spinal cord abnormalities and injuries, the spread of abdominal/thoracic cancer and difficult orthopedic conditions which in the past we either had to make an educated assumption or blindly commit to surgery. Due to expenditure and equipment availability, veterinarians who want to utilize MRI technology more often than not have the procedure performed at a near human hospital.

Endoscope and Images during surgical intervention: The trend towards keyhole surgery is strong. Veterinary surgery is now increasingly seeing endoscope and laparoscope being used to guide and apply small surgical instruments.

Nuclear medicine Images from gamma cameras are used in Nuclear Medicine to detect regions of biological activity that are often associated with diseases. A short lived isotope is administered to the patient. These isotopes are more readily absorbed by biologically active regions of the body, such as tumors or fracture points in bones.

Positron emission tomography (PET): Positron emission tomography is used to detect certain brain diseases. Similarly to nuclear medicine, a short-lived isotope is incorporated into a substance used by the body such as glucose which is absorbed by the tumor of interest. PET scans are often viewed along side computed tomography scans, which can be performed on the same equipment without moving the patient. This allows the tumors detected by the PET scan to be viewed next to the rest of the patient's anatomy detected by the CT scan.

Telemedicine and teleradiology: Advances in computer and internet technologies have created new possibilities. Telemedicine is basically an e- transmission of information to a specialist doctor to enable him to make a diagnostic decision. The pace at which mobile telephony is advancing it could also be used for consultation. High resolution pictures captured on mobile telephone can be transmitted to doctors for consultation. The scope telemedicine is huge. India is geographically spread .Expert veterinary care is concentrated in pockets metros or at universities, with telemedicine the far flu area can access the services of specialist who other w be totally inaccessible to people in rural India. Before patient reaches the hospital the images have alre reached the hospital and the doctors.

Computer-aided diagnosis (CAD) has become one the major research subjects in medical imaging a diagnostic radiology. The basic concept of CAD is provide a computer output as a second opinion to as radiologists' image interpretation by improving accuracy and consistency of radiological diagnosis a also by reducing the image reading time. Because C can be applied to all imaging modalities, all body p and all kinds of examinations, it is likely that CAD have a major impact on medical imaging and diagno radiology in future. The quality of veterinary radiology a imaging in India will depend upon image acquisition a image interpretation. In short the future is both exci and challenging.

Formerly when religion was strong and science w weak in India,

Men mistook magic for medicine.

Now when the science is strong and religion wea Men mistake medicine for magic.

INTRA-ABDOMINAL ADHESIONS AND ITS MANAGEMENT IN PET ANIMALS

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oduction

Adhesions are fibrinous or fibrous bands that form unions between two or more surfaces that are covered with serosa and or not attached to each intra-abdominal adhesions are most inevitable to ident after abdominal surgery which can lead to and mortality .Adhesion incidence of 67% after laparotomy and 93% multiple laparotomy in surgical patients (Lower et al.2000) is a thought current small animal practice . Adhesions may ther at the serosal surface or peritoneum .Although life-threatening adhesions are not reported in the in animal practice, the conditions are increasing particularly after laparotomy in veterinary animals. Carrying-out uncomplicated and multiple laparotomies in dogs and cats are a ging task in the field of surgery in recent years.

ence reviewing the current knowledge with regards sion in the field of small animal practice is essential

creasing incidence of unnoticed adhesion cases.

creasing demand for intra-abdominal elective gery and other routine surgery

Facilitate to carryout many laparotomy

Changing scenario in handling the surgical cases by the practitioners.

es of adhesion

Clinical adhesions are classified as restrictive and restrictive. Restrictive adhesions are firm in ency that tightly binds the structures that involved. ictive adhesion is more important because they are ally prone to cause visceral strangulation or uction.Non-restructive adhesion is also firm in nature involve connection between two abdominal structures omentum .

Adhesions are also classified as (a) Visceral-visceral (b)Visceral -peritoneal based on the anatomical tion. Adhesion in cats and dogs commonly involve omentum and rarely peritoneum. Permanent rence of omentum to the ovarian pedicles following hysterectomy, uterine wall to the intestine following cesarean section, bladder to the abdominal wall following cystotomy ,gastric adhesion following GDV and torsion and intestinal adhesion strangulation due to twisting. Inflammation and infection are the event ends in adhesion due to the following factors.

Aseptical surgical procedure

Tissue ischemia due to rough handling

Traumatic surgical technique

Improper suture pattern and choice of suture materials

Excessive use of cautery and suture materials

Presence of foreignbody obstruction.

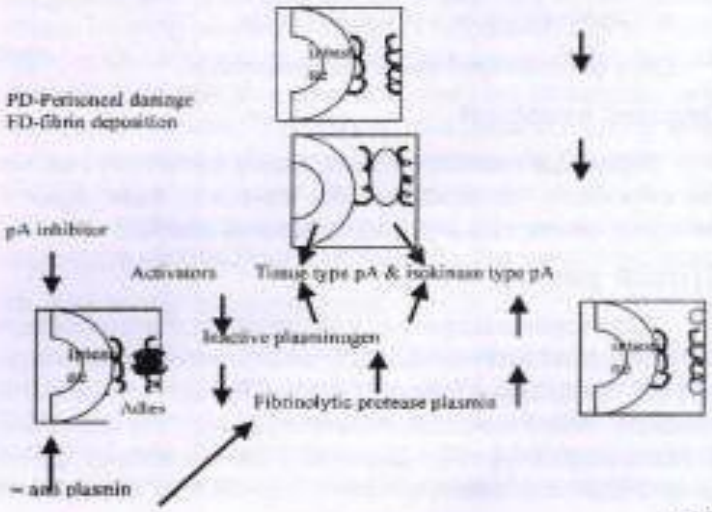
Introduction of foreignbody like surgical glove-starch, lint from cotton-gauze in the surgical area which causes irritation

Persistent severe inflammatory condition including infection

Intraperitoneally improperly placed antibiotic and antimicrobial agents

Pathophysiology of adhesions

Peritoneal adhesions form when closely apposed damaged visceral and parietal peritoneal surfaces due to incorrect surgical procedure, thermal or ischemic injury, inflammation, foreignbody reaction and other causes listed above.



The protective surface of mesothelial layer is disrupted and fibrinous exudates (adhesion) is deposited between the damaged closely apposed serosal surfaces.These adhesions are often transient and are degraded by protease of the fibrinolytic system with in a few days (5-7 days) of injury and later leading to restoration of the normal peritoneal/serosal surface in association with re-epitheliazation of mesothelial cells.

During normal repair, fibrin is degraded principally by the fibrinolytic protease plasmin which is derived from inactive plasminogen through the action of two physiological plasminogen activator (PAs), tissue type PA (tpA) and urokinase type PA (upA).Inhibition of the fibrinolytic system may occur either at the level of plasmin production mainly by µ1 antiplasmin or at the level of PA through specific PA inhibitor inhibition. Macrophages are primarily responsible for the clearance of extra vascular fibrin deposition and require upA for peri cellular proteolysis and cell migration.

Alternatively if there is no sufficient peritoneal fibrinolytic activity, the fibrinous scaffold persists becomes organized by mixing fibroblast and endothelial cells and subsequent collagen deposition forms permanent adhesion with in a week of injury. The normal peritoneum has inherent fibrinolytic activity that is derived from the surface mesothelial cells and endothelial cells. However abdominal surgery and /or infection have been shown in animals to dramatically reduce fibrinolytic activity in both peritoneal fluid and tissues. All the adhesions seen with this acute inflammatory model were thin and firm in nature and do not organize into tissues persisting collagen structure.

Fibrinous adhesions that remain through the fifth day contain fibroblast and usually persist as permanent fibrous adhesions are

a. presence of adequate oxygen and a nutritional environment for the mesothelium
b. Normal mesothelial and mesothelial cells that liberate a plasminogen activity substance
c. Lack of continued severe inflammation

Organs involved

In both cat and dogs adhesions are commonly involve the omentum, other organ like stomach, liver, spleen intestine, ureter urinary bladder, uterus and fat.

Crucial period

After routine surgery or inflammation, the production of fibrinous attachments at the inflammatory site, which helps to bring blood supply of injured tissues and localize infection. There is delicate balance between the formation of fibrin and its lyses by plasmin.If the balance is tipped toward fibrin formation by one of four factors, maturation of the fibrinous adhesions to a fibrinous occurs wi 14 days after surgery. The active fibrinolytic sys the dogs and cats tenders this less likely than in other species but when an iatrogenic foreign b present or chronic peritonitis development, su inflammation and scar tissue may occur to produce organ production.

Clinical signs

The following clinical signs may be observed eit history or from the clinical observation

Obstruction of G.I.Tract and Urethral tract

Infertility problem due to tubal block-adhesio

Loss of appetite, Malaise, Low grade fever

Vague G.I system symptoms, Weight abdominal distension

Abdominal pain, Complaint after surgery

Diagnosis

Although there are no definite diagnostic m are available, the following diagnostic techniques m helpful in diagnosing adhesions cases besides c signs. ***Radiography:*** Plain radiographic investigatio locate space occupying lesion, displaced orga showing increased density at the periphery o adhesion site in advanced cases. ***Contrast radiogra*** techniques will facilitate to identify the displaced o the extent of displacement, prolonged emptying t the contrast, decreased lumen size and discont lumen of the gastrointestinal lumen. ***Ultrasound*** illustrate adhesion and reduced lumen size .Laparos diagnosis is a useful procedure to locate the natur intensity of the adhesion.

Treatment

The treatment procedure may be categorized three methods

A. Preventive and curative
B. Pharmacological strategies
C. Surgical therapy

A. Preventive and curative methods

1. Pre-operative assessment of surgery

Assessment of the patient and the type of su to be performed is essential since all visceral su has the potential of introducing contaminants into surgical site which may act as precursor for infec inflammation and adhesion. Useful guidelines estimating the amount of contamination in such su is furnished below to follow certain pre-operative ca order to avoid infection and adhesion. The percentag

	Definition	Infection rate
	Perfect asepsis -no visceral organ is entered	1-2%
	Entering area of potential contamination without any spillage- ex.cystotomy,gastrotomy ,enterotomy	4.5%
	Spillage from viscous and severe infl ammation with out any pus/infection	5.8%
	Presence of infection /pus	25%

rate gives an indication to asses the status of mation, which warrants certain required ctic procedure to overcome inflammation / adhesion. Success rate is always less in cases fection rate is more than 2%.

guideline: Following strict sterile surgical like scrubbing practice, handling of used nts and draping of patients.

of tissue: Gentle handling and precise technique with exact homeostasis

materials prevention: Gloving powder, lint surgical drapes, un-retrieved threads from cotton pads and use of unsuitable suture materials are material may act as sources of irritation and the adhesion formation

vation of tissue moisture: Placing plastic covering gauze over the exposed surfaces may decrease drying off tissues and frequent irrigation of organs/tissues with physiological salt solution duce adhesion formation.

ging: Lavaging the abdomen with physiological at 10% body weight after surgery dilutes the fibrin and decrease the amount of fibrinogen, oplastin and clotting factor that are required for ation of fibrin

ding Drainage

severe complicated peritonitis the formation of post- operative peritoneal adhesion may also inhibited to some extent by infusing sterile saline abdominal cavity 4-times daily using a total volume ately 10% of the body weight. The infused fluid d from the peritoneal cavity as completely as after every treatment. This is practically possible rainage tube fixation and more beneficial in ting further adhesion formation.

rotmy and its closure

is better to make one stroke incision and detach utaneous fat away from the external fascia over width (0.5cm -1.0cm) in fatty animals to provide feed abdominal wall suture that included the fascia and not the fat alone. Suturing of peritoneal defects or intense peritonealization also increase adherent healing. The peritoneum rapidly migrates and scales over a defect such as closed laparotomy incision. Practicing major laparotomy surgery via a ventral midline incision along the linea-alba is a safe and creates an atmosphere to extend the surgical events in necessary patients. The standard method for closure of the abdominal wall calls for single stitches joining peritoneum and the internal and external fascial layers which are safe and adequate thus avoid adhesion. As alternate method of monofascial layers abdominal closure using simple continuous pattern is used that includes only external abdominal fascia can be also practiced. In medial laparotomy ,the cranial tow thirds of the incision, the sutures are anchored in the full thickness of the lineal alba and in the caudal one third the sutures penetrates only external fascia of the rectus muscle without incorporating muscle fibers which would induce necrosis. The security of a continuous suture pattern is only as good as the two end knots and therefore sufficient number of two throws must be used with the pattern of 5 throws for the start and 7 knot for the end knot. The simple interrupted suture consists of 4 throws.

9.Suture materials and pattern

Catgut, steel thread and non-absorbable polyfilaments should be avoided, rather coated absorbable polyfilaments of polyglycolic acid (Dexon, Dexon plus) or polyglactin 910(vicryl) as well as absorbable monofilaments of polydioxanone (PDS, ethicon) are suitable for soft tissue closure. It must be remembered that all fascial tissues heal slowly and as extended wound support is required, it is essential to use an appropriate size and type of suture material. Usually, the synthetic suture materials are absorbed, principally through the processes of hydrolysis. These materials are non capillary (i.e. monofilaments) or slightly capillary (i.e. coated polyfilaments) that are inert and induce minimal inflammation and maintain their strength in an infected medium. They have rich tensile strength and exhibit a progressive degradation which matches the rate of soft tissue healing. A round swaged needle combined with high tensile strength of synthetic sutures enables the use of small diameter thread which provides atraumatic and leak proof closure. The size of the suture materials used varies according to the weight of the animal .Decimal size 2(USP 3-0) for cats and small dogs; decimal size 3(USP 2-0) for medium dogs and decimal size 4(USP 1-0) for large dogs and decimal size 5(USP 1)for very large dogs.

10. Antibiotic management

Prevention of infection is better than cure. Hence a guidelines furnished here are used to plan antibiotic management in surgical patients. Such classification schemes are, of necessity, arbitary and assume that surgical procedures are carried out under conditions of

strict asepsis. Infusing antibiotics alone inside the abdominal cavity does not offer exciting result. It must always be remembered that antimicrobial prophylaxis is not a substitute for good surgical technique. The following antibiotics combination is useful to control some of the commonly found bacteria during Laparotomy surgery. Antibiotics should be given intravenously, 30-60 minutes prior to surgery to ensure maximal tissue concentration at the time of surgery. Systemic antibiotics prevent bacterial multiplication for up to 3hours with maximal effect at around 1 hour. There is no justification for post operative antibiotics unless there is gross contamination or a procedure is particularly prolonged.

Antibiotic	Percentage of susceptibility	
	E.Coli	*Staphylococcus sp.*
Amoxicillin / Ampicillin (-7mg/kg./10-40mg/kg)	55	37
Cephalosporin (10-30mg/kg)	90	99
Clauvenic Acid + Amoxicillin (8.75mg/kg)	81	99
Fluroquinolone (2-2.5mg/kg) ex. Marbofloxacin, orbifloxacin	100	98

The choice of antibiotic must also take into account the potential risk of infection, its consequence and the cost of drug. As the risk with most elective gastrointestinal surgery is relatively small, either ampicillin or amoxicillin is used, with second generation cephalosporins or fluroquinolones being reserved for high risk patients or conditions

10. Repositioning of organ: Proper re- positioning of organ after each surgical procedure is an essential one in-order to avoid strangulation and later adhesion of abdominal organs.

11. Recurrent clinical signs: Re-occurrence of G.I tract problem, uro-genital surgery with weight loss needs complete investigation for early diagnosis and treatment

13. Management of peritoneal inflammation:

Most of the patients suffering from peritonitis always end in adhesion formation. It is better to understand the management of such cases for early recovery and less adhesion formation. The abdomen is lavaged with copious amounts of warm saline and then suctioned dry. Generally combination of gram-positive (penicillin's -cephalosporin) and a gram negative (guinolones and amino glycosides). Antibiotics are used. Providing open abdominal drainage or suction drains are the important techniques to be adopted for removing unwanted materials.

B. Pharmacological strategies

A number of pharmacological strategies ef prevent or decrease the unwanted restrictive adh have been suggested, which include

1. Anti-inflammatory agents: Although many a including histamine antagonist ,progesterone and co have been tried for reducing inflammatory response surgery .Corticosteriods and non-steroidal inflammatory drugs have been investi carefully.Corticosteriod inhibit fibrin deposition ,prolif of capillaries, fibroblast and deposition of coll Although most non-randomized animal species have reduction in adhesion formation with corticoste controlled studies. However the results of their experimental models of intra peritoneal adhesion for have not been encouraging. Clinically potential use dose of steroid may cause immune suppressio impaired healing which limit its usage in surgical pa parental injections of dexamethazone and promet (1.0mg/kg bwt0 beginning 3-6hrs preoperative continued every 4-8hrs post -operatively for 24hrs will also reduce inflammation and adhesions but complication due to these drugs must be take account.

2. Physical barriers

Adhesions are unlikely to form once mesot repair has occurred in damaged peritoneum a pr that takes approximately 7 days, introduction of a ph barrier between layers of injured tissues during the p might be effective it can remain in place for sufficient p of time. In contrast to pharmacological methods, ba can be targeted more precisely are more associate lower risk of systemic side effects. Such physical b be non reactive persist during the critical stages of he no effect on wound healing, bioreabsorbable, do promote bacterial growth and easy to use.

a. Natural barrier

Omentum and amnion are used and plac between the damaged surface to avoid adh formation.Omentalisation (an omental covering o hollow organ suture site) that aids vasculariz lymphatic drainage and sealing of the wound. In the e of a partial wound break down: the omentum can prevent a local bacterial contamination form beco more generalized infection.

b. Artificial barrier

Encouraging results were obtained by pla membrane /mesh like oxidized regener cellulose(intercede TM) and expanded poly tetra

(PTFE) and bioresorbable hyaluronate membrane in-between the serosal-serosal,serosal-peritoneal have also been advocated for adhesions in surgical patients

liquid barrier

Methyl cellulose (collothyl, citurcel, cologne) at 1% frequently used for adhesion prevention in Hyaluronic acid and sodium haylcorat at 0.4% and supracoat TM, suprafilm, Lactate ringers, also help in minimizing adhesion formation.

Others Combination of heparin and trypsin heparin at the dose rate of 100-200U/kg, protoporphryin, xifin plasminogen activators, Polysaccharides form the fungus and Intra peritoneal administration E have been effectively tried in animal practice.

Adverse effects like delayed wound healing increased spreading of peritoneal infection and bacterial and toxin absorption into the circulation. Intravenous infusion of antifibrinolytic drugs like eminase, actilyse was also effectively used. Streptokinase at the dose rate of 90000-250000IU over 30-60minutes followed by 45000-100000 IU/hr is found to be effective in minimizing adhesion formation

C. Surgical removal of adhesion

The surgical method is useful in case of adhesion in smaller area. Extensive adhesion due to chronic inflammatory condition will be difficult to treat surgically. Smaller area involvement can be treated by slow and gentle separation of adhesion, suturing the defect and with lavage.

DISEASE CONDITIONS AFFECTING THE PERFORMANCE OF HORSE

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Common disease conditions affecting the performance of horses includes cardio- vascular disease, upper airway disease, lower air way disease, disease affecting locomotors system and immune mediated disease.

Cardiovascular disease

The effects of different cardiovascular diseases on athletic performance were difficult to quantify exactly; evaluation of each case is a matter of judgement. As a rule, valvular heart disease is not as coma cause of poor athletic performance as is widely thought. However, arrhythmias which occur during exercise, and which may affect performance, may not be detected without the aid of exercise ECGs and may be under-diagnosed. Echocardiography allows an accurate estimate of the significance of valvular regurgitation in horses which are presented with a history of poor performance.

Mitral regurgitation

MR is the most common valvular condition resulting in poor athletic perforLocalised grade 2/6 murmurs are unlikely to be associated with poor athletic performance, but more widespread and louder murmurs should be regarded with suspicion. Animals with a grade 5/6 murmur of MR are unlikely to perform athletic work normally. Tachycardia and pathological arrhythmias, particularly AF, may be present if marked volume overload results from the valvular incompetence. Animals with moderate or severe MR are likely to start a race normally but tire quickly. Epistaxis is observed in some cases during exercise. After pulling up there is likely to be marked tachycardia and tachypnoea. The recovery period is usually prolonged. Echocardiography is the best method of assessing the severity of grade 3 and 4 murmurs .

Aortic regurgitation

Many horses with AR perform normally. This may be partly accounted for by the fact that it usually affects older horses which often perform lower intensity work than young animals. However, in some circumstances, it may be responsible for poor athletic function. Where a tachycardia or abnormal pulse quality is detected, or when the condition is found in association with significant arrhythmias or MR, it is more likely that performance will be restricted. When AR appears to be sudden in onset it is more likely to affect race times. Other causes of poor performance should also be investigated.

Tricuspid regurgitation

TR is a common finding in racehorses which have normal performance history, or even an excellent race record. It may therefore be an incidental finding when detected in a horse which is presented for poor athletic performance. Other causes of poor performance should be investigated, but when no other significant findings are made, an echocardiographic assess examination should be performed .

Congenital heart disease

Complex congenital heart disease is incompatible with athletic performance. Small restrictive ventricular septal defects (VSDs) are found in some animals which are able to record useful racing performances, but seldom in the very best athletes. Affected animals may be able to perform less demanding work satis. Normal right ventricular size, normal interventricular septal motion and a defect of less than 2.0-2.5 cm are good prognostic signs. Doppler echo-cardiography is very useful; a velocity greater than 4.0-4.5 m/sec indicates that the defect is likely to be restrictive .

Atrial fibrillation

AF is the most common arrhythmia to cause poor athletic performance. Few horses will perform well in competitive events while in AF. AF should therefore be considered as the likely cause of poor performance in animals presented for this reason. Treatment is usually required for them to recover normal perfor levels. If treatment is successful and there is no significant underlying heart disease, it is likely that the horse will return to previous levels of perfor. Animals which need repeated treatment may perform normally between bouts of AF. Although animals have been reported to win races while in paroxysmal AF it usually results in poor performance. It can be very difficult to diagnose. Paroxysmal AF usually only occurs during the stress of a race rather than at home on the gallops or on a treadmill, although there are exceptions. Unless the horse is examined before normal sinus rhythm returns it may be difficult to prove that paroxysmal AF is the cause of fading. It may be worthwhile visiting the raceto record an ECG if the episode of poor performance is repeated. Exercising and 24-hour ECGs may be helpful in establishing that an arrhythmia is the cause of the problem. Although the recordings may not show AF, an increased number of APCs may be detected and this would make a horse more likely

paroxysmal AF during a race. Fractional excretion may be useful because electrolyte disturbances predispose the horse to AF. Echocardiography may be advisable to ensure that there is no evidence of underlying heart disease.

premature complexes, atrial tachycardia ventricular arrhythmias

APCs and/or VPCs may be detected during a routine examination or during heart rate slowing after exercise. It is frequently difficult to determine the significance of these abnormalities with regard to athletic performance. ExerECGs are invaluable in determining whether APCs occur more frequently or less frequently during exercise and therefore whether they are likely to affect performance. Similar tests to those described above for paroxysmal AF should be performed to determine whether there is any predisposing factors.

arditis

Myocarditis may be suspected if arrhythmias are detected. Investigation should include echocardiography to assess myocardial function and identification of any other conditions which predispose to arrhythmias. 'Heart strain' has been a popular concept in some areas of the world, however, there is little evidence that training can have any deleterious effects on the heart, except in exacerbating the effects of a virally mediated myocarditis. Valve abnormalities have been said to indicate the presence of heart strain, but there is no clear evidence that they are reliable indicators of cardiac disease. They may be found in animals with poor athletic performance, however, they are also found in horses with good racing records.

Airway Diseases

Various conditions of the upper airways leading to static and dynamic airway obstruction may cause exercise intolerance and occasional coughing episodes observed in IAD. The presence of abnormal breathing sounds at rest or during exercise, and the absence of mucous and inflammation in the lower airways should assist differentiating these conditions from IAD. Upper airway endoscopic and radiographic studies permit identification of upper airway diseases.

hopneumonia - Pleuropneumonia

Manifestation of severe infection such as fever, depression, decreased appetite, and weight loss, are usually present in bacterial or fungal bronchopneumonia and pleuropneumonia, but are absent in IAD.Radiographic and ultrasonographic evaluation of the chest will facilitate differentiating these conditions from IAD. Leukocytosis and neutrophilia may be found with bacterial respiratory infections and, during the acute phase of a bacterial infection, increased numbers of immature neutrophils may be observed. Cytologic examination of tracheal wash fluid is helpful to differentiate IAD from pulmonary infection. Some horses with IAD may present with septic tracheal wash,but are not systemically ill.

Exercise Induced Pulmonary Hemorrhage (EIPH)

EIPH is a common cause of poor performance in racehorses.The diagnosis is made by finding blood upon tracheoscopy or by detecting increased hemosiderin content in alveolar macrophages.48 Hemorrhage occurs almost exclusively in the caudo-dorsal lung areas and is associated with macrophagic bronchiolitis and fibrosis.It has been suggested that the presence of lower airway inflammation predisposes to EIPH but,several studies have found no significant correlation between hemosiderophage and neutrophil counts in BALF of horses with IAD.

Neoplasia

Thoracic neoplasia is uncommon in horses and may present with a variety of clinical signs, some of which may resemble IAD, in particular chronic coughing. Bronchoscopy, thoracic radiography and ultrasonography, and cytologic and histologic findings from biopsies may help confirm the diagnosis.

Lungworm

Horses with Dictyocaulus arnfieldi infection may have clinical signs similar to those observed in IAD, including paroxysmal coughing, abnormal breath sounds, and mildly increased respiratory efforts. Eosinophilic inflammation in BALF can be associated with IAD or parasitic pneumonitis. Direct examination of tracheal wash fluid may reveal the presence of larvae. D. arnfieldi follows a complete cycle in donkeys, mules, and asses however, the infection is usually not patent in horses. Therefore, the Baermann fecal flotation is not reliable in horses. The resolution of clinical signs with appropriate parasiticidal drugs helps differentiate lungworm infection from IAD.

Therapy for IAD

A combination of environmental modification and anti-inflammatory drugs appears a logical treatment regimen for horses with IAD but, there is limited evidence-based data regarding the efficacy of this therapy.

ENVIRONMENTAL CHANGE

Control of Airway inflammation

Medication

Systemic medications commonly used to treat airway inflammation in horses include dexamethasone and prednisolone. Although systemic therapy has been shown to rapidly and effectively reduce airway inflammation in RAO affected horses, the risk of developing adverse effects associated with this treatment are increased

compared to inhaled corticosteroids. Regardless, 2–4 weeks of corticosteroid therapy is often

prescribed for horses with IAD. Mast cell stabilizers such as sodium cromoglycate have been shown to improve clinical signs and decrease bronchial hyper-responsiveness of young racing horses with exercise intolerance and high BALF mast cell counts. Oral administration of low-dose interferon a (50–150 U q24 hours, 5 days) has been shown to reduce airway inflammation of racehorses with IAD.A parallel reduction in BALF immunoglobulins and inflammatory mediator concentrations was demonstrated.Higher doses of interferon a (450 U) appeared to be less effective. Mast cell and eosinophil counts are not affected by interferon therapy. The possibility of an infectious etiology must be ruled out before resorting to any immunosuppressive treatment.

Bronchodilators

Although horses with IAD often demonstrate airway obstruction and hyper-responsiveness, whether bronchodilators improve airway patency is not known. As with corticosteroids, most of the information regarding bronchodilators in the horse is extrapolated from the study of RAO affected animals. Use of bronchodilators is probably most efficacious when combined with anti-inflammatory therapy, because the underlying mechanism of this disease is most likely related to persistent airway inflammation. Most horses should begin to improve within a few days once treatment is initiated, but full resolution of disease usually takes a minimum of 2 weeks. Because IAD is largely subclinical in horses at rest, repeated examination and reassessment of BALF should be performed to confirm full resolution of inflammation before the horse returns to intense work.

Lower Air Way disease

Horses with heaves exhibit marked lower airway inflammation and obstruction resulting in overt increased respiratory effort at rest. Clinical signs and airway obstruction can be reversed by administration of corticosteroids, bronchodilators, or changing the environment. Horses with recurrent airway obstruction (RAO) tend to be mature to older animals. In contrast, inflammatory airway disease (IAD) can affect horses of any age and clinical signs at rest are usually subtle.

- Poor performance, exercise intolerance, or coughing,with or without excess tracheal mucus.
- Nonseptic inflammation detected by cytologic examination of bronchoalveolar lavage fluid (BALF) or pulmonary dysfunction based on evidence of lower airway obstruction, airway hyper- responsiveness, or impaired blood gas exchange at rest or during exercise.

The following exclusion criteria are also proposed :

- Evidence of systemic signs of infection (fever, hematologic abnormalities compatible with infection
- Increased respiratory efforts at rest (ie, heaves).

Heaves (Recurrent Airway Obstruction)

Heaves (RAO), summer pasture associated RAO (SPRAO),which is clinically indistinguishable from RAO except that affected horses develop signs when maintained on pasture, and IAD share a number of clinical,cytologic, and functional similarities. The lack of labored breathing or severe exercise intolerance in IAD permits differentiation from RAO and SP-RAO, although these signs may be subtle during periods of disease remission for RAO and SP-RAO. In those cases, BAL cytology, pulmonary function testing, or a moldy hay challenge will help reaching a definitive diagnosis.Although neutrophilic inflammation is commonly observed in BALF from horses with RAO, SP-RAO, and IAD, the neutrophilia is usually less pronounced with IAD (ie, ,20%). Increased metachromatic cells (mast cells, basophils) and eosinophils have been described in horses with IAD but are usually not associated with RAO or SPAOPD.

Musculo skeletal disorders

DJD (degenerative joint disease or osteoarthritis) causes lameness in affected horses. The condition develops when the cartilage that protects the bones of the joint is destroyed. Although it may develop in any joint, areas most commonly affected include the upper knee joint, front fetlocks, hocks, and coffin joints in the forefeet. Degenerative Joint Disease (DJD) may result from injury, loose joints, an abnormal growth pattern, or inherited factors. Over time, the cartilage may erode entirely resulting in bone-on-bone grinding and further disability. Degenerative Joint Disease (DJD) is one of the most common causes of lameness in sport horses.

Navicular syndrome

Navicular syndrome (podotrochlosis, podotrochlitis) sometimes referred to as Caudal Heel Syndrome, is one of the most common causes of chronic forelimb lameness. Navicular syndrome occurs almost exclusively in the front feet and usually affects both sides. In the horse, the navicular bone is located directly behind the coffin bone and is held in place by tendons and ligaments.

Osteochondrosis (OCD)

Osteochondrosis is a form of developmental orthopedic disease that involves a local or generalized failure of endochondral ossification affecting the epiphyseal and/or metaphyseal cartilage. Two clinical syndromes affect horses:

- osteochondrosis dessicans (OCD)
- subchondral cyst-like lesions (bone cysts)

TISSUE ENGINEERING AND VETERINARY REGENERATIVE SURGERY

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What is regenerative medicine?

Regenerative medicine is an emerging multidisciplinary field of research and clinical applications focused on the repair, replacement, or regeneration of cells, tissues, or organs to restore impaired function resulting from any cause, including congenital defects, disease and trauma by using tissue engineered scaffolds and stem cells.

Why regenerative medicine?

This field holds the promise of regenerating damaged tissues and organs in the body by stimulating previously treatable and irreparable organs to heal themselves. Regenerative medicine also empowers an endless potential for scientists to grow tissues and organs in the laboratory and safely implant them when the body cannot heal itself. Importantly, regenerative medicine has the potential to solve the problem of the shortage of organs available for donation compared to the number of patients that require life-saving organ transplantation.

TISSUE ENGINEERING

Tissue engineering is a multidisciplinary field which applies the 'application of the principles and methods of engineering (Nanotechnology) and life sciences towards the fundamental understanding of structure - function relationships in normal and pathological mammalian tissues and the development of biological substitutes that restore, maintain or improve tissue function'. The goal of tissue engineering as a treatment concept is to replace or restore the anatomic structure and function of damaged, diseased or missing tissue or organs following any injury or pathological process by combining biomaterials, cells or cell, biologically active molecules, and or stimulating mechanical forces of the tissue microenvironment and overcomes the limitations of conventional treatments based on organ transplantation. One of the principle methods behind the tissue engineering involves growing the relevant cells in vitro into the required three-dimensional (3D) organ tissue. This is achieved by seeding the stem cells onto 3D biomaterial porous matrices, known as *scaffolds* to provide mechanical support and guide cell growth into new tissues or organs.

Components of Tissue Engineering

The four basic components in tissue engineering are biomaterial scaffold, functional cells, biomolecules (eg., growth factors, extra cellular matrix, other functional molecules) and dynamic forces.

Scaffold

Biomaterials are fashioned into scaffolds using nanotechniques and they create milieu within which cells are instructed to form a tissue or organ in a highly controlled way designed to the shape of the tissue as cell support device and finally implanted into the target tissue seeded with stem cells. These scaffolds are designed in 3D architecture with CAD / CAM / laser stereolithography technique of nanoscale (10^{-9}) to microscale (10^{-6}) in various forms such as gelatin sponges, bioceramics, polymer disks foams, supercritical CO_2 foams, injectable microspheres etc., and finally the construct is engrafted into the target tissue. The functional properties of the scaffold is to interact and influence the cell behaviour during healing as a supporting live medium enabling 3D differentiation, orientation, spreading and remodelling of cell and to withstand the even mechanical load during tissue healing process. The traditional scaffolds used are hydroxyapatite (HA) for bone, chitosan and gelatin sponges for tendon, ligament injuries, fragmented omentum for soft tissue wounds, hyaluronic acid liquid solution as intra articular injections and bioceramics for bone. The various biodegradable polymer scaffolds used are polyglycolic acid (PGA), polylactide-co-glycolide (PLG), poly (lactic-co-glycolic acid) (PLGA), polyglycolic acid - polylactic acid (PGPLA) and poly (L-lactic acid) (PLLA). The injectable polymer scaffolds are polyethylene glycol (PEG) and photo polymerised polyethylene glycol diacrylate (PEGDA), atelocollagen gel (0.5% acid soluble type I collagen), thermoreversible gelation polymer etc. Recently, nanofibers with collagen and chitosan and nanocarbon fibers in tube forms are being attempted in tissue engineering process.

Stem Cells

Stem cells are generically defined as undifferentiated cells that are capable of self-renewal through replication as well as differentiation into specific cell lineages. *Totipotent stem cells* are able to create an entire organism, a property retained by early progeny of the zygote up to the 8-cell stage of the morula. *Pluripotent cells* are capable of forming tissues from all embryonic germ layers (endoderm, mesoderm, and ectoderm) and *multipotent* cells can yield a more restricted subset of cell lineages.

Stem cells can be broadly classified as embryonic or adult, depending on the developmental stage from which they were obtained. Adult applies to stem cells obtained from any postnatal organism, but the adult classification is commonly used to distinguish such cells from those of embryonic origin. In addition, various institutes are also exploring the use of stem cells extracted from the placenta, umbilical cord, and umbilical cord blood.

Embryonic Stem cells (ES cells)

Embryonic stem cells are derived from the blastocyst, which is made up of an outer layer of cells (the trophectoderm), a fluid ectoderm filled cavity (the blastocoele), and a cluster of cells on the interior (the inner cell mass, ICM). Blastocysts are preimplantation stage embryos approximately 1 week in age depending on species. The ICM contains the pluripotent embryonic stem cells (epiblast), which develop into the organism, whereas the surrounding trophoblast cells contribute to the placental chorion. As stemness these cells can be defined as cells that are capable of self-renewal and differentiation into cells of all tissue lineages, and they have the capacity for exceptionally prolonged culture (1-2 years with cell division every 36-48 hours) as an undifferentiated cell type. However, before embryonic stem cells can be used clinically for tissue engineering, problems, such as standardising the culture, avoiding teratoma formation and immune rejection by the host must be solved. Despite intense efforts from several research groups, the derivation and maintenance of ES cells has not been successful in all species. ES cells have been derived and maintained from human, non-human primate, and mouse blastocysts. Bovine ES cells have been grown in primary culture and there are reports of ES cells from mink, rat, rabbit, chicken, and pigs.

ADULT / SOMATIC STEM CELLS

Adult stem cells can be obtained from tissues of endodermal, mesodermal or ectodermal lineages. The stem cells isolated from the stroma of other mesodermal tissues are bone marrow, muscle, adipose tissue, synovium and periosteum. Isolation of stem cells has also been reported from tissues of endodermal lineages such as intestine and from ectodermal tissues including skin, deciduous teeth and nerve tissue. Mesenchymal stem cells (MSC) obtained from bone marrow have been reported to differentiate into several specialised cell types of other tissues (transdifferentiation or plasticity) such as those in muscle, fat, bone, cartilage, liver, lung, nerve and other kinds of connective tissue cells such as those in tendons. MSCs from adipose tissue have been reported to be useful for bone regeneration because of the interdependency between adipogenesis and osteogenesis. Harvesting adipose tissue is not morbid and hence, could be the most advantageous source of stem cell harvest. Somatic cells and mesenchymal stem cells have finite replicative life spans after which they can no longer divide and are said to have reached replicative senescence. The exact proliferative life-span of cells depends on cell donor species and donor age, with cell-doubling ranging from 10-50 divisions.

Environment

The issue of localization of stem cells to in tissues becomes important when considering application of stem cell therapy to areas or tissues amenable to direct injection. There is growing experi data supporting homing of intravenously admini MSCs to chemically damaged or irradiated tissues as liver, heart, or nerve with functional improvement engrafted tissue. These studies appear to demon an ability of transplanted stem cells to preferentially in damaged tissues.

Engraftment/ Infusion

One of the fundamental questions regarding cell engraftment/ infusion is the importance of the a number or percentage of either autologous or donor cells in the recipient tissue. It remains unclear wh the incorporated stem cells in the construct mechan function as cells in the repair tissue, e.g., as ca myocytes in models of myocardial infarction, or i are functioning to synthesize and secrete growth fa which are enhancing tissue function. Much of this de may appear pedantic since clinically, the salient po functional recovery, but these issues will need t resolved in preclinical studies to understand and then refine ES or MSC transplantation procedures.

Veterinary Application

Canine:	Equine:
Osteoarthritis	Tendon and ligament injuries
Orthopedic soft tissue injuries	Degenerative joint disease (osteoarthritis)
Corneal ulcers	Osteochondrosis (OCD)
Spinal cord injuries	Sub-chondral bone cysts
	Meniscal injuries
	Fractures

Internal medicine applications: Besides the ab therapies many additional studies demonstrate succ in treating systemic disorders such as cerebral myocardial infarction, muscular dystrophy, and immu mediated disorders.

The future uses of regenerative medicine : In equi it has been evaluated as a potential treatment for car disease, neurologic disease, laminitis, chronic obstruc pulmonary disease (heaves), and some forms of cance Preliminary data suggest that the procedure is succes in about 70% of all cases. In canines the use of stem therapy is extended for heart, liver, kidney, neurologic a immune-mediated diseases.

Who is Vet-Stem ?

Vet-Stem is a quick-turnaround laboratory ser company, located in the San Diego, California ar

exclusively to the veterinary field and enables veterinarians to utilize Vet-Stem Regenerative Cells in within 48 hours after collection of a fat sample. Stem offers autologous regenerative stem cell technology a new hope for debilitating diseases and never-ending tendon and ligament injuries, fractures, cartilage damage, and degenerative joint disease. Vet-Stem has been identified as a pioneer and world leader in regenerative veterinary medicine.

The medications or treatments can be given at the same time with regenerative stem cells for orthopaedic diseases

- **Non-Steroidal Anti-Inflammatories (NSAIDS)** - concurrent use is acceptable and the use of non-steroidal anti-inflammatory agents does not interfere with the action of regenerative cell therapy, and their use can be maintained before and after injection of cells.
- **Hyaluronic Acid (HA)** - has been shown to enhance the use of stem and regenerative cells
- **Glucosamine and or chondroitin sulfate** - concurrent use is acceptable
- **Acupuncture** - concurrent use is acceptable
- **Magnetic Therapy** - concurrent use is acceptable
- **Antibiotics** - concurrent use of systemic antibiotics as prescribed by the attending veterinarian is acceptable
- **Shockwave Therapy** - Following stem cell therapy shockwave therapy is not recommend for at least 60 days because regenerative stem cells require time to reorganize and adhere. Using shockwave prior to regenerative stem cell therapy may increase the signalling process and potentially benefit the overall healing process.
- **Steroids** - Steroid therapy in general has been shown to alter the harvest of cells collected for regenerative therapy as well as diminishing the efficacy of regenerative stem cell therapy once it has been initiated. Hence, the therapeutic levels of steroids be eliminated prior to tissue collection and the use of steroids should be avoided for a minimum of 45 days post-injection.
- **Therapeutic Ultrasound** - The therapeutic ultrasound is not recommend for 45 days after implantation, but may be used before treatment.

Clinical efficacy of Vet-Stem's Regenerative Cell Therapy

- **Osteoarthritis** - Chronic arthritis cases can be treated and the clinical improvement is typically seen very quickly, often within a few days to a few weeks after initiation of regenerative cell therapy. Owners report that patients continue to improve as healing progresses.
- **Tendons and Ligaments** - Because soft tissue injuries vary widely according to the amount of damage in addition to the age of the injury and the animal, healing time is variable regardless of the modality of therapy provided. The optimal time for Vet-Stem Regenerative Cell therapy is within 90 days of the injury, older injuries can respond well if the site of the injury can be identified or imaged clearly. Chronic tendon and ligament injuries (excluding degenerative suspensory ligament desmitis, DSLD) with scar tissue have improved with regenerative stem cell therapy. This therapy claims to significantly improve the quality of healing by restoring the strength and elasticity of the injured tissue rather than allowing inflexible scar tissue to prevail.
- **Fractures** - Vet-Stem suggests treatment within the first 60 days if possible and the healing of skeletal fractures is greatly enhanced with regenerative cell therapy; decreased fracture size and clinical improvement occur in approximately half the time of normal fracture healing rates.

Stem cell therapy is not recommended in cases of sepsis. However, in malignancies haemopoietic stem cells expanded as natural killer cells show therapeutic effects.

Stem Cell Banking and Lineage

Stem cell banking service may provide storage of viable stem cells and their lineages for future use. After the collection and processing procedures part or all of the cells may be banked if cell yield allows. This service is a specially designed tissue preservation process that prepares the animal's stem cells for long-term storage in liquid nitrogen. These cells may be used for additional treatments of an existing injury or will help in timely surgical management of certain clinical conditions such as spinal cord trauma, corneal injury, osteoarthritis, tendon and ligament injury and fracture with autogenic/allogenic adult stem cells or they may be stored as "insurance" for a possible need in the future. Cryogenically frozen stem cells have been shown viable after 20 years of storage and will help in the field of veterinary regenerative surgery and animal stem cell research.

Legalisation procedure of the Veterinary Stem Cell Treatment

Till date, neither the USDA nor the FDA has promulgated regulations or published guidance specific to the practice of veterinary stem cell treatment in general. The regulatory enforcement actions being taken by either agency against companies or veterinarians offering stem cell treatment is still unknown. However, as veterinary stem cell treatment becomes more popular and is used with greater frequency in the future, it is possible that one

or both of these agencies may take steps to regulate the industry and the practice.

Hurdles in Veterinary Stem Cell Research

Several hurdles remain before the enormous potential of stem cells can be realised. Ethical constraints in using embryonic line of stem cells, isolation and establishing autologous/ allogenic stem cell lines overcoming immunogenic issues and characterisation of stem lines using sophisticated genetic and protenomic technologies. There is also a need for the greater standardisation of the techniques and procedures to ensure accurate reproduction of studies. Research in dedifferentiation of adult stem cells is also vital. However the most significant hurdle in stem cell research is the identification of the signal that determine the differentiation, and the signals that inhibit the activity after the injury repair.

There is no current consensus on a gold standard assay to isolate or identify stem cells. For both embryonic and adult stem cells, several markers determining the isolation and lineage-specific differentiation of most somatic stem cells have been described. However specific markers from various species that are exclusively defining cells of interest as completely undifferentiated stem cells or as lineage- committed cells are still lacking.

The evaluation of stem cell potency and regeneration potential regarding the cell survival and the capacity to populate the damaged host tissues, as well as their effectiveness after topical implantation and circulation is yet to be evaluated. The present advanced diagnostic techniques even with gadgets like Magnetic resonance imaging do not to assess the extent of molecular damage to the cells. Instead, estimation of free radicals by the indirect assessment of anti-oxidants in body fluids helps to elicit the molecular damage and the pre-engraftment therapy to be adopted systemically or locally to augment the viability of stem cells. There are various in vivo imaging modalities used to track the movement and incorporation of administered cells. Tagging stem cells with different contrast agents can make these cell probes for different imaging modalities. Recent reports have shown that stem cells labelled with iron oxides can be used as cellular MRI probes demonstrating the cell trafficking to target tissues. Stem cell tracking by cellular MRI is the status and future prospect of cell-based therapy

Conclusion

Stem cell regenerative medicine is on the horizon and therefore a basic understanding of stem cell biology is important for surgeons. Although there are several exciting studies suggesting the existence of stem cells in adult tissues and the ability of these stem cells to transdifferentiate across tissue lineages, indisputable in vivo data is lacking. Studies need to be carefully evaluated and closely scrutinized before clinical application. Considering the hurdles in stem cell therapy involving collection, isolation, differentiation and expa scientists have succeeded in designing matrix w stem cells,using nanotechnology in the treatm wounds and ligament injuries in equines. Regardles potential benefits of stem cell transplantation t improving animal welfare are limitless.

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FRACTURE MANAGEMENT IN PET ANIMALS-MAKING THE RIGHT CHOICES

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Forces on a bone

Bone undergoes specific failure or fracture associated with different modes of loading when loaded in. Forces which act on the bone are tension, torsion and compression.

Stability following anatomical reduction

Stable Fr: Fragments interlock and resist shortening forces-eg. transverse

Unstable Fr: Fragments slide by each other out of position. eg. oblique, spiral

Third Degree: Comminuted fracture with open wound

Orthopedic Implants & Biomaterials

Stainless steel /titanium alloys constitute about 60% of the implants used. The primary stainless alloy recommended for manufacture of orthopedic implants is American Iron & Steel Institute (AISI) type 316 L.

Orthopedic Equipment

Besides general instrument pack (basic) the orthopedic equipment often required is:

General

Retractors: Army - Navy, Rake, Senn, Hohmann, Gelpi, Weitlaner

Bone holding Forceps-serrated, pointed

Hand drills: Steinmann pin chuck, power drill

Bone rongeurs & bone cutter, curettes

Osteotome & chisel & mallet

Periosteal elevators

Wire pliers, wire and pin cutters

Pinning equipment

K-wires and Steinmann pins assorted sizes:

chuck

Pin cutter

Wiring equipment:

- Orthopedic wire: 18, 20, 22, gauge Wire twister / tightener ,Wire pliers & cutter ,Wire passer
- Drill & pins to drill holes

Plating & screw equipment:

- Assortment of plates: eg. ASIF 4.5_ 3.5 2.7 syste
- Assorted screws: eg. ASIF 4.5;3.5, 2.7; cortical
  & 6.5 mm cancellous
- Assorted washer & nuts
- Power drill or hand drill
- Drill bits: eg. 4 5 screw -->3.2 bit; 3.5 screw ---> 2
  2 7 screw, -> 2.0 bit
- Drill guide: eg. DCP: > Neutral (green) Compress
  (yellow)
- Depth gauzes
- Bone Taps for non-self tapping screws
- Tap sleeves
- Screw drivers
- Templates
- Countersinks
- Plate bender

Principles of Fracture RX

Pre-requisites

A stable patient and a correct diagnosis

Thorough & complete planning in terms of surgi
approach, implants and instruments. Always have t
plans for fracture repair.

Objectives

To have a patient rehabilitated & returned to norm
function as quickly as possible ,Restoration of norm
bone length and perfect alignment and Immobilizatio
the fragments as above till healing has taken place

Cardinal rules of fracture repair

Reduction

Closed reduction: Application of traction
countertraction, bending, levering, and other manipulat
means .Muscle fatigue and relaxation is achieved w
balanced anesthesia and use of traction with Gord
extender and by hanging the extremity against patien
own body weight

Open reduction: Most commonly employed techniq
especially for complicated or unstable fracture

ments are reduced and aligned after making an ate exposure of the bone segments under direct . It is achieved by the application of traction, counter , rotation, levering with appropriate orthopaedic ments.

ods of Fixation

splintage principle: eg. Coaptation splints, casts, modified Thomas splint, Mason metasplint or other

splintage principles: eg. External skeletal fixation/ splint, Intramedullary pins, cross pins, bone bone plates tension band wire, cerclage & clage wire.

ion of method of fixation depends upon:

the animal eg. young versus old

activity, location of fracture, fracture configuration,

Fracture Treatment

al Fixation System

external fixator has three basic elements

ers - percutaneous fixation pins, wires, or screws transfix bone segments.

ctors - connecting rods or acrylic columns which the pins and the pin - grippers.

Devices - pin - gripping clamps or other devices attach the fasteners to the connectors.

external fixation frame is formed by the ectors and the linkage devices

- pin penetrates the near cutaneous surface and the near and far cortices of the bone.

- pin or "through - and - through" pin enters the near eous surface, transfixes the bone, and exits through far cutaneous surface of the limb.

lateral frame interconnects two or more half - pins has a connector on one side of the limb.

lateral frame interconnects two or more full pins and two connectors, one on the medial side of the limb a second on the lateral side..

cations

Adjunct to other internal fixation: to prevent axial tation or/and collapse of fracture site eg. IM pin, wire, cross pin etc.

Primary fixation: in Hypertrophic non-unions ,Atrophic non -unions, in severe comminutions ,open gunshot or infected fractures, corrective osteotomies stable/ non-stable fractures, mandibular fractures

ECHNIQUE

Reduce the fracture (open or closed) -Hanging limb dial and tibial fractures, semi open /open but do not

Maintain in reduce position during insertion of fixation pins

Inset minimum of 2 pins in each fragment at same plane

Pins must cross one skin & 2 cortices and must be inserted at 35-45 to each other

Place the proximal (I) & Distal (4) pins relatively near the end of the bone.

Attach the connecting bar with four clamps

Tighten the clamps on the two end pins

Insert the center 2 pins through clamps & tighten all clamps

The splint is covered with gauze & tape

In open reduced fracture splint is applied away from incision line.

Intramedullary Pinning

Steinmann pins commonly used are 2.5mm to 6mm diameter.

The pins used are trocar point, double pointed or single pointed

A pin-chuck is required for its insertion

Using a large pin that fills the medullary cavity

Healing is due to the development of periosteal bridging callus

When K-E apparatus is to be used in conjunction with an I.M. pin the size of IN pin should be about 60-70% of the medullary cavity

Should be used in small & medium breeds.

Pins can be used with an open or closed approach

Used mostly in fractures of long bones i.e. femur, Tibia, Humerus, ulna Radius? Indications: - Diaphyseal Fr of long bones, Irregular transverse & short oblique, Fr, spiral & comminuted with ancillary fixation

Advantages: Simple technique, inexpensive, Minimal surgical time

Disadvantages: No rotational stability or resistance to compression or traction force, damage to medullary blood vessels

Retrograde Technique: (Femur) (Humerus)?

Pin is inserted from the fracture site into the medullary canal of the proximal fragment with a steady pressure and back & forth quarter turns of the pin chuck.

The pin is advanced up the medullary cavity till it comes out of the trochanteric fossa and out of skin

The pin chuck is disengaged and applied to the pin protruding from the skin. The pin is withdrawn slowly, again by making 1/4th turn of the wrist, till its end is level with the distal end (Fracture end) of the proximal segment

Fr. is reduced aligned and held in this position

Pin chuck is advanced so as to send the pin down the medullary cavity of the distal segment where it is seated in the metaphyseal epiphyseal area.

The pin setting is evaluated by measuring with an other pin of same length or by radiography

The excess pin, protruding from the skin at trochanteric fossa is cut with pin cutter as close as possible and pushed under the skin

Extreme caution is taken to avoid penetration of distal/adjacent joint surface.

Point of Start/ Entrance	Bone	Seating of pins
Subtrochanteric fossa	Femur	Distal caudal condyle
Ant crest of greater tubercle	Humerus	Medial condyle
Medial slightly behind straight	Tibia	Medial malleolus
patellar ligament	Ulna	Olecranon process
Distal epiphysis at thecranial border	Radius	(Mostly avoided)

Multiple (Stacking) Pins

- Provide more secure fixation
- Pins can be inserted retrograde/normograde

Cross Pins: Pins are placed across fracture line at converging angles so as to provide 2 or more points of fixation.

Pins should not cross at Fr. line

Indication: Metaphyseal - Epiphyseal Fracture I-IV (Salter)

Advantage: **Provides stable reduction without invading joint.**

Disadvantage: - Retard physeal growth? , More difficult than direct pinning Pin retrieval difficult

Classification of Plates (Per function)

Used as static Intra frag. compression or dynamic compression (Tension band)

Indications for the use of DCP plate

Transverse fracture

Short oblique Fr.

Osteotomies

Arthrodesis

Non-unions

Principle: A DCP plate has oval gliding holes. When are drilled by the use of a loading drill guide, it helps make the holes in the bone towards the top of the bone plate glide holes thereby giving compression of abo mm when screws are tightened.

Technique using 3.5mm DCP

Contour an aluminum template to the surface of reduced bone

Form the 3.5 mm dynamic compression pla according to the shape of the template

Length of the plate should be more or less equa the length of the bone i.e. continue towards metaphy area.

Correct and accurate contouring of the plate to bone is necessary

Over bend the plate in its unperforated middle pa so that it will be very slightly raised from the bone

Drill the first hole 7-8 mm from the fracture ga through both cortices using the 2.0/2.5 mm drill bit throu a drill guide (load) with eccentrically situated hole and arrow pointing towards the fracture gap Measure the dep (length) of the hole (i.e.Width of the bone) by depth ga

Tap both cortices with 3.5 mm tap through a sleeve

While keeping the Fr. under the plate in reduc position tighten the 3.5 screw through the plate to bone

Similarly tighten the other first screw across the line in the opposite segment

This should reduce the Fr gap by 2mm

Apply the remaining screws in both segments wi a green ventral 3.5 mm drill guide

A minimum of 3 screws should be placed on eit side of the fracture

Green/Neutral drill guide provides 0.1 m compression for each screw tightened.Retighten all t screws. Check again if any motion is seen in any scre Screws are tightened by finger pressure only

Neutralization plate

Plate neutralizes and transmits weight bearing forc that would set in the fracture area Indications: Spir oblique & comm. diaphyseal Fr.

Application: Same as in compression plating exce the holes are drilled using neutral guide Plate is be precisely to the contour of the bone. A DCP (or rou hole plate) can be used.

Buttress Plate

Used to shore up a fragment of bone Fr. bridge splint a Fr. area to maintain leg length Indication comminuted diaphyseal fractures ,Osteotomies for lengthening procedure

...es are positioned on the tension side of the bone

...ur - lateral surface

... Tibia - Medial (cranio)

... - Anteriolateral aspect

...rus - Anterio-lateral aspect

Plates when used in dynamic compression fashion ... in primary bone healing

...g screw application

...nsert in a lag fashion or to achieve a lag effect

...t requires drilling a larger hole (the diameter equal ... size of the screw) in the near cortex and another ... equal to the size of the core of the screw in opposite ... cortex

The far cortex is tapped with a corresponding tap, ...eter of which is equivalent to the size or the screw to ...planted

The tap is always moved 2-3 rotation forward & 1/4 ... backwards

...sion band wire:

...ple: Active distracting forces are counteracted and ...ted into compressive forces - It is achieved by ...ing 2 K- Wires & a tension band orthopedic wire

...cation: Avulsion fracture or osteotomies of any ...physeal area - Avulsion Fr. of tibial tubercle, Fr of ...anon process or acromion process of scapula

...nique:

...ce Fr.

Insert two pins from the top of avulsed process ...ing from its caudomedial/lateral corners across the ...ure line to engage the cranial cortex of the distal ...ment. Keep pins parallel to each other

A transverse hole is drilled through the diaphysis ... the fracture line & an orthopedic wire is passed ...gh it

The wire is twisted in figure eight fashion and ...ened by twisting

Individual K-wires are bent backwards, cut & rotated ...riorly so that ends are buried in soft tissue

...clage or Hemicerclage wire

Circle of wire that completely or partially goes around ... circumference of a bone

They are not used as sole method of repair or fixation ... type of fracture

...cations:

... oblique, spiral & comminuted Fr

... ancillary fixation

...gth of Fr. line should be TWICE the diameter of bone

Space them about I cm apart & 0.5 cm from Fr. line

Never use less than 2 wires

Application of Cerclage wire

Reduce fracture segments

Pass the wire around both segment with a wire passer or a curved hemostat

Be sure not to include any soft tissue between wire & bone

Twist wire ends uniformly

When it is tight keep tightening & bend it towards bone

Cut excess off

Hemicerclage application

Drill a hole on either side of Fr. line

Pass a wire through the holes and twist the wire ends together to compress the fracture line

Cut excess wire off

Ability of Various Implants to Neutralize Fr. Forces

Implant	Rotational	Bending	Shearing	Fragment Appos
Single I.M. pin	—	+	—	—
Multiple I.M. pin	+	+	-	-
Bone Plate	+	-	+	-
Krischner splint	+	+	+	-
Cerclage wire	(+)	+	(+)	+
Lag screw	-	-	-	+

An interlocking nail is a Steinmann nail with holes, through which screws can be inserted and fixed to bone cortex.. The interlocking nail nullifies all the forces acting over the fracture line, and thanks to screw fixation, it prevents implant migration s. They can be used in all types of diaphyseal fractures in the humerus, femur and tibia.

Bone Grafting/Transplantation

May be the critical factor in the out come of fracture repair

Provide osteogenic potential or on a limited extent mechanical advantage

Cancellous graft is the most commonly employed type

Cortical

Indications for cancellous bone grafting

Promote healing in delayed unions, nonunions & osteotomies

Joint arthrodesis, Filling voids in the , Osteomyelitis/ Infections

ROLE OF VETERINARY SURGERY IN CAPTIVE AND WILD ANIMAL PRACTICES

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Introduction

India is a country of great biodiversity, particularly rich in vertebrate fauna. This is achieved through its unique biographic, evolutionary and social pasts. Moreover, the great culture of our country has given high degree of tolerance for other life forms as well, compared to any other part of the world. Hence the whole community, veterinarians in special, are vested with the social responsibility of maintaining the health and living conditions of captive and wild animals, in addition to their explicit task of routine treatment of the dumb creatures. In most of their activities with captive and wild animals, technical expertise of surgeons has greatest importance, especially in the area of anaesthetic and operative interventions. The progresses in tranquilization and anaesthetic methods with the introduction of newer drugs have opened new vistas in the field of conservation and management of wild and captive animals. The role of Veterinary Surgery and the responsibilities of surgeons, both in the conservation and management, and in treatment of many of the surgical affections have thus become inevitable.

I. CONSERVATION AND MANAGEMENT

1. Segregation

The animals often require segregation to avoid overcrowding and infighting, in law and order situations, casualties, in consonance with legal issues, as a part of population control programme, for the conservation of endangered species, investigation and vaccination procedures. During the breeding season, particularly in certain species of deer and antelope, fighting among the males is not uncommon, which demand segregation. It not only prevent fighting and mortality but also effective in curtailing conception rates.

2. Translocation and Transportation

Often animals are tranquilized and translocated to another enclosure within the zoo or transported to another zoo of the same country or that in abroad. There are reports on immobilization and translocation of blue bulls and lions in Assam State Zoo, Guwahati; striped hyena, deer and lions in State Museum and Zoo, Thrissur; transportation of giraffe by road from Alipore Zoological Garden, West Bengal to Arignar Anna Zoological Park, Chennai in a low bodied truck (about 1750 km) and elephants from T to New Delhi by rail for participating the cere function in Asiad 1982.

3. Population Control Programme

Some zoos aborad advocate euthanasia necessary evil" for eliminating their surplus stock. all the living creatures have the right to live and their natural life, it is the responsibility of the auth to use judicious methods to keep the population rather than to euthenize them. In Kerala, the lions of T zoo were subjected to orchiectomy and vasectomy of Trichur Zoo and of Hill Palace, Tripuithura, Co caudectomy and vasectomy and leopards of Dr. P Amte's Tribal Zoo cum Orphanage, Hemalka vasectomy. Castration with Burdizzo's castrator carried out in barking deer in Assam State Zo present the Department of Surgery, Madras Vete College, Chennai has undertaken the task of perfo vasectomy in lions and monkeys at Vandaloor Chennai.

4. Collection of Samples for investigation vaccination

Investigation of diseases and vaccination are possible only with chemical restraint.

5. Man - Animal Conflicts

Man - animal conflicts became common as human started encroaching the birth lands of the othe harmless animals. Tigers and leopards, which lost territory, strayed into villages and at many occas become man-eaters. Wild elephants, boars, deer monkeys destroy the crops as they lost their past It is alarming that captive elephants in musth attack kills innocent people. Such situations necessi chemical restraint to safeguard the life of both the and animal. In Kerala (1994), we witnessed the demise of one of our teachers by the attack of aggressive elephant while involved in darting procedu

6. Rescues and Rehabilitation

Nowadays we are getting a lot of reports thro the media that the poachers and game hunters a and inflicting gunshot wounds and other traumas to wild animals. In addition, the animals are also exp

calamities like flood and fire. Such animals ed only by undertaking rescue operation and measures for rehabilitation. At Trichur, we had of treating captive animals maintained by a when tent went in ferno. There are reports measures adopted for treating injured in Kaziranga National Park in Assam State wild tusker belonging to the Agasthyavanam Park, Trivandrum in Kerala after securing the chemical immobilization from a motorboat.

Rescued animals require intense treatment to the injuries and the shock. After recovery the must be rehabilitated to their natural habitat or to For all these operations the active involvement are indispensable.

chipping and Radiocollaring

For the identification of captive elephants and for studies in elephants, rhinoceros, jackals, etc. collaring and implantation of transmitting or non- microchips are being practiced.

servation of endangered species

studies are in progress for surgical collection of from endangered species like rhinocerus for

II. SURGICAL MANAGEMENT

unds

Wounds inflicted by poachers, consequent to penetrating objects, net biting in case of caged falling of logs on legs especially in elephants for timber hauling, falling in pits, automobile etc. necessitate surgical interventions. wounds are common in caged monkeys. A 1985-1989) conducted in the Assam State Zoo that traumatic injury and their complications were important causes of mortality among the animals families. In elephants, injury to trunk interfering prehensile functions is a serious situation requiring surgical intervention.

Dental Affections

carnivores, tooth fracture and periodontal diseases common. Fracture of carnivore tooth may be caused accidents. In elephants pulp infection of the can be a long-standing problem with persistent discharge. Pulp infection of the tusk is successfully being managed by partial pulpectomy. decaying of pulp necessitates extraction of tusk. In two elephants with unilateral pulp infection, tusks were removed and replaced with artificial tusks up of soft wood. In Peshwe Park Zoo in Pune, a tiger was subjected to root canal treatment.

carnivores, 'dental disarming' procedures viz., extraction of tooth and crown reduction have been undertaken for human safety and to prevent serious injuries to other cage mates.

3. Foot Disorders

The main foot problems encountered in both captive and wild animals are due to direct injury, penetrating wound, laminitis, avulsion of horny tissues, overgrowth or excessive wear of hooves, overgrown nail, ingrown nail, hang nail, split nail, etc. Periodic trimming or rasping of the hooves or nails may not be practicable due to restraint difficulties. Carnivores use claws for both offense and defense. It may be desirable to amputate the claws (onychectomy) of aggressive individuals to avoid laceration or death of cage mates.

4. Fractures

Many of the fractures in captive animals are being surgically repaired as in domestic animals. There are reports on the repair of fracture of tibia in lions, radius and ulna in spotted deer. In Kerala attempts were made to immobilize fractured limb in an elephant calf with frame made up of iron rods.

5. Other surgical diseases

Some of the surgical interventions made by our fellow veterinarians include cataract surgery in a lion of Jaipur Zoo (team of surgeons from Madras Veterinary College, Chennai), treatment for scrotal hernia in a stump tailed macaque, amputation of gangrenous limb in a gibbon, extirpation eye ball and correction of cervicovaginal prolapse in hog deer, excision of hypertrophied Harder's gland in an African lion, drainage of sinus due to necrosis of right transverse process of second lumbar vertebra in an elephant, caesarean section in a four horned antelope, enucleation of granuloma in an elephant and amputation tail in lions.

Our former Professor of Surgery, Late Dr. P.O. George had an opportunity to attend a dystocia in a cow elephant. According to him "seeing parturition in an elephant is a rare thing and attending dystocia in an elephant is a rarest thing". Veterinarians of the Zoological Garden, Alipore in West Bengal had attended dystocia in a Giraffe.

Many of the affections necessitate surgical interventions goes unnoticed due to shortcomings in disease diagnosis and monitoring. Certain diseases were diagnosed from post mortem findings only. Some of the post mortem findings were traumatic pericarditis in sika deer, intussusception of intestine in common langure and barking deer, traumatic hepatitis in fox, enterolith in a zebra, plastic bezoar in sambar deer etc.

Considering the role of Veterinary Surgery in wildlife practices it is high time to appeal the Universities to include wildlife related aspects in the academic curriculum both in the undergraduate and postgraduate levels.

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PRINCIPLES AND PRACTICE OF AVIAN SURGERY*

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Pet bird industries have increased in the recent years requiring veterinary care. Urbanization and consequent loss of natural habitat have resulted in more number of birds being injured and presented to veterinarian for medical as well as surgical care. Many practitioners have avoided avian surgery due to their small size, high metabolism and small blood volume. Most surgical complication in birds is related to anesthesia, hypothermia and blood loss. With proper preparation, anesthesia, equipment these complications can be minimized. The fundamental surgical principles of mammals are equally applicable to Avian Species.

The special features of avian anatomy and physiology to be considered for anesthesia

- The air sacs found in birds are extrapulmonary, thinly membranous, highly vascularized and nonrespiratory in function. They are in contact with the principal organs of the body cavity, masses of skeletal muscles or both.
- The air sacs serve as a large resoiver for inspired gases providing buoyancy needed for flight. Except humerus, they are not connected to pneumatic bones.
- There is no diaphragm in avian species, thorax and abdomen one continuous cavity
- Anesthetic gases and vapors are rapidly absorbed into the blood stream. However there is variation in induction and recovery due to less solubility of most inhalation anesthetic in avian blood.
- The gaseous exchange takes place during both passive inspiration and active expiration. Even short periods of apnoea are serious and will produce marked hypoxia.
- Poorly ventilated air sacs may be a source of highly concentrated inhalation anesthetics that may subsequently released into circulation causing deep anesthesia. Post anesthetic oxygen administration important.
- Due to high metabolic rate starvation of 6-8hours is often sufficient to produce fatal hypoglycemia and ketosis. Metabolism of parenterally administered agents is also rapid as compared to mammals.
- Small surgical hemorrhage may result in shock. However, birds do tolerate blood loss better than mammals when compared the body mass to blood volume.

Surgical preparation: The surgical site should be prepared aseptically. Minimum number of feathers should be plucked around operative site to avoid heat loss and increased metabolic demand for regrowth. Flight feathers are avoided and only a few feathers are plucked at a time to avoid bruising or tearing of skin. Retraction of feathers near surgical site can be done by masking tap. Chlorhexidine (Savlon) lotion is applied over the area followed by saline rinse. Saline is preferred over alcohol to avoid heat loss. Clear plastic drapes are preferred over cloth or paper drapes which allow better patient monitoring, respiratory observation and conservation of body heat. Surgical instruments are selected according to choice of surgeon and availability. The smaller the surgical site, the smaller the instrument. Curved tips instruments are preferred for better access. Extra delicate curved mosquito forceps, haemostatic clips, gel-foam, topical thrombin, gauze sponges and cotton tip applicators are used for haemostasis. Magnification for identification of blood vessels helps in coagulation or ligation. A light source focused on the field of vision is necessary. Sutures for most avian patient ranges from 4-0 to 8-0, absorbable (cat gut swaged on an atraumatic needle), synthetic, with good knot holding capacity. Parrots in general do not traumatize suture lines, therefore continuous pattern are acceptable. Suture placement and tissue handling are more important than suture type.

Anesthesia, perioperative care and monitoring. Birds do not react in the same way as mammals to stimuli which cause pain. Humane considerations seem to dictate that anesthesia should be used for birds as it is for mammals. Local anesthesia has no place in avian surgery because even when correctly used the bird still requires restraint and this may produce undue stress. Procaine and procaine penicillin is lethal to parakeets. Do not use epinephrine solutions. Ketamine is considered to be safe, 0.1-0.2mg/g(Birds weighing less than 100gms), 0.05-0.1mg/g(Birds weighing between 250-500gms) with premedication by atropine sulphate(0.04-0.1mg/kg). For operations lasting more than 10minutes xylazine is added @0.15-1mg/kg with care. Induction and maintenance with Sevoflurane (Isoflurane) with intubation when possible is equally safe but costly. Though a variety of equipments are available for monitoring avian patient, presence of a

*The experimental Avian Surgery is part of CSIR sponsored project of Anatomy Department, Orissa Veterinary College

good technician is important during surgery. Cardiovascular monitoring is done by auscultation and ECG. Intraoperative fluid (NS) is administered IV in the brachial (basilica) vein, right jugular and dorsal or superficial plantar metatarsal vein. Respiratory support and monitoring is critical since most birds develop apnoea which is managed by gently blowing down air in to trachea through a narrow pipe used as endotracheal tube every 10-20 seconds depending on bird's respiratory rate. Thermoregulation is critical because a birds body temperature drops by 4-50C within 40 minute s of anesthetic induction. Hence anesthetic time is kept minimum as far as possible.

Surgical approaches to Avian Coelom (Celiotomy). The upper GI tract and female reproductive tract are approached through left lateral and left lateral flap incision. The midline approach gives good exposure to the medial side of ventriculus and intestine, but limited exposure to the reproductive tract. The incision may be extended horizontally along the costal margin and the pubis for greater exposure.

Experimental Surgery of the Gastrointestinal System. The desegmentation of the gut components was undertaken in adult broiler chickens in order to assess the compensatory mechanism for the histophysiological response of the unicellular endocrine cells. The segmental loss is very likely to induce segmental endocrine cell proliferative activities within the gut wall. Further this will authenticate the histomorphological pathway of such proliferations across gut segments. For instance, partial ablation of pancreas as pancreactomy (5-7cm long pancreas ablation) at ascending and duodenal junction is likely to induce pancreatic ß-cell insufficiency thus altering carbohydrate metabolism. If at all exists, a compensatory mechanism at cellular source of glucagons should come up and in fact the duodenal mucosal glands are with numerous entero-glucagon cells in control birds. Thus such surgical experiment may put insight to the way of functioning in the events of digestion physiology. Under similar concept duodenoctomy, Jejunoctomy, typhlectomy and ligation of bile duct are undertaken as part of basic research on gut endocrine cells of chicken in relation to the trend in feed intake by the birds as a part of the CSIR project on the "Biochemical and cytochemical activities of gut endocrine cells following herbal secretagogue challenge". Pancreactomy and duodenoctomy. The bird is restrained in a ventrodorsal position. The abdominal skin is grasped with forceps and tented off the abdominal musculature. A stab incision is made in the skin and the incision is extended to the desired length. The abdominal musculature is then elevated off the abdominal viscera. A stab incision through the abdominal muscles and peritoneum is followed by incision of these structures in one direction and then in opposite direction. By tenting the skin and muscles, the surgeon avoids inadvertently lacerating underlying viscera. On entering into the abdominal cavity the supraduodenal loop containing the pancreas is located. After ligating the segmental blood vessels with chromic catgutno pancreas is ablated from duodenal loop. The laparot wound is closed with continuous suture using catg muscle and interrupted nylon suture in skin. For lig of common bile duct and bilateral cecal ablation incision line is extended anteriorly and poster respectively. Jejunal coils are easily identified enteroanastomosis done after Jejunoctomy. Chro catgut no4/0 with swaged needle is used for suturi intestines. Following G.I surgery birds are offered gluc water for 2days. Post-operative cefotaxime 125m injected intramuscularly daily to each bird for 5 days cutaneous sutures are removed on 10th day. Appro to the left lateral abdomen requires an oblique incisio the paralumbar fossa just caudal to last rib. By ente the left side of abdomen to reach the abdominal org the air sacs are incised. If coelomic cavity irrigatio required, careful of open air sacs and pulmonary expos

Surgery of crop (Ingluviotomy). Surgery of cro indicated for removal of foreign bodies. Crop is elas and has great healing capability. The left lateral dependent part is incised to remove the foreign body sutured with 4/0 catgut. The skin is sutured separate

Enterotomy. This procedure is rare and prognos poor for patients where it is indicated. A parrot intestinal obstruction by plastic materials and a pige with a sharp intestinal foreign body were diagnosed plain radiograph. The parrot died during operation pigeon recovered successfully.

Cloacal prolapse. This occurs secondary to dysto and chronic cloacitis. Cloacal prolapse in a parrot af dystokia was reduced with 50% dextrose and cotton sw soaked in ice water.

Surgery of reproductive system. Reproductive relat procedures are common coelomic surgery in av patients. Indication in female birds include egg retent egg binding (dystocia), egg related coelomitis a sterilization to stop egg laying.

Dystocia with prolapse. Surgery is indicated adhesions of the egg to the oviduct can not be releas by massage and manipulation. In prolapse cases whe the lumen of vaginal os can not be identified or teas open, an incision is made in a non vascular area of t uterus and the egg is removed. Similar technique is appli in an Alexandrine Parakeet to treat a case of egg boun condition.

Male reproductive indications for surgery inclu orchiectomy for testicular neoplasia, sterilization an behavioral problems. The close association of testis the aorta and vena cava make this a difficult procedur One or more hemostatic clips should be placed betwe the dorsal side of testis and aorta and vena cava. Ligati is not possible so deeply. A partial orchiectomy is safe where tunica albugenia is incised and the parenchym

is scooped out. A partial orchiectomy is done in a estic fowl under GA by left lateral approach.

opedics: The goals of avian fracture management to stabilize the fracture, allow load sharing and limit y during healing. Exact anatomical reduction may be necessary in all cases but the orthopedic device ld offer rigid support and be light weight. Limiting will help lower limb fracture but be detrimental for injuries and return to flight. For optimum return to ion in case of rehabilitation of injured birds, external ion is preferred to internal due to less trauma to unding soft tissues. Avian long bones tend to shatter pact, and their thin cortex offers less holding power pins. Limited soft tissue surrounding long bones is matic and blood supply can easily be compromised ternal fixation devices. Light weight bicycle spoke for intramedullary pinning of mid shaft humerus ture in a black kite broke into multiple pieces with ion of one piece into distal segment because of ted flying effort by the bird in the healing process. ther important consideration in treating injured birds that they become offed once handled and loses t hampering healing process. An injured shikra with shot wound and fracture of radius and ulna was ssfully treated and released in nature. The wing was obilized with external splint made of broom stick and sive tape. An injured crested serpent eagle with open nd at left stifle was dressed and bandaged at regular al. The skin wound appeared healthy but there was rd rotation of the limb distal to stifle to claw. A rosy an with compound fracture of wing developed sepsis was amputated under GA. Both the birds were kept e zoo as exhibit. A cattle egret with simple fracture bia was immobilized with adhesive tape supported pieces of broom stick. Pinioning and amputation of in two sarus crane of Nandan Kanan zoo was done r GA. Both the birds recovered successfully. A barn h femoral fracture was kept confined with died after ys.

clusion: Avian Surgery can be practiced due to safer sthetic (Ketamine as injectable and Isofluorane as ant). Domestic broiler birds have less chance for gical intervention. The parental layer birds develop le foot which is excised surgically and dressed with ve antibiotic and protected by bandage for early g. Crop impaction and intestinal obstruction are rarely gnosed early and have poor surgical risk. Caponization st done by laparoscopy than open surgery. Wild and free ranging birds with fracture of wing immobilized by external splints made of light weight materials.

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Egg bound (Dystokia) in an Alexandrine Parakeet.

ADVANCES IN DIAGNOSIS OF ABDOMINAL DISORDERS IN FARM ANIMALS

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Abdominal disorder in farm animals can be diagnosed by combination of signalment and history, physical and clinical examination, hemato-biochemical and exploratory findings, however, to pinpoint the involvement of exact compartment inside the abdomen needs the evaluation by specialized techniques. Diagnostic imaging such as radiography including digital radiography and ultrasound are invaluable and underused tools for the farm animal practice. GADVASU, Ludhiana has standardized procedure by ultrasonography for diagnosis of diaphragmatic hernia and omasal impaction in buffaloes and cows. Other infrequently used modalities include nuclear medicine, computed tomography, and magnetic resonance imaging .

Radiology

Radiology in farm animals has been the most neglected and the least explored area of veterinary radiology. Least economics, requirement of time consuming and complicated procedure, increased radiation exposure to personnel performing the examinations has hindered the utility of radiology in bovines. However, over the last several years, changes have taken place both in the economics of farming and in the field of radiology, making the use of radiology in bovine medicine today a practical and feasible procedure. Advent of excellent, fast-acting sedatives for bovines has considerably reduced the handling problems during radiographic examination. Significant development has occurred within the last several years in radiographic equipment including x-ray machines as well as recording equipment (film-screen combinations and processing apparatus), which reduces the radiation exposure to the extent of one-third or one-fourth. These factors have made bovine radiography one of the integral part of bovine medicine, both for the practitioners and the academicians.

Some of the limiting factors in obtaining a quality radiograph in veterinary practice are:

- A natural handicap that an animal cannot be held totally immobile.
- Motility of organs or certain degree of muscle tremor cannot be eliminated.
- Using high mA and low exposure time are often limited by the thickness of the subject.
- Large area to be covered requires higher focal-film distance (FFD).

Correct radiographic procedure, proper radiog viewing, step by step examination of the radiograph interpretation are mandatory requirement for pro diagnosis. Formulating a radiographic impress diagnosis and prognosis: A knowledge of dise pathophysiology and its relationship to radiographic s is necessary. Finally the radiographic diagnosis sho be integrated with other diagnostic information i.e. his physical examination, hemato-biochemical analysis e to arrive at a final diagnosis.

The radiological examination in farm animals rewarding for the diagnosis of following abdomi disorders

- Diaphragmatic hernia
- Foreign bodies
- Reticular abscess
- Reticulitis
- Peritonitis
- Adhesions

The affections of abdominal cavity incidence are on the top followed by thoracic cavity. Both the affections lead to high morbidity and heavy mortality loss Diseases of the gastro-intestinal tract result into impor clinical signs such as production of gases and chang the pattern of feaces. In diseases of the rumen, reticul omasum and abomasum, tympany is the most impor sign and the involvement of intestine shows difficult absence in the passing of feaces. These clinical s can indicate the type of the organ involved. Radiogra plays an important role in differentiation and confirma of various affections.

For abdominal cavity, the use of radiography is lim up to the cranio-ventral aspect of the abdomen only for diagnosis of diseases of reticulum, diaphragm sternebrae. The main diseases can be foreign bodies reticular hernia. In these conditions main clinical s will be chronic tympany, difficulty in getting up and do coughing, reduction in feed intake and milk produc and hard and scanty faeces. Although, the clinical s and haematological values are indicative of retic pathology but confirmatory diagnosis of these condit is always done by plain and contrast radiography and treated through rumenotomy and herniorraphy of diaphragm. It had also been observed that some ca

be radiographically negative for any foreign body or hernia but still there is problem of persistent tympany. In these cases, the persistent tympany can be peri/extra reticular pathology. The causes of extra pathology can be formation of abscess outside septic peritonitis etc. Therefore critical of radiograph is further required to diagnose differentiate these conditions.

The abdominal cavity is very voluminous in bovine it is not possible to radiograph such a thick area. cranioventral portion of the abdomen is proper in to be radiographed. Therefore main area of study is cranioventral abdomen.

For better normal abdominal radiographic anatomy, other abdominal disorders, the animals should be in lateral recumbent position with the forelimbs forward as compared to standing position for lateral radiographs. The cranioventral abdomen can be covered in standing position in small and medium animal but not in heavy animals. Sometime mild of the animal is also necessary to restrain the for proper positioning of the cassette and centering primary beam. The cassette should also be adjusted to have the sternum in the lower most part of the The horizontal beam of the X-ray should be centered reticulodiaphragmatic caudal pericardial region. an exposure will cover the cranio-ventral region that diaphragm, reticulum and its adjacent area. The appropriate film size is 17x14 inches with high speed fying screen. Radiographic factor for plain graphy should be 90kVp, 90-102mas at a focal film ance (FFD) of 100cms. For contrast radiography, 1-2 barium sulphate suspension should be administered and radiographs should be taken after a lapse of an hour. Exposure factors used should be 90-120kvp, 102mas at a FFD of 100 cms with a grid ratio of 5:1.

On lateral radiograph of the cranioventral abdomen, parts discernible are caudal part of the sternum, ventral of the diaphragm, reticulum and occasionally part abomasum. In addition, caudal border of the heart ventral part of diaphragmatic lobe of the lung. The diaphragm will appear as smooth line separating the abdominal and thoracic cavities joining the sternum just to the 7th sternebra during the peak inspiratory A normal reticulum will appear as a soft tissue lying adjacent to the diaphragm and along the abdominal floor in the sternal region. It lies between and 9th ribs. On most of the time the interphase between the reticulum and the diaphragm is difficult to ciate. The ventral boundary of the reticulum lies just to the sternum or in contact with the ventral abdominal floor, the tip just caudal to the xiphisternum. position of the reticulum is variable depending upon contractory or relaxed phase. Position of the reticulum easily be marked if some sorts of debris or foreign (metallic or non-metallic) are present.

Distribution of abdomen disorders revealed that reticular lesion occupies a unique position (50%), followed by diaphragm (35%). The pathological lesions of the sternum accounted for low occurrence (0.5%). The remaining cases observed are lodgment of foreign body at different locations of the abdomen, septic peritonitis, formation of fistulae\tracts at different site of the abdomen etc. Disease wise distribution showed maximum cases of foreign bodies, followed by diaphragmatic hernia, extra-reticular abscess, septic/aseptic peritonitis and reticular adhesions. Other affections include fistulous sternebrae, reticular fistulae etc.The cranioventral abdomen pathology can show clinical signs of chronic tympany, difficulty in getting up and down, coughing, reduction in feed intake and milk production and hard and scanty faeces. The pregnancy will further aggravate the condition the animal will be dull, depressed and emaciated.

Diaphragmatic Hernia

In diaphragmatic hernia cases the presence of the sharp penetrating foreign bodies is observed to be the most important reason followed by increase in intra-abdominal pressure due to pregnancy etc. The sharp penetrating metallic foreign bodies can weaken the diaphragm resulting in its rupture but the diaphragm can also rupture even without presence of foreign bodies. The radiograph will show loss of continuity of the diaphragm toward ventral side and presence of reticulum in thorax along with foreign bodies. The presence of reticulum in thoracic cavity can be more easily depicted by barium meal. Other abnormalities of the diaphragm can be gas pocket associated with diaphragm indicating diaphragmatic abscess, sagging of diaphragm, flattening of diaphragm, cranial displacement of diaphragm and irregular diaphragm indicating abscess/adhesion.

Foreign Bodies

Potential and non-potential foreign bodies can be seen on radiography. Some radiograph can show non-potential foreign bodies in the reticulum or sometime even no foreign body. The potential metallic foreign bodies can be seen either in reticulum or at other locations such as diaphragm, sternebrae, liver and near the elbow. Sometime it was not possible to ascertain from the radiograph whether a foreign body is lying within the region of the reticulum in cases of the perireticular/extra-reticular abscess was actually within the reticulum or superimposed over it. In most cases of DH the foreign bodies are recovered during rumenotomy.

Adhesions

In cases of inflammatory conditions such as reticulitis, diaphragm hernia, peri-reticular pathology, if cause is not removed then reticulum will get adhered to the surrounding tissue resulting in interfering in the movement of the reticulum and the animal will show signs of anorexia, tympany etc. Radiography of such cases

will depict irregular, hazy diaphragm, gas pocket and radiodense bands toward sternal area indicating formation of adhesions.

Reticulitis

Due to inflammation of the reticulum, the muscles of cardia will get contracted resulting in interference in the process of eructation and the animal will show signs of tympany, reduction in food intake etc. In such animal, the radiographs will show abnormalities of the reticular shape, size and location. Such abnormalities can be seen more clearly on contrast radiography. The contracted reticulum can be seen lifted from the ventral abdominal wall in sternal region and displaced caudally. The reticulo-diaphragmatic interface will become wide.

Reticular Abscess

The abscess formation outside the reticulum may be due to the migration of foreign body or secondary to the travelling of infection from the other organ. The abscess formation usually takes place toward the liver even touching the diaphragm. Due to formation of the abscess, the reticulum will not be free to contract and the cardia will not get relaxed properly. Therefore, the animal will show tympany and other related signs. Radiographs will show radiolucent zones /gas pockets shadowing the reticular area and irregular lining of the diaphragm toward its ventral portion. When barium meal was used to check any break in the diaphragmatic line, the line of diaphragm was observed to be intact but radiographic zone in form of abscess could be seen clearly demarcated. Size and shape of the reticulum can also be seen becoming abnormal. The reticulum will be small and contracted and can be seen displaced dorsally.

Peritonitis

The peritoneum gets infected due to migration of infection either from gastrointestinal tract or from external source i.e. foreign body. The intra-ruminal route is also major cause of inflammation of the peritoneum. The peritonitis can be either aseptic or septic. Most of the time, occurrence of peritonitis is without presence of foreign body in the reticulum. Due to adhesion of the peritoneum with the visceral organ, there will be bilateral distension of the abdomen and the animal will be off-feed. The radiograph of such animals will show contracted and lifted reticulum with radiolucent zone. /gas pockets. The shape of these gas pockets is variable may be round, oval or elongated The diaphragmatic line will be either hazy or sometime missing toward the sternal area. Such type of cases can be differentiated from diaphragmatic hernia only after abdominal tapping or opening of the abdominal cavity

Ultrasonography

Although little work has been done in India, GADVASU, Ludhiana has standardized ultrasonography for diagnosis of diaphragmatic hernia, peritonitis o omasal impaction. Ultarsonography is an ideal diagn tool for the investigation of bovine gastrointes disorders, the most common of which include trau reticuloperitonitis, diaphragmatic hernia, om impaction, abomasal disorders, ileus of the small inte and dilatation and displacement of the caecum ultrasonographic examination is performed on sedated, standing buffaloes and cows ideally using MHz linear transducer after the application of transm gel. The area where the transducer is to be applied ne to be prepared by shaving for optimal transmissio ultrasound.

Liver

Liver and gall bladder can be scanned on right through intercostal spaces using 3.5MHz transd Normal ultrasound scanning of liver starts from paralumber fossa and then scanned trough interco spaces till you reach lungs in the chest area. Va liver changes can be depicted depending upon the or generalized liver disease. Liver abscess, liver tu and fatty liver changes can seen ultrasonogarphica cows. Even, liver can show secondary changes like and gall bladder congestion in case of right sided he failure can be evaluated ultrasonographically.

Kidneys

Ultrasound diagnosis of bovine left kidney dise can be done trough per rectal 7.5 MHz probe. U right kidney the left kidney is movable and can be palp and sonographed using rectal probe. For right kidney right paralumber and intercostals window is used ultrasound scanning in cattle. Various conditions glomerulonephritis, polycystic kidney, hydronephr neoplasis, abscess formation and renal lithiasis ca diagnosed by using ultrasonography.

Reticulum

Ultrasonographic examination of the reticulum conducted by applying the transducer to the ventral asp of the thorax on the right of the sternum as well as to right lateral wall up to the level of the elbow. According literature the scans can similarly be performed on the side. The normal reticulum appears as a half-moon-shap structure with an even contour. It contracts at regu intervals and, when relaxed, is situated immedi adjacent to the diaphragm and ventral portion of abdominal wall. The different layers of the reticular w usually cannot be imaged, and the honeycomb- structure of the mucosa is not often seen clearly even a phantom image. Contents of the reticulum cannot normally imaged because of their partly gase composition. Foreign bodies also cannot usually be se in the reticulum because of the gas content of reticulum. Radiography is the method of choice identifying radiodense foreign bodies.From the right ven

part of the omasum, abomasum, and sometimes are imaged. For an assessment of reticular motility ulum is located and observed for 3 min without the transducer. The number, amplitude, duration eed of reticular contractions and the duration of erval of relaxation between two biphasic reticular ctions are assessed. The reticulum normally cts once per minute. Thus, in the 3-min-observation the reticulum has three biphasic contractions.

ragmatic Hernia

general first the motility of the reticulum is ed within the abdomen and the motility pattern is ded. Then scanning of the thoracic cavity is done at el of the 4th/5th intercostal space at the level of elbow slowly scanning down to the midline. The motility should be visualized at this level if the is positive for diaphragmatic hernia. In a study cted at GADVASU a success rate of 92.30% (11/ ss achieved in the diagnosis of diaphragmatic hernia faloes and 100 % in cows. Diaphragmatic hernia diagnosed on ultrasonography with fair amount of provided reticular motility is present.

uloperitonitis

cattle with traumatic reticuloperitonitis, nography can be used to identify morphological es in the region of the cranial, ventral, or caudal wall. The changes in the contour of the reticulum nd on the severity of the inflammatory changes. sits of fibrinous tissue interspersed with fluid pockets equently seen on the reticular wall.

cular abscess/Abdominal abscess

Location of the reticular abscess determine the ss in US diagnosis and are relatively difficult to ose. Reticular abscess have an echogenic capsule rying thickness, which surrounds a homogeneous echogenic to moderately echogenic centre. The nts of an abscess are frequently partitioned by genic septa. Abscesses are usually caudoventral to iculum, but may be cranial or lateral to the reticulum. ature says that abscesses are often seen between iculum and spleen, reticulum and liver or reticulum omasum or abomasum. Cranial abdominal abscess diagnosed using 3.5 MHz transducer in cattle and ultrasound can be used to determine postoperative ss rate of surgical drainage procedure in cattle.

toneal effusion

Ultrasonographically peritoneal effusion is visible as accumulation of fluid without an echogenic margin and ricted to the reticular area. It is relatively easy to ose as the reticular wall is separated from the dominal wall with anechoic fluid. Depending on the and cell content, the fluid may be anechoic or echogenic. Fibrinous deposits are easily identified in the fluid, and sometimes, bands of fibrin are seen within the effusion. Occasionally, the peritoneal effusion is considerable and extends to the caudal abdomen.

Omasum

On right side in the reticulum, omasum and liver can be imaged from the intercostal spaces. The omasal wall is seen as a circular, distinctly echogenic line, immediately adjacent to the right thoracic wall. The wall of the omasum is thicker than that of the reticulum and omasum has a churning type of movement. The contents of the omasum cannot usually be imaged. If impacted omasum appears as ball like with no motility and with acoustic shadows.Omasal leiomyoma has been reported to dignosed using ultrasonography.

Abomasum

The abomasum can be visualised approximately 10 cm caudal to the xyphoid process from the left and right paramedian regions and from the ventral midline. Ultrasonography is a valuable technique for the assessment of the size, position and contents of the abomasum. The bulk of the abomasum is situated to the right of the ventral midline. The wall of the abomasum appears at the most as a thin echogenic line. Passive and slow movement of the abomasal contents may be seen. Percutaneous ultrasound-guided paracentesis with a low pH of the contents usually confirms abomasum.

Small intestine

The area from the tuber coxae to the eighth intercostal space and from the transverse processes of the vertebrae to the linea alba on the right side is examined ultrasonography for small intestine in cattle. The appearance of loops of small intestine and their diameter, contents and motility are assessed. The ultrasonographic appearance of the contents of the small intestine varies. Most commonly, the intestine contains mucus or feed, which appears hyperechogenic The intestine filled with fluid, appears hypoechogenic. The parts of the small intestine can not be differentiated. Although assessment can be made based on location. When ileus of the small intestine is suspected, an ultrasonographic examination should facilitate the diagnosis by proving with valuable information like fluid filled intestinal loop having no motility. The site of ileus markedly affects the number of dilated loops of intestine seen in cross-section and longitudinally from either the flank or each intercostal space. When only one or a few, usually markedly dilated, loops of small intestine are seen , ileus of the duodenum is most likely. Ileus of the jejunum or ileum is usually indicated by presence of more than five loops of small intestine in one area.

Caecal dilatation

A dilated caecum can always be imaged from the lateral abdominal wall at the flank and in some cases,

may be seen from the 12th, 11th and even 10th intercostal spaces. Diagnosis of caecal dilatation usually is straightforward. A diagnosis by clinical examination alone may not be possible, but ultrasonography facilitates in the diagnosis of caecal dilatation. It however may be confused with ileus and thorough examination of other portions of the abdomen is required.

Umblical and urachal Abscess in Calves

Transverse and longitudinal ultrasound scans can diagnose umblical and urachal abscess in calves using 5MHz transducer. Purulent material can be identified sonographically inside umbilical abscess. In the caudal abdomen urachal abscess that extend to the apex of urinary bladder can easily be diagnosed using ultrasonography. Presence of fluid/gas or gas interface in caudal abdomen in calves is pathognomic for an abscess.. Ulrasonograpy is also useful to identify the abscess cavity if post-operative infection develops in some cases of umblical abscess.

External Abdominal Masses

Ultrasonography is useful in differentially diagnosing the external abdominal masses to be cyst, abscess, hernia or neoplasia.

Reproductive Ultrasonography

1. Pregnancy diagnosis
2. Examination of uterus and ovaries
3. Evaluation of testis

Ultrasound Guided Aspiration and Biopsy

In veterinary medicine, fine-needle aspiration and tissue core biopsy of the liver, kidney, spleen, reticular abscess and abdominal masses are the most common procedures performed under ultrasound guidance. The equipment required to perform these procedures varies depending on the ultrasound machine and choice of technique.

Two major types of directly guided biopsy and aspiration techniques may be used: the free hand technique and the guide assisted, the latter of which uses an adaptor on the transducer. In the freehand technique, the operator holds the transducer in one hand and the needle in the other. With training operator can continuously visualize the needle within the plane of the ultrasound beam. The freehand technique is gaining popularity as it offers several benefits such as versatility of approach, compatibility with any system, and a possible reduction in organ laceration in comparison with the guide assisted technique. To acquire experience in freehand procedures, one can practice targeting small objects in homemade or commercial phantoms. The guide assisted technique requires the use of a biopsy guide that is specific for each type of transducer. The guide enables the operator to predict the path of needle with accuracy. Although the accuracy of this technique often makes it easier than freehand method, the adaptor on the transducer can site accessibility when compared with the free technique.

It is preferable to check clotting profile and pla count before biopsy procedure. The patient shou prepared appropriately prior to any interventi procedure. In bovines local anesthesia is often requ at the site a skin incision is required in bovines for e of biopsy needle.

A wide range of needle types (Westcott, True- and sizes (14-22-gauge) can be used to sample les An automated biopsy gun can significantly improve speed, efficiency, and safety of the biopsy procedure compared with the manual technique. The biopsy gu equipped with a spring-trigger system which automati releases the movement of the needle. This autom method required only a single operator and g satisfactory tissue samples for histopathologic evalua Various types of disposable spring loaded biopsy nee are new available at a reasonable cost.

Whichever technique is used, a post-biopsy sca recommended to assess for possible hemorrhage hematoma. The appearance of recent hemorrhage m vary depending on the location and echogenicity surrounding tissue

Fine-Needle Aspiration versus Core Biopsy :In m cases, the choice of performing a fine-needle aspira versus a core biopsy is based on the size of the nod mass, the type of suspected lesion, and the expertise the cytopathologist reviewing the specimen. A tissue c biopsy is usually performed when histologic evaluatio a solid-type lesion is required, whereas fine-nee aspiration is preferred when draining a cyst-like lesion the latter case, a small-gauge needle is often used avoid leakage. In thick collections such as pus, a larg bore needle is necessary to effectively drain the cavity simple and inexpensive modification of the ultrasou guided fine-needle aspiration biopsy using an extens tube attached to the needle has been described.

If a solid lesion is less than approximately 1cm its largest dimension, a fine-needle aspiration is usua performed rather than a core biopsy. When using a biops gun, the operator should be aware of the penetration dept as different depths are available (eg, 23 and 11mm). Th needle size for fine-needle aspiration varies from a 20, or 16-gauge.

A recent article reviewed the cytopathologic touch preparations (imprints) from core needle biopsies compared with the smears from fine-needle aspiratio The touch preparation slides were equivalent in diagnos value to fine-needle aspirate smeared, demonstrati similar cellular features. Touch preparation can offer rapi diagnosis from a single core biopsy sample. When carefu performed, the touch preparation method preserves th

material for subsequent permanent fixation and sectioning.

Abdominocentesis

Abdominal taping gives you a fair idea of changes taking places in the abdominal cavity of bovine. Some of the conditions like peritonitis and localized peritonitis or abdominal abscesses can easily be diagnosed with fare degree of success.

Clinical Biochemistry

The disease may be considered as an alteration in homeostasis and determination of various metabolites, enzymes, proteins and hormones etc in health and disease can therefore provide valuable diagnostic information about organs involved. Many times it is required to know the functional status of internal organs of the patients both for diagnostic and prognostic purpose. Biochemical methods provide valuable help to ascertain the organ functions. The two most important internal organs, kidney and liver are involved in maintaining blood chemical composition. Liver is the largest and most complex internal organ with diverse metabolic functions; while kidneys play major role in excretion of waste products and homeostasis of electrolyte - acid base balance. Hormones produced by pancreas, adrenal gland and thyroid control the homeostasis or constancy of blood composition. Any alterations in blood and other body fluids composition can help in revealing the functional status of the organs or tissues involved

Biochemical tests can be done on number of biological fluids and these tests support or confirm clinical diagnosis. Selection of the test is based on clinical rationale. Collection of blood samples for further analysis is very important. Sample should be free from hemolysis. Most analytes are estimated from serum. Serum/Plasma should be separated from cells immediately otherwise concentration of CO_2, glucose, Pi, NH_3, K^+ and pyruvate changes. Presence of reticulo-omasal orifice tone and a chloride plasma level more than 75mmol/L were indicators of good prognosis for cases of omasal impaction under going surgical treatment.

Explolatory lapro-rumenotomy and Surgical biopsy

Role of laparotomy and rumenotomy for diagnosis and treatment can not be underrated. Biopsy of various organs during surgery, to diagnose various conditions is an emerging field and this procedure helps in evaluation of prognosis of animal suffering from particular disease.

Nuclear medicine, CT and MRI

Use of nuclear medicine is not approved in animals that are intended for human food supply. Use of Technetum methylene diophosphonate (99mTc-MDP) for bone scintigraphy can be useful for diagnosing lameness or other skeletal abnormalities.

Use of Computed Tomography and MRI have been used in very limited fashion in food animals Generally size of animal (bovine) limits the evaluation to the head (Brain and sinuses) and distal extremities only. The cost of modality keep them reserved for animals with high value. The requirement of general anesthesia and specialized equipments make these modalities unlikely to become universal used or recommended for the food animals.

RECENT TRENDS IN SURGICAL MANAGEMENT OF TEAT PROBLEMS IN BOVINES

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Introduction

Intensification of dairy farming has lead to early culling of cows due to many of the teat problems. Efficient production of high quality milk is challenged when udder health problems occur. Significant teat injuries commonly affect the orifice and less commonly the teat sinus wall. Teat surgery is a demanding test of the skill of the veterinarian. Economic loss results from a loss in milk yield (take care with antibiotic treated milk; possible loss of quarter, if there is necessary to dry off) (Weaver et al., 2005).

Under Indian conditions, the increase in dairy herd farming in periurban areas and small towns with faulty or improper milking procedure in less than ideal hygienic environment is supposed to have enhanced the incidence of teat disorders and subsequent mastitis.

Various agents and mechanisms, causing a number of forms of trauma or lesions, may affect the condition of the teats of the milking dairy cow. In general, these agents and mechanisms fall into one of three broad categories (Hillerton et al., 2001).

- Machine milking effects
- Environmental effects and/or agents
- Infectious agents

Machine induced	Environmental	Infectious
Discoloration	Chapping	Pseudocowpox
Oedema	Mud sores	Herpes mammilitis
Congestion	Sucking damage	Cowpox
Wedging	Fly bites	Papilloma
Ringing	Other abrasions and cuts	Foot and Mouth disease
Petechial haemorrhage	Weather damage	Vesicular stomatitis
Larger haemorrhage	Allergic reactions	Ringworm
Hyperkeratosis	Photosensitization	Staphylococcus aureus
	Chemical damage	Streptococcus dysagalactiae
		Arcanobacterium pyogenes
		Fusiformis necrophorum

In India, veterinary practitioners are frequ confronted with teat obstructions that originate traumatic injuries including faulty hand milking. S injuries do not necessary lead to visible changes in but often lead to outflow obstructions caused proliferation of interstitial tissue and scar formation teat. After repeated hand milking, changes appear in end tissue, resulting in the development of a callous around the teat orifices. Other factors also leads to c formation like teat end shape, teat position, teat le milk production, lactation status and parity (Bhatt, 20

Origin of Teat Problems

Origin of teat problems undoubtedly, the major problems originate from a combination of management, stabling and equipment, and u conformation. However, even in well-managed opera accidents will occur where teats and udders wi damaged by agents such as fence wire, dog bites, o feet of other cattle. The udder suspensory ligaments o weaken and the udder is placed in a position that lead to more injury. The part that the use of a mi machine plays in teat problems is not clear, but it m be as important as the factors listed above. In one h the owner has noted that since he switched to na teat cup liners, the teats on his younger cows h remained small. It appears that the narrow liners red the stretching effect of milking and therefore are impor in reducing teat size and thus teat problems (Bright 1969). The recent histological studies stated that observed changes are from an increased / built up ca tissue around orifice rather than an 'erosion' of teat ti / orifice. The changes are associated with mechan forces exerted by vacuum moving liner during mach milking.

Incidence

Because of the physiological and anatom peculiarity, the cow's teat is exposed to more rigor manipulation and greater risk of injury than any o structure of the animal's body. Injured teats often beco difficult to milk, milking efficiency declines and les become at risk for infection, which may lead to mast Teat wounds are common around parturition as a re of udder size and clumsy movement of the cow, and th is a higher frequency in cows aged 5 to 6 years beca

quarters are lost at each lactation and many cows from milking herds because of various types of teat become important.

The cases of mammary gland affections recorded treated by Kaira District Milk Co-Operative Union (KDUL) in and around Anand during April 2007 - March (1 year data) revealed to be 7.67% (33,586 cases), which, teat canal obstructions recorded were 4.87% cases).

In India different authors have reported incidence various teat affections (Nigam and Tyagi, 1973, Singh 1994, Singh et al, 1981 and Kumar, 2000 and Thilager 2000) and in other countries (Groote, 1979, Witzing 1984 and Beuch et al, 1987). The stenosis was 59.8% teat and 40.2% in fore teats (Roine, 1975). Merchand et al, 1995, reported Single quarter affection more frequent than infection of two or more quarters. The incidence of mastitis is significantly higher in hind than in fore quarter in all breeds of buffalo and

...ctions of Teat

Surgically the affections of teat can classify into ... categories (Ducharme et al., 1987)

Type I - Focal teat cistern obstructions involving less than ...% of the mucosal surface of the teat cistern.

Type II - Diffuse teat cistern obstructions involving greater ... 30% of teat cistern mucosa.

Type III - A membranous or fibrous structure separating ... the gland cistern from the teat cistern, or the ...rous ducts from the gland cistern.

Type IV - Stenosis or obliteration of the gland or the teat ...ts.

Type V - Teat fistulae, webbed teats or lacerations leading ...tulae.

...eat Lacerations

...ncidence of teat laceration is relatively higher in ... due to their pendulous udder and long teats. In ...es, laceration may occur due to direct injury to when ...animal steps down on her teat while rising, barbed ... fencing, thorny bushes and some agricultural ...ents. Superficial lacerations will heal more rapidly, if ...gically corrected. This includes covering the wound ... a clean filter pad, and/or washing the wound with a ... salt solution. The surgical approach will include: ... scrubbing with surgical soap, removal of all fibrin, ...surgical debridement of badly damaged or dirty tissue. ... irregularities in the wound may be corrected by ...ing tissue or by extending the wound. The wound is ... closed with one or two layers of sutures, depending ... depth of the wound. Prophylactic mastitis treatment ...necessary unless the wound extends near the streak ... If tissue damage is extreme, milking with a cannula ...essary for several days.

2. Vertical Lacerations

These are approached as in Open Teat Surgery (O.T.S.). Necessary aftercare will vary, but generally because of the extensive tissue damage the use of a plastic cannula without cap is recommended. Milk is allowed to escape freely so that pressure will not build up in the quarter.

3. Horizontal Lacerations

These also are approached as in O.T.S. Closure must vary as the closure used in O.T.S. technique would probably lead to irregular closure of the mucosa. The recommended method is to put horizontal mattress sutures in place and tighten them all at once. Other layers are closed as in the O.T.S. technique. Aftercare must avoid tension on the teat, therefore constant draining by use of a plastic type cannula without a cap is indicated until healing occurs.

4. Imperforate Teat

Aetiology is congenital in heifers, or acquired as a result of trauma in adult cattle. Access whether milk is present in teat sinus; surgery is only indicated in positive case. Procedure as for teat stenosis.

5. Teat base obstruction

Congenital form in some heifers prognosis very poor and treatment almost invariably hopeless. Acquired form in cows, usually at start of new lactation. Aetiology unknown, possibly inflammation of basal annular fold.

Teat lance or Hog's knife is inserted to break down the annular membrane.

6. Papilloma

Bovine papilloma viruses cause papillomatosis or warts on teats. Supposedly up to six separate strains of papilloma virus occur with at least two identified as the cause of warts on teats. Warts are most common on young cows although they are contagious. The most obvious and problematic warts are those that are frond-like or filamentous protruding up to 10 mm. In some newly calved heifers in some herds warts may completely obscure the teats. The warts are of most nuisances if found on the teat duct orifice affecting hygiene and milk flow. They are easily damaged and bleed, occasionally profusely. They may be secondarily infected although a direct association with mastitis is not proven. Many found warts resolve over the first lactation, although some are persistent and may need to be removed surgically. Many teats and herds only show 'rice grain' or small, smooth and flat, white warts anywhere on the teat. These warts are rarely of any problem to milking or mastitis.

7. Fistulae

It is an abnormal opening or a passage between the teat cistern and the teat surface through which milk flows

out. It is an acquired anomaly traumatic in origin and rarely congenital. These are handled by excising and suturing as in the O.T.S. technique. If the fistula follows a laceration, there will be a great deal of scar tissue that should be removed to reduce thickening and aid healing.

8. Hard Milkers

"Hard Milkers" occurring either as a normal state or as an after effect of injury are treated in similar fashion. Many instruments are used, but the basic principle is to cut the upper end of the streak canal in four directions without injuring the external opening. Some reports suggest the use of a metal dilator inserted with sufficient pressure to stretch the opening. These procedures like all surgery must be conducted through a properly prepared field. Minimum restraint is used. Aftercare includes prophylactic mastitis treatment and frequent forceful milking every hour for 4 to 6 hours. Blood and Henderson, 1960 recommend that this procedure be continued for 24 hours. Rotation of the tip of the teat between fingers to loosen any adhered surfaces before milking has been useful in my practice. In my opinion dilators should not be used. A thumb rule in all cases of chronic obstructions was stated by one correspondent "Be liberal with your surgery". A chronic leaker is usually better liked than a hard milker (Brightwell, 1969).

9. Obstructions

The most common obstruction is a valve-like excess of tissue at the internal opening of the streak canal. The cause of this excess tissue is probably chronic irritation, enlargement and fusing of the folds in this area. Obstruction is present at three regions viz. upper, middle and lower one third. Hindrance at tip is included in lower one third. In upper one third region, partial obstruction causes zigzag flow of the milk and it is not possible to complete the milking. The fibrosis due to injury, fibroma, polyp and tumourous mass are the common conditions affecting all the regions. The teat canal can be suffering from teat stenosis / stricture of muscles, hyperkeratosis of epithelium, scar formation due to injury and some times milk stones, as it lodges in the teat canal and obstructs the path.

The surgical approach is similar to that for hard milkers. However, a curette must be used to remove excess tissue after the four cuts are made. Many instruments are available but the most common instrument has a cone shaped head with a sharp edge that is inserted into the teat cistern and withdrawn to the obstruction. At this point a movable collar is pushed up to the head and the obstruction is cut off. In fact, the obstruction is usually ripped off, because the instrument is not sharp enough or the animal moves with the pain. One Danish author apparently feels that the ripping of this obstruction is important as it reduces scarring. However, it appears to me that there must be excess tissue damage from the ripping. Another form of obstruction involves the floating and the attached pea. The attached pea is reported to be the result of a chronic inflammation of alveolar tissue in the wall of the teat. One pea examined appeared to be granulation tissue attached to the wall with a short neck. The floating pea is probably a milk calculus or an attached pea that has broken off.

Bhargava (2006) corrected lower teat obstruction in 580 clinical cases by using BP blade no. 15 and concluded that success was better in cases where no intramammary infusion was given after the operation, but the same was done during dry period.

10. Supernumerary teat

This is an inherited condition. The teats are commonly caudal but sometimes are attached to the normal teat. Remove when 1 - 9 month old, never within month of parturition. (Oedema, wound break down, infection, mastitis).

Carefully identify supernumerary structure. Crush the base with small burdizzo and resect with knife at inner edge of blades. Suture only if wound edges separate. Line of section should be cranial to caudal, not transverse so that subsequent scar merges into natural folds of udder skin. Alternative technique is to resect with scissors.

11. Teat amputation

This is indicated in cows with severe teat damage where reconstructive surgery and return to normal function cannot be expected eg. Loss of distal portion of teat, long oblique or transverse tears into teat canal. Amputation and closure of teat canal is only successful in the absence of infection.

Site is 1 -2 cm distal to udder teat junction transect teat by scalpel resecting the mucous membrane 1 cm below the cut surface invert mucosa by continuous suture in submucosa insert horizontal mattress sutures to close skin edges. Infuse long acting antibiotic in quarter before final sutures are placed.

Recent Trends

Diagnosis and treatment of teat injuries and stenosis has been performed for several decades (Roine, 1975). Anamnesis and a thorough clinical examination involving palpation of the affected glands, various techniques, such as radiography, ultrasonography (Stocker et al., 1988), theloscopy (Tulleners and Hamir, 1990; Medl et al., 1994; John et al., 1998; Hirsbrunner and Steiner, 1999; Hirsbrunner et al., 2001) and theloresectoscopy (Bleul et al., 2005) have been introduced for diagnosis and subsequent treatment of teat problems.

Ultrasonography facilitates accurate diagnosis of pathological conditions, sometimes impossible to detect by clinical examination. This atraumatic technique enables veterinarian to visualize morphological abnormalities within canals, sinus and glandular tissue of mammary gland. It necessitates the use of 5 - 10 MHz linear or sector probe

be applied in the vertical or horizontal plane. The ultrasonic diagnosis is an uncomplicated method, matic, painless and easy to interpret (Twardon et 2001).

Endoscopy is a new, modern method used in the nosis and therapy of the teat disorders. Two methods endoscopy can be used: endoscopy through the canal or endoscopy from the side access (through wall of the teat). Apart from visualization of inaccessible endoscopy enables surgical operations within the canal. This method necessitates the use of resectoscope (length 150 mm, diameter 2.7 mm), light source, fiber optic light cable, endoflator and Theloscopy using an endoscope has been proven less invasive, atraumatic, and free of major perative complications, such as hemorrhages, cient wound healing, and mastitis (Tulleners and 1990). Most of the currently applied techniques mmary gland endoscopy have curative purposes focus on treatment of teat injuries and stenosis in yielding dairy cows (John et al., 1998; Hirsbrunner Steiner, 1999; Hirsbrunner et al., 2001).

Seyed et al., 1997 evaluated the use of Low Level Therapy (LLLT) on primary healing of experimentally ced full thickness teat wounds in dairy cattle. They uded that LLLT affects various aspects of the healing ess including minimizing inflammation formation of ema, improvement of skin regeneration and ncement of collagen synthesis.

Open teat surgery is indicated in teat spiders, tion and proliferation in area of Furstenberg's rosette. sion of annular fold in multiparous cows and atresia mechanical impatency of teat sinus or udder cistern ngitudinal incision is made into the teat sinus through eroanterior wall of the teat. The length of incision is rmed by the extent of tumour. The mucosa is everted ugh incision and tumours are excised with the help of sors. Mucosa and some part of submucosa is closed sing 3-0 catgut in a continuous or continuous lock tch. Submucosa is closed immediately over the cosal with 3-0 catgut using figure of eight or continuous ttress suture. Finally the skin and musculovascular are to be closed with an interrupted vertical mattress ure of any suitable noncapillary material.

"Open Teat Surgery" (O.T.S.) is the surgical cedure of cutting through the teat wall to enable the geon to correct problems in the teat or udder cistern. his approach the surgeon can see the problem and ercise sound surgical judgement in correcting it. This uperior to blind ripping and cutting through the streak al. O.T.S. is often elective and therefore allows prior mpling of the milk for bacteriological culture and a sitivity test. If a severe mastitis is noted, surgery should postponed until the mastitis is controlled. In all cases sensitivity test will direct the choice of any antibiotic be used as a prophylactic agent after surgery. When the animal is suitably restrained and anaesthetized the teat and adjacent udder should be prepared and draped as for any surgery. The position and length of the incision is governed by the site of the lesion, but is limited in length by the distance from the top of the streak canal to the annular ring. To ensure a properly centered incision, a groove director inserted through the streak canal to the lesion may be employed. The blood supply is extensive and bleeders will have to be tied. When the teat is opened the lesion should become visible and good surgical judgement must be applied. If the streak canal is involved, the area of the rosette (the internal opening of the streak canal) may be exposed by inverting the tip of the teat. Correct suturing of the teat is most important. Step one is to grasp the mucosa with Allis forceps and to close with double or triple 0 medium chromic catgut on a 14-gauge atraumatic needle. Intestinal type suture material is said to be superior. Interrupted or interlocking simple stitches can be applied. The second layer of sutures is applied with the same equipment using a continuous mattress suture. Skin is closed with interrupted vertical mattress sutures with the first bite starting 3-31/4 inch from the incision and the return bite near the skin edges to approximate the skin. However, it appears easier to insert the sutures starting with the shallow bite. Metal clips can be utilized here as well. Some surgeons do not penetrate the mucosa with catgut and therefore eliminate the first layer of sutures. Others suggest one line of deep sutures or clamps to close the whole incision. Experience with this last method indicates that the stitches must be tight to give a milk-proof closure and this tightness leads to swelling and sloughing of the sutures with the probable formation of a fistula.

Aftercare

Bleul et al., 2005 compared theloresectoscopy with conventional teat endoscopy in diagnosis and therapy of covered teat lesions .They found that both the techniques appeared of same value concerning diagnosis of aberrations in bovine teat. Differences were found in handling of instruments performing endoscopy with lateral, artificial approach: the novel theloresectoscope is by far more useful in endoscopic surgery, because the surgical intervention can be performed by a single person, whereas using the conventional instruments in most cases a second person as an assistant for operation is required.

Theloscopy

Teat endoscopy (theloscopy) is a useful technique for diagnosis and therapy of covered teat injuries. Minimal invasive theloscopic surgery may help to restore milk flow, milk yield, and Somatic Cell Count (SCC) of the affected quarter. Infection with pathogens may not change significantly, however. Cows treated as described may yield as much milk as their herdmates at a slightly increased udder SCC and stay as long in the herd as their herdmates. Theloscopy also may be used for

diagnosis and therapy of various other teat disorders (Geishauser et al, 2005).

Silicone Implant

Querengässer et al., 2002 evaluated SIMPL Silicone Implants and NIT Natural teat inserts to keep the teat canal patent after surgery. He concluded that teats inserted with SIMPL after surgery are more milkable short term than teats inserted with a NIT. SIMPL made from silicone with a constant diameter may keep the teat canal patent better than NIT made of wax disintegrating after use. Long term, SIMPL and NIT seem to be equally helpful to restore milkablility. Higher milk yield from SIMPL teats short term may be explained by better milkability short term (Goft et al., 1994). Long term, equal milk yields may be expected after the use of SIMPL or NIT. The findings further indicate that milk quality is better after the use of SIMPL than after the use of NIT long term.

Conclusion

Teat diseases play an important role in modern dairy farming and may leads to economic losses. Teat lesions affect the dairyman by interfering with the milking process or by increasing the likelihood of intramammary infection. Therefore, exact diagnosis and prognosis are necessary. Ultrasonography facilitates accurate diagnosis of pathological conditions, sometime impossible to detect by clinical examination. There are different types of teat problems and they require different interventions. The most common site of teat obstruction in dairy animals with milk flow disorders was lower one third of the teat canal at the tip and the most effective way was cross incision technique using BP blade no 15. In chronic condition of the interior of the teat, it is obvious that the good exposure of the O.T.S. is of great advantage. Practitioner should accept the responsibility of providing this and other similar services to clients. If any one practitioner cannot providing the service, he is ethically bound to refer the case to a practitioner that will provide the service. Recent technique like theloresectoscopy is minimal invasive and it can be succefully used for treatment of various surgical disorders of the teat.

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ABSTRACTS

ANAESTHESIOLOGY SESSION

1.1 CLINICAL, HEMATOLOGICAL AND BIOCHEMICAL ASSESSMENTS IN PREANESTHETIC DEPENDENT KETAMINE ANESTHESIA IN GOAT

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The present study was conducted on eighteen clinically apparently healthy goats weighing between 25 to 30 kg and were randomly divided in three equal groups. The animals were clinically examined to ensure the health status. Diazepam (1 mg/ kg body weight intravenous), haloperidol (0.1 mg/ kg body weight intravenous) and acepromazine (0.05 mg/ kg body weight intravenous) was given in animals of groups I, II and III, respectively followed 5 minutes later by Ketamine (10 mg/ kg body weight intravenous). The onset of anesthesia in group I,II and III ranged between 4.00 to 5.00, 3.00 to 5.00 and 3.00 to 5.00 minutes, respectively, whereas the duration ranged between 25.00 to 27.00 minutes in group I, 16.00 to 22.00 minutes in group II and 19.00 to 23.00 minutes in group III. The average complete recovery took place in 58.50±2.14 minutes, 36.16±1.32 minutes and 39.66±1.20 minutes in the animals of group I, II and III, respectively. The administration of Ketamine along with preanesthetics causes slight depression in temperature, respiration and non-significant change in haematological (TEC, Hb, TLC) and biochemical parameters (serum total protein, sorbitol dehydrogenase, serum total bilirubin, blood urea nitrogen and serum sodium). However, significant changes were recorded in heart rate, PCV, DLC, blood glucose concentration, SGOT, blood creatinine, serum potassium, serum chloride and plasma bicarbonate concentration. The values of fractional clearance, serum half life and per cent retention of bromosulphalein in anesthetized goats are within normal limits. The study concludes that Ketamine along with premedicants have only transient effect on clinical, haematological and biochemical parameters and these combinations can be safely used in goat.

1.2 EVALUATION OF ATROPINE-ACEPROMAZINE-XYLAZINE-KETAMINE COMBINATION AS ANAESTHETIC IN BUFFALO CALVES *(BUBALUS BUBALIS)*

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The study was undertaken in twelve male buffalo calves by administering atropine (0.04 mg/kg, IM) followed by acepromazine (0.04 mg/kg, IM), xylazine (0.04 mg/kg, IV) and ketamine (2.0 mg/kg, IV).. The calves were in sternal recumbency with chin on ground at 1.49±0.90 minute after xylazine-ketamine administration.. Corneal and palpebral reflexes were lost at 8.25±0.62 minute after xylazine-ketamine administration with complete analgesia for 35±2.44 minutes. Head rightening reflex was observed at 38.51±2.36 minute. Complete recovery took 48.31±2.73 minute. Plasma glucose and sodium level were significantly increased after 10 minute of xylazine-ketamine administration and at recovery. Plasma potassium level was significantly lower 10 minute after acepromazine, remained lower at recovery and even at 24 hours after drug administration. There was significant increase in heart rate at 10 minute after acepromazine administration compared to the base value followed by decrease at 20 minute after xylazine-ketamine administration. The mean arterial pressure also showed significant decrease at 20 minutes after xylazine-ketamine administration. Atropine-acepromazine-xylazine-ketamine combination maintained cardiovascular parameters within normal limits throughout the period of observation in buffalo calves.

1.3 EVALUATION OF GLYCOPYRROLATE-ACEPROMAZINE-XYLAZINE-KETAMINE ANAESTHETIC COMBINATION IN BUFFALO CALVES *(BUBALUS BUBALIS)*

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The study was undertaken in twelve male buffalo calves by administering glycopyrrolate (0.01 mg/kg, IM) followed by acepromazine (0.04 mg/kg, IM), xylazine (0.04 mg/kg, IV) and ketamine (2.0 mg/kg, IV) The

animal went into sternal recumbency after mean time of 1.72±0.74 minutes after xylazine-ketamine administra... Analgesia was observed at mean time of 8.95±2.69 minute after xylazine-ketamine administration, while palpe... and corneal reflexes were lost at mean time of 13.51±2.38 minutes after xylazine-ketamine administration. Comp... recovery took 48.71±2.83 minute after xylazine-ketamine administration.There was significant hyperglycaem... recovery (65.28±3.73 mg/dl) from anaesthesia. Cholesterol level showed significant increase with mean valu... 100.617±4.874 mg/dl at 10 minutes after acepromazine, and 24 hours after drug administration (101.467±3.86 mg... Total plasma proteins decreased significantly (6.970±0.243 g/dl). Sodium and potassium levels increased signific... at 10 minutes after xylazine-ketamine administration. There was significant increase in heart rate at 10 minutes a... acepromazine administration and remained higher during entire period of observation. After initial increase in m... arterial pressure (142.77±5.53 mmHg) at 15 minute after glycopyrrolate administration, there was significant decre... in mean arterial pressure after acepromazine administration (132.77±5.92 mmHg) and remained lower throug... entire period of observation. Glycopyrrolate-acepromazine-xyalzine-ketamine combination maintained cardiovasc... parameters within normal limits throughout the period of observation in buffalo calves.

1.4 CLINICO-PHYSIOLOGICAL AND HAEMATOLOGICAL RESPONSE OF FENTANYL AND XYLAZINE USED AS PREMEDICANTS TO PROPOFOL ANAESTHESIA IN LARGE WHITE YORKSHIRE PIGS

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The present study was undertaken to evaluate the efficacy of fentanyl and xylazine as premedicant... propofol anaesthesia in 15 Large White Yorkshire pigs of either sex weighing between 25-65 kg. T... experimental work was divided into three groups. Atropine sulphate @ 0.04 mg/kg body weight intramuscularly ... administered 15 minutes before the treatment in all the groups of animals. In group I, Propofol was administered ... intravenously @ 6 mg/kg body weight. Xylazine @ 2 mg/kg body weight intramuscularly and fentanyl @ 10 µg... body weight intramuscularly were administered as preanaesthetic 10 min. prior to propofol anaesthesia in group II ... group III respectively.Induction of anaesthesia was rapid and smooth with propofol alone and was quicker. in grou... and III. Preanaesthetic administration significantly (P<0.01) increased the duration and complete recovery time f... anaesthesia in group II and III. The degree of analgesia, Muscle relaxation was excellent in group II and III and poo... group I. The rectal temperature showed a nonsignificant decrease in all the three groups. The heart rate and respira... rate showed a significant (P < 0.01) decrease in group II and III after administration of preanaesthetics and the... showed a significant (P < 0.01) increase after administration of anaesthesia in all the three groups which returned... normalcy by120 to 180 minutes in all the three groups. Haemoglobin, Total Erythrocyte Count and Total Leukoc... Count Concentration decreased significantly (P < 0.01) in all the three groups. Lymphocyte Count showed a signific... (P < 0.01) decrease in group I and III while in group II, it showed a significant (P < 0.01) increase. Neutrophil Co... increased significantly (P < 0.05) in group I and III where as in group II, it decreased significantly (P < 0.01). The... were nonsignificant changes in Monocyte andEosinophil Count in all the three groups at various time intervals. T... it was concluded that xylazine and propofol combination was safe and produced anaesthesia of longer duration wh... can be used for performing major surgery in pigs. Propofol- fentanyl combination was also safe but the duration... anaesthesia was shorter which can be used to perform short surgical procedures in pigs.

1.5 CLINICO- PHYSIOLOGICAL AND HAEMATOLOGICAL RESPONSE TO FENTANYL AND BUPRENORPHINE USED AS PREMEDICANTS TO KETAMINE ANAESTHESIA IN LARGE WHITE YORKSHIRE PIGS

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Present study was undertaken to evaluate the efficacy of fentanyl and buprenorphine as premedicants... ketamine anaesthesia in 15 Large White Yorkshire pigs of either sex weighing between 25-65 kg. T... experimental work was divided into three groups. Atropine sulphate was given to the animals of all the groups @ ... mg/kg body weight intramuscularly, 15 minutes prior to the treatment. In group I, ketamine was administered a... intravenously @ 15 mg/kg body weight. Fentanyl (10µg/kg body weight) and Buprenorphine @ (25µg/kg body weig... were administered intramuscularly as preanaesthetics 10 minutes prior to ketamine anaesthesia in group II and ... respectively. The rectal temperature showed a nonsignificant increase in all animals. The heart rate showed

significant decrease in group III after administration of preanaesthetics and then it showed a significant ($P < 0.01$) increase after administration of ketamine in animals of all the three groups. The respiration rate showed a significant ($P < 0.01$) decrease in group II and III, where as in group I it increased significantly ($P < 0.01$). Induction of anaesthesia was not smooth with ketamine alone. Pre anaesthetic administration did not affect the induction time but significantly increased the duration and complete recovery time from anaesthesia in group II and III. The quality of analgesia and degree of muscle relaxation was excellent in group II, and III and poor in animals of group I. Haemoglobin, Total Erythrocyte Count, Total Leukocyte Count and Lymphocyte decreased significantly ($P < 0.01$) while Neutrophil Count increased significantly ($P < 0.01$) in animals of all the groups.

1.6 STUDIES ON EFFICACY OF XYLAZINE AND MEDETOMIDINE AS PREMEDICANT TO KETAMINE ANAESTHESIA IN NEWZEALAND WHITE RABBITS

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The present study was conducted in 12 New Zealand White Rabbits of either sex to compare the Clinico-physiological and anaesthetic effects of ketamine with xylazine and medetomidine preanaesthetics. Rabbits were randomly divided into two equal groups of 6 animals each. Intramuscular injection of xylazine @ 5mg/kg body weight in animals of group I (xylazine-ketamine) and medetomidine @ 200µg/kg body weight in animals of group II (medetomidine-ketamine) was administered. Ten minutes later, ketamine @ 50mg/kg body weight was administered intramuscularly in both the groups. The rabbits were observed for the onset, down time, the time to loss of righting reflex, pedal reflex, heart rate and respiration rate. The animals were operated for making intestinal loops through midline laparotomy approach. Onset time, down time, the time to loss of righting reflex was quicker in animals of group II as compared to group I. Pedal reflexes remained intact in all the animals of Group I but abolished completely in the animals of group II. The three animals (50%) of group I felt slight pain during surgery while the analgesia was excellent in all the animals of group II. A significant decrease ($p<0.01$) in heart rate, respiration rate and rectal temperature was observed in all the groups. All the animals recovered from anaesthesia smoothly and uneventfully. The medetomidine-ketamine combination seemed to produce profound and superior anaesthesia in comparison to xylazine- ketamine anaesthesia for performing pain less surgery in New Zealand White Rabbits.

1.7 HAEMODYNAMIC CHANGES AFTER EPIDURAL ADMINISTRATION OF BUPIVACAINE, XYLAZINE & KETAMINE IN GOATS

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18 goats were randomly divided into 3 different groups with 6 animals in each group. In group-I animals Inj. Bupivacaine (0.5%) @ 1.50 mg/kg , In group- II Inj. Xylazine @ 0.05 mg/kg and in group- III Inj. Ketamine @2mg/kg were administered epidurally (L7-S1) in all the groups of animals. The cardiopulmonary & Haemodynamic parameters Viz., HR, RR, RT, CVP & MAP were assessed at an interval of 0,10,20, 30, 60, 90,&120 minutes intervals. Tachycardia ($P<0.01$), bradycardia ($P<0.01$), & no alteration in HR were observed in group I, II, & III respectively. Tachypnoea was observed in group I & II where as non significant change was observed in all groups. Higher CVP was recorded in-group II & III animals during epidural anesthesia where as CVP remained within physiological limits in bupivacaine administered animals. Mean arterial pressure was decreased in all the groups of animal during various intervals of study. The decrease in MAP was statistically ($P<0.01$) significant in group- II animals.

1.8 COMPARATIVE EVALUATION OF EPIDURAL ANALGESIA OF BUPIVACAINE, XYLAZINE & KETAMINE IN GOATS

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Comparison of Bupivacaine, Xylazine & Ketamine is carried out in 18 goats.3 groups were made (6 animals in each group) Inj. bupivacaine (0.51.) @ 1.50mg/kg, Inj. Xylazine @0.05 mg/kg & Inj. Ketamine @ 2mg/kg were administered epidurally (L7-S1) In group I, II & III respectively. The clinical parameters like induction time,

duration of anesthesia, recovery time, time to get up & time to walk were assessed in all groups of animal. The m ± SE induction time in group I, II, & III were 10.50 ± 0.72, 9.10 ± 0.40 & 6.80 ± 0.25 minutes respectively. Dura anesthesia were recorded 87.20 ± 3.46, 140 ± 3.03 & 54. 00 ± 1.20 minutes in group I, II & III respectively. The ± SE recovery period were 190 ± 2.16, 143 ± 3.36 & 115 ±2.60 minutes in group I, II & III respectively. The mean time to get up was 261. 10 ± 19.7, 262. 83 ± 2.79 & 118.00 ± 2.26 minutes in group I, II & III respectively. The ± SE times to walk were 277. 83 ± 20. 68, 273. 8 ± 2.80 & 120 ± 1.69 minutes in group I, II & III respectively recorded.

1.9 STUDIES ON HEMATOLOGICAL ALTERATIONS AFTER EPIDURAL ANALGESIA OF BUPIVACAINE, XYLAZINE & KETAMINE IN GOATS

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The study was conducted on 18 goats divided in to 3 different group with 6 animals in each groups in g animals Inj. Bupivacaine (0.5%) @ 1.50mg/kg, In group-II Inj. Xylazine @0.05mg/kg and in group Ketamine @ 2mg/kg were administered epidurally (L7-S1) in all the groups of animals. The hematological param Viz.; Hb, TLC, DLC & ESR were recorded at an interval of 0,10,20,30, 60, 90 & 120 minutes interval. The averag concentration & TLC count was not altered during bupivacaine anesthesia where as Epidural administration of X or Ketamine produced significant (P<0.01) decrease in hemoglobin concentration and TLC. All the three grou animals showed non significant change in DLC. ESR was increased significantly at 30 and 60 minutes from bas in all the groups of animals suggesting bupivacaine, Xylazine and Ketamine anesthetics administration incre ESR.

1.10 COMPARATIVE EVALUATION OF PROPOFOL LIPID EMULSION AND PROPOFOL LIPID FREE FORMULATION FOR THE MAINTENANCE OF GENERAL ANASTHESIA BY CONTINUOUS INFUSION IN CANINES

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Present study was carried out in 48 clinical cases of different breeds weighing10-20 Kg. All dogs were di into four groups I, II, III and IV and group I and II comprised of four sub-groups (A, B, C & D and E, F, G of four dogs each in which anasthesia was maintained by continuous infusion @ 0.2, 0.3, 0.4, & 0.5 mg/kg Maintenance of anaesthesia by lipid free propofol was compared with lipid emulsion propofol at standard dose o mg/kg/min on eight dogs in group III and IV. All dogs showed quick and smooth induction while recovery in group II was found dose related and in group III and IV showed no significant difference. Assessment of anaesthesia groups was carried out by evaluation of neuro-muscular signs and grading the quality of anasthesia as per the s points. It revealed that dogs of subgroup C and group III scored 75 and 80 points respectively, whereas, dog subgroup G and group IV scored 75 points each respectively @ 0.4 mg/kg/min, suggesting most satisfa maintenance of anasthesia by continuous infusion.

1.11 COMPARATIVE EVALUATION OF DIFFERENT DOSES OF MIDAZOLAM AS PREANAESTHETIC WITH THIOPENTONE SODIUM IN CANINE

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Eighteen clinical cases of dogs from either sex were randomly divided into three equal groups. Atrop sulphate @ 0.4 mg/kg/b.wt I/M was administered 20min beforethe preanaesthetic in all the animals different groups. Midazolam @ (0.2, 0.4 and 0.6 mg/kg b.wt I/V) was administered 10 min before thiopentone sod as anaesthetic @10 mg/kg b. wt I/V in group I, II&III respectively. Physiological observations such as latent per duration of anaesthesia and recovery time was observed in each animal from all the groups. Clinical and Haem biochemical parameters were recorded at 0, 5, 10, 15, 20, and 30 min interval in all three groups of animals. T average latent period of anaesthesia in group I, II and III was 123.83 + 2.44,96.67 + 2.44 and 66.33 2.44 s

respectively. Whereas the average duration of anaes -thesia was 12.17 + 2.44, 18.17 + 2.44 and24.33 + 2.44 min in the respective groups. The average recovery period of anaesthesia was 34.00 + 2.44, 53.50 + 2.44 and 60.33 + 2.44 min in group I, II and III respectively. Clinical parameters revealed significant decrease in rectal temperature & respiratory rate whereas heart rate increased significantly.Haemato-biochemical parameters revealed non-significant alteration in the TLC ,DLC ,Hb ,PCV, SGPT, serum creatinine and BUN, however serum glucose level increased significantly.It may be concluded that midazolam in combination with thiopentone at different dose levels produces smooth and satisfactory general anaesthesia for surgical intervention without any complications.

1.12 COMPARATIVE EVALUATION OF BUPAVACAINE, XYLAZINE AND KETAMINE FOR INDUCTION OF EPIDURAL NERVE BLOCK IN GOAT

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Eighteen clinical cases of goats from either sex were divided into three equal groups. Bupivacaine HCL (0.5%) was given @1.5.mg/kg b.wt at the lumbosacral epidural space in group I, while in group ?, xylazine was given @ 0,05 mg /kg b.wt and ketamine 2mg / kg b.wt was given in group ? at the lumbosacral epidural space. The physiological and haematological parameters were studied at 0, 10, 20, 30, 60, 90 and 120 min interval. The average induction time in group I, II and III ranged between 8. 20 to 12.80, 7.90 to 10.90 and 5.90 to 8.90 min respectively, whereas duration of anaesthesia ranged between 76 .40 to 97.10 min in group I, 132 to 148 min in group II and 52 to 58 min in group III. The average recovery time ranged between 184 to 196, 134 to 152, 102 and 123 min in goats from group I, II and III respectively. Time to get up in group I, II and III ranged between 168 - 297, 254-297 and 112 -125 min respectively, whereas time to walk ranged between 176 to 309 min in group I, 266 to 284 min in group II and 116 - 128 min in group III. The rectal temperature revealed non significant decrease in group I & significant decrease in group II while non significant change was recorded in group III. The heart rate revealed significant increase in group I and significant decrease in group II whereas non-significant change was recorded in group III. Respiratory rate showed significatly decrease in group I while non- significantly changes were seen in group II and III respectively. CVP revealed significant increase in group II and III whereas non-significant change was found in group I. While MAP revealed unchanged in group I and III but significantly decreased in group II. Haematological parameters revealed non-signi ficant change in DLC and significant decrease in Hb and TLC, whereas significant increase in ESR was observed. It may be concluded that bupivacaine, xylazine and ketamine produces satisfactory surgical anaesthesia without any post anaesthetic complications and it is safe and easy to achieve in goats.

1.13 COMPARATIVE EVALUATION OF DIFFERENT DOSES OF MIDAZOLAM AS PREANAESTHETIC WITH KETAMINE HYDROCHLORIDE IN CANINE

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Eighteen clinical cases of dogs from either sex were randomly divided into three equal groups. Injection atropine sulphate@0.04 mg/kg/b.wt was administered I/M 20 min prior to midazolam in all the groups. Midazolam was administered I/V@0.2 mg, 0.4 mg and 0.6 mg /kg/b.wt in animals of group I,II and III respectively.This was followed 10 min later by ketamin HCL@5 mg/kg b.wt I/V in all the animals of group I,II and III. Physiological observations such as induction time,duration of anaesthesia and recovery period were observed in each animal of all groups. Rectal temperature, heart rate and respiratory rate were recorded at 0,5 ,10,15,20 and 30 min and after recovery . Biochemical and Haematological parameters were also recorded at same intervals Induction period of anaesthesia in group I ranged between 76 to 100 sec In group II and III ranged 50 to 76 sec and 45 to 62 sec respectively. Whereas duration of anaesthesia in group I , II and III ranged between 18 to 25 min, 27 to 34 min and 36 to 49 min respectively .The average recovery period ranged between 36 to 45 min in group I, 45 to 62 in group II and 58 to 68 in group III clinical parameter revealed significant increase heart rate and respiratory rate decreased significantly. However rectal temperature non significantly decreased in all the groups of animals. In haematological parameters HB , TLC, PCV significantly decreased whereas in DLC significant alteration was observed . Biochemical parameters revealed significant increase in glucose, SG PT, SGOT, BUN and serum creatinine in all the groups of animals. From the investigation it can be concluded that midazolam @0.6 mg/kg body weight as preanaesthetic with Ketamine HCL provide good quality of anaesthesia without any complication with smooth recovery.

1.14 COMPARATIVE EVALUATION OF XYLAZINE AND DIAZEPAM AS A PREANAESTHETIC TO PROPOFOL ANAESTHESIA IN GOATS

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The present investigation was carried out on 12 clinical cases of goats of either sex and were rando divided into two groups of six goats each. Group I and II was given diazepam and xylazine intravenous a preanaesthetic@ 0.1mg/kg body weight and 0.4mg/kg body weight respectively, 15 minutes later propofol anaesth was given intravenously @ 4mg/kg body weight. Physiological observations such as induction time, durati anaesthesia, recovery period and clinical parameters like rectal temperature,heart rate and respiratory rate recorded at different time intervals from each animal of both the groups. Average group of induction time of anaesth in group I and II were 0.20±0.08and 0.23±0.07 minutes respectively. Whereas average values of duration of anaesth were 49.16±3.00and 36.60±2.47 minutes in group I and II respectively. The average values of recovery period 75.83±300 and 68.33±2.10 minutes in dogs from group I and II respectively. The rectal temperature and heart showed non-significant changes while respiratory rate decreased significantly in both the group of animals. haematological parameters viz Hb,PCV and TLC showed non-significant changes in both the groups.A signific increase in blood glucose value was recorded in both groups. Whereas non-significant changes in BUN and se creatinine value was also recorded in both the groups.

1.15 COMPARATIVE EVALUATION OF YOHIMBINE AND ATIPAMEZOLE FOR REVERSAL OF INTRAVENOUS DETOMIDINE IN CAMELS

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Twenty atropinized adult camels used in this study were subjected to the intravenous administratio detomidine (40 m/kg). These animals were divided into two groups (1 and 2) and effect of detomidine reversed by intravenous administration of yohimbine (0.125 mg/kg) and atipamezole (15mg/kg) in the animals group 1 and 2, respectively. Intravenous administration of detomidine produced bradycardia, hypothermia, respirat depression and hyperglycemia and these effects were completely reversed within 5 to 10 minutes in all the anim after the intravenous administration of atipamezole yohimbine except two animals subjected to intravenous administra of yohimbine, where there was complete failure of yohimbine in the reversal of detomidine. These animals we recovered after 3 hrs. The efficacy of the yohimbine and atipamezole was assessed by determining various clinic physiological and biochemical parameters. Reversal effect of atipamezole was more rapid as compared to yohimbi

1.16 EVALUATION OF SAFE AND BALANCED ANESTHETIC TECHNIQUE IN CAT SURGERY

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A study was undertaken to evaluate safe and balanced anaesthetic technique in cat surgery. A total of cats, divided equally in 2 groups, were studied. In group-I, Atropine sulphate (0.04mg/kg IM), Xylazine mg/kg IM) and Ketamine hydrochloride(15 mg/kg IM) were used. In group-II, Atropine sulphate (0.04mg/kg IM Xyalzine (1 mg/kg IM) and Propofol (6 mg/kg IV) were used. Anaesthesia was maintained with 2-3% halothane and 1.5 L/min oxygen with portable Goldman's calibrated halothane vaporizer. Operations like ovariorysterectomy, amputat of limb, etc were performed. Physiological parameters were studied before and at 10, 20, 30 minutes of anaesthesia Haematological and biochemical parameters were studied. Anaesthetic parameters like induction time, induct quality, degree of muscle relaxation, quality of recovery and safety of anaesthesia were observed. The study revea that xylazine-propofol combination could be used for smooth and better induction as well as for faster recovery. 2-3 halothane along with 1-1.5 L/min oxygen could be used satisfactorily for maintenance of anaesthesia in cats. Goldman calibrated halothane vaporizer could be used for maintenance of anaesthesia in field conditions.

1.17 ELECTROCARDIOGRAPHIC CHANGES IN KETAMINE- ISOFLURANE ANAESTHESIA IN DOGS

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The study was carried out in twelve female dogs subjected to elective surgical procedures. All the dogs were premedicated with Glycopyrrolate, Xylazine and Midazolam followed by Ketamine anaesthesia maintained with inhalant agent Isoflurane. The electrocardiographic changes in these animals were evaluated for using a multiparameter monitor and the typical changes were recorded and interpreted.

1.18 CLINICAL EVALUATION OF PROPOFOL AND KETAMINE AS INDUCTION AGENTS IN MIDAZOLAM - FENTANYL PREMEDICATED AND HALOTHANE ANAESTHETIZED DOGS

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The present study was undertaken to clinically evaluate propofol and ketamine as induction agents for halothane anaesthesia in dogs premedicated with midazolam and fentanyl. The study was conducted on 31 clinical cases undergone various surgical interventions, with 16 dogs in ketamine group and 15 dogs in propofol group. All dogs were atropinized and subsequently premedicated with 5 µg/kg fentanyl i/m, followed 30 minutes later with 0.3 mg/kg midazolam, i/v. Three minutes later the dogs were induced either with ketamine or propofol intravenously, and subsequently maintained on halothane in oxygen. The analgo-clinical, cardiovascular and haemato-biochemical changes were evaluated. It was concluded that the anaesthetic combination provided by both ketamine and propofol groups was comparable, although ketamine group was found to be more suitable for hypovolaemic patients; and propofol group for patients where rapid induction and intubation were necessary.

1.19 CONTINUOUS INTRAVENOUS INFUSION WITH PROPOFOL IN MEDETOMIDINE AND MIDAZOLAM PREMEDICATED BUFFALOES

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Propofol was injected as continuous intravenous infusion (CII) anaesthesia in six adult male buffaloes in P1 and P2 groups. In P1 sedation was accomplished by medetomidine (2.5 µg/ kg) + butorphanol (0.05 mg/kg), in P2 midazolam (0.25 mg/ kg) + butorphanol (0.05 mg/kg) were used intravenously. Induction was achieved with thiopental sodium in both groups. Maintenance was done by CII of propofol (1%). The treatments were compared for clinicophysiological, haemodynamic and haematobiochemical parameters. P1 produced better sedation and analgesia than P2. The quality of muscular relaxation was excellent in both groups. Depression of palpebral, corneal reflexes and rotation of eyeball was comparable. Depression of pedal and pinprick reflexes was higher in P1 than P2. Lesser dose of thiopental was required in P1 (3.14±0.35 mg/kg) than P2 (5.58±0.46 mg/kg). Infusion rates of propofol in P1 and P2 were 0.05±0.00 and 0.06±0.00 mg/kg/min, respectively. The recovery time, sternal recumbency resumption time and standing time were higher in P2 than P1. Significant bradycardia in P1which improved after induction and maintenance period and significant tachycardia in P2 was recorded. Respiratory rate decreased in P1 and increased in P2. Hypothermia in P1 was more pronounced than P2. Decrease in Hb, PCV, TLC, neutrophilia and lymphocytopenia was observed in both groups. Plasma glucose, cortisol, creatinine and urea nitrogen increased in both groups. MAP increased after premedication in P1. MAP improved during maintenance of anaesthesia. MAP increased after premedication and remained so in P2. CVP increased after premedication, which decreased after induction in both groups. ECG changes were transient. Decrease in SpO2 during anaesthesia was observed in both groups. It was concluded that P1 provided better quality sedation, analgesia and muscular relaxation with slight cardiac depression than P2 in buffaloes. P1 provided more dose sparing effect on anaesthetics used for induction and maintenance than P2 and maintained cardiopulmonary dynamics better during anaesthesia with shorter recovery times. Propofol @ 0.05-0.06 mg/kg/min may be used safely for constant rate infusion anaesthesia of 2 h duration in buffaloes.

1.20 COMPARISON OF XYLAZINE-BUTORPHANOL AND MEDETOMIDINE-BUTORPHANOL AS PREMEDICANTS FOR TOTAL INTRAVENOUS ANAESTHESIA BY PROPOFOL IN CANINE ORTHOPAEDIC PATIENTS

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Twenty four canine orthopaedic patients were divided into 2 groups X and M of twelve animals each. In gro X (n=12) atropine (0.04 mg/kg body wt. IM), xylazine (0. 5 mg/kg body wt. IV), butorphanol (0.02 mg/kg bo wt. IV) and propofol (induction and maintenance, IV) was used. In group M (n=12) atropine (0.04 mg/kg body wt. medetomidine (10µg/kg body wt. IV), butorphanol (0.02 mg/kg body wt. IV) and propofol (induction and maintenan IV) was used. The treatments were compared on the basis of clinicophysiological, haematobiochemical a haemodynamic parameters. The induction dose and rate of infusion of propofol was less in medetomidine group (2.4 ± 0.329 mg/kg) than in xylazine group (2.77 ± 0.432 mg/kg). Abolition of pedal, palpebral, corneal reflexes and ja tone were earlier in medetomidine group than xylazine group and medetomidine provided better basal anaesthes Recovery was smooth and uneventful in both groups with a comparatively longer recovery time in medetomid group. Cardiopulmonary depression was comparable in both groups. Hypothermia, neutrophilia and lymphocytope were recorded in both groups. Haemoglobin, packed cell volume and total leukocyte count decreased in both grou The increase in blood pressure (systolic, diastolic and mean) was more in medetomidine group than xylazine grou Plasma glucose, creatinine and cortisol increased while urea nitrogen decreased in both groups. Both Xylaz butorphanol-propofol and Medetomidine-butorphanol-propofol can be employed safely for anaesthetic managemen canine orthopaedic patients.

1.21 MEDETOMIDINE-BUTORPHANOL PREMEDICATION FOR PROPOFOL AS TOTAL INTRAVENOUS ANAESTHESIA IN CANINE ORTHOPAEDIC PATIENTS

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Twelve canine orthopaedic patients received atropine (0.04 mg/kg body wt. IM), medetomidine (10µg/kg bo wt. IV), butorphanol (0.02 mg/kg body wt. IV) as premedicants and propofol was used for induction a maintenance of anaesthesia. The animals were further subdivided into 2 groups of 6 animals each based on t analgesics meloxicam and ketoprofen. The treatments were compared on the basis of clinicophysiologi haematobiochemical and haemodynamic parameters. The induction dose of propofol and the rate of infusion propofol was reduced significantly with premedication with medetomidine. Recovery time was prolonged with smo and uneventful recovery in both the groups. Medetomidine and butorphanol decreased heart rate and respiratory r whereas propofol caused tachycardia and depression in respiratory rate and SpO2. Blood pressure (systolic, diast and mean) increased after the administration of atropine, medetomidine and butorphanol, whereas, propofol cau hypotension. The values of Hb, PCV decreased in all the subgroups. High glucose and cortisol base values w observed that increased further after administration of drugs. Plasma urea nitrogen decreased, whereas creati values increased. Both meloxicam and ketoprofen provided a comparable degree of postoperative analgesia in ca orthopaedic patients.

1.22 COMPARATIVE EVALUATION OF PROPOFOL, XYLAZINE-KETAMINE AND MIDAZOLAM-KETAMINE ANAESTHESIA IN RABBITS

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The present study was undertaken to evaluate and compare the three different anaesthetics for its utili rabbits. Six rabbits were distributed in three groups in Latin Square method, each group comprising o trials. Based on the result of the pilot and experimental study, the group-I received propofol (1%) @ 15mg intravenously, group-II received xylazine @ 5mg/kg and ketamine @ 25mg/kg and the group-III received midazo

2mg/kg and ketamine @ 25mg/kg intramuscularly respectively. The efficacy of anaesthesia were evaluated on the basis of clinical (down time, muscle relaxation, analgesia, duration of analgesia and recovery time) and physiological (temperature, heart rate and respiratory rate) parameters were observed at 0, 5, 15, 30, 60 and 90 minutes of anaesthesia. Down time was significantly ($P<0.05$) different between groups, which were 0.42 ± 0.15, 4.43 ± 1.21 and 5.45 ± 0.95 minutes in group-I, II and III respectively. Muscle relaxation was adequate in all the groups. There was poor analgesia in group I and III, while in group II the analgesia was good. Anaesthesia were produced for 5.24 ± 1.64, 55.45 ± 2.49 and 62.47 ± 2.35 minutes respectively and highly significant ($P<0.01$) difference between the groups 6.25 ± 1.27, 81.12 ± 3.08 and 83.67 ± 2.90 minutes respectively for recovery time were recorded. There was significant decrease in heart rate, rectal temperature and respiratory rate were recorded in all the groups. On the basis of the results it can be concluded that xylazine-ketamine produced inferior quality of anaesthesia than propofol and midazolam-ketamine.

1.23 VENTILATION STANDARDS DURING ROCURONIUM NEURO-MUSCULAR BLOCKADE UNDER ISOFLURANE ANAESTHESIA IN DOGS

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A study was conducted in two groups of six dogs each that underwent elective OHE. Anaesthesia was induced with diazepam-ketamine and maintained with 2% Isoflurane employing total rebreathing circle system with a FGF of 0.5LPM. Rocuronium @ 0.5 mg/kg bodyweight iv effected neuromuscular blockade. At the onset of apnea, mechanical ventilation was started and continued for 30 minutes. The tidal volumes (ml/kg bodyweight) and respiratory rates (breathes per minute) were 10 and 20 for group I and 20 and 10 for groupII animals. The I:E ratio was 1:2 for both the groups. Atropine sulphate and neostigmine were given 30 minutes after rocuronium to reverse the neuromuscular blockade. The end tidal CO2, SpO2, heart rate and MAP were recorded at 5 minutes interval between Rocuronium and reversal agents and capnography was done using Welch Allyn monitor. The heart rate and MAP were within the normal range in all the animals. The SpO2 was above 98% in all the animals. The EtCO2 level ranged between 50 and 61 in group I and 38 and 45 in groupII. Curare cleft was observed between 13 and 28 minutes after Rocuronium administration. Although the minute ventilation was same (200ml/kg bodyweight) in both the groups, the dead space ventilation was proportionately high in group I resulting in higherCO2 retention in the body. It is concluded that a tidal volume of 10 ml/kg bodyweight is sufficient to keep adequate oxygenation whereas a tidal volume of 20ml/kg bodyweight is required for an adequate ventilation and normal EtCO2.

1.24 POST OPERATIVE ANALGESIC EFFECT OF EPIDURAL BUPIVACAINE ALONE OR WITH BUPRENORPHINE FOR OVARIOHYSTERECTOMY IN DOGS

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A clinical study was conducted on twelve healthy bitches to evaluate the analgesic efficacy of epidural bupivacaine alone or bupivacaine with buprenorphine after propofol anaesthetic induction and maintenance for the postoperative pain management following ovariohysterectomy. The animals were randomly divided into two groups of six animals each. Premedication was done with atropine sulphate 0.04 mg/kg body weight i.m. followed by diazepam 0.3 mg/kg body weight i.v. The general anaesthesia was induced and maintained with propofol i.v. at 4mg/kg and 2 mg/kg body weight respectively. Bupivacaine (0.5 mg/kg body weight) alone was administered epidurally at lumbosacral space in group I animals and bupivacaine (0.5 mg/kg body weight) and buprenorphine (0.05mg/kg body weight) were administered in group II animals. In group I animals a highly significant ($P<0.01$) increase in the Visual Analogue Scale (VAS) score was observed immediately after surgery followed by a significant decrease upto 2 h after surgery. In group II the pain score immediately after surgery was at the lowest. A highly significant ($P<0.01$) increase in the Numerical Rating Scale(NRS) score was observed in group I animals immediately after surgery followed by a significant decrease upto 2 h after surgery. In group II the pain score immediately after surgery was at the lowest. Postoperative pain assessment by visual analog scale as well as numerical rating scale revealed, reduction in pain immediately after surgery and at all intervals in group II animals when compared to group I. It was concluded that epidural bupivacaine with buprenorphine analgesics was superior than epidural bupivacaine alone in the management of postoperative pain following ovariohysterectomy in dogs.

1.25 OXYGEN UTILIZATION FOR MECHANICAL VENTILATION DURING ROCURONIUM NEUROMUSCULAR BLOCKADE AND ISOFLURANE ANAESTHESIA IN DOGS

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The present study was conducted in six healthy dogs that underwent elective ovariohysterectomy. Anaesthesia was induced with diazepam-ketamine and maintained with two per cent isoflurane with a fresh gas flow rate of 0.5 litre per minute. Rocuronium was administered at the dose of 0.5 mg/kg body weight i/v to cause neuromuscular blockade. Mechanical ventilation was initiated at the onset of apnea and continued for 30minutes with a tidal volume of 20ml/kg body weight and 10 breaths per minute. The room temperature was maintained at 21oC during the trial. During mechanical ventilation oxygen supply from a separate pre-weighed cylinder was used. The weight of the oxygen cylinder after the trial was measured. The total oxygen consumption (in litres) for mechanical ventilation was calculated as below,

Δm (in gm) x 22.4 (lit) x {273 (K) +21(°C)} / 32 x 273(K).

The oxygen used through fresh gas flow was subtracted from the total oxygen to find the amount of oxygen utilized to drive the bellows of the ventilator. From the results, it was found that 150ml of oxygen is required to drive the bellows to deliver 100ml of tidal volume.

1.26 ANAESTHETIC MANAGEMENT OF SPLENIC TRAUMA USING SEVOFLURANE AND ISOFLURANE IN DOGS

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The twenty four clinical cases of canine patients suffering with trauma of spleen were included in this study and after recording their detailed history and the physical examination, definite diagnosis was made on the basis of haematobiochemical, radiographic, ultrasonographic and laparoscopic findings and the animals were divided randomly into 3 groups viz. A, B and C. The animals of each group were further divided into two subgroups, viz.AI,BI and CI and AII,BII,CII and were subjected to the surgical intervention i.e. splenectomy under the effect of atropine, diazepam, thiopental sodium, sevoflurane and atropine, diazepam, thiopental sodium, isoflurane anaesthesia respectively. The anaesthetic efficacy was assessed by determining the level of cliniocophysiological parameters. The animals of groups A, B and C were subjected to whole blood transfusion of cattle, buffalo and canine respectively either during the operation or just after the operation. On the basis of observations made in the present study, it was concluded that the combination of diazepam, thiopental sodium and sevoflurane was safer as compared to the combination of diazepam, thiopental sodium and isoflurane as it has least deleterious effects on the different body systems and provide more cardiac and respiratory stability.

1.27 ELECTROCARDIOGRAPHIC AND ELECTROENCEPHALOGRAPHIC STUDIES FOLLOWING DETOMIDINE-PROPOFOL-THIOPENTAL ANAESTHESIA IN DOGS - AN EXPERIMENTAL STUDY

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The present study was conducted on 7 clinically healthy adult mongrel dogs of either sex weighing 17.5±3.335kg. In each dog, 10 minutes after atropinization, medetomidine was injected intramuscularly (20 µgm/kg) and 10 minutes subsequently propofol and thiopental (propofo1% and thiopental 2.5%) mixture was injected intravenously "to effect", to achieve surgical anaesthesia. ECG and EEG were obtained using base apex lead and bipolar transfrontal lead systems, respectively. The average dose of propofol-thiopental mixture used to achieve surgical anaesthesia was 2.0 mg and 5.0 mg/kg, respectively. The surgical anaesthesia lasted for 31-40 min. A highly significant to significant tachycardia was observed following medetomidine and propofol-thiopental administration. Supra ventricular and sinus tachycardia were recorded. ST segment elevation and notched P wave were constant features after propofol-thiopental anaesthesia. Following medetomidine administration low voltage high frequency waves changed to low voltage low frequency and burst suppressions were recorded till 30min. At the end of study low voltage low frequency waves were seen in all the animals.

RADIOLOGY AND IMAGING SESSION

2.1 EVALUATION OF CALCIUM CARBONATE, POTASSIUM IODIDE AND WATER AS CONTRAST AGENTS FOR GASTROINTESTINAL TRACT IMAGING IN RABBIT MODEL

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Twenty five (25) healthy adult New Zealand white rabbits of either sex were randomly divided into 5 groups of 5 animals each. Barium sulphate, Calcium carbonate diatrizoate, potassium iodide were used as radiographic contrast agent in group A,B,C and D respectively and water as sonographic contrast agent in group E. The contrast agents were evaluated on the basis of clinical hematological and biochemical parameters at different time intervals. The animals were normal, active and alert immediately after the administration of contrast agents except in group where potassium iodide was given remained slightly dull up to 2hrs of administration. In all groups feed and water habit become normal by 6 hours after contrast administration. Significant increase ($P<0.05$) in PCV and TEC by 6 hours of adminisyration of contrast agent in group II, III and IV. Significant decrease ($P<0.05$) in serum glucose level 6 hours of administration of contrast agent in all the groups. Significant increase ($P<0.05$) in serum calcium and phosphorus by 6 hours of administration of contrast agents in group II and IV. Significant increase ($P<0.05$) in T3 and T4 was observed in group III Calcium carbonate (80%) and potassium iodide (15%) provided radiographic contrast of the GI tract. Calcium carbonate as contrast agent was economical but the radiopacity was inferior compared to that of barium sulphate. Potassium iodide and diatrizonate provided comparable radiographic contrast of the GI tract. Water in stomach and intestine served as suitable sonographic contrast agent. Ultrasonography and radiography appeared supplementary to evaluate various structural and functional abnormalities of the GI tract.

2.2 UNUSUAL OBSTRUCTIVE UROLITHIASIS IN TWO DOGS-RADIOGRAPHIC AND ULTRASONOGRAPHIC OBSERVATIONS

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Two adult male dogs (4-6years) of age were brought to TVCSC with the history of problem in urination. In both dogs, there was dribbling of blood tinged urine from the urethral orifice for the last 10-15 days. Several drugs like diuretics, antibiotics, anti-inflammatory, B-complex and fluids were tried by the local veterinarian but there was no response. Both dogs were dull and depressed. There was frequent vomition and constipation. Blood picture showed slightly low haemoglobin, increased T.L.C., D.L.C.and PCV values. Bio-chemical values indicated high values of blood urea nitrogen,. SGOT and SGPT. Radiographic reports indicated multiple cystoliths and urethroliths. In one dog, there was unusual big stone in the centre of the urinary bladder and multiple small stones in the bottom. The entire urethral passage was blocked by stones present in single row in first dog and in multiple rows in second dog. Ultrasonographic pictures of the kidney, urinary bladder and urethra not only depicted cystoliths and urethroliths but also showed nephroliths in both dogs. A big sized hyperechoic stone was visible in the urinary bladder with anechoic area surrounding it .in one dog. The density of the urine was cloudy. The urethrogram presented shadow of urethra-penis with hyperechoic picture of multiple stones. The cystoliths and urethroliths were cleared by surgical intervention under xylazine and ketamine combination but nephroliths were managed by conservative methods. Both dogs started passing clear urine after a regular post-operative treatment of 14 days and made uneventful recovery.

2.3 BILATERAL DELAYED FUSION OF TIBIA & FIBULA IN A PUP - A CASE STUDY

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Lameness is a common problem presented in the skeletally immature pups and radiography is frequently used as a diagnostic tool in the investigation of these cases (Baines, 2006). A four month old quadriplegic Dachshund was presented in the clinic, the owners seriously considering euthanasia. The clinical examination

and radiograph confirmed a definite gap between the tibia and fibula on both hind limbs. The case was treated with physiotherapy, infra red therapy and nervine tonics and the progress was reviewed clinically and radiographically at intervals. With care and controlled diet, the pup was able to lead a normal life by the end of 2 months. These diseases that manifest in the growing period whatever the aetiology can be rectified to some extent by strengthening the muscles and ligaments of the limb.

2.4 COMPUTED TOMOGRAPHY GUIDED SMALL ANIMAL SURGERY - A SUPERIOR ADVANCEMENT PRINCIPALLY IN REFERRED AND INTRICATE CLINICAL CASES

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This paper presents two difficult and convoluted clinical cases in which Computed tomography was used to make a diagnosis. A German shepherd dog was presented for bleeding and purulent discharge from mouth. History revealed the pet had undergone oral surgery once for tumour and twice for removal of teeth during previous nine months. Clinical findings included purulent discharge from mouth and left nostril, difficulty in chewing and mastication and tilting of head on one side during mastication and weight loss. Routine examinations carried out were hematology and radiology. C.T scan image revealed complete lysis of premaxilla with exposure of underlining tissue. Second referred case was of unresolved of otitis externa despite long history of medical and surgical treatment including lateral wall resection. C. T scan images showed changes in tympanic bulla and accumulation of fluid. Changes were also observed in petrious temperol bone. This paper presents use of image guided surgery as a superior advancement principally in referred and intricate clinical cases.

2.5 M-MODE ECHOCARDIOGRAPHIC PARAMETERS AND INDICES IN 'INDIAN SPITZ' DOGS

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M-mode echocardiographic measurements were made from 24 clinically healthy, adult 'Indian Spitz' dogs to find out the reference values. Systolic and diastolic left ventricular internal diameter was found to be 15.68±0.54 mm and 24.5±0.64 mm respectively. Left ventricular posterior wall and interventricular septal thickness at systole and diastole were measured to be 10.61±0.44 mm, 6.87±0.28 mm, 11.52±0.4 mm and 7.3±0.33 mm respectively. End diastolic volume, end systolic volume and stroke volume were found to be 21.81±1.43 ml, 7.18±0.66 ml and 14.63±1.03 ml respectively. Cardiac output was measured to be 1612.98±132.67 ml. Left ventricular fractional shortening, ejection fraction, interventricular septal fractional thickening and left ventricular posterior wall fractional thickening were calculated to be 36.02±1.34 %, 67.37±1.85 %, 57.71±1.43 & and 54.88±1.64 % respectively. Left atrial internal diameter, aortic diameter and left atrial posterior wall thickness at systole and diastole were measured to be 14.91±0.[illegible] mm, 12.05±0.39 mm, 15.55±0.33 mm, 14.73±0.29 mm, 4.11±0.18 mm and 4.59±0.19 mm respectively. Left atrial to aortic root ratio, left atrial posterior wall motion and aortic wall motion were found to be 0.96±0.02, 0.48±0.04 and 2.86±0.24 mm respectively. Aortic cusp separation was measured to be 10.75±0.37 mm Left ventricular ejection time and corrected left ventricular ejection time was found to be 186.25±6.89 ms and 245.88±5.44 ms respectively. Mitral valve excursion amplitude, early diastolic posterior motion of anterior mitral valve leaflet, time interval between maximal opening of anterior mitral valve leaflet due to atrial systole and mitral valve closure and distance between interventricular septum and maximum mitral valve excursion were found to be 9.32±0.22 mm, 95.6±4.74 mm/s, 110.54±2.75ms and 6.1±0.36 mm respectively. All these mitral valve parameters showed significant variation in their means among different body weight groups while significant effect of gender was seen on mitral valve excursion amplitude where males had significantly higher values as compared to females. All the echocardiographic parameters, which were affected by body weight showed increasing trend with increase in the body weight of the animals.

2.6 GASTRIO-INTESTINAL FOREIGN BODIES IN DOGS - A RADIGRAPHIC STUDY

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Radio opaque gastric foreign bodies diagnosed on plain and contrast radiography in various cases reported at Kerala Agricultural University Veterinary Hospital, Kokkalai, during the last five years were studied and significant cases are presented.

2.7 COMBINATION DIAGNOSTIC IMAGING OF CANINE ABDOMINAL AFFECTIONS

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In the present study of canine abdominal affections, tremendous diagnostic potential of very complimentary radiography, ultrasonography and endoscopy (luminal and visceral) was utilized to yield definitive diagnosis/ narrow the differential diagnoses. Thirty three dogs with very non-specific and vague clinical signs were subjected to detailed examination along with applicable diagnostic imaging modality for early diagnosis and institution of therapy. In addition to this, thirty seven dogs affected with different type of tumours (cutaneous/CTVT/pulmonary metastasis) were also subjected to abdominal sonographic scanning to assess the extent of distant metastasis. Based on this procedural based diagnosis, 61 affections involving different organs (liver = 24, urinary bladder = 12, kidney = 10, uterus = 7, spleen = 3, prostate gland = 2, perineal hernia = 2 and intestine = 1) were diagnosed.

2.8 ULTRASONOGRAPHIC EVALUATION OF PREGNANCY IN SHEEP

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The objective of the present study was to evaluate the accuracy of early pregnancy diagnosis in ewes using trans- abdominal scanning in lateral and or dorsal recumbency on SONALIZA 32 (L&T) scanner with a 5MHz frequency probe in 40 Corredale ewes between the age group of 2 to 3.5 years from Sheep Research Station Shuhama. The diagnosis of pregnancy was primarily based on visualization of embryonic vesicles, foetal heart rate, crown-rump length (CRL), placentomes and twin pregnancies if any. The embryonic vesicles were visualized on 26 pregnant ewes on day 15to 19. The placentomes appeared as echogenic areas on the surface of endometrium on day 28 and onwards. The foetal heart rate was detected in 24(80%) ewes on day 28. In present study the measurement of crown rump length was possible on 25 to 48 and determination of the fetal number was possible on and after day 35 post tupping day. The method used for pregnancy diagnosis is simple, accurate, rapid, inexpensive, practical and safe for both operators and animals and has 96% accuracy for determining multiple pregnancies.

2.9 C-ARM GUIDED REMOVAL OF FOREIGN BODY FROM THE HOOF OF A GOAT

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SHIJU SIMON, S. PRIYA, and R. SURESH KUMAR
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A two year old female goat was brought to the Large Animal Surgical Outpatient Unit of Madras Veterinary College Teaching Hospital with the history of lameness on its right forelimb. Orthopaedic and radiographic examinations revealed a radioopaque foreign body in the abaxial side of the hoof of the right forelimb. Under ring block anaesthesia with 2% lignocaine hydrochloride, exploratory surgical intervention using C-arm image intensifier guidance was performed to precisely locate the position of the foreign body. A 2cm skin incision was made on the abaxial side of the hoof and the four pieces of tinted glass was removed with minimal intervention at the surgical site. The wound was flushed with normal saline and metrinidazole, antibiotic impregnated gauze was applied and bandaged. The animal made an uneventful recovery and started bearing weight on second postoperative day.

2.10 SURVEY ON RADIOGRAPHIC INCIDENCE OF CYSTIC AND URETHRAL CALICULI IN DOGS - A REVIEW ON 143 CASES

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A survey was conducted on 143 canine cases referred to the Radiology Unit of Madras Veterinary College with the complaint of hematuria, pollakiuria and/or disuria, during the period from August 2007 to July 2008. Lateral abdominal radiographs were studied. A total of 65 cases (45.45%) had radio-opaque urinary caliculi, and the incidence based on the breed, location, and age were analysed. The incidence was more in the Spitz (30.76%) followed by Labrador (13.84%), non-descriptive breed and Doberman (10.76 % each), Lhasa Apso (7.69%), German Shepherd dog, Dachshund and Dalmation (6.15% each), Pug and Great Dane (3.07% each) and Boxer (1.53%). Based on the location, 43.07 % of them were cystic caliculi followed by cystic and urethral caliculi (33.84 %) and urethral caliculi (23.07 %). The incidence was found to be more in the age group of 8 - 11 years (29.23 %) followed by 2 - 5 years (23.08%), 5 - 8 years (21.54 %), 11 - 15 years (18.46 %) and 1 - 2 years (7.69 %).

2.11 GASTROSCOPY FOR DIAGNOSIS AND TREATMENT IN SMALL ANIMALS

ROON MARIAM MATHAI, N.H. KELAWALA, D.B. PATIL, P.V. PARIKH, BARVALIA, D.R. SHIVARAJ JHALA, RAGHUVIR BHATT, C.L. BADGUJAR, M.A. DHAMI and NISHA JOY
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Of 7,385 cases recorded from 1st January 2007 to 20th April, 2008 at the University Clinic, Anand, 16 (6.67 %) cases out of 240 gastrointestinal disorders were subjected to gastroscopy. Animals having vomiting, diarrhoea, weight loss, lethargy, partial or complete anorexia were initially screened and subjected to haematological / serum biochemical and radiological / USG investigations as per the need. All the animals were fasted overnight and were premedicated with atropine sulphate @ 0.04 mg/kg, SC or BAG (Butorphanol, Acepromazine and Glycopyrrolate @ 0.1, 0.1, 0.01 mg/kg b.wt., IV, respectively) combination .In atropine premedicated animals (n = 17), general anesthesia induced with a combination of diazepam @ 0.5 mg/kg and ketamine HCl @ 10 mg/kg administered IV produced desired depth of anaesthesia. In animals premedicated with BAG (n = 7), general anesthesia induced with IV administration of diazepam @ 0.2 mg/kg and ketamine HCl @ 3 - 4 mg/kg produced superior post-operative analgesia. Foreign bodies, stricture, polyps, hyperemia, gastric ulcer, petechial haemorrhage, gastritis with help of gastroscope were successfully diagnosed. As per the clinical symptoms, laboratory findings and confirmation of endoscopic diagnosis, management of clinical cases were carried out to achieve optimum success.

2.12 TRACHEOBRONCHOSCOPY FOR DIAGNOSIS AND TREATMENT IN SMALL ANIMALS

ROON MARIAM MATHAI, N.H. KELAWALA, P.V. PARIKH, D.B. PATIL, BARVALIA, D.R. RAGHUVIR BHATT, SHIVARAJ JHALA, M.A. DHAMI and C.L. BADGUJAR
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Of 7,385 cases recorded from 1st January 2007 to 20th April, 2008 at the University Clinic, Anand, 4 (6.78%) cases out of 59 respiratory tract affected animals were subjected to flexible tracheobronchoscopy. All the animals were fasted overnight and were premedicated with atropine sulphate @ 0.04 mg/kg, SC. General anesthesia induced with a combination of diazepam @ 0.5 mg/kg and ketamine HCl @ 10 mg/kg administered IV produced desired depth of anaesthesia. Sternal recumbency was mostly preferred for performing tracheobronchoscopy. Animals showing signs of dyspnea, tachypnea, coughing or tracheal injury were subjected for tracheobronchoscopy. A flexible fiber optic endoscope with an outer diameter of 9.8 mm and biopsy channel diameter of 2.8 mm was used successfully for tracheobronchoscopy with some degree of difficulty. Time taken for complete procedure of tracheobronchoscopy ranged between 10 - 20 minutes. Tracheal perforation, tracheobronchitis, hyperemia were identified and treated successfully.

2.13 ENDOSCOPIC RETRIEVAL OF GASTRIC FOREIGN BODIES IN DOGS - TWO CASE REPORTS

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Endoscopic retrieval of gastric foreign bodies was performed in two dogs presented at the Veterinary College Hospital, Mannuthy. One was a six month old female Labrador retriever of 20 kg body weight brought to the Veterinary Hospital, Mannuthy three days after it swallowed a Chinese rubber ball. Another was a 2 ½ years old Golden retriever bitch weighing 26 Kg which was brought to the Hospital with the complaint of occasional vomiting, which on clinical examination, was found to have a palpable mass in the stomach. Both the dogs were subjected to gastro-oesophageal endoscopy under general anaesthesia. Foreign bodies were retrieved endoscopically using the foreign body retrieval basket. In the former case the foreign body was a rubber ball of 4 cm diameter and in the latter case it was a mango kernel. Both the animals were normal, both clinically as well as endoscopically following removal of the foreign bodies.

2.14 CLINICAL STUDIES ON LAPAROSCOPIC DIAGNOSIS IN SMALL ANIMALS

RAGHUVIR BHATT, N.H. KELAWALA, D.B. PATIL, P. V. PARIKH, D. R. BARVALIA, ROON MATHAI, SHIVARAJ JHALA, C.L. BADGUJAR, NISHA JOY and M.A. DHAMI
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Clinical studies on laparoscopic diagnosis of intraabdominal disorders in small animals were conducted in 15 clinical cases. The pneumoperitoneum was created with atmospheric air through veress needle. A 11 mm trocar cannula was used to create umbilical port for the insertion of 10 mm laparoscope along with 250 W halogen light source and digital camera attached for visualization as well as to save images of the affected organs. The normal anatomical visualization of visceral organs was possible through 10 mm rigid laparoscope for both cranial as well as caudal part of abdominopelvic organs from the port created at the umbilical site. The laparoscopic examination in the present study diagnosed the pathological lesions in abdominopelvic organs like liver, kidney, spleen, intestine and urogenital organs. The present study indicated that the laparoscopy facilitated proper visualization of the abdominopelvic organs and laparoscopic diagnosis provides confirmative diagnosis of intraabdominal lesions in small animals and satisfactory results were obtained after starting palliative treatment.

2.15 LAPAROSCOPIC BIOPSY IN SMALL ANIMALS

RAGHUVIR BHATT, N.H. KELAWALA, D.B. PATIL, P. V. PARIKH, D.R. BARVALIA, ROON MATHAI, SHIVARAJ JHALA, NISHA JOY, M.A. DHAMI and C.L. BADGUJAR
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Laparoscopy facilitated the diagnosis by histopathology after taking biopsy from the morphologically pathological abdominal organs in six (6) animals. Three samples were from liver and one each from kidney, intestine and liver. It was concluded from the present study that, the laparoscopy was found to be a reliable diagnostic tool in giving confirmative diagnosis and prognosis of the case.

2.16 RADIOLOGICAL DIAGNOSIS OF OESOPHAGEAL OBSTRUCTION IN TWO BUFFALO CALVES

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Two buffalo calves were presented to VC&RI teaching hospital with a history of progressive regurgitation immediately after taking milk or grass for past 7 days. On clinical examination no obstruction or palpable mass could be noticed. Both calves were subjected for contrast radiography. One calf had oesophageal obstruction at cervical oesophgus with a stricture at the level of axis and another calf had oesophageal obstruction at the level of cardia and stasis of barium was noticed in the thoracic part of oesophagus. Both the calves were managed surgically.

SMALL ANIMAL SURGERY SESSION

3.1 STUDY OF MAMMARY TUMOR WITH SPECIAL REFERENCE TO CYCLOPHOSPHAMIDE CHEMOTHERAPY IN CANINE

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The aim of the present study was to follow the effect cyclophosphamide chemotherapy alone combined wi complete surgical excision of malignant mammary tumor in dogs. The study was carried out on 18 clinic cases reported to the College Veterinary hospitals, aged between 7-11years from various breed during the yea 2004-2006.The all tumors (5-adenocarcinoma,4-lobular carcinoma,3-papillary carcinoma,3-malignanat mixed tum & 3-cystadenocarcinoma) was confirmed by histopathologically. They were randomly divided into two groups consist of nine dogs in each group. Group-I- Surgical excision of mammary tumor and Group-II- Surgical excision of mamma tumor + treatment with appropriate dose and interval of Cyclophosphamide @ 50mg/m2 (BSA) intravenously on Th 14th and 21stdays (Postoperatively). For hematological and biochemical studies, the blood sample were collecte prior and following operation on 0th (Preoperatively) and 1st, 3rd, 7th, 14th and 21stdays (Postoperatively) to asse the haematobiochemical changes. Also the efficacy of the treatment was evaluated by clinical parameter and thorac radiography (Lateral view) for the absence or regression of metastasis. The blood analysis showed significant decrea in RBC count on 1stday (6.38b ± 0.12 vs. baseline of 5.82a ± 0.11millions/cumm) in group-II, the mean neutrop count in group-II was decreased gradually from pretreatment value of 82 ± 0.58 to 70.5 ± 0.1 on 21st day pos treatment. The changes in the serum biochemical (Urea, creatinine, SGOT and SGPT) were not significant .Th studies also showed that the surgical excision combined with sequential regime of Cyclophosphamide (ENDOXA ASTA, Zydus Cad. India,) chemotherapy alone suppress effectively the development of new neoplasm and furth metastasis, but its having strong immunosupression effect (thrombocytopenia) on immune system of patient. Som general adverse reaction i.e. anorexia, anemia, alopecia, vomition, haematuria, and hemorrhagic cystitis was observe during the course of chemotherapy.

3.2 CLINICAL AND CYTOLOGICAL DIAGNOSIS OF TRANSITIONAL CELL CARCINOMA IN DOGS

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The present investigation was carried out on seven clinical cases of dogs with average mean age 8.23±01 9.15±04 years, having Transitional Cell Carcinoma (TCC) of urinary bladder, which was confirmed b histopathologically. From comparative standpoint the TCC is the second most common malignant tumor of genitourinar tract in canine. The most common site of development of tumor was at a triagone area of bladder in four dogs Clinically all dogs prior to the surgery showed dysuria, haematuria, pyuria, proteinuria, bactereuia and pollakuria. A dogs were operated for complete surgical excision of tumor followed by Inj. Cyclophosphamide 50mg/M2 (BSA) on 7th, 14th and 21st days, postoperatively. Cytological investigation showed normal urine consisting of transitiona epithelial shreds, amorphous crystals, hyaline casts. The TCC usually exfoliate large number of neoplastic cells that are scattered individually, some cells are markedly pleomorphic with pronounced anisocytosis and anisokaryosis with average score of 2.9cm on 0-4 scale. The size of cytoplasm was decreased to thin rim while vacuoles were found in neoplastic cells in three dogs. During the follow-up period recurrence was observed into two dogs with same clinica signs after one year, while remaining dogs was recovered uneventfully. The present study puts on record of cytological and clinical investigation of transitional cell carcinoma of urinary bladder in dogs.

3.3 SURGICAL REMOVAL OF HAIRS FROM STOMACH & INTESTINE OF A DOG

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A male GSD aged 3 years was presented to surgery clinic with a history of inappetance, loss of general health and vomiting since last 1 month. A digital radiograph of abdomen of dog revealed a trichobezoar type mass in stomach and intestine. A left flank laparotomy was carried out. A bunch of 550 gm of human hair with rubber band & elastic band were removed from stomach after gastrotomy and about 150 gm of similar hair were removed from duodenum after enterotomy. There was evidence of intussusception proximal to the obstruction. Dog was maintained on fluid therapy for one week and broad spectrum antibiotics were given for 7 days & NSAID'S for 3 days. Animal made appreciable recovery.

3.4 MANAGEMENT OF CHRONIC CONSTIPATON IN A DOG

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A male Labrador aged 5 yrs was presented to surgery clinics with a history of absence of defaecation since last 15 days. Animal had occasional vomition but was taking meals everyday. A digital radiograph of abdomen revealed faeces filled intestinal loops occupying majority of abdomen extending from ileum to rectum. Oral medication of laxatives and rectal enema did not yield anything. A linear alba laparotomy was done & distended intestinal loops were partially exteriorised. The hard faeces at 2 places were crushed across the intestinal wall by digital pressure. The intestine proximal to the constipated mass was injected within 100 ml of liquid paraffin into the lumen. A gentle massaging of distended loop was done. It was later followed by squeezing of intestine between index finger & thumb from jejunum & backwards. This procedure led to complete evacuation of faeces from the intestine. The laparotomy wound was closed in usual manner. Animal was given broad spectrum antibiotics for 5 days & NSAID'S for 3 days, fluid therapy for 3 days, semisolid diet for 7 days followed by usual diet, post operatively. Animal started passing faeces from next day onwards easily & made a smooth recovery.

3.5 EXTRACAPSULAR CATARACT EXTRACTION IN TWO CATS

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Two cats with history of blindness subjected to ophthalmic examination revealed mature cataract (bilateral-one; unilateral-one). After Schirmer's tear test, indirect ophthalmoscopy and ultrasonography animal was subjected to cataractous lens removal by extracapsular method. Animal was evaluated at 15 days interval for 3 months. Vision was restored in both the cats.

3.6 STUDIES ON THE PREVALENCE AND TREATMENT OF PYOMETRA IN BITCHES IN AND AROUND DURG DISTRICT OF C.G. STATE

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The present study was undertaken to evaluate the Prevalence of pyometra in bitches in and around Durg district of C.G. State. A total of eighteen pyometra cases in bitches aging from 4 to 14 years (Mean 7.5 years) were used in this study. Age wise prevalence of pyometra showed that it was more in bitches which were in the age group of 6-9 years (55.55 %). Breed wise prevalence of pyometra showed that it was more in smaller breeds than large breeds. It was found to be 44.44% in Spitz, 22.22% in German Shepherd, 16.66% in Pomeranian and 5.55% each in Cocker Spaniel, Doberman and Lhasa Apso. It was found that out of 18 dogs, 14 (77.77%) bitches were nulliparous, 3 (16.66%) were pluriparous and 1 (5.55%) was primiparous. Lethargy and anorexia was observed in fifteen bitches (88.88%). Ten (55.5%) out of eighteen bitches had shown polyuria and polydipsia. Vomiting was

observed in seven (33.33%) bitches affected with pyometra. Except one, all other 17 bitches (94.4%) showed vag discharge which was either whitish (61.11 %) or brownish red in colour (33.33%). Affected bitches showed mo purulent vaginal discharge. All the bitches were operated for ovariohysterectomy under diazepam (@ 1mg/kg I/V) a ketamine (@ 5mg/kg I/V) anaesthesia. There was uneventful recovery in all the animals after a period of 10 days

3.7 PREVALENCE OF VENEREAL GRANULOMA IN NAGPUR DISTRICT

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The cases of Venereal Granuloma were screened from April 2003 to March 2008 in order to determine th prevalence of the disease in the Nagpur district. So also information in respect of age, sex, breed a season of affection was collected through a survey conducted at various veterinary hospitals of urban and rural are of Nagpur district. During the period, out of the total cases presented for the treatment, the canines accounted for 5 37 percent in urban areas whereas in rural dispensaries, it accounted for just 0.09 percent with the overall average 5.61 percent. The cases of tumour amongst the surgical cases were 11.31 percent. Venereal Granuloma was th most prevalent tumour in dogs with the average of 45.35 percent. The prevalence was more in winter season (43.4 followed by rainy season (35.88%). The dogs of young-adult age (2-8 years) were more prone (84.25%) and th malady was most common in non-descript dogs(72.10%). Although the disease is said to be common in free roam dogs, confined dogs also found to be suffered (20.52) following mating with affected dogs. Submucosal resection wa the most common practice for treatment (42.10%) followed by chemotherapy(32.04%). Vincristine sulphate wa mostly employed(92.85%). Recurrence rate of 21.60 percent is reported.

3.8 KARYOTYPING STUDY OF GENITAL AND EXTRA-GENITAL TRANSMISSIBLE TUMOUR IN CANINES

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The long term tissue culture and karyotyping procedure of venereal granuloma and extra-genital tumour w carried out as per the method suggested by Moorehead (1960). The slides of metaphase spreads we stained by Trypsin G-banding and number of chromosomes per cells were counted along with the morphology. A to of 17 samples of genital form of venereal granuloma tissue and two samples of extra-genital transmissible tumo could be successfully cultured to obtain metaphases for analysis. The examination of the both the genital and ex genital transmissible tumour cells revealed that the modal chromosome number was 58.82 ± 0.15 (range 56-6 consisting of 4 to 11 metacentric (mean 8.18 ± 0.62); 3 to 9 submetacentric (mean 6.29 ± 0.40) and 39-48 (me 44.35 ± 0.66) acrocentric chromosomes. The biarmed elements were morphologically similar in different samples both the categories. Similar number and morphology of chromosomes in extra-genital tumour confirmed it to b transmissible tumour. The chromosomal pattern in these cases was different than the normal canine tissue chromoso

3.9 EVALUATION OF SURGERY AND DOXORUBICIN THERAPY FOR THE TREATMENT OF CANINE TRANSMISSIBLE VENERAL GRANULOMA

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Eighteen clinical cases of Canine Transmissible Veneral Tumor (CTVT) were divided in to three groups of s animals in each group. Animals of group I were treated by surgery alone, animals of group II receiv doxorubicin therapy after surgical removal of tumor mass. Animals in group III were treated by doxorubicin therap alone. In animals of group II and III, doxorubicin was administered @ 30 mg / sq. mtr body surface area (Sq.BS intravenously in 200 ml normal saline. Doxorubicin was repeated after 21 days in these groups. Clinical observa such as regression of tumor, recurrence and side effects of chemotherapy were recorded. Physiological, haematologi and biochemical parameters were recorded at 0, 15, 30, 45 and 60 days of treatment. Histopathological evaluation excised CTVT masses was done. The animals subjected to surgical excision alone showed 66.67 per cent (4/6 recurrence whereas; there was no recurrence of tumor in the animals of group II and III. The main side effects obser

roup II and III were anorexia, vomiting and alopecia which were transient in nature. Physiological, hematological biochemical parameters remained within the normal physiological limits in all the groups of animals suggesting doxorubicin is well tolerated in dogs. Majority of the Histopathological specimen showed polyhydral cells with to pink cytoplasm and vesiculated nucleus placed centrally. However, 27.72 per cent (5/18) specimens showed type of CTVT.

3.10 COMPARATIVE EVALUATION OF SURGERY AND TAMOXIFEN THERAPY FOR CANINE MAMMARY TUMOR

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Twelve clinical cases of mammary tumor were randomly divided in to two groups of six animals in each group. Group I animals were subjected to only surgical excision of the tumor whereas; group II animals were given ifen therapy in addition to surgical excision. Tamoxifen was given @ 1mg/ kg per day to maximum of 20 mg per rally for two months. The clinical observations such as whether the animal was spayed or intact, reproductive s, tumor consistency & size were recorded. The physiological, haematological and biochemical parameters recorded on 0, 15, 30, 45 and 60th day of treatment in both the groups. Ten out of twelve animals had their s intact. The caudal abdominal mammary glands (4th) were commonly affected followed by inguinal mammary (5th). Majority of the animals were nulliparous (5/12) or primiparous (5/12) and remaining two bitches were parous. Tumor size varied from 5 cm3 to 2160 cm3. Hard granulomatous tumors were common than soft lomatous tumors. Physiological, hematological and biochemical parameters remained within the normal ological limits in animals of both the groups. Tamoxifen was well tolerated in the animals of group II and one year up showed no recurrence of tumor in this group.

3.11 SPLENIC MASSES IN DOGS- A REVIEW OF TWO CLINICAL CASES

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A retrospective study of splenic masses done at OPD of Bombay Veterinary College revealed an incidence rate of 0.002 in canines. The present paper deals with two clinical cases of splenic masses in an Alsatian a Labrador. In case of 10 year old Alsatian, abdominal palpation revealed a large, globular mass in the mid ventral minal region. X- rays and ultra sonography failed to reveal the exact location and hence exploratory laprotomy performed which revealed a large mass attached to the posterior end of the spleen. Splenectomy was conducted specimen was sent for histopathological examination and it was to be a splenic hematoma. The dog made an entful recovery. In case of the Labrador, a large globular mass was palpated at the anterior right abdominal region. ys and ultra sonography again failed to reveal the exact location and hence an exploratory laprotomy was med. On opening the abdominal cavity, a large, fibrosed mass was found to be attached to the posterior end of spleen, encircling the pylorus of the stomach as well as extending to the fundus and jejunum. In view of its sive attachment the mass was not removed. Specimen was sent for histopathology which revealed the mass to emangiosarcoma. The owner decided to put the dog to sleep in view of the incurable nature of the growth. The ls of the both of these cases will be presented in the conference.

3.12 CLINICAL APPLICATION OF LIQUID NITROGEN CRYOTHERAPY IN ANIMALS

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A study on clinical application and evaluation of liquid nitrogen cryotherapy for treatment of thirty two selected neoplastic and nonneoplastic conditions in animals was conducted. These cases were grouped according thological conditions namely, Granulomatous lesions (Group-I; 6 animals), Fistulae or Sinus (Group-II; 5 animals), digital growth (Group-III; 7 animals) and Miscellaneous pathology (Group-IV; 14 animals). Cryoguard protected ns were cryofrozen to -200C either by spray or contact freezing at the site using liquid nitrogen cryosystem del-800-777-CRYO cryogun. A double cycle of freezing followed by autothawing or overlapping freeze thaw cycle adopted for cryofreezing of the pathological lesions. In some of the neoplastic conditions, surgical debulking was

followed by liquid nitrogen cryotherapy. The result of the study revealed that the instrument used is smaller, lighter and easy to handle however handling loss of liquid nitrogen during frequent loading and process of freezing was limitation. Cryotherapy was effective to treat granulomatous lesions and fistulae / sinus bloodlessly. Chronic non healing wounds responded well to liquid nitrogen cryotherapy as it showed the tendency of early healing. A procedural failure led to over freezing of the adjacent tissue during the treatment of a tumor in a dog. An excellent response as well as complete failure to cryotherapy in many of the animals signifies the importance of case selection.

3.13 EFFECT OF CINNOLINE SULPHONAMIDE DERIVATIVES AND METHOTREXATE IN THE TREATMENT OF CANINE MAMMARY TUMOURS

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The study was carried out in 20 female dogs of different breeds and ages divided equally into two groups (A & B) consisting 10 animals each. All these dogs were affected with spontaneously occurred mammary tumours. These cases were referred to the institute referral polyclinic. The chemotherapeutic agent, cinnoline sulphonamide derivative was administered @ 500mg orally in each spontaneously occurs canine mammary tumour cases in different breeds of dogs. The drug was found very much effective in 66% mammary tumour cases. The drug was effective in small size (2-3 cm) and recently developed tumours. However the derivatives found ineffective in large sizes of mammary tumours. The side effects (vomiting, alopecia and anorexia) were temporary and minimal. Treatment of mammary tumours with Methotrexate at the dose rate of 20 mg/m2 body surface area (BSA) (0.65 mg/kg b. wt) intravenously at weekly interval found to cause gradual tumour regression with 3-4 doses (success rate 45-52%). Combination therapy of Methotrexate (0.65 mg/kg b. wt) intravenously with a COX-2 inhibitor (Meloxicam) at the dose rate of 0.3 mg/kg b. wt orally daily during the entire course of treatment markedly reduced the size of the mammary tumours in 68% cases and caused partial regression in the remaining (32%) cases. No side effects were observed during this chemotherapy. Flow cytometric analysis of apoptosis in tumour regression during chemotherapy was performed using FACS based on MC 540 fluorescence. Percentage of apoptotic cells increased at succeeding weeks of chemotherapy as compared to prior values. Mammary tumours responded well to the combination of COX-2 inhibitor (meloxicam) with Methotrexate and proved as promising combinations as an adjunct therapy in the treatment of canine mammary tumours.

3.14 ENZYMATIC PROGNOSTIC MARKER OF CANINE MAMMARY TUMOURS

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The study was conducted in 85 clinical cases of canine mammary neoplasm (CMN'S) presented at institute referral polyclinic. The role of MMP (matrix metalloproteinases)-9 in canine mammary tumour was investigated. The pattern and level of expression of MMP-9 in sera and tumour tissue of canine mammary tumours were studied. 220 kDa, 135 kDa and 92 kDa were the three major forms of MMP-9 predominantly present in sera and tumour tissue of dogs, however, the level of expression of MMP-9 was more in tumor bearing dogs than in normal dogs. The MMP-9/MMP-2 ratio was more in tumour bearing dogs than in normal dogs. The level of MMP-9 was 2.137 fold higher in diseased sera and 6.48 fold higher in tumour tissue when compared to normal control. The level of MMP-9 in urine was found 6.9 fold increased in tumor cases. The sera samples collected from canines with mammary tumour were compared at different intervals of adjuvant chemotherapy by gelatin zymography. The pattern of expression of MMP-9 was also studied. The serum collected from canines with mammary tumour before the start of therapy showed higher level of expression of MMP-9. The level of expression of MMP-9 showed decrease with the course of treatment as compared to the normal dog. In serum samples of dogs with mammary tumour before the start of therapy 220 kDa, 135 kDa, 92 kDa forms of MMP-9 and 72 kDa MMP-2 were over-expressed. Particularly, the 92 kDa form of MMP-9 was over-expressed. The level of expression was found to be decreased at different intervals of treatment. In the sera of normal dog 220 kDa, 92 kDa and 72 kDa bands were observed and the 135 kDa band could not be observed. There was not much difference at the level of expression of MMP-2 between the serum of normal dog and mammary tumour affected dog. Sera samples from dogs with mammary tumour collected one month after treatment showed level of expression of MMP-9 almost same as that of normal dog sera. MMP (matrix metalloproteinases)-9 enzyme can be considered as a prognostic marker in canine mammary tumours.

3.15 EFFECTS OF DOXORUBICIN AS MONOTHERAPY AND COMBINATION THERAPY IN THE TREATMENT OF CANINE MAMMARY TUMOURS

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The study was carried out in 27 female dogs of different breeds and ages divided into two groups, (A & B) consisting 15 & 12 animals respectively. All these dogs were affected with spontaneously occurred mammary tumours. These cases were referred to the institute referral polyclinic. The anti-cancer drug-Doxorubicin was used as monotherapy in the animals of group A, whereas in the group B, Doxorubicin was combined with immunotherapy. Fifteen (15) dogs with spontaneous mammary tumours were randomly selected and included in the group A. Sizes of mammary tumour were varied in diameter. However, similar sizes of mammary tumours were included in this group to maintain the uniformity. The anticancer drug doxorubicin was administered at the dose rate of 60-75 mg/m2 BSA (1.2-2.4 mg/kg body weight) intravenously once in every three weeks. Ten cases responded very well and required second dose of doxorubicin and the tumour was completely regressed. No observable side effects were reported in these cases. In two cases, first dose of doxorubicin was administered and the case was also responded very well but it could not be followed up later on because the case was not reported to the clinic (owner transferred). In two cases, the owners sought for surgical excision of the tumourous growth in spite of partial regression of the tumour. One case of mammary tumour did not responded well to the treatment and died after 10 days of 2nd dose although partial regression of tumour was seen after 1st dose. The dog showed some side effects like inappetance, fatigue, weight loss etc and the animal also very aged (14 yrs). Twelve (12) dogs with spontaneous mammary tumours were included in this group (B). The drug doxorubicin was administered at the dose rate of 60-75 mg/m2 BSA (1.2-2.4 mg/kg body weight) intravenously once in every three weeks along with a herbal immunomodulatory drug "ImmuPlus" at the dose rate of 1 tsf orally in small sized dogs and 2 tsf orally in large sized dogs once daily for the course of therapy. Nine cases responded very well and required one dose of doxorubicin and the tumour was completely regressed. No observable side effects were reported in these cases. One case could not be followed up because the case was not reported to the clinics while in the other two cases, the owners sought for surgical excision of the tumourous growth because of the few side effects in spite of partial regression of the mammary tumour.

3.16 SURGICAL AND BEHAVIOURAL CORRECTION OF ACRAL LICK GRANULOMA IN A MALE DOG - A REPORT

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Acral Lick Dermatitis (or Granuloma) is a psychogenic disorder commonly seen in male dogs of large breeds above 5 years of age (Fossum, 2002) and characterised by obsessive licking of a particular site usually the carpus and/or metatarsus. An 8 year old German Shepherd dog, (with a previous history of chronic dermatitis), presented with a focal lesion of alopecia on the right metatarsal region in November 2007. The lesion was a raised red plague with hyperaemia. Laboratory tests showed no apparent parasitic cause. As the lesion increased in size medically despite aggressive medical treatment, aseptic surgical excision was carried out under general anaesthesia, 2 months later. Following excision, post surgical antibiotic therapy along with behavioural therapy was used to heal the surgical site and reduce the intensity of the behavioral disorder. The histopathological report was typical of acral lick dermatitis. The prognosis is guarded and recurrence high despite aggressive treatment (Slatter, 1993).

3.17 A RARE CASE OF PRECERVICAL UTERINE TORSION AND FOETAL RETENTION IN A GERMAN SHEPHERD BITCH

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In the scenario of dogs being an important member of the nuclear family, reproductive emergencies are increasing. Uterine torsion is one of the rare causes of canine dystocia which requires immediate emergency procedures. A female German Shepherd, 1.5 years old, was presented with hard abdominal swelling and reduced appetite. 13 days back she had some vulval discharge and teats engorged with milk but had showed no signs of whelping. The animal was active till the day before. A choclate colored fluid was aspirated from the small hard abdominal swelling

having only few RBC's and WBC's. A foetal skeleton was detected in the dorsal abdomen in the radiograph sugges of the uterine torsion or ectopic pregnancy. The condition was diagnosed as precervical uterine torsion on lapara and relieved aseptically under general anaesthesia. A minor complication of a mild edema around the site of su was observed. The animal fully recovered within a week.

3.18 SUCCESSFUL SURGICAL MANAGEMENT OF FECOLITH IN AN ADULT QUEE

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Obstipation is intractable constipation in which the animal is unable to successfully defacate. The ca are varied being intraluminal, extraluminal, or intrinsic. When all medical treatment fails colotomy is advoca (Aronsohn, M., 2003). Post operative recurrence is rare (Rosin et. al., 1988). A 1 year old queen was presented a District Veterinary Centre in April 2006 with a history of reduced appetite and loose motion for 3 days followed anorexia and absence of defecation. Hard abdominal masses were palpated. Faecal impaction in the digestive t was evident in the radiograph. Colotomy was done and the fecolith was relieved aseptically under general anaesthe The animal recovered uneventfully and has had no recurrence till date.

3.19 SURGICAL MANAGEMENT OF A RARE CASE OF APOCRINE DUCTULAR CARCINOMA IN A DOG - A CASE REPORT

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Apocrine Ductular Carcinoma is a new and controversial entry in dogs, similar to the human hriadenocarcino but without classical clear cell morphology (Gross, 2004 and Simko et. al., 2003). They are solitary dogs older than 6 years are predisposed to the condition (Kalaher et. al., 1990). Radical surgical excision is ad and recurrence is rare (Sastry,1963). A 2 year old German Shepherd was presented a fast growing prominent sw on the right cheek region in Novermber 2007. Physiological parameters were normal, general condition good and animal showed no discomfort. Aseptic surigical excision of the 7 x 6 x 3 cm size mass was decided and carried uner general anesthesia of a combination of Atropine, Xylazine, Ketamine and Midazolam. The tissue was beneath the skin surface, whitish, firm, lobulated in appearance. It was histopathologically diagnosed as a moder differentiated sweat gland adenocarcinoma. The owner was not regular for post surgical treatment and wound dehisce of the suture line was observed. No recurrence has been observed till date.

3.20 SEMINOMA WITH HYDROCOELE OF ECTOPIC TESTIS IN A DOG - A CASE REPORT

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A nine year old male Spitz weighing 5.5 kg was brought to the Veterinary College Hospital, Mannuthy with complaint of a swelling at the left inguinal region, appeared four days back. The dog was active and a with normal bowel habits. The swelling, on palpation, appeared turgid, painless and with a hard ovoid mass flo inside. The dog was monorchid with only the right testis in the scrotal sac. Plain lateral abdominal radiograph reve the presence of a soft tissue mass inside the fluid filled swelling. On ultrasound scanning a hypo echoic m surrounded by an anechoic area was detected. On exploratory surgery, the condition was identified as an enlar tumerous ectopic testis with hydrocoele and it was removed. It was recognised as a seminoma on histopatholog examination. The dog had an uneventful recovery.

3.21 SURGICAL EXCISION OF A LARGE LIPOMA IN A LABRADOR DOG

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A five year old male, Labrador dog was brought with a large globular swelling, having six inch diameter, cau to coastal arch on the left lateral abdomen, noticed since one month. The animal was active, alert and h normal feeding and voiding habits. On clinical examination the swelling was found fluctuating and soft in consisten

radiographical examination, the swelling was found to have a uniform soft tissue density and tentatively diagnosed tumour. Surgical excision of the mass was performed under atropine - xylazine - midazolam premedication and anaesthesia maintained with isoflurane. The entire mass weighing about 2.5 kg was separated from the abdominal muscles by blunt dissection through a lengthy cutaneous incision. Post operatively antibiotics administered parenterally and fluid collection in the wound was drained periodically. Histopathological examination tumour confirmed it as a lipoma. The wound showed clinical healing after a period of 8 days and the animal had uneventful recovery.

3.22 ULTRASONOGRAPHIC EVALUATION OF LOWER URINARY TRACT DISORDERS IN DOGS

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Three cases of cystic calculi, five cystitis and one each of bladder tumour and prostatic abscess were evaluated sonologically and correlated with radiographic findings. In dogs with cystic calculi, hyperechoic with acoustic shadowing was detected in bladder lumen. Moving hyperechoic masses with out acoustic shadowing also noticed indicating the presence of intraluminal blood clot in two dogs with cystitis. In dog with prostatic enlargement, both hyperechoic and hypoechoic irregular areas suggestive of prostatic abscess were detected. In dog with tumour of bladder, hyperechoic intraluminal structure was detected indicating a space occupying lesion with in the bladder.

3.23 UROLITHIASIS IN DOGS- A STUDY OF EIGHT CLINICAL CASES

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The study was conducted in eight clinical cases of canine urolithiasis. The cases were diagnosed on the basis of history, clinical signs, radiography and ultrasonographic examination. The radiography revealed the presence of calculi in the ventral groove of os penis in five cases, posterior to the os penis in two cases, at ischial arch of urethra in one case. The cystic calculi detected in three cases. Of the eight cases, calcium oxalate alone in five, calcium oxalate with uric acid in another three and calcium carbonate in two cases were the major component. From the study it was found that the calculi containing calcium oxalate, calcium carbonate and uric acid were mostly associated with Streptococcal infection. The most sensitive antibiotic was ciprofloxacin, followed by amoxicillin. Depending upon the location of calculi, surgical management was performed by cystotomy/ urethrotomy or both and all the dogs showed uneventful recovery.

3.24 SURGICAL MANAGEMENT OF CORNEAL AFFECTION IN DOGS

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Surgical treatments for different corneal affections were carried out in six dogs of different breed (six Chinese pugs and one GSD) and age under general anaesthesia with the help of operating microscope. All the dogs were put to a preoperative instillation of topical antibiotic, ciprofloxacin three days prior to surgery. The cases included two cases of reducible/ irreducible staphyloma, one case of descemetocoele and two-multiple/spreading corneal ulcer. Reduction of the prolapsed iris and suturing or corneal wound was carried out in reducible staphyloma and keratectomy and suturing in irreducible staphyloma. Superficial keratectomy with third eyelid flap was carried out in multiple/spreading ulcer. Temporary tarsorrhaphy was performed in all cases. Topical application of antibiotics, anti-inflammatory and cycloplegics and parenteral antibiotics were successful in preventing post operative infection, pain and formation of anterior synechiae. Of the six cases complete corneal clarity was obtained in two cases by 21st postoperative day. Cornea remained hazy in two and completely opaque in other two on 60th postoperative day.

3.25 MANAGEMENT OF CORNEAL ULCERS IN CHINESE PUGS

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Deep corneal ulcers in six Chinese pugs were medically treated using a combination of topical antibiotic (ciprofloxacin), anti-inflammatory drug (flurbiprofen), cycloplegic (tropicamide) and oral administration of cephalexin at the rate of 22 mg/kg for five days. Corneal swab cultures were sensitive to ciprofloxacin in all cases. Corneal clarity and a negative response to fluorescine dye test were obtained in all cases by 21st day. Corneal pigmentation was noticed in three cases, which resolved by 60th day.

3.26 EXTRACAPSULAR CATARACT EXTRACTION WITH INTRAOCULAR LENS IMPLANTATION IN CANINES

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A clinical study on extracapsular cataract extraction with intraocular polymethylmethacrylate lens (41 D, 6 mm optic and 17 mm haptic) implantation was conducted on 14 eyes of 13 dogs with mature cataract under propofol (5 mg/kg iv) anaesthesia. Cataract surgery was done using coaxial operating microscope (OM-8 Takagi, Japan). After 3 months of cataract surgery, restoration of ambulatory vision was graded "good" in 57% cases (8 out of 14)) followed by 'fair' in 29% cases (4 out of 14) and 'failure' in 14% cases (2 out of 14).Intraoperative complications observed were chemosis (2 cases), iris buldging (2 cases) and haemorrhage (1 case) which were managed during surgery. Post operative complications included corneal opacity (4 cases), corneal edema (3 cases), posterior capsular opacity (1 case) and uveitis (1 case) which were corrected using topical antibiotic-steroid combinations, NSAIDs and mydriatics

3.27 XENOGENIC CROSSLINKED ACELLULAR DERMAL GRAFT FOR REPAIR OF PERINEAL HERNIA IN A DOG

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A male non-descript dog 8 years of age was presented to the poly clinics of the Institute with the history of swelling at the perineal region since last 4 months, which was gradually increasing in size. There was difficulty in defecation. On palpation, animal did not feel pain and the contents were reducible. The appetite of the animal was slightly reduced. Animal had normal temperature, respiration and pulse rate. The case was diagnosed as a case of perineal hernia. The hernioplasty was done under xylazine (1 mg/kg) and ketamine (5 mg/kg) combination given intramuscularly. An elliptical incision was made on the swelling. The hernial contents were pushed back and the defect was repaired with xenogenic acellular dermal graft of rabbit crosslinked with 1% EDC (1-ethyl-3-(3-dimethyl aminopropyl carbodiimide) for 48 h. The graft was sutured with the surrounding muscles by PGA suture material. Skin was closed with nylon suture material using mattress suture pattern. Amoxicillin and clavulanic acid (Temobax) @ 10 mg/kg body weight for 5 days, orally. Nimulslide (Nise) 5 mg/ kg body weight was administered orally for 3 days. Antiseptic dressing of suture line was done with 5% povidone iodine for 10 days postoperatively. Skin sutures were removed on 15 postoperative days. Mild inflammatory swelling was noticed around incision line up to 7 days, which was completely subsided by 15th postoperative day. The telephonic communication revealed no recurrence upto 6 months post-operatively.

3.28 REPAIR OF PERINEAL HERNIAS BY PROLENE SUTURE AND CASTRATION TO PREVENT ITS RECURRENCE

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Three clinical cases of unilateral perineal hernia cases were presented to Teaching Veterinary Clinical Complex, Bidar. All three animals were uncastrated. The age of the animals ranged from 5 to 8 years. Clinical examination revealed swelling on the side of anal opening and history revealed that animal had difficulty in defecation. All the animals were premedicated with atropine@0.045mg/kg s/c,triflupromazine@1mg/kgIV and thiopental sodium @2.5mg/kgIV.Additional epidural anaesthesia (L7-S1) of lignocaine 15 ml was given.The animals were placed in sternal recumbency with hind quarters elevated.The herniated intestinal segments were pushed back and The pelvic diaphragm defect was repaired by prolene suture by interrupted pattern.Castration was performed in all the cases.One year follow up showed no recurrence in all the cases.

3.29 CYSTOLITHIASIS IN A GERMAN SHEPHERD BITCH AND ITS CLINICAL MANAGEMENT

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An eight years old German Shepherd Bitch was presented at campus veterinary hospital PGIVAS Akola, with a camplaint of dysuria and occasional anuria suspecting the case to be of urolithiasis. The blood biochemistry indicated an elevated BUN and serum creatinine levels and abdominal sonography was done. The sonography confirmed the presence of one large cystoliths laparocystomy was done through prepubic paramedian incision to remove bladder calculi. The surgical repair was done in routine manner. A course of antibiotics comprising ceftriaxone (500 mg IM bid) and norfloxacin (200 mg bid orally) was given for five days along with regular antiseptic dressing. The owner was advised to add vinegar in the drinking water skin sutures were removed at 10th postoperative day. Recovery was uneventful.

3.30 SURGERY IN CANINE POLYCYSTIC KIDNEY ASSISTED BY COMPUTED TOMOGRAPHY

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In canine practice the outcome of major surgical procedure depends on the degree of accurate diagnosis. Cases are usually referred in teaching hospitals for second opinion or to aid diagnosis. In complicated and advanced cases quicker diagnosis is even more crucial as condition of the patient may not be entirely free from risk. The preceding treatment and surgical procedures may mislead diagnosis. The delay in referring by a veterinarian may also worsen the condition. The risk of surgical intervention increases as time lapses and diminishes the possibility of good outcome. In contrast the owner may expect prompt outcome of a seemingly protracted condition. In such cases choice of diagnostic technique is paramount important. This paper presents the use of advanced diagnostic tool such as C.T scan in a referred and complicated case. A female boxer dog aged ten years with history of persistent heamaturea for more then eighteen months was referred to Bombay Veterinary College .Accompanying clinical signs were of moderate abdominal distension, depression, anorexia, sporadic emesis, polydipsia, polyuria and weight loss. Routine examination carried out were urine analysis, hematology, USG and Radiography. Survey radiograph indicated structural abnormality of the right kidney. USG revealed a change in contour and size of the kidney. Computed tomography was performed for detailed organ assessment. C.T was performed both plain and contrast using a spiral C.T. Plain scan showed a grossly enlarged right kidney. Large multiple nodules were observed in the cranial pole of the kidney. Contrast studies with Gadolinium 0.1mmol/kg body weight given as intravenous bolus to study shape, signal intensity, contrast enhancement pattern of the kidney. Contrast study provided superior images of renal parenchyma, renal pelvis and ureters. The case was diagnosed to be of Polycystic kidney with large

multiple cysts. Nephrectomy was performed through ventral midline incision. Follow up of the case revealed [illegible] function was normally maintained by contralateral kidney so far one year following nephrectomy. This paper presents successful surgery of an exceptional case of polycystic kidney in a boxer by aid of computed tomography.

3.31 PREDICTION AND MINERAL ANALYSIS OF STONES IN CANINE PATIENTS SUFFERING FROM UROLITHIASIS

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The study was conducted on 21 clinical cases of dogs suffering from urinary tract calculi. Radiopacity, urinalysis, physical characteristics of stones and blood biochemistry were used as guide in prediction of the types of uroliths. Under general anesthesia the uroliths were surgically retrieved by cystotomy and urethrotomy (n=18) and from kidney at necropsy (n=1). Radiography diagnosed 19 out of 21 urolithiasis cases in the urinary bladder and 12 out of 13 in the urethra while ultrasonography diagnosed 17 out of 21 cases of urolithiasis in the urinary bladder. Out of these, the chemical composition of uroliths was predicted in ten randomly selected cases. The prediction matched in six (60%) cases when compared with the results of uroliths analyzed by Fourier Transform Infra-red spectroscopy. The mineral analysis showed that most of the stones were composed of magnesium ammonium phosphate followed by calcium oxalate.

3.32 CLINICAL AND HAEMATOBIOCHEMICAL CHANGES FOLLOWING ADMINISTRATION OF VINCRISTINE SULPHATE IN DOGS AFFECTED WITH TRANSMISSIBLE VENEREAL TUMOR

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The study was conducted in 10 dogs (Six female + four male) braught to the clinical complex, R.V.C. with serosanguneous discharge and growth in the urethral passage. Diagnosis was made confirmed by physical and clinical examination of patients.

All the animals were treated with Vincristine sulphate @ 0.025 mg/kgbwt intravenously at weekly intervals. 80% dogs were responded positively in terms of 100% regression without relapse. Only two dogs exhibited 90% remission. There was Transient and nonsignificant alteration in SGOT, SGPT and alkaline phosphatase after Ist treatment but remain within normal physiological limits after 3 weeks. There was significant increase in PCV, Hb and decrease in glucose levels after 2 successive treatment. A nonsignificant alteration were recorded in TLC, DLC, BUN and creatinine and total protein. Non-descript breeds were mainly affected. The occurrence was maximum in females as compared to male. However, old animals were mainly susceptible (1-10 yrs age). 10% of the patient treated with vincristine sulphate experienced side effect in form of vomition or leukopenias or both.

3.33 THERAPEUTIC PROTOCOL FOR PERIODONTAL SURGERY IN CANINE: A CLINICAL STUDY

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Study was conducted on 80 adult dogs, irrespective of age; breed and sex subjected to supra and sub gingival scaling for moderate to severe periodontitis during Jan. to June 2008 in the Dental surgical unit of the Department. Preoperatively, parentral administration of Amoxycillin-cloxacillin, Nimesulide-seropeptidase, Ranitidine and Dextrose -Normal saline- multivitamin and dexamethasone and oral application of chlorhexidine-metronidazole gel for 3 to 5 days makes the animal fit for periodontal surgery and increases the prognosis for favorable outcome. Fasting is not mandatory in canine dental surgery though it may help in anaesthesia. Sterilization of instruments in formaldehyde chamber was found satisfactory for dental surgery. Atropinization and Xylazine IM with topical spray of 14% lignocaine seems to be a better choice in 65% of the dogs for supra and sub gingival scaling while addition of Ketamine IV was found necessary in rest 35% of the dogs specially in young, furious and those suffering with moderate to severe periodontitis. Ultrasonic dental scalar seems to be superior instrument over the manual scalars in many ways however manual scalars were found necessary with ultrasonic scalar for severe cases of periodontitis and

ed conditions. Use of tincture Benzoin locally was found satisfactory to check haemorrhage during scaling while drogen peroxide proved its superiority in cleaning the teeth and maintaining asepsis. Post operatively, intra oral acy of Chlorhexidine -Metronidazole gel was noticed better than chlorhexidine alone. Use of Ranitidine checks ity and maintain appetite post operatively. Nimesulide or Meloxicam provides adequate post operative analgesia. obacillus oral preparations with cold liquid diet provide satisfactory alimentation for the dental cases. Anorexia). Emesis (5%), Inflammatory pain, fever ((22%) and septicaemia (3%) were noticed as post operative complications ch were manageable by symptomatic treatment. Only two animals died out of 80 cases probably due to septicaemia.

3.34 SURGICAL MANAGEMENT OF INTUSSUSCEPTION BY INTESTINAL ANASTOMOSIS WITH ENTEROPLICATION - A CASE REPORT

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A 4 months old female young dog was brought to our clinic with the history of a prolapsed mass through the for past one week. Clinical examination revealed the prolapsed mass is a part of intestine and concluded that case of intussusception. The prolapsed intestine was lubricated and reintroduced into the abdominal cavity and a age shaped intestinal loop was able to feel on palpation. Medical management was failed to relive the susception. Under general anesthesia, the intussusception was exteriorized through mid ventral abdominal on and the telescoped intestinal loop was slided as much as possible. About 15 cm length of necrosed intestine resected in a usual procedure and intestinal anastomosis was performed. To avoid reoccurrence, enteroplication performed. Abdominal incision was closed by usual manner. Food withheld for 48 hrs and water withheld for 24 postoperatively. No postoperative complication was observed. With intensive postoperative management the dog e to normal life completely after a week even a delayed case of intussusception.

3.35 A CLINICAL STUDY ON THE INCIDENCE OF PERIODONTAL DISEASES IN CANINES AND ITS SURGICAL TREATMENT

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A total of 200 cases of dogs were examined for periodontal disease of which 21 cases showing varying degrees of periodontal disease were treated surgically and the extent of recovery was studied for 1 month treatment. Depending on severity, periodontal disease was divided into 3 grades; grade-I (Mild), grade-II (moderate), -III (severe). Anaesthetic management was studied in 20 cases divided into 2 groups; Group-A (Triflupromazine hydrochloride @0.5mg/kg IV and propofol @ 3mg/kg IV and Group-B (propofol alone @ 5mg/kg IV).Ultrasonic scaler used to clean the tartar off the tooth. The study revealed that of the 200 cases examined 89% cases had some of periodontal disease. 80% were in the age group of 4-10 years. Oral radiology is an important tool in osis of periodontal disease. It was preferred to use propofol alone without any pre-anaesthetic for scaling due to duration of anaesthesia and faster recovery. Ultrasonic scaler reduced 33.33% of the time taken by hand scaling th. After scaling, 30% cases showed absence of halitosis while 70% showed reduction in halitosis. In most of cases an improvement in appetite was observed post scaling.

3.36 CLINCAL STUDY OF EXTRACAPSULAR CATARACT EXTRACTION IN CANINES

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Out of 29 cases screened, 9 eyes of 7 dogs with mature cataract were selected for the treatment of cataract by Extracapsular Cataract Extraction method. Complete physical and haematological examination of each was performed to ensure that vital organ functions were reasonably normal. Anaesthesia was induced with e and Diazepam. Retrobulbar nerve block with 2% lignocaine hydrochloride was performed behind the globe. a lateral canthotomy, a 3-4mm stab incision was made on the limbus at 2 o'clock position through which y was done and the nucleus was removed. Results were interpreted in 2 ways viz. surgical result (good/ e) and visual result (presence or absence of ambulatory vision). At the end of 3 months, success rate of

88.88% was achieved in terms of return of ambulatory vision; while good surgical result was achieved in 77.7[illegible] cases. Complications like corneal opacity, wound leakage, posterior synechia and staphyloma were obser[illegible] Extracapsular cataract extraction is preferred to treat mature cataract.

3.37 VERTICAL EAR CANAL RESECTION IN A DOG INVOLVING SEBACEOUS EPITHELIOMA - A CASE REPORT

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A 13 year old, Spitz dog was presented with bleeding from left ear. External examination of the vertical [illegible] canal revealed hard mass and animal showed severe pain on palpation. Treatment with parentral antibio[illegible] and anticoagulants offered temporary relief but the condition recurred soon. Under general anaesthesia, vertical [illegible] canal was resected approximately 2 cm dorsal to the horizontal ear canal. Doral and ventral flaps were made [illegible] sutured to the skin creating a drain board. Skin was apposed with interrupted pattern and over head bandage appl[illegible] Elezebethan collar was applied to avoid self-mutilation. Daily dressing, parentral antibiotics and removal of sutures [illegible] 10th postoperative day followed this. Histopathological examination of the resected vertical canal revealed sebaceo[illegible] epithelioma.

3.38 PIECES OF PLASTIC HOSE PIPE AS FOREIGN BODY IN THE INTESTINE OF A CHIPPIPARAI DOG - A CASE REPORT

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A 10 month old, Chippiparai dog was presented with occasional vomiting & frequent diarrhoea, often wi[illegible] mucous and blood. Abdominal palpation showed an enlarged colon with hard faecal mass. Animal did [illegible] resist or felt pain while palpation. Plain radiograph revealed enlarged faecal filled bowel with gas and pieces of forei[illegible] bodies. Barrium contrast study indicated delayed transit time. Medical treatment with stool softeners and cisapri[illegible] achieved no progress. Affected segment of the intestine was exteriorized & enterotomy was performed to remove [illegible] foreign materials and the impacted fecal material was evacuated out. The removed faeces contained pieces of plas[illegible] hosepipe and sand particles. Enterotomy and laprotomy incision were closed by routine method. Postoperative flu[illegible] therapy was continued for one week along with parentral antibiotics. Dressing of the wound was done daily & sutur[illegible] were removed on 8th postoperative day.

3.39 SEROMUSCULAR EXTRAMUCOSAL VS SEROMUSCULAR MUCOSAL INTESTINAL ANASTOMOSIS USING SIMPLE INTERRUPTED SUTURE PATTERN IN DOGS

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This study was carried-out to compare the healing pattern of seromuscular extramucosal and seromuscu[illegible] mucosal intestinal anastomosis.A total of 6 female mongrel dogs were used in this study. Under isoflura[illegible] general anaesthesia "end to end" anastomosis were performed at two places i.e. proximal and distal jejunum us[illegible] seromuscular extramucosal with seromuscular mucosal suture techniques respectively .Simple interrupted sut[illegible] pattern was applied using polydioxanone II -2-0 monofilament suture materials in both the site. All the animals we[illegible] assessed throughout the post-operative period and euthanized at day 10 and day 21 post-operation. Healing patt[illegible] of both techniques was assessed at necropsy and from the histopathological evaluation. The fibroblast at anastomos[illegible] site was also counted using image analyzer on both post-operative days. Seromusular mucosal techniques show[illegible] more intra-abdominal organ adhesion at necropsy and muscular discontinuity in the histopathological studies. Howe[illegible] seromuscular mucosal technique showed mucosal herniation into submucosa at both post-operative days. The pat[illegible] way of the suture materials was not completely closed in both techniques .The fibroblast count revealed no signific[illegible] differences between the two suture techniques at day 10 and 21 post- surgery. Although both techniques are suita[illegible] to perform intestinal anastomosis in dogs but seromuscular extramucosal techniques showed reduced abdomi[illegible] organ adhesion.

3.40 SURGICAL GASTROINTESTINAL TRACT EMERGENCIES LESIONS IN DOGS AND CATS- A REVIEW OF 70 CASES

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Surgical gastrointestinal tract emergency is gastrointestinal condition that has developed which needs immediate exploratory surgery.The aim of this study was designed to summarize the presenting complaint clinical signs, etiology, clinicopathological, radiographic and ultrasonographic findings. The various surgical techniques were evaluated based on the treatment outcome. Medical record of dogs and cats with surgical gastrointestinal emergencies lesions over a five years period in UVH (January 2003 to December 2007) were reviewed. Information obtained regarding patient signalments, physical examination, blood parameter result, radiographic and ultrasonograhic findings. Etiologies, surgical findings, post-surgical data recorded included treatment administered, complications experienced, and hospital outcome and outcomes were tabulated, graphically analyzed. Eight types of lesions were encountered. Foreign body obstruction (FBO) 45.7% (32/70), GDV 8.6 % (6/70), intestinal intussusception 1.4% (1/70), abdominal hernia 2.7% (2/70), intestinal pseudo-obstruction 4.3% (2/70), colon impaction 8.6% (6/70), rectal prolapse 27.1% (19/70) and gastrointestinal neoplasia 1.4% (1/70). Common clinical signs of GIT lesions included inappetance/anorexia, vomiting, depression/weak, dehydration, pale mucous membrane, constipation, abdominal distension and diarrhea. Neutrophilia is the most consistent finding. Foreign bodies can be identified by survey radiograph and contrast study based on their radiodensity. Stomach, intestine filled with gas or fluid was commonly seen in intestinal obstruction cases. FBO cases mostly found in Mongrel and Bull mastiff. Fish and chicken bones, needle and thread, steel wire, fish hook and nylon string, socks, sponge, fruit (durian) seed, staple, rubber band, small plastic, table cloths, pebbles, ball, string, cotton thread, and hairball were foreign objects found in GIT. Unusual foreign bodies such as steel wire and durian seed were found. Major surgery included esophagotomy (2.4%), gastrotomy (12%,) gastrotomy and gastropexy (7.2%), enterotomy (13.3%), multiple enterotomies (2.4%), intestinal anastomosis (9.6%), colotomy (6%), subtotal colectomy (3.6%) and colopexy (13.3%). Minor surgeries included manual removal of F.B (7.2 %) and manual reduction of rectum by using purse string suture (22.8%) under general anesthesia. The recurrence rate of purse string suture reached 68.4%. Successful treatment outcome was achieved on 92.8% of patients.

3.41 A CASE OF COMBINED URINARY BLADDER MUCOSAL HYPERPLASIA AND CYSTIC CALCULI IN A BITCH - A REPORT

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A nine year old female spitz dog was presented to the Veterinary College Hospital with a history of chronic hematuria and intermittent anorexia. On clinical examination a mass was felt on palpation of caudal abdomen. Radiography of lateral abdomen revealed single round radiopaque cystolith. Exploratory laparocystotomy was performed and large single cystic calculi was removed. On further exploration of bladder a large soft mucosal mass was felt adhering to bladder mucosa, which was excised and sent for histopathology. The bladder, abdomen and skin wounds were closed. Histopathology of cystic mass revealed mucosal hyperplasia of bladder. The animal recovered uneventfully.

3.42 INTESTINAL OBSTRUCTION DUE TO SHOE SOCKS IN TWO DOGS

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Intestinal obstructions are common in dogs due to their indiscriminate feeding habits and swallowing without chewing. An 8 month old Mastiff male dog was presented to the Veterinary College Hospital, Bangalore with a history of chronic vomition and dyschezia for 4 days and another dog of 2 years of age, Labrador Retriever was presented with the similar complaint. Animal was started immediately on fluid therapy and antibiotics. The plain radiograph did not give clear cut picture of intestinal obstruction except the gas filled intestines. The 12 hr Barium intestinal transit time (ITT) revealed complete stasis of barium in the small intestine suggestive of intestinal obstruction. Both the animals were subjected to exploratory laparotomy and obstructing segment of intestine were explored and exteriorized at the ileum region. The enterotomy revealed socks in both the cases. The intestinal wounds were closed in simple interrupted manner with chromic catgut suture material. The peritoneal cavity was lavaged with warm normal saline. The surgical wound was closed in the routine manner. Both the patients recovered uneventfully.

3.43 AN UNUSUAL CASE OF INTESTINAL OBSTRUCTION BY A STONE IN LABRADOR DOG

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A one and half year old Labrador Retriever male dog was presented to the Veterinary College Hospital with history of vomition for one week and refractory to medical treatment given. On physical examination animal was dehydrated, dull and depressed. On abdominal palpation, mass was felt at the cranial abdomen. Plain radiograph of lateral abdomen revealed radiodense foreign body at the cranial abdomen. It was decided for exploratory laparotomy and on exploration, a hard mass was found in jejunum. The enterotomy was performed and obstructing material removed was single big stone with bone pieces. The intestine was closed by simple interrupted suture pattern with knots inside the lumen. Abdominal wound closed as per as the standard procedure. The animal recovered uneventfully.

3.44 A CASE OF GASTRIC DILATION AND VOLVULUS IN A DOG

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A 18 months old great dane dog was presented to Veterinary College Hospital, Hebbal, Bangalore, with severely distended abdomen. Lateral radiograph of the abdomen revealed an extensively gas-filled stomach. The animal was prepared aseptically on the mid-ventral abdomen. A mid-ventral incision was made to approach the abdominal cavity. The stomach was highly distended and using an 18 gauge needle it was punctured and the gas was relieved. Then an incision was made on stomach and gastric contents were emptied (gastrotomy). Gastropexy to abdominal wall was also performed later. The mal-positioned spleen was exteriorised and corrected the position. The wounds were later closed routinely. Post-operatively the dog was given antibiotics (Ceftriaxone 500 mg) twice daily and inj. Metronidazole once daily intra-venously. The dog was put on parenteral fluids for 6 days.

3.45 UROLITHIASIS IN A DALMATIAN DOG

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A One and half year old male Dalmatian dog was presented to Veterinary College Hospital, Bangalore with history of urinary incontinence and anorexia since few days. On routine physical examination animal was dull and depressed. The Laboratory examination of urine sample revealed albumin, erythrocytes, sediments and urine pH was 6.2. Catheterization was not successful.The radiolograph did not reveal any radioopaque calculi in urethra and bladder. The ultrasound scanning did not reveal any growth or calculi in urinary bladder or urethra. On exploratory urethratomy a radiolucent calculi was found behind the ospenis and was removed, cystotomy was performed to remove the remaining calculi. After thorough flushing of bladder by normal saline through catheter the bladder was closed using 2-0 chromic catgut by Cushing and Lambert suture. The urethra was closed by interrupted sutures and the abdomen by 1-0 vicryl suture material and the skin by coonventional sutures. The antibiotics was given for 7 days and regular wound dressing yielded uneventful wound recovery..

3.46 GASTRO INTESTINAL OBSTRUCTION BY A LINEAR FOREIGN BODY

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A 2 year old Mudhol hound female dog was presented to the Veterinary College Hospital, with a history of vomition and anorexia .On physical examination a mass felt in the abdomen. The plain radiograph revealed radiodense mass in stomach and in jejunal part of intestine. The contrast radiograph revealed partial obstruction in the stomach and in the proximal part of jejunum. The animal was prepared for the aseptic surgery. Exploratory laparotomy was performed. The jejunum was exteriorized, enterotomy was done to remove the foreign body but it was continuation with linear foreign body cranially adhereing to stomach. Gastrotomy was done for removal of foreign body. Gastrotomy wound was closed. Due to damage to intestine, intestinal resection was performed and anastomosed. Abdomen was closed as the standard procedure. The animal was on fluid therapy for three days. The dog had uneventful recovery.

3.47 HEMANGIOSARCOMA IN A DOG WITH LUNG METASTASIS

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An eleven year old German Shepherd female dog was presented to Small Animal Out Patient Unit, Madras Veterinary College Teaching Hospital, with the history of anorexia and vomition for four days and exercise intolerance for about four months. The body condition of the animal was found to be very poor and the clinical examination revealed pale mucous membrane, dark to purple skin lesion and distended abdomen. In the lateral thoracic radiograph, numerous metastatic lesions were noticed. Ultrasonography of abdomen revealed anechoic area in the spleen and liver, suggestive of tumors of spleen and liver. Haematological and blood bio-chemical parameters were found to be varied from the normal range. Surgical management by total splenectomy was planned but the animal collapsed immediately after mid ventral celiotomy. Postmortem lesions also confirmed the tumor mass as hemangiosarcoma and the case will be discussed in detail.

3.48 INGUINAL HYSTEROCELE IN A BITCH AND ITS SURGICAL MANAGEMENT

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A spitz female dog of 12 years old was presented with an anamnesis of left side (unilateral) inguinal swelling, and absence of defecation and urination for the past two days. Physical examination revealed a soft, doughy, irreducible mass in the inguinal region. The case was tentatively diagnosed as inguinal hernia. Survey radiograph and barium meal study revealed no intestinal involvement. The clinical signs revealed no major systemic abnormalities except the gradual increase in the size of the mass towards the left side on the ventral aspect of the abdomen. Surgical management was done by performing herniorraphy and the contents noticed were the horns and the cranial body of the uterus. The animal made an uneventful recovery and the case will be discussed in detail.

3.49 SURGICAL MANAGEMENT OF VAGINAL HYPERPLASIA IN DOGS

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Eight cases of redundant vaginal hyperplasia in different breeds reported at Kerala Agricultural University Veterinary Hospital, Kokkalai were subjected to detailed study. All the animals were subjected to atropine-xylazine- ketamine anaesthesia and the urethral meatus was catheterized prior to surgical incision. The prolapsed vaginal mass was removed through sub- mucosal resection by simultaneous cutting and suturing technique-using catgut. All the dogs had an uneventful recovery.

3.50 PYOMETRA IN CAT : A CASE REPORT

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A 3 ½ year old cat was presented in a clinic with the symptoms of anorexia since last eight days with dull, depressed presentation. The abdomen was distended. The clinical examination revealed the symptoms of anemia, dehydration and also the vaginal discharge. The radiographic facility was not available hence on the basis of clinical examination and the symptoms instigated to prefer the conclusion that, the cat was suffering from metritis. Ovariohysterectomy was performed in attempt to find the remedy. Postoperatively the cat was recovered uneventfully.

3.51 SURGICAL MANAGEMENT OF TUMOUR AFFECTING UPPER PALATE AND COMMUNICATING WITH NOSTRIL IN A CROSSBRED DOG

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A seven year old crossbred dog was presented with the history of swelling in the right nasal passage obstructing inhalation leading to difficult breathing. There was occasional bleeding from the right nostril and mouth. Clinical examination revealed tumour involving upper palate which was communicating with the right nostril of the same side. Aseptic surgery was carried out under Xylazine- Ketamine general anaesthesia. The small opening present on the upper palate from the inner side was extended and the soft tissue tumourous mass was carefully removed. Chemical cauterization of the cavity and the part involving the nostrils was done. The wound was left open as the tissue was not holding the suturing material. Antiseptic dressing was done Betadine and Wisprec spray. Post operatively injection of cefataxim (500mg), melonex (2ml) and dexamethasone (8mg) were administered for 7, 5 and 3 days respectively. Two injections of Vincristine Sulphate @0.025mg/kg body weight were given at weekly interval. No reoccurrence was recorded in a follow up period of three month.

3.52 SCHIOTZ'S AND APPLANATION TONOMETERY IN DOGS

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44 normal clinically healthy and 15 ophthalmic clinical cases of dogs of either sex were subjected to Applanation and Schiotz's tonometeric procedures to record their intraocular pressure (IOP). Three weights i.e 5.5, 7.5 and 10g were used for recording IOP with Schiotz's tonometer. Both the canine and human calibration tables were also used in Schiotz's tonometery for calculating and comparing IOP values together and with applanation tonometer. The paper describes the techniques and detailed comparative evaluation of above mentioned techniques.

3.53 STUDIES ON THE INCIDENCE OF EYE AFFECTIONS IN DOG

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81 dogs with various ophthalmic conditions were identified among 904 clinical cases presented to Veterinary College clinics of CSKHPKV, Palampur during 1 year of study. The overall incidence of ocular affections observed in dogs was 8.96%. Among these, 54.32% cases were actually presented for management of ophthalmic condition (Primary cases) whereas; in the rest the conditions were incidental finding (Secondary cases). The paper describes the details of other epidemiological findings and types of cases with their diagnosis and management.

3.54 DUODENAL TUMOUR IN A DOG?A CASE REPORT

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A four and half year old male dog weighing 28 kgs was referred to small animal soft tissue outpatient of Madras Veterinary College Teaching Hospital with a history of palpable abdominal mass and a progressive deterioration in health for the past one month.Haematological evaluation indicated anemia. The animal was transfused with fresh whole blood twice at an interval of one week .Post transfusion revealed a moderate improvement in blood picture. Ultrasound of the abdomen indicated haematoma of spleen.ECG showed reduced ?R? wave and changes in ?T? Wave. It was decided to perform an exploratory coeliotomy. The abdominal cavity was approached through a standard linear incision under propofol induction and maintained. by Sevoflurane. Investigation revealed a hard mass about a size of 4 cms along the cranial portion of duodenum with. patent duodenal lumen. The mass was resected and intestinal anastomosis was done .Histopathology confirmed Lymphoma. The dog showed an uneventful recovery

3.55 CYSTOTOMY IN A BITCH

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A six year old pomerian bitch was presented in the Local Veterinary hospital Gwalior with the complain of anorexia, difficult micturation (arched back) and high fever. On catheterization no obstruction in the urethera was detected. The radiographic examination of the abdomen revealed a radio opaque mass in the bladder, which was diagnosed as cystolith. The corrective measure which was planned was cystotomy. A posterior midline incision was given and bladder was exteriorised by giving an incision on the dorsal aspect and a cyst of the size of 3 cm in diameter was removed. A catheter was passed from the urethera in a retrograde manner but no other obstruction was detected. The bladder walls were very thick and fibrosed which were sutured using 1-0 catgut in Lamberet fashion and the laparatomy incision was closed as usual. Sutures were removed 10th post operative day. The antibiotic therapy was continued for five days , the bithch started normal urination normally on second post operative day and the animal recovered uneventfully.

3.56 INTRA ORAL TUMOURS IN DOGS - A REPORT

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Dogs presented to the department with complaint of inappatence dysphagia, dyspepsia and vomition symptoms were examined for suspected lesions in the oral cavity revealed masses attached to either to palate, or gums etc. Oral tumors like odontoma, oral papilloma melanoma and basal cell carcinoma etc were diagnosed based on histopathological examination. These tumors were excised surgically and appropriate therapy was followed. In all these cases the parameters like incidence, Clinical symptoms, diagnosis, line of treatment, histopathological features and post operative treatment were studied.

3.57 A STUDY ON INCIDENCE AND MANAGEMENT OF CANINE NEOPLASMS IN PALAMPUR

NAMEIRAKPAM UMESHWORI DEVI, ADARSH KUMAR, S.P. TYAGI, M.S. KANWAR, N.P. KURADE and A.C. VARSHNEY
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75 cases of tumours in dogs were recorded (5.033%) in a study conducted at the Clinics of College of Veterinary and Animal Sciences, CSK HPKV, Palampur from December 2006 to April 2008. Main groups of tumours recorded were mammary (13.33%) and genital tumours (33.33%). Individually, canine transmissible venereal tumour was the most common tumour (25.33%). Incidence was highest in the age group of 8-10 years (26.66%) followed by age groups >12 years (22.66%), 10-12 years(16%), 4-6 years(14.66%), 6-8 years (8%), 2-4 years (8%) and <2 years (4%). Sex-wise more incidences were observed in female animals (56%). Malignancy was recorded in 32% of the cases. Pulmonary metastasis was observed in animals with hepatoid gland adenoma, complex mammary carcinoma, canine transmissible venereal tumor, osteosarcoma and ossifying fibroma. TNM evaluation was followed for surgical and/or medical treatment.

3.58 A RARE CASE OF MYXOSARCOMA IN A 13 YEAR OLD FEMALE BITCH

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A 13 year old bitch was presented with a history of growth of approximately the size of coconut on the right thoracic wall extending from 6th to 9th rib posterior to the right elbow. Fine needle aspiration cytology of growth suggested of malignant lymphoma. The case was not operated due to owner's reluctance for operation. After period of 1 ½ years, approximately 30 % increase in the size of growth was noted suddenly. The hematological reports showed persistent leucocytosis (neutrophilia). Radiography and sonography revealed encapsulated cystic

tumor close to thoracic wall with thinning of thoracic muscles. During surgery the mass appeared highly vascular with presence of multiple serous fluid containing cavities and was deeply embedded in the thoracic muscles. The dog recovered uneventfully after surgery. The cut sections of mass showed abundant mucoid matrix. Histopathological widely spread stellate cells with multipolar process and faintly stained basophilic cells showing great morphological variations were observed. In some areas mass was acellular and was predominated by fibrous compoundment. On the basis of histopathological reports the growth was confirmed as Myxosarcoma considered as a rare connective tissue tumor in animals.

3.59 AN UNUSUAL CASE OF ECTOPIC PREGNANCY IN A FEMALE DOG

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Ectopic pregnancy denotes a pregnancy occurring elsewhere than in the cavity of the uterus. A seven year old female Mongrel dog weighing about 20 kgs was brought to the Animal Care Centre, Goa Animal Welfare Trust, Curchorem, Goa for sterilization. On external examination a ball shaped bulging mass was palpated external near to the umbilicus. It was thought to be a tumour. After examination, it was decided to remove the tumour prior to sterilization. A cranial midline laparotomy was performed after anaesthetizing the dog with Diazepam and Thiopentone sodium. After exploration of abdomen a ball shaped tumour like mass (approximately the size of tennis ball) was found attached to the mysentry of small intestine with peduncle. It was carefully exteriorized and separated by ligation of blood vessels. The removed mass was kept aside and ovariohysterectomy was performed as usual. The uterus and ovary were without any abnormalities. Operation wound was sutured as usual. Subsequently, the removed tumour like mass was opened for examination. It was found to contain a dead foetus of around 5-6 weeks gestation. The ectopic foetus was then preserved in formalin solution. Skin sutures were removed on 8th post-operative day. The bitch showed uneventful recovery and is fine till date.

3.60 CERVICAL FIBROMA IN DOGS- A REPORT OF 2 CASES

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Two female spitz dogs were presented with the history of purulent vaginal discharge since 15 days. Based on clinical examination, radiography and ultrasonography, the cases were diagnosed to be pyometra. Celiotomy revealed a growth on the cervix in both animals. Pan hysterectomy was performed with tumour removal employing standard surgical technique. Histopathologically, the excised tumour mass revealed presence of cervical fibroma.

3.61 SURGICAL MANAGEMENT OF TRANSMISSIBLE VENERAL TUMOUR IN A LHASA APSO

S. KATHIRVEL, K. JAYAKUMAR, A. KUMARESAN, V.T. BHAGAT, G. VENUGOBAL, S. SENTHILKUMAR, N. RAJENDRAN and S. DHARMACEELAN
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A 4 year old intact male Lhasa Apso was presented to the Veterinary College Hospital, Namakkal with the history of hard mass on the ventral abdomen since one year. Fine needle aspiration biopsy revealed cutaneous veneral granuloma. Surgical removal of the transmissible veneral tumor was done under xylazine, ketamine and isoflurane anesthesia. Histopathological study performed.

3.62 SURGICAL MANAGEMENT OF CO-EXISTENT OCULAR HYPERTENSION AND CATARACT IN A DOG

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A six year old female Spitz was presented to the Small Animal Ophthalmology Unit of the Madras Veterinary College Teaching Hospital with complaint of problem in vision. Tests for vision gave poor results. Detailed ophthalmic examination revealed cataract and hypertension in left eye and cataract alone in the right eye. Surgical management of ocular hypertension was resorted to, initially. Under general anaesthesia, and a fornix based conjunctival incision, trabeculectomy was done on the left eye, upon which the animal regained vision moderately. Subsequently, the left eye developed complete mature cataract and the lens got luxated, for which and intracapsular lens extraction was performed. The right eye gradually developed complete mature cataract and it was extracted by phacoemulsification. Aphakic vision was thus established in both eyes. Co-existant cataract and glaucoma and its surgical management is detailed in this case report.

3.63 A CASE OF CATARACTOUS LENS REMOVED BY PHACOEMULSIFICATION AND ASPIRATION TECHNIQUE AND IOL IMPLANTATION

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A two year old female Labrador retriever was brought to the Small Animal Ophthalmology Unit of Madras Veterinary College Teaching Hospital with a history of loss of vision for the past one month.Detailed Ophthalmological examination was performed and the case was diagnosed as immature cataract.pre operative haematological,biochemical and survey radiography was taken.the animal was premedicated and general anaesthesia was given.Mydriasis was achieved with intraocular adrenalin.Cataractous lens was removed by Phacoemulsification and aspiration technique and IOL was implanted.Post operative topical and oral antibiotic and anti inflamatory medicine was advised.The animal regain it fullness and vision within a week.

EQUINE SURGERY SESSION

4.1 FULL THICKNESS SLIDING SKIN GRAFTING IN A HORSE

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A mare aged 6 years was presented to the surgery clinics with a history of extensive wounds at mid of the neck pectoral region extending down below up to the carpus.The wounds were infested with maggots and had extensive suppuration with loss of skin from entire pectoral area and above and below to it. A thorough debridemant was performed and wound was dressed with BIPP. Parenteral administration of Amoxicillin-Cloxacillin 3 gm bid and Meloxicam 50 mg im and Dexamethasone 30 mg im. A full thickness sliding skin grafting was performed on either side at pectoral region. A full thickness skin grafting (Z-plasty) was done at fore arm region. Graft was covered by sterile dressing. The graft at pectoral region were accepted well and healing started and a wound at distal cervical and proximal pectoral region healed in 8 weeks. A simultaneous ultrasonic therapy was performed every day at wound edges .Complete healing occurred at sternal region and medial aspect of fore arm. Open wound healing was allowed in remaining wound. Animal was discharged after 12 weeks. A follow up of the case remains unavailable.

4.2 MANAGEMENT OF GRANULOMA OF FRONTAL SINUS IN A MARE

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College of Veterinary and Animal Sciences, Bikaner - 344 001, Rajasthan.

An eight year old mare was brought to the surgery clinics with history of protruded granuloma at turbinate portion of frontal sinus. The granuloma was highly vascular and tended to bleed during manipulation. Mare was anaesthetized with atropine Xylazine-Ketamine combination. The granuloma was completely excavated from the turbinate portion of frontal sinus quickly. The necrosed portion of turbinate bones were also removed along with granuloma. Temponading of the cavity was done with adrenaline soaked sterile swabs. A pressure bandage was applied over the wound. The gauge were removed after 48 hr and sinus was irrigated with Povidone Iodine mixed saline solution every day. A drainage was established through respective nostril. Post operatively, Amoxycillin-cloxacillin 3 gm bid for 15 days and meloxicam 50 mg for 5 days were administered. A very good healing was seen across the turbinate portion of frontal sinus. Animal was discharged after 6 weeks.

4.3 REMOVAL OF EYE WORM FROM POSTERIOR CHAMBER IN A HORSE

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A 3 year old male Kathiawadi horse was presented with a history of corneal opacity and wriggling eye worm in the anterior chamber of right eye, since five days. On clinical observation eye worm was not clearly visible in the anterior chamber due to cloudy cornea. After treatment with topical flurbiprofen and ciprofloxacin drops, on the fifth day, eye worm was visible under illumination in the posterior chamber. Ocular ultrasonography confirmed presence of eye worm in the posterior chamber. Under xylazine- ketamine anaesthesia eye worm was removed through incision on pars plana.

4.4 SMALL COLON FAECOLITH IMPACTION IN A MARE AND ITS SURGICAL MANAGEMENT- A CASE REPORT

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Colic is an important cause of discomfort in horses and is a most common cause of death. Disorders of large intestine are frequent cause of equine colic. About 50 % of death in equines are caused by or related to conditions in the large intestine. Colic related to small colon is usually caused by obstruction and strangulation. A case of colic in a mare due to faecolith impaction in colon and its successful surgical management is discussed.

4.5 EQUINE LAMINITIS - A CASE REPORT ON SIX CASES

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Six horses, five of Kathewari and one of Thoroughbred aged in between 18 to 72 months were presented with the clinical signs of reluctance to move, front feet extended forward away from the body, hind quarters up to the level of abdomen, difficulty to get up and down, tucked up abdomen, hard / semisolid faeces, increased digital pulse and physical parameters slightly increased. By history it was reveled that one case was reported after clearing the 36 hours of episode of colic which might be due to an endotoxic changes in GIT, two cases were due to feeding of lush green pasture and remaining three were due to constant concussion on the hoof due to working on hard surface. As per the history, clinical signs and hoof tester examination all recorded cases were diagnosed as developmental, acute and chronic phases of laminitis. It was advised to provide soft bedding in all the cases. Proper oral and parenteral medical management was started with laxative, purgative, antiflatulant, antacid, electrolyte, digestive stimulant, hoof cryotherapy, proper hoof trimming, shoeing, sole support, non steroidal anti inflammatory, antibiotic and antihistaminic drugs. All the horses were offered only dry hay and wheat bran and completely avoided feeding of grain and Lucerne for a minimum period of three weeks. All phases of laminitis cases were recovered without too much hoof complications within 21 to 75 days. Early diagnosis, appropriate medical management and proper shoeing are the major factors which were contributed in successfully treating the laminitis otherwise pedal bone rotation takes place and necessitate euthanasia in thoroughbred horses.

4.6 INCIDENCE AND SURGICAL MANAGEMENT OF UMBILICAL HERNIA IN FOAL - A REPORT ON 16 CASES

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In the herd of 508 thoroughbred foals at the age of 3 to 5 months total 16 cases of umbilical hernia were reported during the year 1998 to 2008. A ten year retrospective recorded incidence was observed 3.14 per cent. Diagnosis of umbilical hernia was confirmed by digital palpation and firm thickened hernial ring of 4.0 to 5.0 cm in diameter. The surgical repair of umbilical hernia was performed under the general anesthetic combination of Inj. Acepromazine @ 0.06 mg / Kg body weight followed by Inj. Pentazocin lactate @ 0.5 mg / kg body weight administered intravenously as premedication and Inj. Xylazine @ 1.1 mg / Kg body weight and Inj, Ketamine @ 2.2 mg / Kg body weight were administered intravenously as induction agent by keeping the foal on semi lateral dorsal recumbancy. The hernial contents were carefully examined for any abnormalities after opening either by elliptical incision / clamping the skin, subcutaneous tissue and hernial sac combinely by two way artery forceps. The hernial ring was closed by using non-absorbable synthetic and remaining structures by absorbable synthetic suture material. Non-steroidal antinflammatory drug and proper antibiotic course was continued minimum for 5 to 7 days. Operated wound healing was occurred without any complication. Umbilical hernia is most commonly repaired at 1 to 6 months of age. Surgical correction appears to be the treatment of choice because there is potential for strangulation of segments of intestine.

4.7 PREVALENCE OF VISION THREATENING OCULAR DISORDERS IN HORSE

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The equine eye is prone to problems because of its large surface area and decreased immunity to disease. Loss due to visual impairment in equine industry is enormous, keeping this view the present study was undertaken to study the prevalence threatening disorders in a large population of horse as there is paucity of such report globally and from India. Routine and special diagnostic ophthalmic tests were conducted, including ophthalmoscopic examinations, tonometry, and conjuctival swab culture. A variety of ocular condition were identified, recurrent equine uvietis 24% was diagnosed the major cause of vision threatening disorder among other condition like glaucoma 13%, corneal ulcers 8%, cataract 3%, synechia 2% and retinal hemorrhage 1%. Most common bacteria isolated from normal eye were staphylococcus spp and from cases with corneal ulcers was pseudomonas spp. This study shows that prevalence of ophthalmic disorders in horse are higher than perceived and it is a significant cause of stress to the animal apart from causing great economic loss due to the severe morbidity of the animal.

4.8 EXUBERANT GRANULOMA IN A HORSE AND ITS MANAGEMENT: A CASE REPORT

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A four year horse was presented for treatment with the complaint of a chronic wound at the right ventrolateral aspect of the abdomen underneath 18th to 16th rib involving skin and superficial muscles. The animal had a history of injury one year back out not at the site of the wound. The wound had a firm swelling at the base, suppurative and was not healing inspite of antibiotics therapy with locally and parenterally along with conventional method of point firing. On puncturing pus came out and biopsy findings were taken. The area was desensitized by local infiltration of 2% lignocaine Hcl and lumpy mass was treated with corticoids. Evacuated the content from cicatrized open wound and applied finely ground copper sulphate in a thin layer in conjunction with ointment containing antibiotic. The wound was dressed antiseptically and parental administration of broad spectrum antibiotics and analgesics were done accordingly. The opening was plugged with absorbent cotton and the wound was kept under pressure bandage to prevent further exuberant granulation tissue formation and to keep the skin edges in approximate apposition. Subsequently the wound contracted and made an uneventful recovery in 21st days.

4.9 UNUSUAL CASE OF OESOPHAGEAL FISTULA IN A PONNY: A CASE REPORT

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A six months old ponny was presented with the history of partial anorexia and leakage of partially digested food material through a dog bite wound at the ventral aspect of the neck area since a week. On clinical examination and typical symptoms condition was suspected to be a oesophageal fistula. Clinical oesophagotomy was operated under diazepam sedation and local infiltration anesthesia and putrefied foul smelling biological foreign body was removed from the fistulous wound. Wound on the oesophagus was closed as routine manner. The fistulous tract was freshened, necrotic tissue was debrided and the skin wound was closed in routine manner. The animal was maintained on fluid and parental antibiotics and analgesic were administered for one week. The cutaneous sutures were removed on 10th post-operative day. The animal recovered uneventfully.

4.10 SURGICAL MANAGEMENT OF OCULAR THELEZIASIS AND SETARIASIS IN EQUINES

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Six cases of worm in anterior chamber of equines were treated at TVCSC, COVAS, Udgir and Parbhani during past 12 years. The cases were treated with needle paracentesis and surgical incision over limbus under xylazine and keatmine combination anesthesia. The details of procedure and result will be discussed in technical session.

4.11 UPWARD FIXATION OF PATELLA IN A MULE

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A four year old mule was presented to the polyclinic with the history of typical locking of stifle joints occasionally and jerky movements of both hind limbs since one year. Based upon the history and clinical examination the case was diagnosed as bilateral upward fixation of patella. Medial patellar desmotomy was performed . The surgical management of the case will be discussed.

4.12 MILLER'S DISEASE IN TWO INDIAN THOROUGHBRED HORSES (EQUUS CABALLUS) AND ITS MANAGEMENT

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Two geldings of Indian thoroughbred horses aged 6½ years and 7 years was reported to the Madras Veterinary College Teaching Hospital with the history of respiratory distress with progressive swelling over the rostral and shifting lameness for the past six months. Clinical examination revealed hard swelling of the maxillary involving bony structures. Haematobiochemical parameters showed an abnormally elevated alkaline phosphatase and phosphorous levels. Ventrodorsal and lateral oblique radiographs revealed no abnormality in maxillary sinus. The history was collected and the feed was sent for analysis. The diagnostic results including renal creatinine, and phosphorus clearance were suggestive of nutritional osteodystrophia fibrosa due to disproportionate with phosphorus rich wheat bran. The dietary schedule was corrected with daily oral supplementation of carbonate 200gram and tricalcium phosphate 100gram for three months. Symptomatic improvement was

4.13 SURGICAL MANAGEMENT FOR SQUAMOUS CELL CARCINOMA IN A PONY

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A 10 year old pony stallion was presented to the veterinary college hospital with the history of progressively increasing cauliflower like growth on the right eye since one year. On clinical examination, cornea and conjunctiva were not visible and whole orbit was occupied by the tumour mass. FNAB revealed neoplastic cells. Under xylazine, ketamine and isoflurane anesthesia with IPPV, transpalpebral exenteration of the right eye was performed. The animal had an uneventful recovery.

4.14 CASES OF HOOF CAPSULE DISTORTION, CHRONIC HOOF WALL SEPARTION, HOOF WALL CRACKS AND ROTATIONAL MANAGEMENT IN BROOD MARES

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The management of few cases of hoof capsule distortion, chronic hoof wall separation and hoof wall cracks in brood mares is presented. Hoof wall injuries and defects in the form of separations, loss and cracks were frequent occurrences and these conditions were found common in brood mares kept under semi open system of management along with holding of large number of equines where regular hoof management is not in routine. These were often a reflection of environmental conditions, inherent structural problems and specific athletic endeavors. Range was being insignificant to unable to bear the weight on a given limbs. In severe cases mares lost body weight, treatment and recovery took long duration. Corrective trimming, balancing of hoof, corrective shoeing and rotational management based on visual analysis and radiographs were applied for the management of conditions.

ORTHOPAEDIC SURGERY SESSION

5.1 COMPARATIVE EVALUATION OF DIFFERENT IMPLANTS USED FOR REPAIR OF FEMUR FRACTURE IN DOGS (A CLINICAL STUDY)

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Thirty clinical cases of femur fracture in dog presented to the TVCSC- Veterinary Hospital were treated with the different implants. These cases were divided into five groups with six dogs in each group. In group I & II femur fractures were immobilized with intramedullary horn peg while in group III & IV, femur fractures were immobilized with intramedullary Kuntscher V-Nail, whereas in group V, femur fracture were immobilized with intramedullary interlocking nail. In addition, animals of II & IV were supplemented with Nandrolone Laurate @ 0.5 mg/kg BW at schedule interval. The process of fracture healing in various groups was assessed on the basis of clinical, radiological, haematological and biochemical observations at scheduled intervals. The results obtained in the treatment of clinical cases of femur fracture in dog indicated that horn peg could be used only in small size dog without considering rigid fixation of fracture fragment. The heavy dogs could be treated successfully with Kuntscher V-Nail considering semi-rigid fixation of fracture fragments without mobility and the interlocking nailing technique was found to be best method for neutralization of various forces acting over the fracture site and provided satisfactory stability and quick rehabilitation of the operated limb, resulting in high success rate.

5.2 SUCCESSFUL NORMOGRADE PINNING WITH WIRING FOR EXTENSIVE SPIRAL TIBIAL FRACTURE IN A KENGURI SHEEP

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A Kenguri ewe aged 3 years from the Dept. of LPM, Veterinary College, Bidar was presented to the Teaching Veterinary Clinical Complex with the history of entrapment of right hind limb in a cage. The animal was unable to bear weight and the affected limb was loosely hanging. Clinical examination revealed crepitus, suggestive of fracture. The animal was subjected for radiography which revealed extensive spiral fracture of tibia with large fragment separated from main bone. The animal was prepared for surgery. Normograde pinning with circlage wiring was done under ketamine (11 mg/kg) and xylazine (0.1 mg/kg) anesthesia. Two month follow up showed complete recovery of the animal with normal weight bearing.

5.3 USES OF ULTRASOUND AND INTERFERENTIAL THERAPIES IN DIFFERENT MUSCULO-SKELETAL DISORDERS IN SMALL ANIMALS

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Therapeutic ultrasound produces both thermal and non-thermal effects in tissues. Advantages of interferential therapy are the ability to treat deep-seated lesions. The aim of this study was to investigate the effects of these therapies in the management of different musculo-skeletal disorders in small animals.Ultrasound therapy at different dose schedule was applied in the management of acute traumatic aseptic arthritis, muscular injuries, simple diaphyseal fractures of long bones and tendon injuries in different species of small animals. Clinico-haematological, radiography, ultrasonography, biochemical and histopathological observations confirmed the beneficial effects of ultrasound therapy in these disorders. Resolution of inflammatory swelling, lameness, pain and weight bearing was earlier in ultrasound treated groups. In ultrasound treated animals, joint capsule was almost normal and there was no calcium deposition. There was complete bridging of incised muscular wounds with persistent and moderate fibroblastic and angioblastic activity in ultrasound treated animals. Low-intensity ultrasound reduced the healing times of fresh fractures by up to 40% and provides stronger and stiffer callus formation and accelerates endochondral ossification

The effect of ultrasound and interferential therapies was also studied in hindquarter weakness in different of dogs. Ultrasonic therapy was applied at a frequency of 1 MHz, an intensity of 2 Watt/cm2 (SATA) for 10 thrice in a week till the discharge of the case in a pulsed mode (1:4), whereas, interferential therapy was at the base frequency of 100 Hz, spectrum frequency-50 for 10 min thrice in a week, till the discharge of the along with conventional therapies in both the groups. Resolution of inflammatory swelling and improved pain (towards normalcy) were observed earlier in the interferential group followed by ultrasound therapy group. These produces deep heat on tissues/joints and because its micro-massage effect enhances vascularity and and reduces inflammatory pain and swelling in these disorders. They have been able to improve functional reduce post-ambulatory period, alleviate suffering and restore the animal's health early.

5.4 REHABILITATIVE SURGICAL MANAGEMENT OF ANGULAR DEFORMITIES OF RADIUS AND ULNA IN DOGS

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Twelve clinical cases of dogs having angular deformities of radius and ulna were divided into two groups with six dogs in each group. Group I consisted of skeletally immature dogs and group II consisted of skeletally dogs. In group I, 2 cases were surgically managed with ulnar ostectomy and external coaptation. Wedge of radius alone was performed in one case. Wedge osteotomy of radius and ulnar osteotomy / ostectomy performed in 3 cases. Out of this, 2 cases were managed with external coaptation and two others were stabilized dynamic compression plating. In group II, 5 cases were surgically corrected using a combination of wedge of the radius and ulnar osteotomy / ostectomy and were stabilized with dynamic compression plating. case was managed by using transverse osteotomy and external skeletal fixation. Clinical evaluation, hematology, biochemistry and radiological evaluation were performed preoperatively and postoperatively. Rehabilitative management of angular deformities resulted in return of carpal angulation to normal range in orthogonal views cases. There was mild recurrence of the angular deformity in one case. One case had joint laxity and another had severe cranial bowing of the radius. Cosmetic appearance had significant improvement with reduction of in the postoperative period in both the groups. Leukocytosis was seen in both the groups postoperatively. calcium, phosphorus and alkaline phosphatase were significantly increased in the postoperative period in both groups. Radiological evaluation revealed good fragment alignment, endosteal callus formation and correct positioning implants in all cases except one, in which the external skeletal fixator was failed and corrected by application T plate. Postoperative complications like seroma formation, joint laxity and pressure sores were observed. In present study, osteotomy and / or ostectomy of radius and / or ulna was found to be effective in rehabilitative of angular deformities of radius and ulna in both skeletally immature and mature dogs.

5.5 SYNOVIAL FLUID CYTOLOGY IN CATTLE WITH SEPTIC ARTHRITIS

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Synovial fluid samples from 63 joints of 36 cattle affected with septic arthritis were examined to characterize the cytological changes. Neutrophils were the predominant cell type in majority of the cases (88.89%) on of presentation. Degenerative changes in neutrophil morphology were observed in 15 samples (28.57%). cells such as erythrocytes in 10 samples (15.87%) and synoviocytes in four samples (6.35%) were also Bacteria were observed in Gram's stained synovial fluid smear in 45 samples (71.43%). Of the 45 samples bacteria were observed 29 were extracellular (64.44%) and 16 were intracellular (35.55%); 22 were Gram (48.89%) and 23 were Gram negative (51.11%). Yeast colonies were observed in two samples. The value of fluid cytology in the diagnosis of septic arthritis is illustrated in the present study as bacteria were observed smear in 12.70 per cent of cases with absence of bacterial growth upon synovial fluid culture.

5.6 ANTIMICROBIAL SUSCEPTIBILITY OF BACTERIA ISOLATED FROM SYNOVIAL FLUID OF CATTLE WITH SEPTIC ARTHRITIS

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Culture and antibiotic sensitivity tests were conducted in synovial fluid samples from 63 joints of 36 cattle to find out the most common bacteria causing septic arthritis and their susceptibility pattern. The culture was positive in 37 joints (58.73%) and negative in 26 joints (41.27%). The bacteria isolated were Streptococcus spp. (23.81%), Escherichia coli (14.29%), Pseudomonas spp. (11.11%), Staphylococcus spp. (6.35%) and Salmonella spp. (3.17%). Of the 15 isolates of Streptococcus, majority were susceptible to amoxicillin (13), cloxacillin (10), penicillin (10) and ampicillin (10). E. coli, Pseudomonas, Salmonella and Staphylococcus species were highly susceptible to amikacin and gentamicin. The present study indicated that amikacin was highly effective against all the isolates except Streptococci. Combining this drug with amoxicillin, penicillin or ampicillin provides broad-spectrum coverage against majority of the bacteria isolated in the study area. Hence, initial antibiotic therapy for septic arthritis should include a combination of amikacin/gentamicin and amoxicillin/penicillin. Other antibiotics shall be kept as reserve and used for treatment if culture and susceptibility results demonstrated their efficacy.

5.7 ARTHROSCOPIC FIBRIN DEBRIDEMENT PARTIAL SYNOVECTOMY AND JOINT LAVAGE IN THE TREATMENT OF SEPTIC ARTHRITIS IN CATTLE

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Thirty six clinical cases of cattle with septic arthritis were randomly divided into three groups of 12 animals each and treated by conventional lavage (group I), arthroscopic fibrin debridement and lavage (group II) and arthroscopic debridement, partial synovectomy and lavage (group III). Hyperaemia, petechial haemorrhage, degenerative necrosis in synovial membrane, thickening and clubbing of villi, articular cartilage erosion and fibrin deposits or floating fibrin clots were the major arthroscopic findings. The mean time taken for resolution of joint infection was 18.11, 13.33 and 11.13 days in group I, II and III respectively. It is concluded that arthroscopy permits thorough evaluation, appropriate debridement and effective lavage of septic joints with minimal tissue trauma and offers considerably good results than conventional lavage. Partial synovectomy is recommended during arthroscopic debridement of septic joints to eliminate colonizing bacteria and as it helps to shorten the recovery period. Arthroscopy is recommended for cases presented 7 days or more after onset of clinical signs and those which were refractory to conventional treatment.

5.8 CLOSED INTERNAL FIXATION OF PROXIMAL EPIPHYSARY FRACTURE OF TIBIA IN A SHE GOAT

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A three year old she goat was presented with the history of non-weight bearing lameness in the left hind limb. On clinical and radiographic evaluation the condition was diagnosed as fracture of proximal epiphysis of tibia. Under epidural anaesthesia using 2 % lignocaine hydrochloride, closed reduction of the fracture was achieved and a 3 mm Steinman's pin was driven through the proximal articular surface of the tibia into the medullary cavity in a normograde fashion. Periodically radiographic evaluation was carried out. By the end of the second month animal made an excellent clinical and radiographic healing and the pin was removed.

5.9 EPIDURAL ADMINISTRATION OF METHYL PREDNISOLONE ACETATE FOR THE MANAGEMENT OF PARAPLEGIA IN DOGS

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The effectiveness of epidural administration of methyl prednisolone acetate in the treatment of paraplegia was evaluated in six clinical cases of paraplegic dogs presented to Surgery units of Veterinary Hospitals, College of Veterinary and Animal sciences, Mannuthy. Preliminary clinical, neurological and radiological examinations were conducted in all dogs. All the dogs were subjected to a detailed neurological examination to localize the lesion and the observations were correlated with radiography to confirm the diagnosis. The dogs were subjected to epidural administration of methyl prednisolone acetate (2mg/kg body weight) for the first two days and followed up with oral administration of prednisolone acetate in a tapering dosage regimen for 15 days. All the dogs were administered supportive medicines like neurotropic drugs like methyl cobalamine and antibiotics (amoxicillin-cloxacillin). The study concluded that epidural administration of methyl prednisolone acetate followed by oral administration of prednisolone acetate was effective for the treatment of paraplegia in dogs with spinal concussion syndrome.

5.10 STUDIES ON INCIDENCE OF FRACTURES IN CANINES AND THEIR MANAGEMENT IN HOSPITAL POPULATION AT VETERINARY COLLEGE, ANAND

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A study on the incidence of various fractures occurring in canines presented at the Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Anand, was carried out over a period of 6 months from 1st January 2008 to 31st August 2008. Out of total number of 4,244 cases presented at the Teaching Veterinary Clinical complex, 2,895 comprises of canines and of which 986 nos. were referred to Surgery OPD, and out of which 103 (3.55 %) cases were referred to the department for fracture repair. The incidence of fractures was recorded to be 78 (75.73%). A higher incidence of fractures was evident in male dogs (61.53%) as compared to females (38.46%). Incidence of fractures in young dogs of the age group 0-1 years was highest (48.71%), followed by growing dogs of 1-3 years (25.64%), adult dogs of 3-6 years (20.51%) and older than 6 years (5.12%). Breed wise incidence revealed highest occurrence in Mongrels (48.71%), followed by Labrador (12.82%), Doberman (11.53%), Spitz (10.25%), German shepherd (7.69%) and least in Great Dane, Rottweiler and Dalmatian. Based on the radiological findings the incidence of fracture was highest in femur 35.89% followed by humerus and tibia 15.38% each, radius-ulna 14.10%, metacarpal 3.84%, metatarsal 2.56%, digits 1.28%, pelvis 8.97 % and lumbar 2.56%. The etiological factors included automobile accidents, accidental fall from heights, malicious injuries and dog fights. Surgical management included reduction and immobilization with plaster cast, POP gutter splints, Robert-Jones bandage, wooden/ aluminum splints, Thomas splints and internal fixation by intra-medullary pinning and cerclage wiring .Most humeral, femoral and tibial fractures were immobilized by Intramedullary pinning along with a Robert-Jones bandage for additional support in 31 dogs (39.74%), while metacarpal, metatarsal and digital fractures were effectively immobilized by plaster cast with POP gutter splint in 20 dogs (25.64%) and Robert-Jones bandage in 19 dogs (24.35%). Supportive therapy was administered to all dogs for control of infection, pain management and enhancing healing of tissues.

5.11 STUDIES ON INCIDENCE OF FRACTURES IN FARM ANIMALS AND THEIR MANAGEMENT IN HOSPITAL POPULATION AT VETERINARY COLLEGE, ANAND

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A study on the incidence of various fractures occurring in farm animals presented at the Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Anand, was carried out over a period of months from 1st January 2008 to 31st August 2008. Of the total number of cases 4,244 presented at the Teaching Veterinary Clinical Complex, 95 (2.23%) cases of affected farm animals were referred to the department. Incidence of

fractures was recorded in 9 cattle (189), 2 buffaloes (535), 2 sheep (22), 34 goats (398), 2 donkeys (32) and a horse (87). Among sheep and goat, higher incidence of fractures was evident in females (63.88%) as compared to males (36.11 %). Young kids below the age of 1 year (50 %) were highly prone to fractures in comparison to adult goats (22.22 %). Based on the radiological findings, carpo-metacarpal fractures showed highest incidence 22.22%, followed by humerus 19.44%, tibia 16.66%, metatarsal 13.88%, radius-ulnar, femur and digits 8.33% each. Among cattle and buffalo, higher incidence of fractures was evident in cows (72.72%) as compared to bulls (27.27%). Most common breeds affected were Gir, Kankrej, Cossbred cows, Jafarabadi and Surti. Long bone fractures involved metatarsal, metacarpal and femur, along with coxofemoral and hip dislocation. Both the donkeys were reported with metatarsal fractures and a horse with metacarpal fracture. The etiological factors included automobile accidents, accidental fall from heights, malicious injuries and dog bites. Most cases were treated with plaster cast reinforced with aluminum splints. Surgical management including reduction and immobilization with plaster cast, POP gutter splints, Robert-Jones bandage, wooden / aluminum splints, Thomas splints and internal fixation by intra-medullary pinning were found effective in stabilizing the fracture fragments. Most metacarpal, metatarsal and digital fractures in sheep and goats were effectively immobilized by plaster cast with POP gutter splint in 20 (25.64%) cases, while humeral, femoral and tibial fractures were immobilized by intramedullary fixation along with reinforcement with a Robert-Jones bandage in 6 (39.74%) cases and wooden splint bandage in 4 (11.11%) cases.

5.12 MANDIBULAR FRACTURE FIXATION BY INTRAMEDULLARY PINNING IN KANKREJ COW - A CASE REPORT

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A kankrej cow aged 7 years was referred to the Department of Surgery and Radiology with the history of an accident resulting in dropping of the lower jaw. Clinical examination revealed complete bilateral fracture of the horizontal rami of the mandible. Under diazepam sedation and local infiltration analgesia, intramedullary pins were inserted by normograde method into the mandible for fixation of the jaw, a PVC gutter splint for complete immobilization of the jaw.

5.13 SUCCESSFUL UNILATERAL TROCHLEOPLASTY WITH TIBIAL TUBERCITY TRANSPLANTATION IN A LABRADOR RETRIEVER BITCH - A CASE REPORT

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A Labrador bitch, 1.5 yrs of age and 36 Kg body wt. with crouched gait was presented to this department with grade - 3 Medial Patellar Luxation in right stifle joint. On exploration deep erosion cartilage wound on shallow traochlear surface and internal rotation of tibia were found. The depth of the sulcus was increased by wedge resection, removal of underlying bone and repositioning of wedge for deeper sitting of patella within the trochlea. Partial lateral transplantation of the tibial tubersity and fixation of it by one small k-wire were done for proper alignment of the straight ligament. Thomas splint was applied upto 45 days post-operatively. Clinical and radiological evaluation were done upto 6 months post-operation for peaceful rehabilitation.

5.14 MANAGEMENT OF METATARSAL FRACTURE WITH POP CAST AND PVC SPLINT IN A COW - A CASE REPORT

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A 10 years old Jersey cow was met with a road accident and rescued by director of animal shelter from the slaughter house. The cow was brought to the clinic and underwent clinical examination. It revealed a complete fracture on its right metatarsal bone and the cow was unable to bear weight. The cow was restrained in left lateral recumbency. Plaster of Paris cast was applied and immobilized both proximal and distal joints. Double PVC splint was placed over the cast both cranial and caudal side of the limb to give additional support to the cast. The cow was able to stand and bear the weight 6 hrs after the cast application and able to walk with the help of cast and splint one week later.

5.15 SUCCESSFUL REPAIR OF SEVERED FLEXOR TENDON IN BULLOCK - REPORT OF FIVE CASES

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Five clinical cases (two Deoni & three non-descript bullocks) were referred to TVCSC Udgir with history of injury over dorsal metatarsal. There was profuse bleeding through wounds in two animals while three cases were already operated by local Veterinarian. All the cases showed sever lameness with upward movement of hoof & fetlock was touching the surface of land. On clinical examination revealed rupture of both superficial & deep digital flexor tendon in three cases while only superficial flexor tendon served in two cases. Tenorrhaphy was performed with aseptic precaution under sedation and ring block. Both the tendons were easily apposed in fresh cases while granulation tissue and much more gap observed in already operated cases which required tension to oppose the severed ends. Immobilization of the limbs was achieved with bandaging with cotton and supported by bamboo splints and PVC pipe splints. Post-operatively Inj. Streptopenicilline for five days, Inj. Melonex and Inj. Ascorbic acid were injected for three days. Two animals able to bear weight on the affected limb after one month which were operated freshly while three animals recovered 45 days post-operatively.

5.16 LUMBAR VERTEBRAL COMPRESSION FRACTURE AND ITS MANAGEMENT IN A MONGREL

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A 4year old male mongrel dog was presented to the Small Animal Orthopedic Unit, Veterinary Teaching Hospital, Madras Veterinary College with history of paraplegia and loss of bladder control since 2 days. The dog was spastic and pain was evinced on palpation of the lumbar region. Neurological examination revealed absence of deep pain sensation and patellar reflex. Conscious proprioceptive reflex was negative. Bladder was flaccid and incontinent. The case was neurologically graded as grade 4 which indicated an unfavourable prognosis. Lateral and ventrodorsal plain radiographic examination revealed compression fracture of articular process of L3 vertebrae. Under general anesthesia, myelography was performed by injecting Iohexol (350mg/ml) into the cerebellomedullary cistern at the rate of 0.3 ml/kg body weight. Serial lateral and ventrodorsal views of the cervical and thoracolumbar spine were taken. Abrupt stoppage of contrast agent at the level of L3-L4 was visible. A hemilaminectomy procedure was performed at the level of L3 -L4. A fragmented articular process compressing the spinal canal was removed. Polyethylene glycol was infused locally at the hemilaminectomy site. Post operative neurological examination was performed periodically. The Animal showed a gradual improvement in neurological function as evidenced by return of deep pain sensation, patellar reflex, conscious proprioceptive reflex and bladder function by 4th post operative week. The animal was ambulatory by 5th post operative week.

5.17 CORRECTION OF TIBIA AND FIBULA MALUNION BY TYPE II EXTERNAL SKELETAL FIXATION - A CASE REPORT

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One year old, German shepherd dog was presented with the history of fall from height 40 days back. On examination, limping and shortening of the right hind limb noticed with the tip of the proximal fragment prominently visible outside with excess callus. Radiographic examination revealed overriding fracture with malunion over the right tibia & fibula. Under general anaesthesia, callus was removed completely and the fracture fragments were reduced to normal anatomical alignment and stabilized by type II external skeletal fixation. From the immediate postoperative radiograph, sufficient alignment and apposition between the fracture fragments could be observed. Dressing of the wound was done daily along with parentral antibiotics and sutures were removed on 8th postoperative day. Animal was able to place its operated limb over the ground by 2nd postoperative day and appreciable weight bearing could be noticed by first postoperative week.

5.18 INCIDENCE OF FRACTURE IN DOGS

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A study was conducted in Veterinary College Hospital, Hebbal, Bangalore, for a period of one year to study the incidence of fracture according to breed, sex, limb affected and bone involved. This study concluded that the non-descript/ cross-bred dogs were having the highest incidence of fracture followed by German shepherd, Pomeranian and Labrador retriever. The male dogs were affected more compared to females. Hind limb was more affected with fractures than the fore-limb. The most commonly affected appendicular bone was the femur followed by tibia, radius, and humerus. Pelvic bone fracture was only 1.66% and skull fractures 0.41%. Axial skeleton fractures comprised only 39.80% and the incidence of fracture was highest in lumbar vertebrae.

5.19 REPAIR OF FEMORAL FRACTURES WITH THE HELP OF HORN-PEG AND SUPPLEMENTATION OF NANDROLONE LAURATE IN CANINE

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Study on twelve cases in dogs affected with femur fracture and reported at Nagpur Veterinary College Hospital, Nagpur showed higher incidence of femur factures in the group of below one-year age. German- Shepherd breed was mostly affected. Most of the fractures involved the shaft of bone and were either transverse, oblique or multiple in nature. In all the 12 dogs, Automobile accident was main cause of fracture. The cases were divided into two Groups of 6 animals each. In both the groups horn pegs prepared from Bovine horn were used to immobilize the fracture. In addition to this supplementation of Inj. Nandrolone Laurate was given in group-II post-operatively. The Comparison of two groups was done on the basis of Clinical, Radiological, Hematological and Biochemical observations. Clinically, the full weight bearing capacity was seen earlier in the dogs of group-II. Radiographically, the process of fracture healing was relatively faster in group-II. The hematological study revealed increased in the Neutrophil and decreased Lymphocyte percentage in both the groups. The Biochemical study revealed increase in the alkaline phosphates values in both the groups. The horn peg did not incite any untoward reaction at the site of fracture during period of observations and the fracture healing was relatively faster in anabolic hormone treated group.

5.20 COMPLICATIONS OF EXTERNAL SKELETAL FIXATION IN LARGE ANIMALS: AN ANALYSIS OF 24 CLINICAL CASES OF LONG BONE FRACTURES

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The study included 14 cattle, 3 buffaloes and 7 horses with different long bone fractures (mostly compound comminuted fractures) treated using different external skeletal fixation (ESF) devices. In 14 cases, circular fixators (CEF) developed using aluminum or mild steel rings were used for fracture fixation. In remaining 10 cases bilateral linear fixation devices (BLF) were used. In 16 cases, trans-articular fixation was done. The number and diameter of rings, and the diameter of K-wires and threaded pins varied from case to case depending on the size of the animal, and the type and location of fracture. The common complications during the fracture fixation and in the postoperative period were analysed. During the fixation of CEF the most common problem encountered was the difficulty in aligning the fixation wires to the ring holes. As many holes were engaged to secure the side bars, sometimes it was difficult to align the fixation wires with the ring holes leading to slight bending of wires. Reduction and alignment of fracture fragments posed problem in some cases of proximal metatarsal or tibial fractures. In one case of metatarsal fracture, where BLF was used, a threaded pin was inadvertently placed in the tarsal bone. Fixation of fractures with ESF was generally rigid and stable; however, in 2 horses, a cow and a buffalo, fracture stability appeared inadequate, which was due to severe comminution of fracture fragments and transarticular fixation where the fixation pins/wires were fixed far away from the fracture site. Fracture reduction and alignment was unsatisfactory in 5 cases. In general, cattle and buffaloes tolerated the fixator better than horses during the postoperative period. In 2 animals fixation failed within 48 hrs. Slight bending of 1-2 fixator rings was noticed in two cases, and bending of side

bars of BLF in one case. The most common complication with ESF was the wire/pin tract sepsis and osteolysis, which was more in cases of unstable fixation, especially in wires/pins near the open fractures and at the metaphyseal region. Slight bending/bowing of wires was frequently recorded, and breakage of wire/s was seen in 6 cases and breakage of threaded pin was seen in one case. Breakage of wire was generally noticed at the wire-bone interfaces or wire-ring interfaces in the proximal bone fragment. In one case, re-fracture at the wire tract was noticed. Delayed/non-healing was recorded in cases of unstable fractures (comminuted fractures) and also in compound fractures with severe soft tissue damage and loss.

5.21 EFFECT OF ANTIRESORPTIVE DRUGS- RALOXIFENE, ALENDRONATE AND CALCITONIN ON MINERAL PROFILE OF OSTEOPENIC LONG BONES IN GROWING RABBITS

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The effects of different antiresorptive drugs like Raloxifene, Alendronate and Calcitonin on mineral profile of long bones were studied in growing rabbits with induced osteopenia. Sixteen New Zealand rabbits of either sex, 60 day old, were randomly divided in 4 equal groups, A, B, C and D. The animals of all groups were administered with oral supplementation of calcium (100 mg/kg), vit-D3 (20 IU/kg) and zinc (5 mg/kg of feed) for 30 days to induce osteopenia. The animals of group A acted as control and no other treatment was given. The animals of groups B, C and D were administered with Raloxifene (10 mg/kg body weight in feed), Alendronate (5 mg/kg body weight in feed) and Calcitonin (10 IU/kg body weight, IM), respectively, for 30 days. On 60th day after initiation of treatment, the animals of different groups were euthanized and the long bones femur and radius/ulna were collected, and were subjected to different estimations like weight, density, length, and different mineral and ash percentages. Normal and dry weight of femur and radius/ulna were the least in group B, followed by group A. Weight of femur bone was significantly more in group D than in groups A and B. Whereas weight of radius/ulna in group D was also significantly more than that of group B. Bone density did not differ significantly between groups. The length of femur and radius/ulna was the least in group B, which was significantly lesser than in other groups. Ash % in femur bone was significantly more in group A than in groups C and D. In radius/ulna, ash % in group C was significantly lesser than in group B. Organic matter % was the least in control group A, which was significantly lesser than in groups C and D. Calcium % was also the least in the femur and radius/ulna bones of control group A. Whereas phosphorus % of bones was maximum in group B, where it was significantly more than in groups A and D. The cobalt concentration was the least in long bones of group B; cobalt concentration in groups A and D was significantly lesser than in other groups. Zn and Fe concentrations did not differ significantly between groups, whereas Mn concentration in femur bone was significantly more in group D, followed by group B. The results of the present study indicate that different antiresorptive drugs have varied effects on macro- and micro-minerals of osteopenic long bones in growing rabbits. Among the different drugs, calcitonin has the maximum positive response on mineralization of long bones, followed by Alendronate, whereas Raloxifene showed the least effect.

5.22 MANAGEMENT OF OSTEOPENIC BONE FRACTURES IN DOGS BY MODIFIED DYNAMIC COMPRESSION PLATE WITH LOCKING SCREWS

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The objective of the study was to evaluate the efficacy of modified Dynamic Compression Plate (DCP) with locking screws in the management of fractures in osteopenic bones. The study was conducted in 8 dogs with femoral diaphyseal fractures, of which 6 dogs had apparent osteopenia. Under atropine sulphate (0.04 mg/kg body wt i/m), diazepam (1mg/kg body wt i/v) and pentazocine (1mg/kg body wt i/v) premedication and thiopental general anaesthesia, femur bone was approached by the standard procedure in all the animals. After reducing the fracture, modified DCP with locking screws was used for fracture fixation. Either 6-hole plate or 8-hole plate was fixed on the antero-lateral aspect of the bone depending upon the bone size, using specially designed locking drill sleeve and locking screws using standard technique. All the animals were subjected to different intra-operative and postoperative observations like fracture stability, weight bearing and radiographic bone healing. Fracture reduction and fixation did not pose problem in any of the animal. Good fixation stability was achieved in all the cases. During the immediate postoperative period good weight bearing on the affected limb was observed in all the animals, indicating stable

fixation. In none of the animals screw/plate loosening was noticed, which is the common postoperative complication seen in osteopenic bone fractures. Radiographs made at different intervals showed signs of progressive healing at the fracture site. In all the cases fracture healed with minimal to no external callus suggesting rigid fixation In dogs having osteopenic bones with loss of bone fragments, the fracture gap was visible even up to 45 days; in these animals complete healing was achieved only by 90 days. This suggests that fracture fixation using DCP with locking screws provides complete stability with little or no motion at the fixation site. The results of this study indicate that the use of modified DCP with locking screws may be very effective in the management of fractures in osteopenic bones.

5.23 POLYURETHANE BASED CAST IN LARGE ANIMAL ORTHOPAEDICS; A REVIEW OF 50 CASES

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Polyurethane (PU) adhesive based cast bandages have the distinct advantages of being stronger, light weight, water-proof, faster-setting and more radiolucent when compared to traditional Plaster of Paris (POP) cast bandages. However, their substantially higher cost prevented their widespread use in veterinary practice in India so far. The authors used these bandages in large animal orthopaedic cases for the last 5 years and modified and refined their application techniques suiting to Indian conditions. In a retrospective study of 50 such cases, the paper describes the application techniques, merits, demerits, complications and economics of these PU casting bandages.

5.24 SUCCESSFUL MANAGEMENT OF BILATERAL MANDIBULAR FRACTURE IN A DOG USING STEINMANN PINS AND INTERFRAGMENTARY WIRING

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A seven month old male Rottweiler pup was presented to the Small Animal Orthopaedic Unit of Madras Veterinary College Teaching Hospital with dropped lower jaw at the level of its angle. The dog reported was involved in a road traffic accident. Lateral oblique radiographs of the skull confirmed complete unstable bilateral fracture of the mandible rami at it angles. Oral examination revealed fracture fragments protruding into the oral cavity. The animal had inability to close the mouth and was unable to feed. Physiological and haematological parameters were within normal range. Under general anaesthesia, the fractured rami were primarily stabilized and immobilized using 2.5 mm Steinmann pins. Ancillary stabilization of the fragments of the right ramus was done by interframentary wiring using 22 G orthopaedic wire. Feeding was aided by an oesophageal feeding tube (14F Ryles tube) placed through a pharyngostomy incision. An E-collar was also fixed to protect the site from mutilation by the dog. The operative procedures were successful and there was an excellent outcome.

5.25 MANAGEMENT OF UNSTABLE DIAPHYSEAL FEMORAL FRACTURES USING PLATE ROD TECHNIQUE IN DOGS - A REVIEW OF EIGHT CASES

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Eight cases presented to the Small Animal Orthopaedic Unit, Madras Veterinary College Teaching Hospital with the history and clinical symptoms suggestive of femoral fractures were included in this study. Confirmative diagnosis of femoral diaphyseal fractures was made by radiographic evaluation. Open reduction and internal fixation was accomplished using a 3.5mm dynamic compression plate. The plate was applied on the tension surface of the bone based on ASIF technique. Additional stability was provided by insertion of 2.5mm/3mm of intramedullary steinmann pin based on the diameter of the bone. Normal weight bearing was noticed in six cases on immediate post operative day. Lameness grade, functional outcome, fragment alignment, implant position, biological activity and complications are discussed.

5.26 DEVELOPMENT OF A VET FIX SYSTEM (CLAMP ROD INTERNAL FIXATION) TECHNIQUE FOR THE MANAGEMENT OF UNSTABLE DIAPHYSEAL FEMORAL FRACTURES IN DOGS - A REVIEW OF SIX CASES

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Six cases presented to the Small Animal Orthopaedic Unit, Madras Veterinary College Teaching Hospital, with the history and clinical symptoms suggestive of femoral fractures were included in this study. Confirmative diagnosis of femoral diaphyseal fractures was made by radiographic evaluation. Open reduction and internal fixation was accomplished using an indigenously developed clamp rod internal fixation. This system consisted of a round, roughened stainless steel rod (316 L) of length 150mm/200mm and diameter of 3.5mm. The clamps were of 3.5mm size to correspond to 3.5mm specially designed bone screws. The clamps could be slided and arranged along the rod at any required position. Normal weight bearing was noticed in five cases on the immediate post operative day. The techniques of fixation, functional outcome, and complications are discussed.

5.27 CLINICAL USE OF UNIVERSITY OF MELBOURNE PAIN SCALE (UMPS) TO ASSESS PAIN AND RESPONSE TO ANALGESICS IN CANINE ORTHOPAEDIC PATIENTS

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Twenty four canine patients which underwent surgery for orthopaedic affections were selected for the study. These animals were divided randomly into two groups of twelve animals each and were administered with meloxicam (0.2 mg/kg) and ketoprofen (2 mg/kg) respectively preoperatively and postoperatively for 5 consecutive days. Pain was evaluated on days 0, 1, 3 and 5 of administration of analgesics using University of Melbourne Pain Scale (UMPS). The pain score reduced in both groups from day 0 to day 5 with a similar decreasing trend. The reduction in pain score was comparable in both groups. The scale seems to be promising in the evaluation of pain and also in the evaluation of analgesics during the postoperative period in canine orthopaedic patients.

5.28 FRACTURES IN FARM ANIMALS - A SURVEY OF 460 CASES

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The fracture incidence in 460 clinical cases of farm animals referred to the Large Animal Surgery Unit of Madras Veterinary College Teaching Hospital during January 2005 to December 2007 was reviewed. The major incidence was noticed in caprine (72.8%) followed by bovine (24.6%), equine (1.5%) and ovine (1.1%). Among the various etiology, trauma due to automobile accident (64.6%) especially hit by two wheeler (37.0%) was found to be the major exciting cause of fractures. In caprine and bovine, the major incidence was noticed in females, 75.5% and 74.3% respectively than males. Young animals less than one year were found to be more affected in caprine (71.1%) with a high incidence in the age group of 0-3 months (35.0%) and bovine (58.5%) during 4 to 6 months (23.9%). The fracture incidence in axial skeleton in caprine and bovine were 8.2% and 8.3% and higher incidence was noticed in appendicular skeleton 91.8 % and 91.7% with major incidence in pelvic limb 46.4% and 59.2%. Among the long bones involved in caprine, the incidence was higher in metacarpus 29.0% followed by metatarsus 20.0% and in bovine tibia and fibula (19.2%) followed by metatarsus (18.3%). Transverse type of fracture (42.2%) was found to be more common in caprine and comminuted type of fracture (36.4%) in bovine. The fractures at mid shaft area (32.3%) were accounted to be more in caprine and proximal third site (28.2%) in bovine.

5.29 MANAGEMENT OF METATARSAL FRACTURE WITH STANDARD LINEAR EXTERNAL SKELETAL FIXATOR IN A DONKEY (EQUUS ASINUS)

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A 70 days old female donkey weighing around 20kg was referred to the Madras Veterinary College Teaching Hospital with the history of automobile trauma. Orthopaedic and radiographic examinations revealed compound transverse fracture of the right metatarsus at distal third. The animal was prepared for aseptic surgery and 2% lidocaine hydrochloride solution was used to induce epidural anesthesia as an adjunct to xylazine @1.1 mg/kg and ketamine @ 2.2 mg/kg intravenous anesthesia and was further maintained with a combination of xylazine and ketamine. The right metatarsal fracture was immobilized with type II standard linear external skeletal fixator. The assembly consisted of five numbers of 4mm smooth transosseous pins inserted proximally (three pins) and distally (two pins) secured with standard AO clamps. Postoperatively, the animal showed good functional usage and had uneventful clinical recovery on the 45th postoperative day.

5.30 CONTRACTED TENDON IN A GIR CALF

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A female Gir calf aged 4 months, was brought to Large Animal Surgery Unit of Madras Veterinary College Teaching Hospital with the history of congenital knuckling of fetlock joint of both the limbs. The animal had pressure sore on the skin over the joints and got infected. The purulent discharge was sent for antibiotic sensitivity test and Amikacin was found to be sensitive antibiotic. Bone deformity was ruled out through radiography. Under regional intravenous anaesthesia, the tenotomy was performed on deep digital flexor tendon. The fetlock joints of both the limbs were extended and supported by moulded PVC splint to promote the tendon healing and ankylosis of the corrected fetlock joints. Using C - arm image intensifier the bone alignment was assessed. Wound on the fetlock joints were dressed on alternate days and post operatively the animal showed full weight bearing in the 2nd week.

5.31 MANAGEMENT OF MANDIBULAR FRACTURE IN A DOG

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A six month old male doberman dog was referred to the Small Animal Orthopaedic Surgical Outpatient Unit of Madras Veterinary College Teaching Hospital with the history of dropped lower jaw secondary to automobile accident. Orthopaedic and radiographic examinations indicated bilateral mandibular and symphyseal fractures. Fluoroscopy was performed to obtain a three dimensional view of the skull and to precisely locate the fracture site. The animal was subjected to general anaesthesia and placed in a ventrodorsal position. A ventrolateral approach to the right mandibular region was performed. Using C-arm image intensifier, the position of the fracture site was located at the angle of the horizontal and vertical ramus of the right mandible. The fracture was unstable. A modified external skeletal fixator was constructed by placing two 2.5mm Steinmann pins, two in the horizontal rami proximal to the fracture and one distal to the fracture. The pins were connected by a corrugated tube filled with M seal to serve as a connecting rod. The fracture in the left hemi mandible was stable and had a palpable callus. No surgical intervention was performed at this site. Postoperatively, the animal showed improvement in condition as evidenced by lower jaw movement and improved ability in tongue movement and swallowing reflexes.

5.32 SUCCESSFUL REPAIR OF BILATERAL DISTAL RADIUS ULNA FRACTURE WITH 2.7 DYNAMIC COMPRESSION PLATES IN A DALMATIAN DOG

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A 10 months old Young Dalmatian dog presented to college clinic with the clinical signs of nonweight bearing of both fore limbs and unable to stand due to accidental fall from height. Radiography revealed that fracture distal radius ulna in both the fore limbs. Internal bone splinting was done with craniomedial application of two mm dynamic compression plates on two distal radial bones at the same time. Weight bearing and complete ambulance was noticed on 7th post operative day on both the fore limbs and the animal is able to walk normally within one month by showing

5.33 EXTERNAL SKELETAL FIXATION FOR TARSOMETATARSUS FRACTURE IN DOMICILE CRANE (GRUS VIRGO)

N. DHANALAKSHMI, R.V. SURESH KUMAR P. VEENA,
SATYA PRAKASH ARUN, THOIBA SINGH and P. MANOHAR
College of Veterinary Sciences, Tirupathi - 517 502, Andhra Pradesh.

A domicile crane (Grus Virgo) was presented to college clinic from S.V.Zoo park with accidental injury and symptoms of swelling and open wound on leg. On radiographic examination, a compound fracture of tarsometatarsus was found and it was decided to repair with ESF. A combined Ketamine, Diazepam anaesthesia was followed for surgical fixation. Transfixation pinning was done on tarsometatarsus by using K-wires and local epoxy putty. Good tolerance and cooperation were observed from the bird and the Pins were removed 3 weeks postoperatively after healing of fracture site.

5.34 MANAGEMENT OF FEMORAL FRACTURES IN DOGS

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Twenty femoral fractures with different fracture configuration were diagnosed in college clinic and were managed successfully by different surgical fixation techniques. Incidences of unstable diaphyseal (12), supracondylar fractures(6) and multiple fracture cases along with tibia (2) were observed. The diaphyseal fractures were managed with IMP, IMP+ Exfix and plating. The Supracondylar and multiple fractures were managed by using modified pinning and external skeletal fixators.

5.35 STUDY OF SPINAL DISORDERS IN CANINE PATIENTS

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A total of 20 cases of hind quarter weakness presented to the polyclinic were diagnosed on the basis of clinical, radiological and neurological examination of the animals. The animals were brought for the treatment at variable time of onset of illness. The parameters like heart rate, respiration rate and rectal temperature were in the physiological range in all the animals. Survey radiography was found to be most valuable diagnostic aid for spinal disorders but sedation was required in some cases for proper positioning. Treatment was initiated with electroacupuncture along with methyl predinisolone acetate, methyl predinisolone sodium succinate, L- NAME, and meloxicam in different doses for study purpose. Haematological and biochemical parameters were measured to assess the improvement status along with clinical signs. Electroacupuncture was found to be successful in 16 cases while 4 patients do not turned back after the slight improvement for complete study.

5.36 EFFECT OF METACARPAL OSTEOTOMY AND TRACTION FOR LENGTHENING OF FORELIMB IN CALVES.

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Twelve cross breed calves of 6 to 12 months age, weighing 60to 120 kg were randomly divided into 2 groups of 6 animals each. Under xylazine (@ 0.2mg/kg i/m) sedation and brachial plexus block (2 % lignocaine solution), transverse osteotomy was performed at the mid shaft region of metacarpal bone. In group I the limb was immobilized using locally fabricated full pin transverse fixation device from the day 6 day onwards, the bone fragments were retracted at the rate of 1 mm gap/day for 10days. In group II partial tenotomy (accordion method)of the flexor tendons was performed on the day and immobilization and retraction procedure was adopted as in group I. Clinical examination, hematological, radiographical and histological examination were studied at different intervals.

5.37 ALL MEAT DIET SYNDROME IN A GREAT DANE PUP - CASE REPORT

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The all meat diet syndrome has been wide spread concern which was seen in young giant breed dogs which were fed with high meat diet. A 5 months old Great Dane female pup was brought to the Small Animal Orthopedic Out Patient unit of Madras Veterinary College Teaching Hospital with a fracture in the left femur. The animal was subjected to clinical and radiological examination. Radiological examination revealed pathological fracture of the left femur with loss of skeletal density and thinning of the bone cortex. Serum biochemistry revealed Ca 7.0 % and P 8.74 % . On questioning of the owner regarding the feeding of the dog it was found that the animal was fed with meat (beef/chicken waste) thrice a day and with calcium tablets .The fracture was treated conservatively with POP cast with complete rest along with calcium , vitamin C oral supplementation with an advice to give balance diet. The animal recovered uneventfully. Feeding of meat which has low calcium and high phosphorus has the tendency to cause secondary nutritional hyperparathyroidism (SNH),a condition in which the parathyroid are stimulated to secrete parathormon which increases the resorption of calcium from the bone in order to maintain proper serum levels.

5.38 OSTEOSARCOMA IN DOGS - A REVIEW OF TWO CASES

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Osteosarcoma is an aggressive, higly metastatic tumor of older large and giant breed dogs with significant increased incidence in male dogs .One theory suggests that the rapidly growing cells found at the growth plates of the bone are genetically at a greater risk of mutation another theory is that the tumor develops at the site of trauma commonly seen the long bones and mandible. Two cases of Osteosarcoma in dogs which was brought to the Small Animal Orthopedic Out Patient unit of Madras Veterinary College Teaching Hospital were presented which differs from the common incidence. A Rotweiller, eight years old female dog weighing 44 kg was brought with history of old case of fracture in the left forelimb, limping and swelling over the carpal joint with maggot infested septic wound . Radiodiagnosis of radius ulna revealed osteolytic changes in the distal extremity and chest X-ray there was no lung involvement. CBC and serum biochemistry were with in normal. Biopsy of the bone revealed Osteosarcoma. Hence surgery was advocated and amputation of left fore limb to the extent of mid humerus was carried as per standard procedure. Animal recovered uneventfully with any complication. After five months the animal was reviewed where in the chest radiograph reveled multiple metastatic lesion as clusters of graphs with metastasis in the liver. After some days the animal shows signs and distress which was maintained with anti-inflammatory drugs for pain management and the animal died after a month. Another case, a boxer ,nine years old male dog was brought with a history of non weight bearing and swelling in the left hip region for the past 4 months with progressive limping .Clinical examination reveled non bony involvement .Radio diagnosis reveled osteolytic changes in the pelvic bone with no lung involvement. Fine needle aspiration biopsy was confirmative of Osteosarcoma. Since surgery cannot be performed on pelvis the animal was put to sleep. Post mortem finding reveled tiny nodular lesions with histopathology confirmative of Osteosarcoma. In review of both the case, common bone involved was radius ulna but in female dog where the incidence is low, in another dog it was male dog but the location of tumor is at an unusual sight.

5.39 EFFECT OF PULSED SHORT-WAVE DIATHERMY ON PAIN AND FUNCTION OF SUBJECTS WITH TRAUMATIC ARTHRITIS OF THE KNEE IN COMPARISON TO CONVENTIONAL THERAPY

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This study was designed to compare the effects of shortwave diathermy (SWD) and conventional therapy comprising of administration of systemic antibiotic and analgesic on pain, range of motion and function in umatic arthritis (TA) of the knee. Subjects were sixteen male buffalo calves aged 1-2 years which were artificially culated TA of the knee. Subjects were assigned into combined SWD and conventional treatment groups and nventional therapy alone and were treated daily for two weeks from third day of inoculation to 14 day of duration of e study. Subjects were assessed at the beginning and end of the study for pain, range of motion (ROM) and function observing symptoms. Blood and synovia were collected for study. Data were subjected to descriptive statistics of eans and standard deviation and inferential statistics of independent and paired t-tests. Results showed that while e subjects in the SWD group had significantly greater ROM and function than the conventional therapy group at the ginning of the study. But both groups were not statistically significantly different dependent variables at the end of e study. Paired t-test also indicated that the conventional therapy group improved significantly on all three dependent iables while the SWD group improved significantly in pain and ROM only. The improvements in pain, ROM and nction effected by SWD and conventional therapy were however not significantly different. It was concluded that WD and conventional therapy are equally effective on TA of the knee and that conventional therapy can be substituted r SWD in the treatment of TA of the knee.

AVIAN, WILD & ZOO ANIMAL SURGERY SESSION

6.1 MANAGEMENT OF RECTAL PROLAPSE IN A STAR TORTOISE

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A male tortoise aged 7 years was presented to surgery clinics with a history of rectal prolapse since last [illegible] hours. Owner reported lodgement of dried bunch of plant fibers in the cloaca. Tortoise was straining and was unable to pass faeces. Owner pulled out the obstructing plant fibres and it was soon followed by a prolapse which gradually enlarged up to 1 inch in length and became edematous and congested. The tortoise was secured in dorsal recumbency and prolapsed mass was irrigated with mild cold water for 2 minutes. Oedema was further reduced by gentle digital compression. The prolapsed mass was lubricated with Pendistrin-SH intramammary ointment. The prolapsed mass was reduced and 1 ml of content of Pendistrin was placed into the rectum. A cotton plug was placed across the cloacae and was retained in situ by an adhesive tape taken around the borders of lower shell of tortoise. The plug was removed after every 12 hours and tortoise was allowed to urinate and defaecate for 3-4 hours. It was followed by intrarectal administration of pendistrin and reapplication of cotton plug for another 3 days. Tortoise was administered 1mg Dexamethasone s/c for 2 days and tetracycline granules were administered in drinking water for 5 days. Tortoise made uneventful recovery.

6.2 ANAESTHESIA AND MANAGEMENT OF TIBIAL FRACTURE IN BURMESE PEAFOWL

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The Burmese peafowl or green peafowl (Pavo muticus) is one of the endangered species of bird worldwide and population is found mainly in Vietnam, Cambodia, Laos, Myanmar,Thailand and China . In India its availability is sometimes reported in north-east adjacent to Myanmar. Information is available regarding the maintenance of such bird in captivity, mainly in the Zoos of Manipur and Mizoram. The article reports on tracing of one injured green peafowl in forest in Tarpho village located at about 150 Km east from Aizawl, Mizoram, toward the eastern boundary of India adjacent to Myanmer with tibial fracture and its anaesthesia and orthopaedical management. An adult green peafowl was presented with complete shaft fracture of tibia fibula which warranted internal fixation of the fracture. The bird was successfully anaesthetized with the combination of midazolam and ketamine and some physiological and haematological changes were noticed. The bird was rehabilated by successful management of the tibial fracture with intramedulary pinning

6.3 IMAGE INTENSIFIER GUIDED REMOVAL OF AIR GUN PELLETS FROM A MONKEY: A CASE REPORT

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A male monkey captured by Forest dept. was presented with a history of gun shot injuries leading to paraparesis. Radiographic examination revealed presence of two air gun pellets, one below the body of first lumbar vertebra and other on the medial aspect of right thigh below the skin. After emergency medication with methyl prednisolone sodium succinate, antibiotics and sedation with diazepam and ketamine, the air gun pellets were retrieved through a key hole surgery, under the guidance of image intensifier television. After successful outcome the animal was released in the forest.

6.4 INTRAMEDULLARY PINNING OF TIBIA IN A EMU BIRD

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A one year Emu bird weighing 30 kg was presented to the department of Veterinary Surgery and Radiology with the complaint of compound Tibia fracture due to sudden hit against hard object. On clinical examination, an oblique fracture involving mid shaft of right tibia with protrusion of one fractured end was seen. The physiological parameters of the bird were normal and the bird was healthy. Therefore it was decided to perform intramedullary pinning of tibia. The bird was sedated with I/M xylazine (30 mg) and anaesthetized with I/M ketamine (150mg).The onset of anaesthesia was seen in 10 minutes. Retrograde intramedullary pinning of tibia was done using standard surgical technique. The duration of anaesthesia was for 45 minutes and the bird recovered completely in 120 minutes. Post operatively, I/M injections of Amoxicillin -cloxacillin (500mg) for seven days, meloxicam (7.5mg) for three days, dexamethasone (4 mg) for two days were given. Skin sutures were removed after 12 days. The bird showed an uneventful recovery in a period of 5 weeks.

6.5 A RARE CASE OF A FOREIGN BODY IN OESOPHAGUS OF AN INTERMEDIATE EGRET - (MESOPHOYX INTERMEDIA)

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A wild Intermediate Egret was presented late in the evening at the hospital with a clearly palpable fishing hook, struck in the oesophagus. The animal lover, who presented the case, had a laboratory, so he took a radiograph which clearly revealed a fishing hook. Under Ketamine anaesthesia, the hook was directly approached and removed surgically and aseptically. The case was not presented for follow up, instead the animal lover reported over the phone that the bird flew away on the third day. The possibilities are discussed in the paper.

6.6 SURGICAL MANAGEMENT OF A RARE CASE OF MAMMARY TUMOUR IN A NILGIRI LANGUR : A CASE REPORT

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Department of Zoo & Wild Life and Animal Husbandry Department, Kerala.

A female adult Nilgiri Langur (Semnopithecus johni) was suffering from a chronic ulcerating wound on right mammary gland. The animal was anaesthesized with a Ketamine and Midazolam combination and local infiltration with 2% Xylocaine was done. The entire affected, hardened tissue simulating a growth was surgically excised. The surgical wound was apposed and closed with chromic catgut. After care and healing is discussed. A minor complication of gaping at the lower end of the incision was dealt with. The animal was released with the whole crowd. Possible causes for the condition are discussed.

6.7 CATARACT SURGERY IN A 17 YEAR OLD LIONESS

C.S. JAYAKUMAR, A. VARGHESE and V. RAMAKUMAR

Department of Zoo & Wild Life and Animal Husbandry Department, Kerala

A 17 year old lioness (Panthera leo) at Trivandrum Zoo, who was apparently healthy otherwise, was identified as having great difficulty due to a ripe cataract. After deliberation and planning, it was decided to conduct a cataract surgery. Preanaesthesia with Glycopyrrolate; induction with Xylazine and Ketamine; maintenance with Midazolam and Propofol and an ocular nerve block with 2% Xylocaine was the anaesthetic protocol adopted. Extracapsular lens extraction was conducted aseptically. The post operative care, aspects of anaesthesia care and survival are discussed.

6.8 EXTRACAPSULAR LENS EXTRACTION AND INSERTION OF INTRAOCULAR LENS IN A LION TAILED MACAQUE

C.S. JAYAKUMAR, A. VARGHESE and V. RAMAKUMAR
Department of Zoo & Wild Life and Animal Husbandry Department, Kerala

A male adult lion tailed macaque (Macaque silenus) with a mature cataract was identified at Trivandrum Zoo. After deliberation and preparation and planning, it was decided to conduct a cataract surgery. The surgery was conducted with the animal under deep sleep (using Ketamine and Midazolam) and ocular nerve block (with 2% xylocaine). Extracapsular lens extraction was performed and a human lens was inserted by dialing to ensure capsular placement of both heptics with minimal capsular damage. The post surgical care is also discussed. The animal is still in the Trivandrum Zoo.

6.9 MANAGEMENT OF INFIGHTING INJURIES IN A MALE LION

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Self-inflicting injuries or wounds occurred as sequel of infighting cause are of challenging task in day-to-day management of captive or semi-captive wild animals. A 13-year-old male lion suffering from multiple wounds was spotted during a routine visit for inspection of animals that were housed in semi-captive enclosures at BNP, Bangalore. Upon close observation it was evident that the animal was suffering from a lacerative type of wounds on the left lateral abdominal region and on the face near left eye area. The animal was apparently dull in appearance and reluctant to respond to routine instructions from animal attenders. The animal was moved into a protective enclosure with squeeze cage facilities. Upon securing the animal in a restraining squeeze cage wounds were carefully examined, irrigated with normal saline and thoroughly cleaned by removing the tissue debris, blood tinged pus, body hair and dirt. Finally, wounds were sprayed with Povidone Iodine and applied a fly repellent antimicrobial cream (Lorexane Cream). A therapeutic dose of strepto-penicillin was also administered intramuscularly. The follow-up wound care and antibiotic administration was undertaken on regular basis for next seven to ten consecutive days. During treatment period the animal was housed in a protective enclosure and separated from the other animals. In a span of two weeks duration, animal made uneventful recovery from body injuries.

6.10 BONE PLATING FOR THE MANAGEMENT OF COMPLETE MID-SHAFT RADIO-ULNAR FRACTURE IN A STRIPED HYENA

F. KARLETTE ANNE, C.L. BADGUJAR, M.A. DHAMI, D.O. JOSHI, M. DAR, R.H. BHATT, ROON MATHAI, N.H. KELAWALA and D.B. PATIL
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A striped hyena (Hyaena hyaena) from the Forest range, Surat was referred to the Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Anand, with the history of non weight bearing in right fore limb due to accidental trauma. Under sedation with Xylazine, clinical and radiological examination of the traumatized limb revealed a complete transverse overriding mid-shaft fracture of radius and ulnar, causing complete rotation of the limb. Bone plating was performed under diazepam and ketamine anaesthsia for stabilization of fracture fragments with 2.5 mm Sherman bone plates fixed rigidly to the bone using cortical screws. Routine post-operative care was carried out with antibiotic and analgesic. External coaptation using Robert Jones bandage was applied for additional support to the limb. The perioperative and post operative procedure is discussed.

6.11 INTRAMEDULLARY PINNING FOR FIXATION OF LONG BONE COMPOUND FRACTURES IN BIRDS - A REPORT OF 3 CASES

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Three wild birds including a black Ibis (Plegadis falcinellus), a sarus crane (Grus antigone) and a peacock (Pavo cristatus) were presented at the Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Anand, Gujarat, with the history of compound fracture of the limbs. Under ketamine anesthesia the

fracture fragments were successfully immobilized using intramedullary pin by retrograde method under the guidance of an IITV. External coaptation was applied for additional support post operatively, along with antibiotics and multi-vitamin supplements, before releasing the birds.

6.12 MANAGEMENT OF CARAPACE FRACTURE IN A TORTOISE

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A tortoise weighing 2 kg was presented with a history of fall from 30 ft height. Clinical examination revealed fracture of the carapace with protrusion of coelomic membrane. On radiography (42 kVp, 10 mA) fracture of dorsal carapace was evident. After cleaning the protruded structures was replaced back into the body cavity using a sterile gauze .Then the animal was placed in a warm water bath maintained at 25 degree Celsius for 20minutes to get rehydrated.Later 1% Metronidazole ointment was applied on the wound .The broken carapace after alignment was fixed using an adhesive and the wound was bandaged with sterile guaze and tape. Butorphanol tartarate was given @ 2mg/kg body weight subcutaneously at the neck region. On the first week animal was found to be taking food normally but could not regain the movement of hind limbs completely. The wound was again cleaned and rebandaged After one month, bone wax was applied to reunite the fractured carapaceal pieces. Animal made uneventful recovery

6.13 DIAZEPAM-CHEMICAL IMMOBILIZATION IN AXIS AXIS-A REVIEW OF 12 SPOTTED DEERS

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Capture Myopathy is the main etiology in the loss of valuable spotted deer's, especially at the time of minor translocation or minor surgical procedure. Diazepam at the rate of 1.5 gm per deer, weighing 50 to 120 Kgs orally, found to be highly safe and suitable chemical immobilizing technique for translocating captive spotted deer. In the present study 12 spotted deer's were translocated from a temple to the forest Department Park. All the animals were healthy and were in the habit of both group feeding and hand feeding from outside the cage. All the animals were with held water and feed for 18 hours and 24 hours respectively before sedation. Atoxia was noticed following oral administration 14.25 ± 2.7 minutes, sedation for safe handling 8.58 ± 2.81 hours and time taken for total recovery was 41.08 ± 8.2 hours. All the animals recovered safely without any complication like bloat, injuries, excitement, Myopathy, etc.

6.14 STUDIES ON REPTILE ANAESTHESIA USING KETAMINE HYDROCHLORIDE

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Snakes were anaesthetized under ketamine anaesthesia @ 50 - 75 mg / kg, im for electrocardiography, radiographic and imaging studies. Induction of anaesthesia was achieved within 3 - 5 minutes and duration remained for more than 90 minutes. One snake was intubated for artificial respiration. Studies indicated that induction and recovery varies according to ambient room temperature.

6.15 SUCCESSFUL SURGICAL TREATMENT OF BILATERAL AURAL ABSCESS IN RED EAR SLIDER TURTLE

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A one year old red ear slider male turtle is brought to the clinic with history of anorexia lethargy and swelling around neck. The turtle was reluctant to move and stopped eating from last one week.Careful

physical examination revealed that the turtle was suffering from bilateral ear abscess. The tympanic membrane protruded outside with clearly visible yellowish white Caseous material inside tympanic cavity. The turtle was in great discomfort and was not able to open the jaw. After a thorough checkup it was decided to remove abscess surgically. Surgical manipulation of aural abscess done under appropriate anesthesia (Ketamine 30-44mg/Kg bdwt -30% carapace weight.) An Incision is taken through the entire thickness of the tympanum along its ventral border from 9 o clock to the 3 o clock positions. the incision is then connected in the horizontal direction across the center of the tympanum with out damaging the columella inflammatory debris was removed by using small artery forceps. After complete debridment the Eustachian tube was gently flushed with saline to completely remove all debris. Following this the ear canal is liberally levaged with anti microbial solution (Povidone iodine) gentamycine ointment is applied once a day for seven days till it healedwithsecondary intention. It has taken 11 days for complete wound healing, and turtle started eating immediately after recovery from anesthesia (with in 36 hrs) During recovery period turtle was kept in appropriate manage mental conditions.

6.16 COMPLICATION OF IMMOBILION-LA TRANQUILIZATION IN AN ASIAN ELEPHANT (ELEPHAS MAXIMUS)

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A captive male makhna aged about 45 years belonging to chandaka elephant sanctuary showed symptoms of musth on 16.8.07. It brake into the nearby villages and damaged properties. The forest officials guided the elephant back into the territory of sanctuary. It was immediately hobbled and tethered securely. Again it became aggressive and it was decided to tranquilize it. The elephant was darted with 4ml of Immobilion LA using Dist-inject equipment for sedation. After darting, the animal was further excited, broke its chain and ate 2 bags of wheat and few kg of turmeric from store room by breaking its door. Antidote M 50-50 (Diprenorphine) 8ml was administered into the ear vein. The elephant died within 45 minutes of darting. Details of tranquilization process and cause of death will be presented.

6.17 INTERMUSCULAR CHRONIC ABSCESS IN AN AFRICAN GREY PARROT (PSITTACUS ERITHACUS)

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An adult male, African Grey Parrot weighing 450gms was presented to the University Veterinary Hospital, Universiti Putra Malaysia with a history of progressive, diffuse swelling of left tibio-tarsal region and mild intermittent weight bearing lameness for duration of 8 months. Upon Physical examination the bird showed mild discomfort in its gait and occasional lameness of left hind limb. A ventro-dorsal radiographic view of the hind limbs showed soft tissue swelling at the left tibio-tarsal region and mild bony changes at the lateral condyle of the femur. The bird was presented after two months with no improvement .Upon physical examination of the left tibiotarsal region and Ventrodorsal radiographic examination of the limb revealed a marked soft tissue swelling at the left tibiotarsal region. Ultrsonography (Toshiba) examination revealed a space occupying mass with few circular hypo echoic areas within the mass. General anaesthesia was induced with 5 percent Isoflurane gas and was maintained with 1-2% percent Isoflurane and oxygen (1.0L/minute) delivered using a non-cuffed endotracheal tube of size 2.An encapsulated mass was located in-between the gastrocnemius medial head and tibialis cranialis muscles. The encapsulated mass was excised and removed completely .Muscle and the skin was closed in routine manner. The size of the mass measured approximately 4.5cm in length, 2 cm in breadth and 2mm thickness .The pale yellow encapsulated mass contained casseous yellowish thick materials inside. Histological examination of the mass revealed, well encapsulated necrotic tissue with mild inflammation and severe fibrosis .The bird made an uneventful recovery.

6.18 SURGICAL MANAGEMENT OF FRACTURE OF TIBIO-TARSUS IN AN EMU- DROMAIUS NOVAEHOLLANDIAE

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An emu of 6 months of age was presented to Veterinary College Hospital, Hebbal, Bangalore with a history of non-weight bearing on the right hind limb and bone exposed to outside on the same limb. Clinical examination revealed tibio-tarsus fracture. The bird was anaesthetised using ketamine hydrochloride at a dose rate of 25 mg/kg body weight intra-muscularly on to the pectoral muscles The fracture was stabilised using k-wire of 2.5 mm diameter. Intra-medullary pinning was performed in a retrograde manner. Post-operatively the bird was put on Sporidex syrup 125 mg for 5 days. The fracture was stabilised successfully.

6.19 SURGICAL REMOVAL OF BULLET FROM THE VERTEBRAL COLUMN OF A TIGER

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Tiger weighing approximately 200 Kg. was brought to Van Vihar National Park, Bhopal from Satna forest range with the history of injury on the vertebral column near the last lumbar vertebrae and hind limb paralysis. The examination of the animal showed wounds on the right side lateral to the 5th lumbar vertebrae and on left side parallel to the 7th lumbar vertebrae with no reflex response in the both the hind limbs and tail. The radiographic examination of the animal showed presence of foreign body at the level of last two lumbar vertebrae. The animal was operated under xylazine- ketamine anaesthesia which was maintained for 6 ½ hours. A large size bullet weighing 42 gm and 2.1 cm length was removed from the body of the last lumbar vertebrae. Animal showed improvement during first two days after surgery but collapsed on 3rd day after Surgery.

6.20 SURGICAL REMOVAL OF IRON PALLETS FROM THE HEAD REGION OF A CROCODILE

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A crocodile weighing approximately 45 kg. was brought to the T.V.C.S.C. from forest range, Damoh with the history of injuries on face and below the eyes. The examination of the animal showed large wounds just above the nasal bone and small injuries below the right and left eye. The radiographic examination of the animal showed presence of several pallets of iron below the nasal bone, right and left orbital rim and above the medial canthus of the eye on the frontal bone. The animal was operated under Ketamine anesthesia and 10 pallets were removed. The other pallets, which were deeply embedded in the tissue were left as such. The animal showed complete recovery after surgery.

6.21 MANAGEMENT OF EXTENSIVE WOUND IN THE NECK REGION OF HYNA

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A hyna was brought to the T.V.C.S.C. from the Ranjhi forest area, Jabalpur with extensive wounds in the neck region due to wire snare. The examination of the animal showed presence of extensive maggotted wound all around the neck of the animal The wounds of the animal were cleaned thoroughly with hydrogen peroxide and treated with terpendtine oil and topicure spray for first two days along with parental administration of Ivermection 1 ml. s.c. This was followed by daily dressing with lorexane ointment , topicure spray and parental administration of cefotaxim. Animal recovered completely in 15 days and again released in natural habitat

6.22 IMPACTION DUE TO FOREIGN BODY IN EMU

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Impactions due to foreign bodies in emu birds are common problem encountered. Impaction in emu birds were reported by emu farmers all over Tami Nadu. During this study period, 25 such cases were reported to this research centre. Two emu farmers brought the birds to this centre with same problem. Three such cases were attended in the emu farms at Pudukkottai district by the technical staff members of this Centre. Twenty cases were attended in the emu farms situated other parts of TamilNadu by the technical staff members of this centre. The etiological agents for impaction, the clinical signs revealed by these birds, the diagnosis of such cases, palliative treatments suggested, the surgical intervention carried out and the outcome of the treatments carried out discussed in detail.

6.23 AMPUTATION OF FRACTURED FORE-FLIPPER IN A GIANT SEA TURTLE

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Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

A Sea turtle about two-feet-long was seriously injured, with its left fore-flipper fractured was rescued off the coast & reported to the Bombay veterinary college, OPD .There was continuous spurting of blood from injured flipper. After confirmation on Radiography, Amputation of flipper was done under 2 % lignacaine local anesthesia. Daily dressing of amputated part and antibiotic enrofloxacillin & anti-inflammatory inj.Melonex was done. Sea turtle recovered uneventfully.

6.24 EXTIRPATION OF RUPTURED EYEBALL IN A CAMEL-A CASE REPORT

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Dantiwada Agricultural University, Sardarkrushinagar-385506, Dist-Banaskantha, Gujarat.

A male camel aged 5 years was brought to the clinic with a history of ruptured eyeball due to injury of with fencing with no vision and continuous dribbling of tears along with blood showing severe pain, anorexia for the last seven days. Extirpation was done under xalazine sedation and local infiltration of 2 % lignocain HCL. The wound was closed in routine fashion and post operative antibiotic oxytetracycline and anti inflammatory drugs for five days. The skin sutures were removed on 12th post-operative day. Animal recovered well after surgery.

6.25 INTESTINAL OBSTRUCTION IN A PYTHON AND ITS SUCCESSFUL EXTRACTION

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A female Python was presented for treatment with the history of rolling, anorexia and constipation since one week. Clinical examination revealed two hard swellings of about 4" and 6" at ventral body about 10 inches cranial to the cloacal opening. Radiograph in ventrodosal and lateral position revealed presence of bone pieces along with the eggs in the genitelia. Surgical intervention was carried out under ketamine hydrochloride anaesthesia @ 5 mg/kg body weight. Attempts to extract the foreign bodies with, local manipulation and use of whelping forceps failed since the hard eggs were found to obstruct the passage of the foreign body. The uterus was incised through the cloacal aperture and two egges were delivered. The genitelia was sutured and the foreign bodies (hooves of cloven footed pray) were the extracted through the cloacal opening. A course of antibiotic and analgesics was given and the python showed uneventful recovery.

6.26 USE OF OXOFERIN (TETRACHLORODECAOXIDE) SOLUTION FOR CHRONIC WOUND HEALING IN AN ASIATIC ELEPHANT (ELEPHUS MAXIMUS)

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A 35 year old intact female Asiatic elephant weighing around 3.5 tonnes was referred to Madras Veterinary College Teaching Hospital with the past history of chronic suppurative wound on its right thigh region treated with indiscriminate medications of numerous antiseptics, ointments, systemic administration of antibiotics - penicillin and gentamicin, analgesics, and antihistamines and nutritive supplements. The present history reported was non healing infected suppurating cavity and ulcerated nature of the wound. The discharge from the wound was sent for antibiotic sensitivity and culture tests. Laboratory result revealed Streptococcus aureus with drug sensitivity to enrofloxacin. The wound was thoroughly lavaged with hypertonic saline and 1% povidone iodine solution and finally dressed with gauze soaked in oxoferin (Tetrachlorodecaoxide, Elder Health Care Ltd.). Enrofloxacin @ 2.5 mg/kg body weight was administered orally twice daily for 10 days. The discharge was reduced and the wound showed progressive healing with healthy granulation tissue formation. Continuous topical use of the drug showed appreciable wound healing and the healing was in progress.

6.27 AN UNUSUAL CASE OF ENDOMETRIOSIS EXTERNA IN A LIONESS

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Eight years old Lioness was presented with complaint of swelling on the ventral aspect of abdomen which was present from past two months and it was said to be a rescued animal. The animal was examined under anesthesia. There were soft fluctuating hard masses on ventral abdomen at different locations. Fine needle aspiration did not reveal any information. It was decided to perform surgery. The lioness was anaesthetized using Xylazine and ketamine combination to effect. Surgical excision at the site revealed watery fluid pockets with different sizes in subcutaneous and muscular part of entire ventral abdomen. Excised the mass along with fluid filled pockets and sutured the incision in a routine way. The samples collected were sent for histopathology. Microscopic examination revealed endometriosis Externa. Postoperative antibiotics, analgesics and regular dressing made the animal uneventful recovery.

6.28 INTRAMEDULLARY PINNING FOR FEMUR FRACTURE IN AN EMU BIRD

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A 2 year old male emu bird was reported to the Veterinary College Hospital, Namakkal with a history of slippage on wet floor, since then the bird was not able to stand. On clinical examination left femur fracture was suspected which was confirmed radiographically, showing mid shaft femur fracture. Under xylazine, ketamine and isoflurane anesthesia the fracture was repaired with a 6mm Steinman pin introduced by retrograde method. Periodical clinical and radiological evaluation was carried out and the animal recovered uneventfully.

6.29 STEM CELL THERAPY FOR POSTERIOR PARESIS AND PRESSURE SORES IN A GUN SHOT INJURED WILD TIGRESS

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A multiple gun shot injured wild tigress at Satakosia Wildlife Sanctuary, Orissa was rescued and transferred to Nandan Kanan Zoo for detail examination and treatment. Two bullets were detected in the tigress by metal detector and radiograph. Routine antibiotic and dressing of wounds after removal of bullets resulted in healing of the wounds but the animal was unable to get up in its hind limbs. Tigress was presented to Surgery Department, veterinary college for sonographic examination and radiography of lumbar regions. Compression between L5 and L6 was suspected. Though the tigress was eating, defecating and urinating normally it developed pressure sore on both sides of point of hip. Physiotherapy, keeping in sling under anesthesia, provision of water bed, molinea surgipad, infusion of human protein, application of recombant human epidermal growth factor did not improve the condition. Finally autologous bone marrow cells were collected from femur and cultured in the Laboratory of CIFA (Cental Inland Freshwater Aquaculture) for raising of stem cells. The cultures of stem cells were transplanted into the periphery of wounds and into the lumbo-sacral space. There was healthy granulation of wounds. Animal attained sitting posture with lifting of tail but due to shifting of sides sores reappeared. The details of treatment schedule will be presented.

FOOD ANIMAL SURGERY SESSION

7.1 NON-COMPLICATED SURGICAL MANAGEMENT OF ATRESIA ANI ET RECTI IN LARGE WHITE YORKSHIRE PIGLETS

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Absence of anal opening and absence of rectum (atresia ani et recti) is a developmental defect commonly present in bovine calf but incidence of this defect also reported in piglets. Four recently furrowed piglets 3 males and one female were found with absence of anal opening and rectum (atresia ani et recti), female only with absence of anal opening (atresia ani). All piglets were surgically treated and postoperatively syrup Mox was given orally for 5 days, antiseptic dressings of wounds were done with povidine iodine solution. These piglets recovered uneventfully.

7.2 CONGENITAL ANAMOLIES OF URINARY BLADDER IN NEW BORN FEMALE BUFFALO CALVES-ULTRASONOGRAPHIC OBSERVATIONS

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Five newborn female buffalo calves (2-5days) of the age were brought to TVCSC with the history of problems in urination. In first category (2 cases), of just 2 days of age, buffalo calves had the history of not passing urine immediately after birth. In second category (3 cases) between age group of 3-5 days, there was dribbling of urine from the umbilicus and no passing of urine from the normal passage. Ultrasonographic study was carried out in all the five cases to know the exact cause of retention of urine in first group and to see the exact attachment of urachus with the urinary bladder in second group so that urachus can be ligated by surgical intervention. In first category, the ultrasonograms showed irregular hypoechoic shadow of distended urinary bladder with hyperechoic embryonic membranes lining the urinary bladder thus preventing the passage of urine from urinary bladder to the urethra. In second category of cases, the ultrasonogram depicts presence of two connections at the periphery of hypoechoic urinary bladder one of urethra and second of urachus. In first category, a sterilized long, narrow teat siphon was passed into the urethra under caudal block and pushed with little force to tear the membrane and both calves passed the urine .A sterilized polyethylene catheter was passed into the urethra and it was transfixed in situ. Both the calves survived. In second category of cases of patent urachus, on the basis of ultrasonographic observation, the abdominal cavity was opened and the urachus was ligated at both ends using silk no.1.The abdominal cavity was closed. Finally, sterilized polyethylene catheter was passed in to the urethra and it was transfixed in situ. All three calves started passing urine. Out of three calves only two could be saved and one calf died due to peritonitis. The post-operative management in both groups included administration of fluids, antibiotics, analgesics, B-complex and daily anti-septic dressing. After a gap of ten days, the polyethylene catheters were also removed.

7.3 SURGICAL MANAGEMENT OF INTERDIGITAL EOSINOPHILIC GRANULOMAS IN CATTLE

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Three crossbred cows aged 5-8 years presented to the Teaching Hospital, Puducherry with the history of limping due to an interdigital mass which was progressively growing for the last 6 months to one year. In all the animals, the hind limbs were found to be affected and in one animal it was bilateral in occurrence. Clinical examination of the site revealed protuberance of the skin in the interdigital space at the dorsal half. The growth was reasonably hard in consistency and in one animal it was ulcerated showing bleeding with myiasis. Surgical excision of the growth was performed under sedation with Xylazine @ 0.05 mg/kg body wt IV and digital nerve block using Lignocaine hydrochloride 2% solution. Under aseptic precautions, the entire mass was removed in a wedge shaped pattern by making two longitudinal incisions. Part of the protruding interdigital fat was removed and the skin was sutured by routine manner. The hooves were bandaged together and protected by an additional polythene cover. The

animals were administered with antibiotics and the dressings were changed on alternate days till healing noticed. All the animals showed uneventful recovery by 3 weeks. Histopathological examination of the excised mass revealed eosinophilic granuloma.

7.4 CASTRATION IN STANDING POSITION : AN APPROACH

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Twelve cases of bulls aging 3 - 4½ years were presented to Teaching Veterinary Clinical Complex, Veterinary College, Udgir for castration. The animals were sedated with Xylazine @ 0.02 mg/kg IM. After 20 minutes the bulls were restrained in standing position in Travis by tying hind limbs to two posterior bars of Travis and head was also restrained anteriorly with a rope. The testicles were pulled to caudal side (backwards) from space between two hind limbs and Tincture Iodine was applied on spermatic cords. Asculep forcep was applied on spermatic cord of left side same procedure was adopted for right testicle. Lastly Tincture Iodine was applied on bites of Asculep forceps. Antibiotic (Streptopenicillin @ 10 mg/kg BW IM) and antinflammatory (Ketoprofane @ 1 ml/45 kg BW IM) was given for three days and dressing with Tincture Iodine was also advised for three days. The approach was found easy, safe, less time consuming and requiring less manpower.

7.5 INTUSSUSCEPTION IN BULLOCKS : A CLINICAL STUDY

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Twelve cases of cattle presented to Teaching Veterinary Clinical Complex, Veterinary College, Udgir with the history of absence of defecation, kicking at the belly, grinding of teeth, straining and colic formed the part of study. On the basis of history, clinical signs and per-rectal examination cases were diagnosed for intussusception. The disease was found only in bullocks ageing 4-7 years and the most probable causative factor was found to be heavy drinking of water/feeding after heavy exertion. Right flank laparotomy followed by end-to-end anastomosis was performed as a corrective surgical treatment. All the twelve cases recovered and survived normally.

7.6 PHOTOSENSITIZING DERMATITIS IN CALVES

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Bovine calves aged between 5 to 12 month, suffering from skin lesions were presented to the hospital. History revealed that all the animals were of local community, which had free access to the green pasture grown on local sewage canals, which were of highly contaminated with sewage pollutants. Clinical examination revealed dermatological lesions of varying severity ranging from: erythematous eruptions to sever necrotizing dermatitis involving patches of body areas, mainly on the back. Necrotizing skin lesions, dry scales or wart like dry skin lesions were predominantly observed around the muzzle, eyelids and ears. Condition was diagnosed as photosensitizing dermatitis, which could have resulted due to abnormal skin reaction to the photosensitizing effect of accumulated phytochemicals and synergic toxic effects of fungal and chemical pollutants from ingested green pasture. The treatment regimen was comprised of daily wound care with application of topical antimicrobial solution/ ointments (Povidone iodine/ Soframycin® skin cream), an initial dose of prednisolone (1 mg/ kg body weight), followed by antihistamine (Chlorpheniramine maleate 1 mg/kg. Bwt.), parental administration of a course of antibiotics (Gentamicin or enrofloxacin) and a supportive dose of Vitamin A at weekly intervals. During treatment period, owners were advised to keep the animal in-door and not to allow access to green pasture on local sewage canals. Depending on the soverity of the condition, over the period of 4 - 6 weeks duration of treatment regimen, all the animals were made uneventful recovery.

7.7 CRYOSURGICAL DISBUDDING IN CROSSBRED AND BUFFALO CALVES

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A total number of seven crossbred and six buffalo calves aging 1-10 weeks were selected for the present study. The calves were grouped according to species namely, Disbudding in crossbred calves (Group-I, 7 animals) and Disbudding in buffalo calves (Group-II, 6 animals). The cryoguard protected horn buds were cryofrozen at -400C using double freeze-thaw cycles. The cryofrozen horn bud showed hyperemia immediately following freezing. Later, the dry and necrosed horn buds detached and sloughed of over a period of month. The procedure was simple, easy, quick, stress free and did not require anaesthesia. It was observed that the younger calves were the best candidates for cryosurgical disbudding. The older age calves with grown up horn buds required second sitting.

7.8 AN UNUSUAL CASE OF PARASITIC CYST - COENURUS GAIGERI IN THE LOWER EYELID OF A GOAT

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A six month old goat was presented with history of swelling present around the left eye since few days. The goat had normal temperature, respiration and pulse. Physical examination of the eye revealed a soft swelling present on the lower eyelid which fluctuated on palpation. The goat did not evince pain on palpation. The eye reflexes and all the adnexa of the eye including vision were apparently normal. Based on the history and physical examination, the case was diagnosed as "Abscess/Cyst".The site around the eye was prepared for aseptic surgery. A linear incision on the swelling revealed oozing out of approximately 2 ml of clear fluid and appearance of a white mass at the site of incision. Digital pressure and expulsion of the contents through the incision revealed it to be a parasitic cyst. Macroscopic and microscopic examination of the cyst revealed it to be as "coenurus gaigeri" measuring 2.9 cm in length and 1.2 cm in breadth with large number of protoscolices in clusters attached on the internal surface of its wall. Photographs and video clipping will be presented and discussed. Numerous authors have located coenurus gaigeri in subcutaneous tissue, shoulder, thigh, neck muscles, heart, kidney, ovary, uterus, rectum and urinary bladder in goats. There is no report of coenurus gaigeri in the eyelid, therefore, this appears to be the first case of coenurus gaigeri cyst located in the eyelid of a goat

7.9 SUCCESSFUL FIELD REPAIR OF CRANIAL FRACTURE IN A GOAT - CASE REPORT

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An eight month, black Malabari doe was presented after being attacked by street dogs thirty minutes back. Goat was recumbent, with epistaxis and in shock. Dog bite wounds were present on the neck, lateral abdomen and face. At the junction of the right frontal bone and frontal process of the zygomatic bone, broken ethmoid turbinates, splintered bone segments and cranial cavity bearing the meninges could be visualized. Also along the medial canthus, nasal bone was broken exposing the nasal cavity dorsally. Euthanasia was recommended, but the owner was against it. No radiographic facilities were available. Intravenous fluids, co-trimoxazole, dexamethasone administered initially, wounds were dressed and xylazaine and lignocaine were used for restraint. Splintered fragments were removed, frontal bone and frontal processes were apposed and simple interrupted skin sutures, taking bites through the periosteal region intermittently and ensuring no dead space. Skin tension would facilitate immobilization of the fragments. Nasal cavity dorsal opening was sutured. Frusemide, B-Complex, Dextrose 25% and Enrofloxacin were administered along with tetanus toxoid and antirabies vaccination.The goat improved daily and went onto make an uneventful recovery.

7.10 REPAIR OF UMBILICAL HERNIA IN PIGS - A REPORT OF FOUR CLINICAL CASES

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Four clinical cases (all female) of congenital umbilical hernia in Large White Yorkshire × Ghoongroo piglets of 15-25 kg body weight of Piggery Project Farm of the University were operated for repair under Atropine Sulphate @ 0.05mg/ kg, Xylazine Hcl @ 2 mg/ kg I/M with Ketamine Hcl @ 10 mg/kg and Diazepam @ 1mg/kg I/V anaesthesia. The anaesthesia was standardized. Two large hernial rings of approximately 15 cm length were closed with interwoven continuous No. 1 silk thread suture and other two were closed by Polyglactin 910 suture. After postoperative care and removal of suture the piglets recovered from stunted growth with average increase of body weight of 10 k.g in a month.

7.11 CLINICAL EVALUATION OF CENTELLA ASIATICA LEAF PASTE IN THE TREATMENT OF SEPTIC WOUND IN CATTLE

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* Gandhigram Rural University, Gandhigram, Tamilnadu.

A clinical study was conducted in 60 cattle to assess the wound healing efficacy of Centella asiatica (Vallarai) fresh leaf paste. The animals were randomly divided into two groups of 30 each and treated with povidone iodine ointment in group I and fresh leaf paste of Centella asiatica in group II. Progress of wound healing was judged by appearance, resolution of inflammation and rate of wound contraction. Pus formation (73.33%), presence of foreign matter (31.66%) and necrotic tissue (23.33%) were the common findings on the day of presentation. Granulation tissue appeared on 5th post treatment day on both groups. Statistical analysis revealed no significant difference in per cent wound closure between the two groups at different time intervals. The mean time taken for complete healing of wound was 18.92 and 17.20 days in group I and II respectively. The leaf paste is recommended for topical application in the treatment of wounds in cattle as an alternative to chemical antiseptics. Herbal medical treatment will pave the way in the long run for organic livestock production sans antimicrobial drugs.

7.12 MANAGEMENT OF BILATERAL SCIATIC PARALYSIS IN A GOAT: A CASE REPORT

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A seven year old doe was presented with the history of weakness of both the hind limbs since one month. On examination the doe was found unable to bear weight on its hind limbs and was sitting on haunches and acute flexion of both hock and fetlock joints. Radiography of the lumbar spine and pelvis did not reveal any lesion. The condition was symptomatically diagnosed as sciatic paralysis. The goat was subjected to ultrasound massage of the lumbo-sacral region and also the posterior thigh region upto the hock for a period of ten days using ayurvedic oil (Sahacharadi thaila) as the coupling medium. Prednisolone acetate tablet was given at the rate of 2 mg/kg body weight for first five days followed by 1 mg/kg body weight for next five days and later tapered down to 0.5 mg/kg body weight for the last five days. Neurotropic vitamins with other multi-vitamin and mineral supplementations were given. Topical applications of liniments and hot fomentations were also advised. The animal started showing signs of improvement from the third day onwards and started standing square on all four limbs by the end of second week. A second course of ultrasound massage for ten days was given after a brief break of one week and the supplementations were continued. By the end of first month of treatment the doe was very active and the functional limb usage was normal and the case was discharged.

7.13 INCIDENCE AND SURGICAL MANAGEMENT OF MILK FLOW DISORDERS IN DAIRY ANIMALS

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Eighty dairy animals from university and near by dairy farms of Anand town were studied for the evaluation of surgical techniques for correction of the milk flow disorders (MFD). The incidence of MFD was more in the age group of 6-10 years , lactation group of 2nd and 4th , post partum days between 16- 30 and high milk yielders . All cases were recorded in the milking machine operated dairy farm. Majority cases of teat obstruction were located in lower one third of the teat. All the cases were treated using BP Blade No. 15, under local infiltration at teat orifice and physical restraint of the animal. There was no recurrence till six months of observation period. The most effective method of correcting teat obstructions in lower one third at the tip was cross incision technique using BP Blade No. 15.

7.14 UNUSUAL LARGE UMBILICAL HERNIA IN PIG: A REPORT OF TWO CASES

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Two male Landrace pigs, 9 months of age were presented to the Institute Referral Polyclinics with the history of swelling at the umbilical region since last two months. The swelling was gradually increasing in size. On palpation the swelling, animal did not feel any pain or discomfort and the contents were reducible. The appetite of the animals was slightly reduced. Animals have normal temperature, respiration and pulse rate. On clinical examination the case were diagnosed as a case of umbilical hernia. The hernial ring was 18-20 cm in diameter. The herniorrhaphy was performed under atropine-azaperon-ketamine combination (intramuscularly) of anaesthesia. An elliptical incision was made on the swelling. The hernial sac was dissected free and opened. The hernial contents were pushed back into the abdomen and the hernial was repaired with poly glycolic acid (PGA) suture material. Skin was closed with silk suture material using mattress suture pattern. Antibiotics and analgesics were administered for 5 days postoperatively. Skin sutures were removed on 15th postoperative day. Mild inflammatory swelling was noticed around incision line up to 7 days, which was completely subsided by 15th postoperative day. No recurrence was observed upto 6 months post-operatively.

7.15 INCIDENCE AND MANAGEMENT OF CONGENITAL PROBLEMS IN RUMINANTS

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Incidence of congenital problems was studied in 18170 surgical cases treated during the last 12 years. Atresia ani was the most common congenital disorder noticed in both large and small ruminants. Umbilical hernia was the next common problem followed by skeletal defects such as contracted flexor tendons, arthrogryphosis, deformational defects, lateral luxation of patella, polymyelia etc., rare cases noticed were triopthalmia, pervious urachus, absence of vulva, decephalic foetus, congenital thymic neoplasms, patent ductus arteriosus, perosomus elumbatus-atresia ani et recti etc. Inaddition to atresia ani, common congenital condition noticed in goats(kids) was penile-urthral dilatation hypospadias. Radiological and chromosomal studies were undertaken to study the details of intersex-hypospadias condition along with the evaluation of surgical and nonsurgical management. Surgery of atresia ani, umbilical hernia, pervious urachus yielded 100 % success. Whereas, surgery was not successful for atresia coli. Surgery for congenital flexor tendon yielded success and calves were able to walk and work later when either two limbs were involved and the cases were presented within 7 to 10 days after birth. The surgery could not correct the severe cases of lateral luxation of patella in cow calves. Surgery could not be attempted for arthrogryposis involving multiple joints. Surgery was successful in all the cases of congenital neoplasms of thymus in claves and cow and cleft palate in calves. In conclusion, atresia ani was the most common, simple to treat requires less post-operative care when compared to most of the congenital conditions described above which required adequate skill and post-operative management.

7.16 COMPARISON OF VENTRAL DRAINAGE AND SCROTAL ABLATION TECHNIQUE FOR THE TREATMENT OF SCHIRROUS CHORD IN BULLOCKS

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Two surgical techniques were evaluated to assess the success rate in bullocks presented with complication of castration such as different grades of pyogenic inflammation and fibrosis of scrotal sac and spermatic chord. The cases were referred from field with complaint of huge swelling of scrotum and consisted history of closed method of castration. The cases were operated under xylazine sedation and local analgesia. In six bullocks, open drainage technique was followed and in fifteen bullocks, scrotal ablation technique was followed. In both the cases, spermatic chord was ligated on a healthy area. However, time required was more in ventral incisions as dissection was required to remove the adhesions of the infected and fibrosed scrotal sac and drainage of pus. Ventral drainage technique required prolonged post operative care as the scrotal cavity was entered while removing large quantity of pus and infected tissue. It required daily irrigation of the cavity, prolonged antibiotic therapy and hospitalization. Scrotal ablation technique avoided contamination of the surgical site as all infected sac and the pus were excised without puncturing. It also required less post operative care as only dressing of the wound and three days antibiotic therapy. All the fifteen operated cases of using scrotal ablation technique showed early recovery although; post operative swelling was seen in few cases. Scrotal ablation technique is a preferred technique than taking a incision on the ventral aspect of scrotal region.

7.17 SUCCESSFUL MANAGEMENT OF RARE CASE OF DIAPHRAGMATIC HERNIA IN A COW CALF UNDER LOCAL ANALGESIA

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Diaphragmatic hernia is commonly reported in buffaloes and rarely in bullocks and bulls. Diaphragmatic hernia is probably not recorded in young cow calf and hence this paper presents this type of disorder, its diagnosis and successful treatment. A six month old calf was presented with persisting tympany since 15 days without responding to the medical treatment. No symptoms of regurgitation, abduction of elbow, kyphosis were present. Laboratory examination revealed complete absence of protozoal motility, severely reduced protozoal desiodophilic activity, total volatile fatty acids and increased methylene blue reduction time. Radiological examination confirmed diaphragmatic hernia. Rumenotomy operation was performed, the contents evacuated, the size and the location of ring was ascertained. On second day, diaphragmatic hemiorrhaphy was performed using transabdominal approach under local analgesia and xylazine sedation. The hernia ring was about 5 cm and large portion of reticulum herniated into the thoracic cavity showing severe adhesions with the lungs. The reticulum re positioned, ring sutured using Silk No 2 by following simple continuous with lock stich suture. The calf started taking feed normally within three days, showed normal values of total volatile fatty acid, methylene blue reduction time and ruminal pH after 15 days and recovered uneventfully.

7.18 PREVELANCE OF RUMEN IMPACTION DUE TO PLASTIC MATERIALS AND EFFICACY OF RUMENOTOMY ALONE OR WITH ECOTAS PROBIOTIC OR RUMINAL CUD TRANSPLANTATION IN COWS AND BUFFALOES

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Prevalance of rumen impaction due to ingestion of waste plastic materials was estimated in animals sent for slaughter and in animals sent for treatment. The prevalence was studied in over 1500 cattle and buffaloes slaughtered. The prevalence in bullocks was 3.67 per cent and in buffaloes was 9.62 per cent. The prevalence of plastic induced impaction out of 7568 cattle and buffaloes treated for various surgical disorders during the last ten years was 0.44 per cent. The prevalence was more in slaughter house situation than in animals presented for treatment. Clinical study was conducted to know the most specific clinical signs of plastic induced digestive disorder, changes in physiological, haematological, biochemical and ruminal fluid and also to evaluate three treatment methods. Sunken hard left flank with emaciation and scanty faeces was the most specific clinical sign. The physiological and

matological values were within the normal limits. Alkaline ruminal pH was the most consistent feature and could sed as a diagnostic tool in field level. Reduced protozoal motility, density, iodophilic activity, total volatile fatty ds were characteristic whereas methylene blue reduction time was increased. Slightly reduced serum calcium, sphorous, protein levels were noticed whereas, serum sodium and chloride levels were normal. Eighteen clinical es were divided into three groups consisting of six in each. Plastics were removed through rumenotomy in group umenotomy followed by ecotas probiotic administration in group II and rumenotomy followed by ruminal cud nsplantation were carried out in group III. The improvement in feeding, ruminal pH, protozoal motility, density, dophilic activity, total volatile fatty acid level, methylene blue reduction time, and biochemical parameters were er and significantly different in groups II and III when compared to group I. The improvements were seen as early day 7 in group II and III and on day 15 in group. The results suggested that administration of ecotas probiotic or sh cud transplantation are highly beneficial in survival of cases of plastic induced impaction instead of rumenotomy e and can be easily adopted in field practice. The study suggested that laparo-rumenotomy is the only diagnostic curative method for the management of plastic induced impaction and the laboratory findings only help in knowing severity of the case.

7.19 MANAGEMENT OF ACQUIRED VISCERAL EVENTRATION IN RUMINANTS: CASE REPORTS

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Four cases (2 bovine, 1 ovine and 1 caprine) of acquired eventration were presented for treatment. The intestine and rumen was found protruding through an accidental trauma/dog bite wound defect in the ventral dominal wall. The peritoneum was found ruptures in the cases. The intestinal anastomosis and sutures of rumen e performed and organs were replaced after thorough flushing using normal saline mixed with antibiotics under l infiltration of 2% lignocain Hcl and diazepam sedation after dilating the abdominal wall defect. The defect in scles and skin were opposed with sutures in routine manner. Post-operative fluid therapy, antibiotic and analgesic e administered for 5 days. One case in bovine, one in caprine and ovine recovered uneventfully.

7.20 AN UNUSUAL SIZED ABSCESS AND ITS SURGICAL MANAGEMENT IN A KID: A CASE REPORT

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A one month old female kid was presented with a history of slowly developing unusually tennis ball sized abscess hanging from ventral side of tail, just covering almost the perineal region. The abscess assumed size in a 8 days or so. Following all aseptic procedure a surgical excision of abscess at its base was undertaken der triflupromazine premedication. Skin wound was sutured with black braided silk no. 3/0 in a routine manner. rental injection of antibiotics and analgesic were administered intramuscularly in recommended dosed alongwith daily antiseptic dressing of the wound. The wound healed uneventfully and sutures were removed on 7th post-erative day.

7.21 SURGICAL MANAGEMENT OF TEAT INJURY IN CAPRINE: CASE REPORTS

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Three non-descript lactating goat aged 3-4 year was presented to treatment with a dribbling of milk continuously from the teat was due to barbed wire injure. There was longitudinal separation of muscularis with skin out perforation of teat sinus. Surgery was performed under triflupromazine premedication and ring blockade using ration of 2% lignocaine Hcl . After placing a polythene catheter in the teat canal, wound edeges were trimmed to fresh. The teat was repaired by simple continuous pattern followed by closure of connective tissue and muscles simple continuous pattern using 2/0 chromic catgut. Skin was closed with simple interrupted pattern using black aided silk no. 3/0 suture. Post- operatively parentral injection of antibiotic and analgesic were given for 5 days and ing of the quarter was restricted for 7 days. Cleaning and dressing of wound with antiseptic solution was continued removal of sutures on 8th post â€" operative day. The animals made an uneventful recovery.

7.22 REVIEW OF DIAPHRAGMATIC HERNIA IN BUFFALOES WITH OPERATIVE CONSIDERATIONS IN THE FIELD

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Diaphragm hernia (DH) is serious condition affecting health and milk production of adult female buffaloes. DH involves rupture of the diaphragm mostly at the right musculotendinous junction (90%) with subsequent herniation of the reticulum and omentum into the thoracic cavity (Despande e. al., 1981, Saini et al., 2001). In India the attention is dragged on DH after the first report by Despande (1965), then by Naik and Mahendale (1969). The prevalence reported is very high all over India. The buffalo are affected maximum compared to very less number of cattle (Jit Singh et al., 2006). Traditionally, foreign body syndrome (FBS), advanced pregnancy and act of parturition are projected as main etiologic factors. However, wallowing in the water ponds is considered as one of the major exiting factor. Diagnosis of DH is apt from the characteristic symptoms and radiological examination. Use of ultrasonography is also reported by Mohindroo et al. (2001). The treatment of DH is surgical and no conservative treatment is available. Prognosis depends on the health status of the patient, size of the hernial ring, adhesions, perioperative anaesthetic and surgical management. Either abdominal approach (Singh et al., 1977) or lateral thoracic approach (Krishnamurthy et al., 1980, Prasad et al., 1980) is used. Pre and post operative management using steroid and fluid therapy with sufficient tissue oxygenation are the key factors for the success of surgery. In the absence of artificial ventilation, surgery is justifiable and successful if the mediastinum does not rupture (Prasad et al., 1980, Usturge and Bhokre, 1989, Singh et al., 1996, Willium et al., 2003). Treatment is cost effective, restores milk production and saves the cost of animal. Many pregnant cases also have been treated without ill effect on the fetus (Prasad et al., 1980, Krishnamurthy et al., 1980). Important aspect of surgery and causes of perioperative failure are narrated. Treatment of cases in the field is depicted with video clips. Training of the local veterinarians and creating awareness for prevention of the affection are imperative to control this malady.

7.23 HORMONAL AND BEHAVIOURAL CHANGES RELATED TO STRESS IN GOATS SUBJECTED TO SURGICAL EMBRYO COLLECTION

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The study was conducted in 12 clinically healthy goats, subjected to surgical collection of embryo after superovulation, to evaluate physiological, behavioural and hormonal changes related to stress in postoperative period. Goats were fasted for 24 hours and anaesthesia induced by xylazine - ketamine injection intramuscularly. Physiological parameters and behavioural changes were observed during pre and postoperative period. Plasma cortisol concentration was also estimated using radio immuno assay during pre and postoperative period. The study concluded that significant increase in plasma cortisol level was observed in goats subjected to surgical embryo collection which was supported by behavioral changes in post operative period.

7.24 SURGICAL TREATMENT OF INTUSSUSCEPTION IN TWO CROSS-BRED COWS - A CASE REPORT

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Intussusception is most common condition of intestinal obstruction in cattle. Two cases of 2 ½ and 4 years of age were presented to the college clinic with the history of anorexia and unable to pass the faeces since 4 and 6 days respectively. After careful clinical examination the cases were diagnosed as intestinal obstruction and planned for surgical correction. Laparotomy was performed under local infiltration anaesthesia and with careful exploration of abdomen cavity affected loops were taken out from the surgical site. With all standard techniques affected loops were resected and intestinal anastomosis was performed in both the cases. Surgical wound was closed as a routine procedure and post-operative treatment was followed. In both the cases animal had passed the faeces within 24 hours and improved in condition within one week.

7.25 SURGICAL MANAGEMENT OF AN UNUSUALLY LARGE CHRONIC SUPPURATIVE YOKE GALL IN A GIR BULLOCK

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A six year old Gir bullock had an unusually large (15" X 6" approximately) chronic suppurative yoke gall. The suppurative pockets were encapsulated and interconnected. The tumor-neck showed tendency of increase in size and periodic inconsistent medico-surgical management by local veterinarian remained unsuccessful. The tumor-neck was then surgically excised en-mass under Xylazine sedation and local infiltration analgesia. The clinico-surgical management as well as perioperative and post-operative care has been described. The bullock made an uneventful recovery.

7.26 MANAGEMENT OF SCROTAL ABSCESS IN OVINE- CASE REPORTS

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Two ram aged 7 months to 1 year were presented with the history of scrotal swelling. Animal was controlled in lateral recumbency and 2% lignocaine Hcl was infiltrated on the top of the scrotal sac. On palpation of swelling, a fluctuating point was observed. Exploratory puncture and clinical examination revealed it as an abscess. The abscess was incised and pus was drained. After evacuation, cavity was irrigated with Povidone Iodine solution and packed by gauge soaked with Tincture Iodine. Post-operatively parental administration of antibiotics was advocated for five days. Recovery was uneventful.

7.27 A RARE CASE OF EYE CANCER IN A SHE BUFFALO

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A six year old buffalo is presented to TVCC of Veterinary College,Bidar.The animal had the growth at the limbus.The animal was sedated with xylazine @0.1mg/kg IM and Peterson's block was done with 25ml lignocaine and lignocaine gelly was applied on palpebral borders of eye lids.The tumour was excised.The tumour was very very hard in comparision to cattleand was black in colour.The excised area was scrapped with silver nitrate.Eight months follow up showed no recurrence.

7.28 TO STUDY HISTO-MORPHOLOLOGICAL CHANGES DURING DIFFERENT PHASES OF WOUND HEALING WITH THE USE AZADIRACHTA INDICA

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The present research was carried out in the department of Surgery and Radiology, NVC, Nagpur to study histomorphological changes in three healthy male buffalo calves of the age 1 and 1 ½ year to evaluate wound healing property of 10% and15% alcoholic Azadirachta indica with control as a Neosporin ointment. The biopsy of healing wound was performed on 3rd, 7th, 14th 21st and 30th post treatment day. Histomorphologically there was fibroblastic proliferation with leucocytic infiltration upto 3rd day in 10% alcoholic extract ointment. However edema and hemorrhages were observed in 15% alcoholic extract ointment Azadirachta indica. Diffuse lecucocytic infiltration and fibroblastic proliferation were observed in alcoholic extract ointment Azadirachta indica treated groups while leucocytic infiltration was not observed in Neosporin treated group on 7th day. In all treatment group's organization of granulation tissue with disappearance of leucocytes along with proliferation of dermal epithelium was observed on 14th day. Epitheliazation of wound surface and keratinization of dermal epithelium was detected in both alcoholic extract ointments of Azadirachta indica on 21st day where as in Neosporin ointment treated group it was observed on 30th day.

7.29 SUCCESSFUL MANAGEMENT OF CONGENITAL RIGHT HIND LIMB FLEXURAL DEFORMITY AND LEFT FORELIMB CARPUS VALGUS BY IV OXYTETRACYCLINE AND PVC SPLINT IN A THREE DAY OLD CALF

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A three day old calf was presented with history of difficulty in standing and suckling udder of dam of its own since birth. The calf had normal temperature, respiration and pulse. Physical examination of the limbs revealed knuckling of the right hind fetlock and medial deviation of the left carpal joint. Based on the history and physical examination, the case was diagnosed as " Contracture of right hind flexor tendon at the level of fetlock and Carpus Valgus of the left forelimb.The calf was administered 1500 mg (30 ml) of oxytetracycline mixed in 500 ml of normal saline slow IV and the right hind limb was kept on PVC pipe splint after thoroughly bandaging it with cotton and roller bandage. The affected right hind limb fetlock contracture straightened effectively post 24 hours of OTC therapy. A second dose as above was repeated with PVC splint application. The right hind limb straightened completely 48 hours after initiation of intravenous OTC therapy and the calf was able to bear weight on the right hind limb effectively enabling it to stand and suckle the dam's udder.The carpus valgus of the left forelimb was treated with PVC pipe splint application for next two days. The case was presented after 70 days for examination and was found to be having normal conformation of the fore and hind limbs. Series of photographs and video clipping of day 3, 4 , 5 and 73 will be presented and discussed.

7.30 ANALYSIS OF GELATINASE ACTIVITY OF ACELLULAR AND NATIVE BOVINE PERICARDIUM BEFORE AFTER CROSSLINKING WITH GLUTARALDEHYDE AND HEXAMETHYLENE DIISOCYANATE

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Matrix Metallo Proteinase (MMPs) and tissue properties of acellular and native bovine pericardium were analyzed before after crosslinking with Glutaraldehyde (GA) and Hexamethylene Diisocyanate (HMDI). After collecting from local abattoir the pericardium was thoroughly washed with normal saline solution and divided into two portions. One portion was crosslinked using GA and HMDI and the second portion was made acellular using anionic biological detergent and then cross-linked. Protein extraction and amino acid determination and SDS-PAGE analysis of the tissue homogenate showed that crosslinking with GA and HMDI were effective in both native and acellular biomaterials. Matrix metalloproteinase's were detected by zymography with equal amount of solubalized protein were loaded onto the zymogram. MMPs activity was present in acellular and GA crosslinked acellular pericardium and it was 8.5 fold higher in acellular pericardium as compared to GA crosslinked pericardium. Crosslinking with HMDI in native as well as in acellular pericardium was not effective in reducing gelatinase activities. The presence of these gelatinase activities in acellular pericardium may contribute to the in- vivo degradability.

7.31 INTESTINAL OBSTRUCTION AND SURGICAL REMOVAL OF FEACOLITH IN 8 CLINICAL CASES : CASE REPORT

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The cases included with 1 cow, 4 bulls, 1 buffalo and 2 bullocks of 3 to 7 years age were presented in TVCSC, COVAS, Parbhani, during the period of May 2008 to July 2008. They had the history of absence of defecation from 4- 6 days followed by anorexia, suspended rumination, reduced water intake and subsequent dehydration. The heart rate, respiration rate and temperature were normal with slight congested mucous membrane and weak ruminal motility viz. 1/5 min were noticed as clinical observations. The laprotomy was performed in standing position through right paralumbar fossa under local infiltration analgesia with 2% lignocaine hydrochloride. All the six cases were of faecolith with different size. Incision was closed as per standard procedure. Post operatively fluid therapy, suitable antibiotics, multivitamins were given for 5-6 days. Daily dressing of wound was done with spirit and applied the seal of tincture iodine upto complete healing. Sutures were removed on 10th day post operatively. All cases were shown the uneventful recovery.

7.32 RECTAL TUMOR IN COW : A CASE REPORT

MRUNALI KAMBLE, V.D. AHER, RAJU BHANGARE, KAILASH PUKALE and VIKAS SATPUTE
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A case was presented in TVCSC, COVAS, Parbhani, cow, aged about 4 years with the history of off-fed last from 15 days and passes little amount of defaecation. The clinical observations of animal were extreme anemic, slightly pale mucus membrane with normal heart rate, respiratory rate and temperature. A radiograph doesn't reveal any deformities. The laprarumenatomy showed a large rectal tumor along with leather pieces and polythene in rumen. All the foreign material removed along with tumor. The lapratomy incision sutured as per standard procedure. The fluid therapy, Antibiotics and B-complex injections were given for 6-7 days post operatively. Daily dressing of wound has been done upto the complete healing and sutures were removed on 12th day post surgery. All the cases were shown uneventful recovery.

7.33 CLINICO-BIOCHEMICAL CHANGES DURING NON-PENETRATING FOREIGN BODY SYNDROME IN BOVINE

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The present investigation was carried out on 18 animals were divided into three groups comprising six animals in each. The selection of animal were randomly carried out on the basis of history and symptoms such as loss of appetite, loss of health status and distended abdomem. The first group 'A' having normal and healthy animal was kept as control. The second group 'B' comprised of animal having presence of 5 to 10 per cent per 100 kg body weight of non-penetrating foreign bodies. These three groups were subjected to clinico- biochemical study before and 5th, 10th and 15th day post operatively. Clinical observations in affected animal revealed anorexia, dehydration, dullness, depression, increased heart rate, pulse rate, respiration rate with reduction in ruminal movement and increased reticular biphasic contraction time, Lusterless rough hair body coat, lethargic movement and hide bone condition was noticed in some animal before the surgical intervention. Serum biochemical profile of affected animal showed increased blood glucose, serum phosphorous, total protein. Whereas decrease in serum calcium and sodium level in the body, however serum potassium was unaffected due to presence of non-penetrating foreign bodies. All the clinico- biochemical parameters were normalized after 10 to 15 day of operation. From the overall investigation it is suggested to perform lapro-ruminotomy for removal of non penetrating foreign bodies to achieve normal blood biochemical profile of animals.

7.34 EFFECT OF NON-PENETRATING FOREIGN BODY ON RUMEN FUNCTION WITH SPECIAL REFERENCE TO HISTOPATHOLOGY OF RUMINAL MUCOSA

R.B. PATIL, S.P. MEHASRE, D.B. PAWSHE, A.H. ULEMALE, and K.M. KHAN
Post Graduate Institute of Veterniary And Animal Science, Akola - 444001.

The present investigation was carried out on 18 animals were divided into three groups comprising six animals in each. The first group 'A' having normal and healthy animal was kept as control. The second group 'B' comprised of animal having presence of 5 to 10 per cent per 100 kg body weight of non-penetrating foreign bodies. These three groups were subjected to rumen function study before and 5th, 10th and 15th day post operatively. The rumen liquor profile of affected animals revealed rise in the rumen liquor Ph and ammonia nitrogen with marked reduction in total protozoal count and total volatile fatty acid concentration before operation when compared with control group the ruminal environment was normalized within 10&15 days of operation. The histopathological examination of affected group revealed that the stratified squamous epithelium layer was appeared to be more compact as that of the normal. The thinning of stratum corneum layer along with infiltration of the leukocytes with degenerative changes and superficial couglative nacrosis in stratum granulosum as well as stratum spinosum layer was observed in affected animals. From the overall investigation it is suggested to perform laparoruminotomy operation for removal of non penetrating foreingn bodies to restore the normal ruminal environment with improvement in digestion.

7.35 BILATERAL CONVERGENT STRABISMUS IN A KHILLAR BULL AND IT'S SUCCESSFUL SURGICAL CORRECTION

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A khillar bull aged 18 months was presented to clinics with a complaint of bilateral squint eyes since birth. On clinical examination, severe bilateral convergent strabismus was noticed and was characterized by a symmetrical antero-medial rotation of the eyeballs. Surgical correction was taken up for both the eyes (with a gap of one month) under Xylazine sedation and Retro bulbar nerve block using 2% Lignocaine hydrochloride. Technique consisted of bilateral medial rectus recession of 10 mm along with resection of conjunctiva and lateral pulling of eyeballs by laterally placed scleral stay sutures with Vicryl 2-0 sutures. Frequent Adrenaline moping was done to control bleeding. Post operatively injections of Chloromphenicol, Nimusulide and Dexamethasone parentrally and subconjunctival injections of Chloromphenicol mixed with Dexamethasone were administered for 5 days. Chlormycetin ophthalmic ointment was instilled into both the eyes for a period of 2 weeks. Strengthening of the operated eye by patching the non operated eye for several hours in a day and thereby forcing the operated eye to do the work was done. Eight weeks after the 2nd eye operation, the patient had slight residual convergent squint of about 5 degrees in the left eye and an almost straight right eye when looking straight ahead. After one-year follow up period both the eyes appeared almost normal.

7.36 EXTERNAL IMMOBILIZATION WITH DESIGNED METALLIC SPLINT FOR UNILATERAL HORN FRACTURE REPAIR IN BULLOCKS

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The horn usually gets fractured as a result of trauma due to fighting or an accident. The traditional method of application of bamboo sticks was tedious as the bamboos had to be fastened regularly and there was no good stability at the fracture site. Wounds at the base of horn prevent Plaster Of Paris cast application. So in the present study an external metallic splint was designed and employed for immobilizing the unilateral horn fracture in Twenty-four Bullocks (clinical cases). On clinical examination of these animals, there was unilateral loosening of the horn, nasal bleeding on the affected side and wound at the base of the horn. External splint was designed, prepared (using iron rings, iron bar, nuts and bolts) and applied for immobilizing the fracture. The splint was maintained for 4 weeks. Injections of Streptopenicillin and Meloxicam were administered for 5 days. Animals recovered uneventfully. The designed splint provided good stability at the fracture site, allowed for regular dressing of the wound at the base of the horn, was of low cost and could be easily prepared and used at field level.

7.37 MARSUPIALIZATION OF RANULA IN THREE CATTLE

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Three animals were presented to the Veterinary Hospital with a history of protrusion of the tongue through one side of oral commissure, partial anorexia, salivation and a nodular growth below the tongue. On clinical examination tennis ball sized, pinkish soft fluctuating swelling was found on the floor of the mouth protruding from the base of the tongue. Needle aspiration revealed, blood tinged, ropy, mucoid fluid which confirmed the sublingual sialocele / Ranula. Under Xylazine premedication and bilateral mandibular nerve block using 2% Lignocaine hydrochloride, flow of saliva was redirected by employing Marsupialization technique. Post operatively injections of Streptopenicillin, Meloxicam, B- Complex, and Vitamin A, D3 & E were given for 5 days. Regular cleaning of the operated site with $KMnO_4$ solution was done to avoid food material entering there. All the animals recovered uneventfully

7.38 BLOOD ACID-BASE AND ELECTROLYTE STATUS OF COWS SUFFERING FROM INTUSSUSCEPTION

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The study was conducted on 10 clinical cases suffering from intussusception. The cases were presented with the history of colic followed by gradually decrease in the quantity of drug and finally leading to cessation of passage of the drug. The cases were presented after days 3-12 of the episode of the colic. The cows became anorectic after the colic but the water intake was in routine and slightly in reduced quantity. The cows were subjected to right flank laparotomy and entero-anastomosis was performed.

Arterial blood samples were taken just before surgery, immediately after surgery, 24 hrs and 48 hrs. after surgery to study various acid- base and electrolyte parameters like pH, pCO_2, pO_2 , sodium , potassium , chloride , bicarbonate, base excess(BE) and anion gap using blood gas analyzer. The status recorded will be discussed.

7.39 NON SURGICAL MANAGEMENT OF TAIL GANGRENE IN BOVINES

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Tail Gangrene is most commonly recorded sugrical condition in the field & the only therapy routinely followed is amputation of tail. Etiology for tail gangrene is not well explained & supposed to be bacterial or fungal origin or even mite infestation. A detailed history of tail gangrene patients revealed the fact of coccygeal vetebrae malposition occuring due to twisting of tail. Misplaced coccygeal vertebrae inturn compress lateral coccygeal vessels thus impairing blood supply to the descending tail. Hence a single dose of prednisolone by low epidural route will reduce inflammation at the impaired site. Topical application of 2% Minoxidil at the descending site will help in vasodilatation & additional blood supply to the affected part, thus avoiding Necrosis / gangrene.

7.40 NEWER CONCEPTS IN FARM ANIMAL RECONSTRUCTIVE SURGERY IN AUGMENTING HEALTH, PRODUCTION AND RURAL ECONOMY

V.D. AHER
College of Veterinary & Animal Sciences, Parbhani (M.S)

The cases of congenital defects in farm animals presented in TVSCC, COVAS Parbhani were treated with reconstructive surgery. Congenital defects like atresia ani, atresia ani et recti, rectovaginal fistula, cleft palate, dermoids, umbellical hernia, cleft in rima oris, contracted tendons, pervious urachus and evisceration of abdominal organs were corrected with reconstructive surgery in farm animals for augmenting health production and rural economy. The details will be discussed in technical session.

7.41 BOVINE TEAT OBSTRUCTION: A SIMPLE MANAGEMENT UNDER FIELD CONDITIONS

N. VASUDEVAN
Veterinary Dispensary, Samakuttappatty, Salem-Dt, Tamil Nadu.

Teat obstruction is a very common presenting problem in field conditions. Teat obstruction can occur at various levels of the teat canal. Traditionally these cases are treated by removing the teat obstructing growth or membrane using teat knife or teat tumour extractor and keeping the patency of the teat canal by placing the IV tubes and or even neem sticks inside. But falling and following mastitis are common sequlae of the later approach. A study was conducted to treat the teat obstruction cases with Human Infant Feeding Tube (size-6). The study included 42 animals over a period of one year. The technique is very simple. After removing the obstruction, the Human Infant Feeding Tube (size-6) was placed in the teat canal and was held in position using adhesive tapes. It was kept as such for 3 to 5 days depending on the severity of the case. Milk was let down in the provision made in the Human Infant

Feeding Tube (size-6). Strict hygienic measures were taken and all the animals were given antibiotics. After 5 days the Tube was taken out and patency was checked for the free flow of milk. Out of 42 animals 33 have shown good patency and normal flow of milk without recurrence. Hence it is concluded that usage of Human Infant Feeding Tube is a very simple and useful technique to manage the teat obstruction cases with less cost under field conditions.

7.42 AN UNUSUAL RETROPARITONEAL ABSCESS IN AN INDIGENOUS BUFFALO

B.C. DAS, B. JUSTIN WILLIAM, A. ARUN PRASAD, G.D. RAO, H. PUSKIN RAJ and R. SURESH KUMAR
Madras Veterinary College, Chennai 600 007, India.

An indigenous female buffalo of five years old, approximately 400kg body weight, was brought to the Large Animal Surgery Out Patient Unit of Madras Veterinary College Teaching Hospital with the history of massive swelling on the left flank since two months. Initial the swelling looked like a tennis ball and gradually it enlarged to form double the size of foot ball. Examination and needle aspiration revealed escape of foul smelling gas. Exploration was performed from the lower boundary; incising through the skin and muscles, a gas filled cavity was observed retroparitoneally. The content of the cavity was gas and insipisated pus. The cavity was surrounded by dark hypertrophic membranous structures with necrosis. Culture and isolated sample revealed Clostridium. The content was evacuated, the hypertrophic membrane was excised and the cavity was obliterated. Provision was made for irrigation. The wound healed up.

7.43 SUCCESSFUL SURGICAL MANAGEMENT OF INTESTINAL OBSTRUCTION DUE TO FECOLITH IN H. F.COW-A CASE REPORT

S.H. TALEKAR, J.N. MISTRY, S.R CHOUDHARY, P.B. PATEL, N. MAHAJAN, M. RAUT and S. SULGAR
College of Veterinary Science and Animal Husbandry, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar-385506, Dist-Banaskantha (North Gujarat).

A 7 year old H.F.cow was referred for the treatment of loss of appetite, no history of defecation, and abdominal pain, frequent sitting & getting up from 2 days. Case was confirmed by per rectal examination and clinical signs for intestinal obstruction. Right flank exploratory laparotomy was performed under sedation of xylazine and local infiltration of 2 % lignacaine HCL anesthesia. Point of obstruction was identified by hard mass in small intestinal part and was exteriorized. Incision was made on hard mass and enterotomy was done and big fecolith was removed. Immediately after removal of obstruction forceful defecation was found during surgery. Surgical wound was closed in a routine manner. Animal recovered uneventfully without any complication.

7.44 SOME TYPICAL SURGICAL AFFECTIONS UNDER FIELD CONDITIONS

ARVIND SHARMA
Department of Animal Husbandry, Veterinary Polyclinic, Shahpur, Distt.Kangra (Himachal Pradesh)

Fourteen typical surgical affections were encountered at the Polyclinic and in the surgical camps in the district. The cases included evisceration in a mare, Congenital evisceration in a kid, tumorous growths in canines in typical locations, hydrometra in a bitch odontoma in cow and horn cancer in bullocks. The surgical management of each case will be discussed.

7.45 SURGICAL MANAGEMENT OF A TYPICAL CASE OF CARPAL HYGROMA IN CROSSBRED JERSEY COW

BASANTA SAIKIA, BEDANGA KONWAR and HITESH BAYAN
College of Veterinary Science & A. H, Central Agricultural University, Selesish, Aizawl, Mizoram

A 7 years old cow was having a large round mass like a football above the knee of right fore leg .Temperature, pulse, respiration, feeding and milking was normal. No evidence of pain was observed on manual palpation of the swelling, only little difficulties was observed when the cow was getting up and laying down. From symptom, history and clinical manipulation it was diagnosed a case of chronic form of carpal hygroma. The cow was sedated with xylazine HCl @0.20 mg/kg body weight along with local infiltration of 2% lignocaine HCl. A bi-cycle rubber tube

tourniquet was applied above the knee. After taking aseptic procedure bursectomy was performed through a lateral elliptical incision after restraining the animal with the affected limb upside .The wound was closed as usual manner Then the entire limb was placed under a plaster of Paris caste using bamboo splint. Dicrysticin 2.5 gm was injected for five days .On 8th days the plaster of paris cast was removed and on 9th days the sutures were removed .recovery was uneventful.

7.46 SURGICAL DELIVERY OF A COW IN ADVERSE CONDITION

SANJAY AGRAWAL
Divisional Veterinary Hospital, Jabalpur (MP).

A cow suffering with dystocia due to chronic cervico - vaginal prolapse since two days was attended in late night hours in an interior tribal village Mohania of Jabalpur (MP). On examination incomplete dilation of os with approximately 1½ feet cevico - vaginal prolapse since 10 days was seen. The muzzle and foetal hooves of forelimb were protruding out through the lumen of the prolapsed mass in vagina. The animal was dull and exhausted. The everted mucosal layer of cervico - vaginal region was dry oedematous and necrotic at places. The calf was alive. Posterior epidural block was given. The prolapsed mass was cleaned thoroughly and painted with povidone iodine. A longitudinal incision was given on dorsal commisure of vagina extending upto distal prolapsed mass. The incision was extended to expose the lumen of the vagina and foetus was delivered. The necrotic tissue was debrided and repaired by chrinic catgut no.1 in continuous lock stitch pattern and simple interupted suture. The prolapsed cervico - vaginal part was reduced to normal position and additional bruner's sutures were given. Routine treatment and fluid therapy made uneventful recovery of the fetus and the cow. The entire operation was performed in the head light of the car.

7.47 SURGICAL TREATMENT FOR A SCHISTOSOMOUS REFLEXUS - CALF THAT BORN ALIVE

B.R. SRINIVASAN
Veterinary Dispensary, Jeelugumilli, W.Godavari Dt,A.P. 534456

The calf relieved by forced traction On examination, all appendageswere normal but there is no muscular connectivity from thoracic region up toumbilical region and the abdominal, intestine and Liver coming out. On the other hand beating heart and lungs viscible through opened Diaphgram. Immediately the Diaphgram made suture with the adjustant thoracic muscular region. The Intestine and inner abdomen region washed with normal saline and Gentamicin 200mg. Abdomen muscles were sutured after inserting the intestine.Before closure metronidazole and ciprofloxacin 100ml fluids were infused in to abdomen. Subcutis suture using catgut No - I in continues pattern was done and continues suture with cotton for skin layer was done to enhance greater strength. Injection Dexamethasone 2 ml and Tetanus toxoid 0.5 ml were done. Inj. Amikacin 2 ml was done for 5 days.The sutures removed by 10th Day the Calf was successfully recovered.

7.48 PATELLAR DESMOTOMY - CASE STUDY

B.R. SRINIVASAN
Veterinary Dispensary, Jeelugumilli, W.Godavari Dt,A.P. 534456

Eighty (80) chronic Luxation of patella were operated through closed technique to record the efficacy is the field condition out of all these 60 were Buffaloes and 20 Bullocks are grouped under 3 categories by physical restraining in lateral recumbency, by using muscle relaxant in lateral recumbency and standing position. All Desmotomies done with Bp handle 3 with Bp blades -11 Desmotomy done over the region of anterior tibial tuburosity or some times depending on location, Formation of depression, protruding of fat tissue indicates successful surgery.Tr.iodine 10ml instilled inside the stab incision site. Leg flexion and extension made forcefully for 4 -5 times After desmotomy.Cases of CLP that failed are 1. Having chronic hip dislocation or femur dislocation 2. Flexion and extension action of limb absent after Surgery Xylaxine as a muscle relaxant found to be safe for restraining and ligament location during Desmotomy.

7.49 A NOTE ON NEOPLASMS IN CATTLE

R.V. SURESH KUMAR, P. VEENA, C.H. SREELATHA, N. DHANALAKSHMI, V. DEVIPRASAD and P. MANOHAR
College of Veterinary Science SVVU Tirupati

Neoplasms involving different organs are common in large animals. Many times these may go unnoticed or not given much importance due to ignorance or lack of knowledge leading to aggravating the condition spreading to different organs and economic losses to the owners. Incidence, clinical features, histopathological diagnosis and surgical treatment of few Neoplasms of eye, horn, skin, nostrils etc. in cattle are discussed.

7.50 TRANSABDOMINAL DIAPHRAGMATIC HERNIAL REPAIR UNDER GENERAL ANESTHESIA

N. RAJENDRAN, S. SENTHIL KUMAR, S. DHARMACEELAN, S. KATHIRVEL and K. JAYAKUMAR
Veterinary College and Research Institute, Namakkal - 637002, Tamil Nadu.

A pleuriparous Jersey cross breed eight month pregnant cow was presented in the veterinary college and research institute hospital Namakkal, with the history of persistent tympany, scanty pasty faeces, anorexia and loss of condition. Auscultation revealed fluid splashing sound in thoracic cavity and ruminal hyper motility was also observed. Plain radiography examination revealed disruption in the continuity of diaphragm border.

The diaphragmatic hernia was confirmed by exploratory laparorumenotomy. Animal maintained with intravenous fluids for 48 hours post operatively. Transabdominal diaphragmatic herniorrhaphy was performed through post Xiphoid region under general anesthesia. Glyceryl guaicolate @ 50mg /kg Body weight as 5% solution in 5% dextrose was administered intravenously, anaesthesia induced with ketamine @ 3 mg/kg Body weight, and maintained with 2% isoflurane. Animal recovered uneventfully. With diaphragmatic herniorrhaphy under general anaesthesia there are relatively lesser intraoperative emergencies, it is less time consuming and as the animal is in dorsal recumbency during operation post operative complications are less.

7.51 SURGICAL MANAGEMENT OF UNUSUAL FOREIGN BODY IN A COW

S. KATHIRVEL, N. RAJENDRAN, S. DHARMACEELAN, S. SENTHILKUMAR, A. KUMARESAN, K. JAYAKUMAR and BHAGAT VINAY TEJRAO
Department of Veterinary Surgery and Radiology, VC&RI, Namakkal-2.

A Jersey cross cow aged 6 years and pregnant for about 7 months was brought to VC&RI teaching hospital with a history of anorexia, cessation of rumination for past 10 days and frequent coughing was reported by the owner. On clinical examination, reduced rumination with reticular grunt suggestive of foreign body. On plain radiography a large gunny bag sewing needle was found in the reticulum with the sharp end piercing the reticulum. The foreign body was removed on exploratory rumenotomy under left paravertebral nerve block and the animal recovered uneventfully.

7.52 SURGICAL MANAGEMENT OF FOREIGN BODY AT THE MANDIBULAR REGION IN A PREGNANT COW

A. KUMARESAN, N. RAJENDRAN, S. DHARMACEELAN, S. KATHIRVEL, S. SENTHILKUMAR, K. JAYAKUMAR, BHAGAT VINAY TEJRAO AND G. VENUGOBAL
Department of Veterinary Surgery and Radiology, VC&RI, Namakkal-2.

A Jersey cross cow pregnant for about 5 months was brought to the VC&RI teaching hospital with a history of swelling in the left mandibular region for past one week. On clinical examination the swelling was hard and painful resembling actinomycosis. Radiological examination revealed presence of metallic foreign body. Counter irritant was applied and after ripening the foreign body was retrieved on the 10th day. The animal recovered uneventfully.

SMALL ANIMAL SURGERY POSTER SESSION

S.1 SURGICAL MANAGEMENT OF UTERINE STUMP CYST IN A CAT - A CLINICAL REPORT
N. ARULJOTHI, T.P. BALAGOPALAN, R.M.D. ALPHONSE, and B. RAMESH KUMAR
Rajiv Gandhi College of Veterinary and Animal Sciences, Kurumbapet, Vazhudavur Road, Pondicherry - 605 009.

S.2 PROGRESSIVE CHONDROSARCOMA IN A LABRADOR
S.V. UPADHYE, M.S. DHAKATE, B.M. GAHLOD, S.N. PATIL, S.B. AKHARE, V.M. DHOOT, GAURI FISKE, M.F.M.F. SIDDIQUI, ANKUR SHARMA and PRACHI TAKSANDE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

S.3 METASTATIC DUCTAL ADENOCARCINOMA OF LIVER IN A GERMAN SHEPHERD
M.S. DHAKATE, S.V. UPADHYE, S.N. PATIL, B.M. GAHLOD, S.B. AKHARE, V.M. DHOOT, M.F.M.F. SIDDIQUI, GAURI FISKE and PRACHI TAKSANDE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

S.4 OBSERVATIONS ON VENEREAL GRANULOMA IN CANINES
S.V. UPADHYE, V.S. PANCHBHAI, SMITHA PILLAI, GAURI FISKE and ROHINI TEMBHURNE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

S.5 OBSERVATIONS ON OSTEOSARCOMA IN CANINES
V.S. PANCHBHAI, S.V. UPADHYE, M.S. DHAKATE, ANKUR SHARMA, B.M. GAHLOD, S.B. AKHARE, M.F.M.F. SIDDIQUI and GAURI FISKE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

S.6 SURGICAL MANAGEMENT OF A RARE CASE OF RECTAL PROLAPSE IN A CAT
A. RAJU SHARAD, S.K. TIWARI, SANAT NAIK and CHATRAPAL TANDEKAR
College of Veterinary Sciences and Animal Husbandry, P.Box .No.6, Angora, Durg - 491 001, Chattisgarh State.

S.7 LAPAROSCOPIC DIAGNOSIS OF TEN CRITICAL CLINICAL CASES
S.K. MAITI, P. AJITH, A. DUTTA, B. BHADANE, N. KUMAR and A.K. SHARMA
Indian Veterinary Research Institute, Izatnagar , Bareilly - 243 122, Uttar Pradesh.

S.8 CANINE INGUINAL ENTERO- HYSTEROCELE WITH PYOMETRA- A CASE REPORT
A.K. MAJI, P. BISWAS, S.K. GUHA and S.K. NANDI
Veterinary College, West Bengal University of Animal and Fishery Sciences, Kolkata- 700 037, West Bengal.

S.9 VAGINAL FIBROMA IN A GERMAN SHEPHERD DOG
K. RAJANKUTTY, C.B. DEVANAND, M.K. NARAYANAN, P.. PRIYA and K. UNNIKRISHNAN
College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, Kerala.

S.10 MANAGEMENT OF GASTRIC OBSTRUCTION DUE TO COAGULATED RUBBER LATEX IN A BOXER PUP
N.S. JINESH KUMAR, T. SARADA AMMA, SYAM K. VENUGOPAL and K.D. JOHN MARTIN
College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, Kerala.

S.11 AN UNUSUAL FOREIGN BODY (PAD LOCK) IN A DOG - A CASE REPORT
SYAM K. VENUGOPAL, V.M. SHEEJA, T. SARADA AMMA, and K.D. JOHN MARTIN
College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, Kerala.

S.12 INCIDENCE OF NEOPLASMS IN ANIMALS
M.A. DHAMI, F. KARLETTE ANNE, N.H. KELAWALA, K.S. PRAJAPATI, D.B. PATIL and P.V. PARIKH
College of Veterinary Sciences, Anand Agricultural University, Anand - 388 110, Gujarat State.

8.13 IN-VIVO BIOCOMPATIBILITY EVALUATION OF CROSSLINKED ACELLULAR DERMAL GRAFT IN A RABBIT

NAVEEN KUMAR, SANJAY PUROHIT, A.K. SHARMA, T.K. GOSWAMI, S.K. MAITI and RAJENDRA SINGH
Indian Veterinary Research Institute, Izatnagar , Bareilly - 243 122, Uttar Pradesh.

8.14 REMODELLING OF HUMERUS IN A DOG

A. ARUN PRASAD, B.C. DAS, S. AYYAPPAN and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.15 SURGICAL REMOVAL OF AN UNUSUALLY LARGE MAMMARY TUMOR IN A GERMAN SHEPHERD BITCH

K.M. KHAN , S.P. MEHASRE, A.H. ULEMALE , G.G. CHANDORE and R.G. SHRIRAO
Post Graduate Institute of Veterinary and Animal Sciences, Krishinagar, Akola - 444 104, Maharashtra.

8.16 AN UNUSUAL CASE OF JUVENILE CELLULITIS AND ITS MANAGEMENT IN A 12 DAY OLD PUP

RAVI RAIDURG
VHDDIC, APMC Yard, Gandhi Gunj, KVAFSU, Bidar 585 403, Karnataka.

8.17 CANNABIS INDICA (BHANG) AS PREANAESTHETIC TO PROPOFOL ANAESTHESIA IN DOGS

S.S.H. KUMAR, L.L. DASS and A.K. SHARMA
Ranchi Veterinary College, Ranke, Ranchi - 834 007, Jharkhand.

8.18 EFFECT OF LEAVES OF LYCOPERSICUM ESCULENTUM (TOMATO) AS A PREANAESTHETIC TO PROPOFOL ANAESTHESIA IN DOGS

S.S.H. KUMAR, L.L. DASS and A.K. SHARMA
Ranchi Veterinary College, Ranke, Ranchi - 834 007, Jharkhand.

8.19 SURGICAL CORRECTION OF AN UNCOMMON CASE OF PROLASPED GRAVID UTERUS AND BLADDER IN A BITCH

V.N. PAWAR, K.V. POWAR, D.J. PATIL, S.R. TATELU, G.S. KHANDEKAR and L.B. SARKATE
Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

8.20 ASSESSMENT OF HYDROXYAPATITE AS A BONE SUBSTITUTE PRODUCT IN TIBIAL DEFECTS IN RABBITS

V.N. DAVE, L.B. SARKATE, D.U. LOKHANDE, G.S. KHANDEKAR,
D.J. PATIL, K.S. CHAUDHARI and S.R. TATELU
Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

8.21 COMPARATIVE STUDY OF UNCOATED TITANIUM AND APATITE WOLLASTONITE COATED TITANIUM IMPLANTS FOR BONE HEALING IN TIBIAL DEFECTS IN RABBITS

D.J. PATIL, G.S. KHANDEKAR, L.B. SARKATE, D.U. LOKHANDE, V.N. DAVE, K.S. CHAUDHARI and S.R. TATELU
Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

8.22 USE OF LASERS IN DOG

NEHA WAKANKAR and C.C. WAKANKAR
Practicing Veterinary Surgeons, Mumbai.

8.23 A TYPICAL CASES OF LINEAR FOREIGN BODY

NEHA WAKANKAR and AMI BHATIA
Practicing Veterinary Surgeons, Mumbai.

8.24 LARGE TUMORS IN DOGS

NEHA WAKANKAR, AMI BHATIA and PREMAL DARJI
Practicing Veterinary Surgeons, Mumbai.

S.25 SPLENECTOMY IS THE REMEDY FOR SPLENIC ABSCESS - A CASE REPORT
V. MAHESH, DAYAMON D MATHEW and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.26 SURGICAL CORRECTION OF IRIS PROLAPSE IN A DOG - A CASE REPORT
L. RANGANATH and V. MAHESH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.27 INTESTINAL OBSTRUCTION DUE TO SHOE SOCKS IN TWO DOGS
V. MAHESH, DAYAMON. D MATHEW, N. NAGARAJU and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.28 A CASE OF INTUSSUSCEPTION IN A PUP
DAYAMON D. MATHEW, N. NAGARAJU and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.29 A RARE CASE OF TUMOUR GROWTHS IN A WHITE RAT- RATTUS NORVEGICUS
DAYAMON D. MATHEW, N. NAGARAJU and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.30 A MASSIVE MAMMARY TUMOR EXCISION IN NON DESCRIPTIVE DOG
N. NAGARAJU, B.N. NAGARAJU and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.31 SURGICAL EXCISION OF HUGE LIPOMA IN A DOG
N. NAGARAJU, B.N. NAGARAJU and L. RANGANATH
College of Veterinary Sciences, KVAFSU, Hebbal, Bangalore - 560 024, Karnataka State.

S.32 A RARE CASE OF TRICHOBEZOAR IN A DOG AND ITS SURGICAL MANAGEMENT
M. SHIJU SIMON, MOHD. SHAFIUZAMA, H. PUSHKIN RAJ, R. SURESH KUMAR and CAPT. G.D. RAO
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

S.33 SEMINOMA IN A DOG AND ITS SURGICAL MANAGEMENT
M. SHIJU SIMON, R. JAYAPRAKASH, H. PUSHKIN RAJ, R. SURESH KUMAR and CAPT. G.D. RAO
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

S.34 INTUSSUSCEPTION IN A DOG AND ITS SURGICAL MANAGEMENT
M. SHIJU SIMON, MOHD. SHAFIUZAMA, H. PUSHKIN RAJ, CAPT. G.D. RAO and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

S.35 PROLAPSE OF NICTITANS GLAND ('CHERRY EYE') IN DOGS - A CLINICAL STUDY
K. RAJANKUTTY, M.K. NARAYANAN, K.D. JOHN MARTIN, C.B. DEVANAND and A. ARCHANA
College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, Kerala.

S.36 SURGICAL MANAGEMENT OF A RARE CASE OF RECTAL PROLAPSE IN A CAT
A. RAJU SHARD, S.K. TIWARI, SANAT NAIK and CHATRAPAL TANDEKAR
College of Veterinary Sciences and Animal Husbandry, P.Box .No.6, Angora, Durg - 491 001, Chattisgarh State.

S.37 CONJUNCTIVORHINOSTOMY IN REFRACTORY NASOLACRIMAL DUCT BLOCKADE IN A DOG
S.P. TYAGI, RAM SWAROOP and ADARSH KUMAR
DGCN College of Veterinary Sciences, CSKHPKV, Palampur - 176 062, Himachal Pradesh.

S.38 A REPORT OF HEMIVERTEBRA IN DOGS - THREE CASES
M. SHIJU SIMON, R. GANESH, H. PUSHKIN RAJ, RAJIB DAS, S. SOORYADAS and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.39 SURVEY ON RADIOGRAPHIC INCIDENCE OF LUNG METASTASIS IN DOGS - A REVIEW ON 227 CASES
M. SHIJU SIMON, R. GANESH, H. PUSHKIN RAJ, RAJIB DAS, S. SOORYADAS and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.40 ECTOPIE TESTIS IN A MONGREL DOG
S. JAISWAL, V. KUMAR, K.H. SANGEETHA, and H.N. SINGH
College of Veterinary Sciences & Animal Husbandry,
Kumarganj, Narendranagar, Faizabad - 224 229, Uttar Pradesh State.

8.41 PROLAPSE OF HARDERIAN GLAND
S. JAISWAL, V. KUMAR and H.N. SINGH
College of Veterinary Sciences & Animal Husbandry,
Kumarganj, Narendranagar, Faizabad - 224 229, Uttar Pradesh State.

8.42 A CASE OF VAGINAL FIBROLEIOMYOMA IN A BITCH
K.D. JOHN MARTIN, SYAM K. VENUGOPAL and G. GANESH
College of Veterinary and Animal Sciences, Mannuthy, Thrissur - 680 651, Kerala.

8.43 EVALUATION OF BONE MARROW CELLS FOR FRACTURE GAP REPAIR IN RABBITS: AN EXPERIMENTAL STUDY
AMARPAL, H.P. AITHAL, P. KINJAVDEKAR and A.M. PAWDE
Indian Veterinary Research Institute, Izatnagar , Bareilly - 243 122, Uttar Pradesh.

8.44 SUCCESSFUL TREATMENT OF OPEN PYOMETRA WITH TOXAEMIA IN AN OLD BITCH - A CASE REPORT
S.H. TALEKAR, R.V. GAIKWAD, R.V. MARGAJ and Y.R. KAGINKAR
Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

8.45 A CASE OF FIBROADENOMA IN A RAT
HRUSHIKESH KARANDIKAR, MOHAMED SHAFIUZAMA, BHAJAN CHANDRA DAS, R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.46 LYMPHOSARCOMA IN A DOG-A CASE REPORT
HRUSHIKESH KARANDIKAR, MOHAMED SHAFIUZAMA, R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.47 VAGINAL FIBROMA IN A BITCH-A CASE REPORT
HRUSHIKESH KARANDIKAR, MOHAMED SHAFIUZAMA, MALA SHAMMI, CECILIA JOSEPH, SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.48 RECTOVAGINAL FISTULA WITH ANAL ATRESIA IN A 1 MONTH OLD PUPPY: A CASE REPORT
S.R. TATELU, S.V. GAIKWAD, S.R. SONAWANE, G.S. KHANDEKAR and L.B. SARKATE
Bombay Veterinary College, Parel, Mumbai - 400 012, Maharashtra.

8.49 COMPLETE PROSTATECTOMY FOR ADENOCARCINOMA IN A DOG - A CASE REPORT
M. SHIJU SIMON, R. JAYAPRAKASH, MALA SHAMMI, A. ARUNPRASAD, S. SOORYADAS and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.50 PERINEAL HERNIA DUE TO PROSTATIC ABCESS IN A DOG - A CASE REPORT
A. ARUN PRASAD, R. JAYAPRAKASH, G.D. RAO and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

8.51 AN UNCOMMON DUCT PAPILLOMA OF THE MAMMARY GLAND IN A MALE DOG
R. UMA RANI, K. VAIRRVASAMY, B. PUVARAJAN and B. MURUGANANDAN
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LARGE ANIMAL SURGERY POSTER SESSION

SURGICAL REPAIR OF PREPUTIAL TUMOUR IN A COW BULLOCK

S.K. TIWARI, KASHI NATH R. SHARDA, PADAM JAIN M.O. KALIM R.K. SONAWANE, SANAT NAIK and TARUN SONWANE
College of Veterinary Sciences and Animal Husbandry, P.Box .No.6, Angora, Durg - 491 001, Chattisgarh State.

SQUAMOUS CELL CARCINOMA INVOLVING ALAR NASAL FOLDS IN A COW BULLOCK AND ITS SURGICAL MANAGEMENT

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SURGICAL MANAGEMENT OF DRY GANGRENE OF SCROTUM IN A BULL

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CAESAREAN UNDER FIELD CONDITION IN BOVINE - REPORT OF 7 CASES

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MANAGEMENT OF CHEMICAL BURN INJURIES IN A HEIFER

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OVARIECTOMY IN MARE - A CASE REPORT

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FIBROMA IN A BLACK BENGAL GOAT

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NON-PENETRATING FOREIGN MATERIAL AT STERNUM IN A RAM: A CASE REPORT

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CYSTORRHEXIS DUE TO OBSTRUCTIVE UROLITHISASIS IN A LAMB AND ITS SURGICAL MANAGEMENT-A CASE REPORT

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SURGICAL CORRECTION OF BUCCAL WALL LACERATION IN A CALF: A CASE REPORT

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WILD ANIMAL SURGERY - REVIEW OF FIFTEEN CASES

M.K. KELAWALA, D.B. PATIL, P.V. PARIKH, M.G. MARADIA, C.N. BHUVA and R.G. JANI
College of Veterinary Sciences, Anand Agricultural University, Anand - 388 110, Gujarat State.

9.12 HISTOMORPHOLOGICAL EVALUATION OF WOUND HEALING POTENTIAL OF COW URINE IN GOATS
R. MISHRA, L.L. DASS, A.K. SHARMA and K.K. SINGH
Ranchi Veterinary College, Ranke, Ranchi - 834 007, Jharkhand.

9.13 OCULAR FILARIASIS IN MARE - A CASE REPORT
J.N. MISTRY, MD. J.Z. KHAN, S. TALEKER and P.B. PATEL
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9.14 CLINICO-SURGICAL MANAGEMENT OF MUMMIFIED FETUS IN A COW
M.A. DHAMI, P.H TANK, H.K. MAHIDA, K.B. VALA, A.M. PATEL and M.G. MARADIA
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9.15 CUTANEOUS PAPILLOMA IN A GOAT AND ITS SURGICAL MANAGEMENT
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9.16 OESOPHAGEAL OBSTRUCTION IN A COW AND ITS SURGICAL MANAGEMENT
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9.17 MANAGEMENT OF GORED WOUND IN A BULLOCK: A CASE REPORT
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9.18 GELDING IN A HORSE: A CASE REPORT
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9.19 A VAGINAL RECONSTRUCT IN A KID
L. RANGANATH and N. NAGARAJU
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9.20 ROLE OF AZADIRACHTA INDICA IN WOUND HEALING
N.M. AWAGHAD, S.N. PATIL, M.S. DHAKATE, B.M. GAHLOD and T.R. GAWANDE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

9.21 STUDY OF WOUND MAPPING BY USING WONDER PLANT - A "NEEM"
N.M. AWAGHAD, S.N. PATIL, M.S. DHAKATE, B.M. GAHLOD and T.R. GAWANDE
Nagpur Veterinary College, Seminary Hills, Nagpur - 440 006, Maharashtra.

9.22 A CASE OF OESOPHAGEAL OBSTRUCTION IN A JERSEY CROSS-BRED COW
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9.23 UNCOMMON BILATERAL BULGING OF CHEEK IN A BUFFALO- A CASE REPORT
K.S. CHAUDHARI, M.G. THORAT, V.D. KALE, V.M. SALUNKHE and G.U. YADAV
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9.24 OESOPHAGEAL OBSTRUCTION DUE TO THE CLOTH IN A BUFFALO : A REPORT
MRUNALI KAMBLE, V.D. AHER, FAREEN FANI and S.U. RAUT
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S.25 FOREGIN BODY IN BUFFALO : A CASE REPORT
MRUNALI KAMBLE, V. D. AHER, RAJU BHANGARE, KAILASH PUKALE AND VIKAS SATPUTE
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S.26 URINARY OBSTRUCTION AND ITS SURGICAL REMOVAL : A CASE REPORT
MRUNALI KAMBLE, V.D. AHER, KAILASH PUKALE, VIKAS SATPUTE and RAJU BHANGARE
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S.27 SURGICAL CORRECTION OF RECTAL TEAR AND INTESTINAL EVISCERATION THROUGH ANUS IN A BULLOCK
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S.28 SURGICAL CORRECTION OF KNUCKLING OF CARPAL JOINT IN A JERSY CALF
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S.29 SURGICAL CORRECTION OF HIND LIMB EXTENSOR TENDON INJURY IN A JERSEY COW
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S.30 MANAGEMENT OF UMBILICAL HERNIA WITH PROLENE MESH IN A CALF
H.R. BHARDWAJ, PALLVI VERMA, R. B KUSHWAHA AND M. M. S. ZAMA
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R.S.Pura, Jammu - 180 102, Jammu & Kashmir.

S.31 AN UNUSUAL CONGENITAL VENTRAL ABDOMINAL HERNIA IN A CALF
S. JAWRE, M.K. BHARGAVA, A. SHAHI, R. SINGH and V.P. CHANDRAPURIA
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S.32 TRAUMATIZED EYE IN AN INDIGENOUS BUFFALO
B.C. DAS, B. JUSTIN WILLIAM, G.D. RAO, A. ARUN PRASAD, H. PUSKIN RAJ and R. SURESH KUMAR
Madras Veterinary College, Vepery, Chennai - 600 007, Tamil Nadu.

S.33 SUCCESSFUL REPAIR OF LARGE VENTRAL HERNIA WITH USE OF THICK BRAIDED COTTON THREAD
TALEKAR S.H., GOUTAM M.L., CHOUDHARY D.A.
Animal Help-line, Ahmedabad, Gujarat State.

S.34 SURGICAL EXTIRPATION OF A FIBROUS MASS WITH MULTIPLE SINUSES IN THE ESTUCHEON REGION OF A BUFFALO
S.H. TALEKAR, J.N. MISTRY, S.R CHOUDHARY, P.B. PATEL, N. MAHAJAN, M. RAUT and S. SULGAR
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Dantiwada Agricultural University, Sardarkrushinagar-385506, Dist-Banaskantha,Gujarat.

S.35 SUCCESSFUL SURGICAL MANAGEMENT OF INTUSSUCSEPTION IN CROSSBREED COW-A CASE REPORT
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S.36 SUCCESSFUL REPAIR OF RUPTURED LUNG IN A RAT SNAKE
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9.37 VAGINAL PROLAPSE IN SOW AND ITS MANAGEMENT

BASANTA SAIKIA, BEDANGA KONWAR and HITESH BAYAN
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9.38 CONGENITAL MONSTER HEAD IN A NEONATAL BUFFALO CALF

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9.39 SURGICAL TREATMENT FOR TESTICULAR WOUND IN A BULLOCK

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9.40 AN UNUSUAL CASE OF CORNU CUTANEUM IN A SHEEP

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AWARD SESSION

10.1 SURGICAL MANAGEMENT OF PREPUTIAL AND PENILE DISEASES IN BULLS

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Study was undertaken in thirteen cases of bulls suffering from preputial and penile diseases. Ten cases were of preputial diseases and remaining three of penile diseases. The preputial diseases observed were prolapse of internal mucosa of the prepuce (3 cases), preputial tumours (3 cases), paraphimosis (2 cases) and phimosis (2 cases). These preputial conditions not only create problem in urination but also affect the covering of the cows making bulls unfit for breeding. The bulls were put under sedation and ring block around the prepuce was achieved by infiltrating 2% lignocaine hydrochloride. The prolapsed mucosa of the prepuce was resected out. After resection, the bulls became fit for breeding. The cases of preputial tumours were also responded well to the surgery but after a gap of 15 days in first bull there were signs of dysurea. Cultural examination revealed infection of E.coli in the urine. The bull became suddenly recumbent and died. Post-mortem examination showed uretheritis and cystitis. The second bull responded well to the surgery and became fit for breeding after two months of operation .In third bull there were sign of recurrence of the tumor. Paraphimosis was observed as sequelae to external injuries of the prepuce and hanging penis. Due to these injuries, amputation of glans penis was done in one cow bull. In second bull, separation of prepuce from the penis was easier method and it responded well to the treatment. In cases of phimosis, the constricted portion of the internal prepuce was removed as a longitudinal strip to dilate the the preputial orifice. Both the bulls showed improvement after stripping of the internal mucosa of prepuce. In three cases of penile diseases, there was history of bleeding during urination and covering of the cows. The cow bulls were sedated with xylazine and pudendal block was done to relax the penis. Out of three, two were of ulcerative balanitis and one of penile tumour. The cow bulls with ulcerative balanitis responded well to the surgery and resumed normal work of breeding. The cow bull with penile tumour also recovered successfully after surgery and there were no sign of recurrence upto two months of operation. Histopathological examination of the tumour showed squamous cell carcinoma.

10.2 A REPORT ON CAESAREAN OPERATIONS CONDUCTED UNDER FIELD CONDITIONS IN SIVAGANGAI DISTRICT OF TAMILNADU

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A report on Caesarean operations performed in Cows, does and ewes over a period of the past 20 years in various blocks of Sivagangai district of Tamilnadu has been presented. In most of the cases the option for going for caesarean section has been resorted to as a last option and in most cases the owners of the animals were resource poor rural farmers. The various reasons for going in for caesarean sections included torsion of the uterus, uterine inertia, foetal over size and incomplete cervical dilatation. (ICD) and narrow pelvis. Caesarian operations were performed in 30 cows, 45 does and 22 ewes. Out of 30 caesareans performed in cattle only one was a failure in which the cow operated upon died 22 days after surgery, where as in does and ewes all the operations were successful. In all, the beneficiaries were the rural farmers for whom livestock farming formed part of their livelihood.

10.3 MANAGEMENT OF CONTRA LATERAL FRACTURES - RADIUS & ULNA WITH PVC SPLINT AND TIBIA & FIBULA WITH TYPE II EXTERNAL SKELETAL FIXATOR

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An 8 months old, German shepherd dog was presented with the history of fall from second floor 20 days back to clinic. Clinical examination revealed contra lateral fractures of left tibia & fibula and right radius & ulna. Radiographic examination confirmed oblique fracture with a butterfly fragment over the right radius & ulna and transverse over riding fracture over the left tibia & fibula. Under general anaesthesia, the callus over the fractured left tibia & fibula was removed & fractured end was aligned to normal anatomical positioned and stabilized by type II external skeletal fixation. The fractured radius & ulna was immobilized with PVC gutter splint. The animal was ambulatory by 2nd postoperative week after the immobilization procedures and the animal's tolerance to the fixator and PVC splints was satisfactory. Satisfactory clinical union with PVC splints was achieved in the radius & ulna by 4th postoperative week and with the linear fixator on the 6th week. The animal displayed full functional limb usage on the 10th week.

10.4 CARDIOMYOTOMY FOR THE MANAGEMENT OF ACHALASIA OF GASTROOESOPHAGEAL SPHINCTRE IN DOG - A CASE REPORT

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Congenital dilatation of oesophagus in dogs is reported infrequently and acquired mega esophagus cases are not common. Achalasia of the cardia on account of neurological insufficiency is thought to be the major cause for mega oesophagus .A case of segmental oesophageal dilatation along with achalasia of gastro-esophageal junction and its successful surgical management is reported. A four year old male entire Labrador retriever was presented with the history of chronic vomiting since two months. On clinical examination the animal was found to be regurgitating the stomach contents approximately ten minutes after feeding. It was previously treated with ant emetics, antacids and H2 blockers but with out effect. Contrast radiography with barium swallow revealed a dilated thoracic oesophageal segment and a narrowing towards the terminal portion and oesophagoscopy revealed reflux oesophagitis and stricture of the gastro-esophageal junction. Attempts to Widen the distal oesophageal sphincter with gastro scope was not successful. Based on clinical, radiographic and endoscopic findings, the condition was diagnosed as segmental dilatation of esophagus along with cardiac achalasia. Since correction of stricture with gastro scope was not fruitful, it was decided to perform cardioplasty to effect dilation of gastro-esophageal junction. The patient was prepared by withholding food and water for twelve hours preoperatively and the left paracostal site was prepared for aseptic surgery. Anaesthesia was induced with Ketamine hydrochloride @ 10mg/Kg weight intramuscular along with Xylazine hydrochloride @ 1 mg/Kg weight and Glycopyrrolate @ 0.01 mg/Kg both given intramuscularly as preanaesthetics. Muscle relaxation was effected by giving diazepam injection @ 0.5 mg/Kg intravenously. The animal was controlled on right lateral recumbancy. Gastro-oesophageal junction was approached through 12th intercostal space along with resection of 12th rib. Respiratory support was given by manual compression of ambubag connected to the endo-tracheal tube. The stomach and the abdominal oesophagus were exteriorized by holding the greater curvature of the stomach. Attachment of the phreno-oesophageal ligament was incised and widened the hiatus oesophagi to expose the thoracic portion of the lower oesophageal sphincter. The gastro-oesophageal junction was identified and a longitudinal incision was made over the cardia region. The incision was confined to the muscular layer leaving the mucosal layer intact. Blunt dissection was performed to separate the muscular layer from the mucosal layer. The longitudinal incision was closed vertically. The incision on the oesophageal hiatus was closed. Reposited the stomach and the laparotomy wound was closed in routine manner.

Postoperatively, the dog was maintained on dextrose saline (5%) intravenously for three days along with antibiotic cover with ceftriaxone and tazobactum combination, @ 20 mg/Kg weight, twice daily. There after it was given liquid food orally along with cephalexin tablets twice a day for four days. Liquid diet was continued for another four days and semisolid food there after, for three weeks after surgery. Skin sutures were removed on 8th postoperative day. The animal regurgitated small quantity of mucus on third day when it was shifted to liquid diet and milk on 5th day, after two hours of feeding. There after the animal did not show any untoward reactions and made an uneventful recovery.