Greetings!

Creature Companion, India’s foremost Pet Care magazine, from the House of L.B. Associates caters to the needs of Pet Parents. It provides a stable platform to the Pet Industry to communicate with Pet Parents, regarding the various offerings, for the well-being of their beloved pets. It is only through Creature Companion magazine that pet parents as well as the entire pet care industry, is kept updated on happenings, around the globe.

However, till now our country is in dearth of any such publication for Pet Practitioners.

Pet Practitioners’ Journal (PPJ) would be serving the needs of Pet Practitioners’, Veterinary Students and Pharmaceutical Companies. It is the compendium of knowledge, information and innovations of Pet Practices. We all know that there is an urgent need of Continuous Professional Development (CPD) of Pet Practitioners’ for better care of our pets.

In India, pets also deserve the best and latest treatments, like in other developed countries. Indian Veterinary Doctors are doing marvellous jobs in US/ Europe etc, but in India, there are many constraints due to lack of information. They find it impossible to hone their skills regularly. After leaving college, there is an urgent need to provide them with latest knowledge and keep them updated on new development in pet practices. This knowledge should come, from throughout the world. This way, the Vets can equip themselves with all the latest skills as well as information, for the best care of our pets.

PPJ would be covering wide range of topics, on Pets’ Behaviour, Medicine, Surgical, Orthopaedic & Anaesthetic Procedures, Dentistry, Ophthalmology, Diagnostics and Case Reports. These all would be reviewed under excellent guidance of Dr Manvir Singh, who has initiated India’s first Pet Journal, and is the Editor-in-Chief of the same (PPJ).

Not limited to this only, PPJ would also include tools to test your knowledge in form of Vet Quiz, What is your Diagnosis, Identify the Spot etc. PPJ would also provide updates on various CPD events in India, as well as the World.

In future, many more topics would be covered on PPJ. So, keep reading ‘n’ watching!

I would be looking forward for your feedback.
Esophagoscopy in dogs: Overview for Practitioners

By S A Hussain*, S A Dattu, S K Uppal and N Hassan
Department of Veterinary Medicine, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab-141004, India
*Corresponding author: daaushihussain@gmail.com

Abstract
Esophagoscopy has become one of the most common tools for diagnosis of many esophageal diseases like strictures, diverticula, esophagitis, megaesophagus, ulcers, gastroesophageal intussusceptions etc. The dogs with dysphagia, regurgitation or excessive salivation are the most commonly referred patients for esophagoscopy. Foreign bodies wedged in the esophagus are often removed by using a rigid endoscope but sometimes can be pushed distally into the stomach. If the endoscopic length permits, esophagoscopy should always be followed by gastroscopy.

Key Words: Dog, Esophagoscopy, megaesophagus, esophageal foreign body

Esophagoscopy refers to examination of lumen and mucosal lining of esophagus by means of a flexible or rigid endoscope.

Indications, Patient Preparation and Detectable Lesions:
Esophagoscopy is indicated in the patient with signs of dysphagia, regurgitation, excessive salivation, anorexia and recurrent pneumonia. Detectable lesions include foreign bodies, strictures, diverticula, esophagitis, megaesophagus, ulcers, hiatal hernia, gastroesophageal intussusception, tumors and gastric reflux (reflux esophagitis). Patient preparation includes withholding food for 12 hours and water for 2 hours. For the procedure, the patient should be anesthetised and a cuffed endotracheal tube should be inserted to prevent aspiration. Doing so, reduces risk to both the patient and the endoscope. Before anesthesia, physical examination and blood work should be carried out. Also the patients should be assessed for ongoing diseases particularly liver diseases, because they result in detoxification deficiencies, deficiency in synthesis of clotting factors and albumin. Dehydration and acid-base disturbances should be corrected before the anesthesia.

Patient Position during the Procedure:
The anesthetised patient should be placed in left lateral recumbency (right side up). This releases the pylorus and pyloro-duodenal angle from the weight of the viscera. A mouth gag as well as the lubricated endoscope is inserted under direct observation. The endoscope is passed through the oral pharynx, into the upper esophageal sphincter. Air should be insufflated to dilate the lumen, so that the esophagus is passed distally. The endoscope should not be advanced blindly without visualization of the lumen. If the lumen does not distend with insufflation, manual compression of the esophagus, just below the larynx prevents air from escaping out from the upper esophageal sphincter. The mucosa should be examined systematically and any lesions should be biopsied. It is technically difficult to take biopsies from normal esophageal mucosa, owing to its smooth and tough texture. Thus the esophagus is a rare exception where tissue is not taken, if no lesions are seen.

Appearance of Normal Esophagus:
In anesthetised animal, the normal esophagus is flaccid and drapes over trachea and thoracic vasculature, giving the appearance of mega esophagus. The esophagus may contain small amount of clear fluid. The presence of food is abnormal. The normal mucosa is glistening, pale and smooth (Fig. 1). As the esophagus is distended with air, an impression of the adjacent trachea will appear in the cervical area. Sub mucosal blood vessels are usually not visible in the dog esophagus but a network of superficial vessels is sometimes apparent in the esophagus of puppies and cats. The distal few centimeters of cat esophagus is characterised by a series of circumferential mucosal folds termed the Herring bone. The gastroesophageal junction has a slit like appearance (Fig. 2). Slight reddening may be apparent at gastroesophageal junction in normal animals, due to transition from esophageal to gastric mucosa. The lower esophageal sphincter is usually closed at time of examination but occasionally may gape open.

Fig. 1: Normal esophagus in healthy dog with longitudinal folds, gray mucus membrane and soft and glistening surface
Fig. 2: Closed gastroesophageal sphincter in healthy dog
**Common Esophageal Abnormalities**

**Megaesophagus:** Megaesophagus is one of the most common esophageal disorders in dogs. Endoscopy may not be helpful in making the diagnosis because the esophagus is normally dilated during insufflation. In cases of idiopathic megaesophagus, however, marked dilation of the lumen occurs during routine endoscopy. It is often seen, along with accumulation of foam (Fig. 3). Generally, the diagnosis of esophageal motility disorders is best made using contrast radiology or fluoroscopy. Caution should be taken during oesophagoscopy of a dog with megaesophagus because of the potential for secondary aspiration pneumonia.

**Esophagitis:** The cause may be mechanical trauma, ingestion of toxic substances, or reflux of gastric acid. The endoscopic findings of esophagitis include erythema, erosions, and mucosal irregularity (Fig. 4). Identification of a large, open lower esophageal sphincter during endoscopy, in conjunction with a reddened hyperemic distal esophageal mucosa, is consistent with gastroesophageal reflux.

**Esophageal Foreign Bodies:** Prompt removal of esophageal foreign bodies is essential to avoid extensive mucosal damage or necrosis. Bones are the most common esophageal foreign bodies in dogs, most often found lodged in the distal esophagus. Effective removal of an esophageal foreign body may involve the use of a rigid or flexible endoscope and other instruments, like grasping forceps, wire baskets, or snares. Removal of large foreign bodies, such as bones, often requires a large, rigid esophageal scope and a pronged grasping forceps. The advantage of a rigid esophageal tubular scope is that, it mechanically dilates the esophagus, and the endoscopist can pass a larger-sized grasping forceps through the rigid esophageal scope, to retrieve the foreign body. If the foreign body cannot be retrieved through the mouth, it may sometimes be pushed distally into the stomach. In case of bones, they are often sufficiently digested by gastric acid to allow passage through the gastrointestinal tract. Other objects may require removal from the stomach at exploratory laparotomy, a much safer procedure than thoracotomy and direct removal from the esophagus. Examination of the esophagus should always be followed by examination of the stomach, if the endoscope available permits this. After endoscopic removal of a foreign body, the esophagus should be carefully evaluated for any lacerations, perforations or tears, which may heal on their own or sometimes require surgical intervention.

**Esophageal Diverticula:** Diverticula occur as sac like dilatations or outpouching of mucosa through one or more layers of the esophageal wall. They are generally secondary to damage of the mucosal wall by a foreign body. The presence of a diverticulum can result in accumulation of food and fluid within the diverticulum itself. Small lesions may be asymptomatic, while large ones usually result in significant clinical signs.

**Esophageal Neoplasia:** Leiomyomas are the most common benign tumors of the esophagus. They are usually observed as incidental findings unless they are large enough to obstruct the esophageal lumen. Esophagoscopy enables visual evaluation of the esophageal lumen and the opportunity to obtain a mucosal biopsy. Esophageal papillomas are benign tumors that occasionally occur in the esophagus and are possibly the result of chronic inflammatory changes. Squamous cell carcinoma is the most common primary malignant esophageal neoplasm in cats.

**Esophageal Strictures:** Esophageal strictures are commonly associated with direct mucosal trauma or reflux of gastric acid. Strictures may occur as narrow fibrous bands or as long segmental lesions. Intramural strictures should not be confused with vascular ring anomalies, or intraluminal masses. Endoscopy provides the best means of identifying the presence and character of most intraluminal strictures. A stricture in the esophagus is best treated using balloon catheters. The dilation procedure frequently needs to be repeated several times, at approximately one week intervals, until the dilation is maintained to the point of resolution of clinical signs.

**Esophageal Neoplasia:** Leiomyomas are the most common benign tumors of the esophagus. They are usually observed as incidental findings unless they are large enough to obstruct the esophageal lumen. Esophagoscopy enables visual evaluation of the esophageal lumen and the opportunity to obtain a mucosal biopsy. Esophageal papillomas are benign tumors that occasionally occur in the esophagus and are possibly the result of chronic inflammatory changes. Squamous cell carcinoma is the most common primary malignant esophageal neoplasm in cats.

**Esophageal Diverticula:** Diverticula occur as sac like dilatations or outpouching of mucosa through one or more layers of the esophageal wall. They are generally secondary to damage of the mucosal wall by a foreign body. The presence of a diverticulum can result in accumulation of food and fluid within the diverticulum itself. Small lesions may be asymptomatic, while large ones usually result in significant clinical signs.

**Vascular Ring Anomalies:** The diagnosis of a vascular ring anomaly is routinely made using barium contrast radiographs. Endoscopy becomes helpful in confirming the diagnosis of extra luminal compression of the esophagus by large blood vessels.

**References**


Nutritional Management of Obesity in Young Pups

By Vishal Mudgal and R. K. Jain*

Division of Animal Nutrition and Feed Technology, CIRB, Hisar, Haryana 125 001, India

*Professor, Department of Animal Nutrition, College of Veterinary Science and Animal Husbandry, Mhow (MP)

Abstract
Obesity is presently the most common nutritional disorder, occurring in companion animals. It is seen that obesity is on an increase. This is because of sedentary lifestyle (pet owners have lack of time as well as, there is unavailability of places where they may take their pets for exercise). This sedentary lifestyle has become the norm rather than the exception for many dogs. Avoid obesity among pets; we try to give information regarding the topic as well as its possible solutions.

Keywords: Obesity, Pup, Prevention, Management, Therapeutics.

Obesity is defined as the excessive accumulation of fat in the adipose storage areas of the body (Thornburg et al., 1984). Body weight that is 20 percent or more, above the normal is generally considered to be indicative of obesity. Health problems in human subjects begin to increase when weight reaches 15 percent or greater above ideal body weight.

Types of Obesity
The basic problem of obesity includes an increased mass of the body fat, produced either by enlargement of fat cell size alone (hypertrophic obesity) or by an increase in both fat cell size and fat cell number (hyperplastic obesity). Pets that develop hyperplastic obesity are generally more difficult to treat and have a poor long-term prognosis. Normal adipocyte hyperplasia occurs during specific critical period of development. In most species, these periods occur during early growth and occasionally during puberty. After onset of adulthood, increase in fat cell size takes place, but no change takes place in its number. Although conditions of extreme and prolonged overfeeding can result in fat cell hyperplasia in some animals, the majority of cases of adult onset obesity are a result of fat cell hypertrophy alone.

Causes of Obesity
Obesity is considered to have numerous causes with physical, emotional, environmental, endocrinial and/or neurological components. The sedentary lifestyle of the domestic dog, combined with high rates of surgical contraception, may play a dramatic role in the environmental and endocrine mechanisms, respectively. Other factors such as musculoskeletal problems and/or developmental abnormalities greatly influence the ability to exercise and ultimately contribute to weight gain. The indiscriminate feeding habits including table scraps, poor diet, constant access to food and other poor eating rituals are the significant contributing factors. In addition, competitive eating in multiple dog households may be a factor not apparent to owners.

Diagnosis of Obesity
Diagnosis of obesity in companion animals should always include an examination for the presence of edema, ascites, hypothyroidism, hyperadrenocorticism and diabetes mellitus. After these diseases have been ruled out, a comparison of the pet’s current weight with previous weight measurements or with its weight shortly after reaching adulthood may be indicative of abnormal weight gain. In some cases, of purebred dogs and cats, a comparison of the pet’s body weight with the weights suggested by the breed’s standard may also be a useful guideline for determining ideal body weight (Table).

Table: Standard weights of popular breeds of dogs (Ibs).

<table>
<thead>
<tr>
<th>Breeds</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boxer</td>
<td>55-70</td>
<td>50-60</td>
</tr>
<tr>
<td>Doberman pinscher</td>
<td>65-85</td>
<td>55-70</td>
</tr>
<tr>
<td>German Shepherd</td>
<td>75-90</td>
<td>65-80</td>
</tr>
<tr>
<td>Labrador and retriever</td>
<td>65-80</td>
<td>55-70</td>
</tr>
<tr>
<td>Pomeranian</td>
<td>4-7</td>
<td>3-5</td>
</tr>
</tbody>
</table>
Estimating the percentage of body fat is the most accurate method of diagnosing obesity. Ultrasound provides a non-invasive, rapid method for measuring subcutaneous fat, but is not yet practical in most clinical settings. Likewise, measurements of total body density are very accurate, but are usually not feasible. The most practical method used to assess excess body fat and obesity in dogs and cats is palpating the thickness of tissue overlaying the rib cage and along the ventral abdomen (Thornburg et al., 1984; Dustin, 2011). If a dog or cat is too thin, the ribs will be easily seen. An animal of normal weight will have barely visible ribs that can be easily felt when palpated. The ribs of overweight animal will not be visible and an overlying layer of fat can be felt. Visual assessment of the pet provides additional support for the diagnosis of obesity.

Management of Obesity

If a pet is overweight that means, the pet it is taking more calories than it requires. In that case, the pet should be examined for heart, thyroid or other metabolic disorders. A detailed history should be taken with emphasis on frequency of exercise, amount and type of food being provided and other parameters relative to calorie requirements.

The short-term goal of the treatment of obesity is to reduce body fat stores. This goal relies on the induction of a negative energy balance. Negative energy balance can be accomplished by restricting dietary intake, stimulating total energy expenditure or a combination of the two (Osborne et al., 1986; Jewell et al., 2000). The long term goal of treatment is for the pet to attain its ideal body weight and to maintain this weight for the rest of its life. Dogs and cats that are 15 percent or more above their ideal body weight should be placed on a strict weight loss programme. Depending on the degree of obesity and the age and health of the pet, a weight loss of 1 percent to 3 percent of the animal’s total body weight per week is recommended (Barrie et al., 1993: Spector, 2011). Behaviour modification, exercise, and dietary manipulation should be included in all weight reduction programmes.

Behavioural Modification

The owners’ method of showing affection should be directed more toward physical activity than feeding, Think, “FETCH” not “FOOD”! Behavioural modification techniques are designed to change habits of the owner that may have contributed to the pet’s initial weight gain. Such activities include providing the pet with high-calorie table scraps, self-feeding a highly palatable and energy-dense food, encouraging or allowing begging and frequently feeding dog biscuits and treats. Some changes that can be instituted include keeping the pet out of the kitchen while meals are being prepared, decreasing the number of treats that are given per day, breaking treats into small pieces and giving only a small piece at a time to the pet and lastly keeping the pet out of the dining room during your meal.

Exercise

Include moderate and regular exercise in the treatment of obese pets affects body weight in several ways. Increase in activity has the direct benefit of raising daily energy expenditure, and thus contribute to the energy deficit that is necessary for weight loss. An increase in exercise also aids in the regulation of food intake. Studies with animals and humans have shown that caloric intake varies proportionally with energy expenditure during moderate to high levels of exercise. However, reduction of activity to a completely sedentary level results in increased food intake and eventual weight gain. Physical activity should always be initiated at a low level with animals that are accustomed to a completely sedentary life-style. Twenty minutes of legitimate exercise three to five times per week is a good start. Daily exercise is ideal. Both the duration and the intensity of the exercise can be increased as the animal begins to lose weight and there is an increase its exercise tolerance. Daily walking, running, or playing fetch and other games are recommended exercises for dogs.

Dietary Manipulation

The most important component of a weight loss programme for dogs and cats is caloric restriction. Providing a diet that provides 60 percent to 70 percent of the calories necessary to maintain current body weight usually results in adequate weight loss (Barrie et al., 1993). Even though dogs can lose weight and maintain health on energy deficits, as equivalent to 40 percent of maintenance requirements. At a level of 60 percent to 70 percent of metabolism energy, most pets will lose between 1 percent and 2 percent of their total body weight, per week.

During the weight loss programme, the pet should be weighed once each week and a record or graph of weight loss should be kept. Caloric intake can be adjusted as the pet loses weight. It may also be helpful to feed several small meals per day, rather than one or two large meals. This practice may decrease signs of hunger and increase the energy losses of meal- induced thermo genesis. Once the goal weight has been reached, the daily volume of food can be slowly increased until an amount that maintains ideal body weight is provided.

Types of Diets for Weight Loss

Some pet owners include a great number of treats and table scraps in their pet’s daily ration. When this is the case, simply eliminating all of the extra tidbits and restricting the pet’s intake to 70 percent
to 80 percent, of its body weight requirement will lead to adequate weight loss. This is the preferred method to use with pets who are only slightly overweight, do regular exercise and have well-motivated owners. In addition, weight loss may be relatively slow due to the smaller caloric deficit. Commercially prepared foods with a low energy density are formulated to contain adequate levels of nutrients while supplying low calories. Therefore, in cases of moderate to severe obesity or when owners are not strongly motivated to change their habits, a change of diet to a commercially prepared diet with a low energy density is recommended for weight reduction.

Commercial pet foods (low caloric diets) may be divided into two distinct types: those that are low in fat and high in digestible, complex carbohydrate and those which are low in fat and high in indigestible fiber. Decreasing the fat content of a pet food results in a decreased caloric density and may decrease palatability. Commercial, low-fat diets contain between 8 percent and 11 percent fat on a dry-matter basis. This percentage is equivalent to 18 percent to 26 percent of the calories in a diet with an energy density of 3500 kcal/kg. The decreased proportion of fat is low enough to reduce the caloric density of the food but high enough to provide adequate palatability and the required amounts of essential fatty acids. All pet foods that are used for weight reduction or for sedentary pets have decreased levels of fat. However, significant differences occur in the amounts of indigestible fiber, digestible carbohydrate and protein that these foods provide. Some products replace fat with primarily digestible carbohydrate and other products contain high levels of indigestible fiber. Pet foods that replace fat with complex carbohydrate without adding additional fiber, retain the level of digestibility of the higher fat products, but they contain less total calories. Corn and rice are both excellent sources of digestible carbohydrate for pet foods.

An alternate way to decrease the caloric density of a diet may be diluting calories through the addition of indigestible fiber. Several commercial reducing diets are available that contain low levels of fat and unusually high amounts of dietary fiber. The rationality behind these products is that the increased bulk and decreased digestibility of the diet will cause a decrease in voluntary energy consumption and assimilation, leading to weight loss. A certain level of fiber is necessary in the diets of companion animals. However, the weight reducing effect of high levels of indigestible fiber in the diet is questionable and excessive fiber intake can produce a number of adverse side effects also. High intakes of dietary fiber cause decrease in nutrient digestion and availability. Specifically, fiber interferes with the absorption of lipids; calcium, zinc, and iron, and it results in increased fecal energy and nitrogen excretion (Miller et al., 1992; Crapo, 1986: Reinagel, 2010). Excess fiber consumption also leads to increase in gas production, fecal volume, and defecation frequency.

Surgical Management

The surgical management of human obesity by gastroplasty or liposuction is in vogue. However, application of such techniques is documented neither as safe, nor effective and therefore, has no status in ethical veterinary practice (Crane, 1991).

Therapeutic Management

Pharmacological or hormonal management of metabolic rate and, hyperphagia may very well complement dietary management and exercise in pet animals with obesity. Treatment of obese dogs with adrenal steroid dehydroepiandrosterone (DHEA) in combination with a low energy, high fiber diet, has resulted in greater loss when compared with dogs on the same diet without DHEA (MacEwen and Kurzra, 1991). However, there is little documented experience in veterinary medicine with drug and to suppress appetite.

Prevention of Obesity

Precautionary measures for obesity should start in scientific manner, from very young stage by adopting a feeding schedule to prevent the onset of juvenile obesity. Besides, special care should be taken during changing circumstance it the animal’s life, which put the animal at a greater risk for developing obesity. This is particularly important after orthopedic surgery and medication with certain drugs or development of any clinical conditions in which exercise must be restricted. Preventive measures are more important in animals recovered successfully from a bout of obesity. Once the target ideal weight has been achieved, the dietary management should continue, with a gradual increase in caloric intake to a calculated below maintenance level.

References

Spector D. 2011. How to help your overweight dog lose weight. Dogfoodadvisor.com
Feline Anaesthesia: Injectable and Inhalant Anaesthetics for Cats

S A Hussain*, N Hassan and S K Uppal
Department of Veterinary Medicine, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab-141004, India
Corresponding author: daaashihussain@gmail.com

Abstract
The use of anaesthetics is common in feline veterinary practices. It provides an essential tool for surgical or other painful procedures. The most commonly used pre-anaesthetic sedative is Acepromazine. Commonly used injectable anaesthetics are propofol and ketamine while Isoflurane is generally used as inhalant anaesthetic.

Keywords: Feline Anaesthesia, inhalant, injectable

Introduction
Anaesthesia is “loss of feeling or sensation”. However, in a lay man’s mind, anesthesia is as close to death as a body can be without actually dying. So, anaesthesia is quite frightening for most of the cat owners and sometimes, few such owners do not give consent for any surgical procedure, due the phobia of anaesthesia. Certainly, no one would ever expect their cat to be operated without the benefit of anaesthesia. It has been said that there is no such thing as the perfect anaesthetic, and there is always potential for risk with any of them. So, it is necessary to do our homework prior to any procedure requiring anaesthesia, and to do a pre-anaesthetic blood screening. This precaution is not a guarantee by any means (e.g., cardiomyopathy will not show up on a blood panel), but it can help you determine what is the best anaesthetic or combination of anaesthetics. Therefore, an understanding of some of the commonly-used anaesthetics and analgesics will help us to make the best decisions when it comes to sedating the cats.

Pre-Anaesthetic Sedation
Sedatives or tranquilizers, either singly or in combination, are commonly given before the induction of anaesthesia, or as a first step to induction. These drugs sedate and calm the animal for introduction of the mask or tracheal tube required for an inhalant anaesthesia. Pre-anaesthetics lower the amount of general anaesthetic, minimize vomiting and allow a quicker recovery period. Generally, sedatives are administered by injection (mostly intravenously, although Ketamine can be given intramuscularly). The most commonly used sedative is acepromazine (0.02–0.1 mg/kg IV, IM, SQ). It is used in conjunction with an analgesic such as buprenorphine (0.005 mg/kg IM, SQ, IV) to provide a reliable sedation, as it has no analgesic activity. Xylazine (0.1-0.5 mg/kg IV slowly, 0.2–1 mg/kg IM, SQ) is also used as a pre-anaesthetic sedative. Xylazine may result in nausea and should be avoided in sick or debilitated animals. Atropine @ 0.04 mg/kg IM, SQ or 0.01–0.02 mg/kg IV, is usually given as pre-medication.

Cats should not be given any food to eat for 12 hours, prior to anaesthesia. However, very young cats (< 10 weeks) and cats < 2 kg should be kept hungry for only 1-2 hours only. Obtain an accurate body weight. Calculate the dose of glycopyrrolate (0.01-0.02mg/kg) and administer, if the heart rate goes below 80rpm during anaesthesia. Pre-operatively analgesic must be administered for procedures that may result in pain. Commonly used agent is meloxicam (Load dose of 0.2 mg/kg PO/SC SID and 0.1 mg/kg PO/SC subsequently). It should be kept in mind that for meloxicam use, cat must be well hydrated and with normal kidney function.

Injectable Anaesthetics: Injectable anaesthetics are used for full anesthesia for relatively quick procedures, such as spray/neutering or caesarean sections. The commonly used injectable anaesthetics are propofol and ketamine.

a. Propofol: It is a non barbiturate hypnotic. It is used by choice for certain veterinary procedures, because it is quick acting, has a rapid recovery period, and rarely induces drug after effects. Dosage for propofol: Induction: 2-8 mg/kg IV (dose to effect), infusion: 0.2-0.4 mg/kg/min IV.

b. Ketamine: It is a dissociative anaesthetic and has been widely used as both a pre-anaesthetic drug, and in combination (@2–4 mg/kg, IV) with other drugs, such as Acepromazine (@0.1 mg/kg IV, IM), as full anaesthesia for some procedures. It is generally considered safe, although some people believe that certain breeds of cats or dogs may be at risk with its use. Ketamine is non-narcotic and non-barbiturate, but interestingly, is a hallucinogenic and is used by some people as a recreational drug for that purpose.

Inhalant Anaesthetics
Isoflurane is the most commonly used inhalant anaesthetic now-a-days and is used as 1.5%-3% inhalation. It revolu-
tionised veterinary anaesthesia, because of its safety (partic-
ularly with older or compromised patients), rapid recovery
of the patient after surgery, and the fact that it is not likely to
either induce or exacerbate heart arrhythmias. Isoflurane is
still considered the anaesthetic of choice in veterinary medi-
cine for pregnant animals (including caesarian sections) and
for animals with heart problems. Sevoflurane is relatively
new, costing around four times more than isofluorane. Halo-
thane costs even less than Isofluorane, and is still used popu-
larly.

Brief Procedure for Inhalation Anaesthesia

• Lubricate the endotracheal tube with lidocaine gel or sterile
  lubricant
• With the cat in sternal recumbency, extend the head and neck
  so that they are in a straight line
• Use a long piece of gauze roll to hold the upper jaw, pull the
tongue forward and out of the mouth
• Use the laryngoscope to disengage the epiglottis from the soft
  palate, exposing the glottis and vocal chords
• Using a long cotton swab, apply a dab of lidocaine gel to the
  larynx
• Insert the endotracheal tube gently past the vocal folds into the
  trachea
• Confirm proper placement by checking for the cat's breath as
  it exits the endotracheal tube during exhalation
• Secure the endotracheal tube by tying the gauze around the
  tube and then behind the animal’s head
• Attach the endotracheal tube to the gas anaesthesia machine
  and start the oxygen (400-800mL/min) and gas anaesthesia
  (1.5-2.0%)
• Inflate the cuff of the endotracheal tube.

Maintenance of Anaesthesia

1. Keep cat warm by providing a gentle heat source throughout
   the duration of the anaesthesia, until the cat has fully recov-
   ered from anaesthesia. Heat source must be sufficient to main-
   tain thermostasis while not causing thermal burns.
2. Use monitoring devices to assess vital signs and anaesthetic
   depth (ex: pulse oximetry, blood pressure, EKG, thermometer).
3. Never leave the cat unattended while anaesthetised.

Recovery

1. Turn off gas anaesthetic vaporiser but keep oxygen running
   for 5 minutes
2. Deflate cuff and remove endotracheal tube when the cat be-
   gins to swallow
3. Observe cat during recovery until fully awake.

Potential Hazards of Some Commonly Used Anaesthetics

Acepromazine: It is not an analgesic. Therefore, acepromazine is
usually used in combination with another sedative. It is contrain-
dicated in animals with central nervous system lesions, and can
sometimes cause hypothermia.

Ketamine: Ketamine is contraindicated in cats suffering from head
trauma and renal or hepatic insufficiency. There is a potential for
depressed cardiac function, compromise respiratory function, in-
cluding apnea for cats with cardiac disease or severe debilitation.

Propofol: It can cause apnea when inducted quickly, and over dos-
age can cause cardiac arrest. However, ordinarily there are minimal
effects on the cardiovascular system. Propofol is contraindicated
for cats with certain liver diseases, since it is primarily metabolised
via the liver.

Halothane: Cardiopulmonary depression, and a risk of malignant
hyperthermia in some breeds.

Isofluorane: Respiratory depression and cardiovascular depres-
sion.

Anaesthetic complications appear relatively rare, though recent
work suggests they are more common in cats than dogs. Current
estimates indicate that approximately 0.11 percent (1 in 895 anaes-
thetics) of healthy cats’ die of an anaesthetic related death, which
is more than twice as frequent as has been recently reported in dogs
(0.05% or 1 in 1849). Most of these deaths occur in the post-op-
erative period. A number of risk factors have been associated with
death, including patient health status, age, weight, and procedure
type and urgency. Endotracheal intubation and fluid therapy have
been reported to be associated with increased odds of anaesthetic
death in cats and may reflect higher risk techniques in cats com-
pared with dogs.

References
P Lerche, WW Muir and RM Bednarski. 2000. Rebreathing anesthetic
systems in small animal practice. Journal of American Veterinary
R E Fish, M J Brown, P J Danneman, AZKaras. 2008. Anesthesia and
Diego, California, 2008.
tcam.2010.09.007.
CARE Anesthesia Monitoring Record http://www.research.cornell.edu/
care/documents/ Forms/Anesthesia%20Record.pdf
Surgical Management of Dystocia in Bitch

By G Kamalakar1*, R Mahesh1, J Devaratnam1, N Sumiran1, V Devi Prasad2, R V Suresh Kumar3
Department of Veterinary Surgery & Radiology, College of Veterinary Science Proddatur, YSR Kadapa District Andhra Pradesh – 516360.

*Corresponding author: drkamal_zet@yahoo.co.in

Introduction
Dystocia is inability of the dam to expel the foetus at parturition through birth canal without assistance (Reichler and Michel, 2009). The incidence of dystocia in companion animals like bitch are quite low (Jackson, 1995), but when it occurs it may constitute life threatening situations to both dam and the young ones. The incidence of foetal and maternal dystocia in bitches was 24.7% and 75.3% respectively (Darvolid and Linde-Forsebeg, 1994). The causes of dystocia may be maternal like narrow pelvis, uterine inertia, uterine torsion and foetal like, malposition, malpresentation, malposition and monstracities (Wykes and Olson, 1993). However, the maternal causes appear to be more common. Diagnosis can be made, based on symptoms, per vaginal examination and radiography. Uterine torsion, uterine inertia can be treated medically, manually by digital and forceps manipulation but, for relieving dystocia due to narrow pelvis and foetal malposition, caesarean section is the only alternative. This paper communicates the successful management of dystocia in two bitches by following the mid ventral laparohysterectomy.

Keywords: Dystocia, canine, laparohysterectomy

Case History and Observations
Case 1
A Pomeranian cross bitch of 1st parity was presented to clinic with a history of delay in whelping. The labour pains had started five hours back, since then no discharges were observed. It also had a history of accident to hind quarters when it was a pup. Local veterinary doctor had treated it by administering oxytocin, calcium levulanate but the result was unsuccessful. Abdominal palpation revealed pups in the uterus. Per vaginal examination revealed complete cervical dilatation but the pelvic inlet was very narrow.

Case 2
A Labrador cross bitch of 3rd parity was presented to the clinic with a history of delay in whelping. The labour pains had started five hours back, since then no discharges were observed. It also had a history of accident to hind quarters when it was a pup.
with a history of labour pains since 36 hours. It had whelped three pups already, since then showing severe straining without any result. It was treated locally by manual methods but in vain. On palpation, the abdomen was tense, distended and could feel pups. On vaginal examination, we could palpate limbs and body of foetus but not the head. The bitch was very dull, anorectic with sunken eyes. Radiography revealed four pups in the abdomen but the anterior one was nearer to the pelvic inlet with lateral head deviation (Fig:1).

Based on the observations in both the cases, emergency caesarean operation was planned to retrieve the pups.

Treatment and Discussion

Considering the fluid loss in the operative procedure both the bitches were infused with 300 ml of ringers lactate intravenously and meloxicam 1 ml was administered as pre-emptive analgesia prior to the surgery. Caudal mid ventral abdominal region was prepared aseptically. Both the bitches were pre anaesthetised with atropine sulphate @ 0.04 mg/kg BW. Anaesthesia was induced and maintained with ketamine and diazepam @ 6mg/kg BW and 0.5mg/kg BW respectively. Uterus was exposed, following routine abdominal procedures and an incision on the body of uterus was made to milk out foetuses from both horns. In case 1, five live pups were retrieved where as in case 2, four dead pups were retrieved, of which the anterior one was large sized, slightly emphysematous and head was deviated (Fig:2). Uterine incision was closed by double inversion sutures using chromic catgut no.1 and abdominal wound was closed in 3 layers by routine manner after thorough lavage of the cavity. Post operatively both the animals were infused with ringers lactate 250 ml and metronidazole 100 ml intravenously for three days and cefotaxime sodium 500 mg, meloxicam 1.5 ml, chloropheneramine maleate 2 ml and B-complex2 ml were administered intramuscularly for five days. The owners were advised to give soft diet for five days. Skin sutures were removed on tenth post operative day and no complications were observed.

Dystocia in case 1 is likely to be pelvic disproportion as confirmed by per rectal and vaginal examination. Radiography is crucial for estimating number, size, direction and location of foetuses (Reichler and Michel, 2009) as observed in case 2. Mal positioning of the head, fore limbs or hind limbs of the canine foetus is not readily corrected with the use of forceps, traction or digital manipulation because of the limitation of the size of the birth canal of the bitch. Moreover, time of surgical intervention after the initiation of labour pains is very important for the life of pups as well as dam. Considering the above reasons we directly proceeded to the operation in case 2. The puppies could have been alive, if the caesarean section was performed within 12 hours after onset of labour (Venugopalan, 2009) which was coinciding with the case 1 and 2. Thus, we conclude that early diagnosis and management of dystocias in bitches increase the viability of the pups.

References


Ultrasonography Diagnosis of Foetal Mummification in a Bitch

By Shyam Sunder*, Aarif Khan
Teaching Veterinary clinical complex, Apollo College of Veterinary Medicine, Jaipur, Rajasthan-302031
*Corresponding Author: jangra.shyam52@gmail.com

Abstract
This clinical report presents a case of canine foetal mummification, which is very rare. A German Shepherd bitch, aged two years was brought to Teaching Veterinary Clinical Complex of Apollo College of Veterinary Medicine. Detailed history about breeding of bitch was obtained from the owner. Five mummified foetuses were observed by ultrasonographic examination.

Keyword: Ultrasound, Bitch, Mummification, Pups

Introduction
Foetal mummification is a common problem in polytocous and rare in monotocous animals (Perumal and Srivastava, 2011). In canines, it is uncommon and sporadic in nature (Roberts, 2004). Death of foetus and foetal fluid are reabsorbed by the uterus causing dehydration of foetal tissue and associated membranes with persistence of the corpus luteum so that the products of conception are re-

In canines, it is uncommon and sporadic in nature (Roberts, 2004). Death of foetus and foetal fluid are reabsorbed by the uterus causing dehydration of foetal tissue and associated membranes with persistence of the corpus luteum so that the products of conception are retained within the uterus

Fig 1 and 2 shows the presence of fetal skeleton without fetal fluid
tained within the uterus. This is called foetal mummification (Noakes, 1986). Death of the foetus after ossification of foetal bones generally leads to foetal mummification, if there is no bacterial infection concurrent with or causing death of the foetus (Robinson et al, 2003). The uterus contracts on the foetus, placental fluids get absorbed and foetal membranes become shrivelled and dried (Roberts, 2004). In polytocous species, if mummification occurs in some embryos, it does not interfere with continuation of pregnancy of viable foetus; instead mummified foetus may be delivered with live foetus at the time of normal parturition (Arthur et al., 2001).

History and Clinical Observations
A two year old German Shepherd female with a history of mating 55 days before, was brought to TVCC, Apollo College of Veterinary Medicine. The owner reported anorexia, fever, and vomiting, abnormal vaginal discharge since four days. The bitch did not show any clinical manifestations of approaching whelping. The rectal temperature was 102.9°F and the animal was weak and lethargic. The perineum of the animal was soiled with vaginal discharge. To know about pregnancy status of bitch, ultrasonographic examination was carried out.

Result
Ultrasonographic examination was performed through trans-abdominal approach. Ultrasonographic evaluation on 55th day of pregnancy revealed presence of five foetal skeletons. All foetuses were small and without heartbeats. Foetal fluid was absorbed and foetal membranes adhered to the foetus. So, the present clinical case was diagnosed as foetal mummification.

Discussion
The foetal mummification is a common problem in polytocous and rare in montocous species (Perumal and Srivastava, 2011). In this study, all the foetuses were mummified and surrounded by dark capsules with wet surface. The main reason for the lack of expulsion of dead mummified foetus in the present case may be primary uterine inertia which is common in canine species (Romagnoly et al., 2004). Walett and Linde (1994) also reported uterine inertia as main cause of dystocia in bitches. In elderly female dogs, due to poor abdominal muscle tone there is difficulty in producing uterine contraction in second stage of labour (Jackson, 2004b). This primary uterine atony may have been cause for the maternal dystocia (Voorwald et al., 2012). It was also believed that foetuses fail to produce sufficient ACTH and cortisol to initiate the birth process (Johnston et al., 2001a; Linde- Forsberg, 2010).

References
Therapeutic Management of Severe Hemorrhagic Enteritis Due to Ancylostomiasis in a Spitz Dog

By Sidhartha Sankar Behera, Ananta Hembram, Monalisa Behera, Soumyaranjan Pati, A.R. Gupta and J.K. Das

Teaching Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Odisha University of Agriculture and Technology, Bhubaneswar-751003, Odisha.

Introduction
Hemorrhagic gastroenteritis (HGE) is a fairly common disorder among dogs that is characterised by sudden vomiting and diarrhea. The vomit and diarrhea may contain variable amounts of bright, red blood or dark, digested blood. The exact cause of this disease is unknown, but diet, bacterial infection or bacterial toxin, virus, reaction to an intestinal parasite, etc. have been suggested as its cause. Among the above factors, the hook worm (*Ancylostoma caninum*) is supposed to be one of the causative agents for HGE. Ancylostomiasis is caused when hook worms, present in large numbers, produce an iron deficiency, anemia by sucking blood from the host’s intestinal walls. Further, the severity of the clinical disease is related to the infection, age, nutritional status, iron reserves and presence of acquired immunity. Initially, the anaemia is normocytic and normochromic but as the animal becomes iron-deficient, a microcytic hypochromic anaemia supervenes (Soulsby, 2005).

Case History and Diagnosis
A female Spitz dog of four months, was brought with history of chronic intermittent vomiting, bloody diarrhea and deprived appetite since 15 days. The prophylactic schedule against common infectious diseases was reported to be undertaken but de-worming of the animal had not been done. Clinical examination revealed the pale mucus membrane along with moderate dehydration. During examination the dog defecated which was diarrhoeic and contained heavy bloody mucus and tarry nature (Fig.1). The defecation continued for a long time, which had only blood without excreta. Diagnosis was made from the characteristic clinical signs and confirmed by the presence of large numbers of the eggs in the faecal sample. The characteristic thin-shelled, oval eggs were easily seen, floating on fresh faeces from infected dogs (Vegad and Katiyar, 2009). Blood sample examination revealed eosinophilia, which was also the consequence of the disease in later stages (Soulsby, 2005).

Treatment and Discussion
There was respiratory distress and cardiac arrhythmia towards the end. So lifesaving drugs, like Dexamethasone @ 1.0 mg/kg body weight and theophylline @ 10 mg/kg body weight was given, to restore the respiratory and cardiac function. To restore the blood volume plasma, expander (Haemaccel) was given @ 20 ml/kg body wt. and Ringer lactate solution @ 50 ml/kg body weight in-
travenously for three days to check dehydration and control metabolic-acidosis due to persistent diarrhea (Fig.2). Broad spectrum antibiotic such as ceftriaxone (Intacef) @ 25 mg/kg body weight was given for five days to prevent secondary bacterial infection. Metoclopramide (Perinorm) @ 0.1 mg/kg body weight was given to check the vomiting. For haemostatic action, hemocoagulase (Botrapase) @ 1.0 ml (total dose) was given intramuscularly for two days. Tribivet (vitamin-B1, B6, and B12) @ 2 ml intramuscularly was given for five days to enhance the haemopoiesis. After 5 days when the dog started taking food, it was prescribed fenbendazole (Fentas) @ 50 mg/kg body weight orally for 3 days to kill the adult and larval stages of hook worms. The dog was recovered completely and regained its normal appetite within 2 week.

Ancylostomiasis (hookworm disease) is a disease of worldwide distribution. *Ancylostoma* caninum is the most common and species-specific hookworm and it parasitises dogs in the tropics and subtropics. Due to its high prevalence and its zoonotic significance, *Ancylostoma* caninum has gained major importance in the field of veterinary as well as public health research (Obiukwu and Onyali, 2006). It occurs mostly in summer, and especially in animals that are confined to a relatively small area of moist ground, like dogs in kennels. It is seen in animals of all ages, however, prenatal infection may cause a sudden onset of severe anaemia, coma and death about three weeks after birth (Lapage, 2000). The most important effect of hookworms results from the parasite’s ingestion of blood, leading to anaemia and hypoproteinaemia. The amount of blood loss due to a single worm in 24 hours has been estimated to be 0.2 ml (Vegad and Katiyar, 2009). The pre-infective stages are not resistant to desiccation, so that ground and pens on which susceptible animals are kept should be as dry as possible and faeces should be removed at short intervals. The floors of kennels may be treated with common salt or sodium borate (2 kg/10 m2) which helps in killing the larvae. Wherever possible, the floors of kennels and exercise yards should be made impervious by concrete or similar material (Soulsby, 2005). Fenbendazole inhibits fumarate reductase system of parasites, thereby, blocking the citric acid cycle and also reduces glucose absorption by the parasite (Ramsey, 2007). In the present case fenbendazole proved well in its efficacy as evident by improvement in the clinical symptoms and absence of parasitic eggs in faecal examination. After recovery the owner was advised to follow the above medicine practices along with periodic de-worming of the dog.

References
Feline Kaliopenic Polymyopathy–A Review of Three Cases

B. Y. Ambily, V. R1*, Janus, A1, Usha Narayana Pillai2
Department of Clinical Veterinary Medicine, College of Veterinary and Animal Sciences, Mannuthy, Kerala Veterinary and Animal Sciences University - India
*Corresponding author - ambily.vr@kvasu.ac.in

Abstract
Feline Kaliopenic Polymyopathy is a generalised metabolic muscle weakness disorder in cats. It is secondary to hypokalemia, which is associated with inadequate dietary intake or excessive gastrointestinal or urinary depletion. Three kittens, aged three months, belonging to the same litter were presented to University Veterinary Hospital, Mannuthy. They had a history of weakness, anorexia, diarrhoea, downward deviation of head and abnormal gait. Serum biochemical analysis revealed Hypokalemia (<3.4 mmol/L) in all the three kittens. Acute or chronic vomiting or diarrhoea can lead to an increased gastrointestinal loss of potassium. The condition was diagnosed as Hypokalaemic Polymyopathy, which is secondary to chronic diarrhoea. All the animals were successfully treated with intravenous fluids and antibiotics together, with oral dosage of Potassium chloride @300 mg per day for five days. All animals showed an uneventful recovery.

Introduction
Feline Kaliopenic Polymyopathy, otherwise known as Feline hypokalemic polymyopathy, is a generalised metabolic muscle weakness disorder in cats. It is secondary to hypokalemia, which is associated with inadequate dietary intake or excessive gastrointestinal or urinary depletion. Extra cellular hypokalemia causes muscle cell membrane hyperpolarisation and secondary excessive permeability to sodium. This leads to hypopolarisation of the muscle cell and subsequent weakness. Hypokalemia, a sub-normal serum potassium ion concentration, mostly occurring as a secondary problem, can occur as a primary problem in Burmese cats. The most characteristic clinical sign of hypokalemia in Burmese, is a skeletal muscle weakness. It is frequently episodic in nature, either generalised, or sometimes localised to the cervical and thoracic limb girdle muscles.

Case History and Observation
Three month old, three kittens, belonging to the same litter were presented to University Veterinary Hospital, Mannuthy. They had a history of weakness, anorexia, diarrhoea, downward deviation of head and normal gait. Serum biochemical analysis revealed Hypokalemia (<3.4 mmol/L) in all the three kittens. Acute or chronic vomiting or diarrhoea can lead to an increased gastrointestinal loss of potassium. The condition was diagnosed as Hypokalaemic Polymyopathy, which is secondary to chronic diarrhoea. All the animals were successfully treated with intravenous fluids and antibiotics together, with oral dosage of Potassium chloride @300 mg per day for five days. All animals showed an uneventful recovery.

Serum Potassium ion concentration, mostly occurring as a second -

Treatment and Discussion
All the animals were treated with Ringer lactate @ 20 ml/kg body weight and Sulpha-trimethoprim @ 15 mg/kg body wt intravenously for five days. They were also given Potassium chloride @300 mg per day for five days. B complex vitamins were also given as supportive therapy. All the animals recovered in five days of treatment. Dietary potassium supplements for one week more, was advised.

Blood and urine tests are done to confirm the diagnosis. Chronic severe hypokalaemia causes muscle fibre hypo-polarisation, leading to extreme muscle weakness and even rhabdomyolysis, which results in elevated levels of Creatinine Kinase concentrations. Urinalysis may reveal low specific gravity and increased potassium excretion. In healthy animals, plasma potassium levels are maintained within narrow limits of 4-5 mmol/L by complex neuroendocrine homeostatic mechanisms (Dow et al, 1987). Severe potassium depletion is usually caused by renal dysfunction and excessive urinary potassium losses. Acute or chronic vomiting or diarrhoea can lead to an increased gastrointestinal loss of potassium. Small intestinal diarrhoea can result in significant faecal loss of potassium, particularly if mal-absorption compromises resorption of the ion (Mardell and Sparkes, 2004). This condition is treatable with dietary potassium supplements. Prognosis is excellent with early diagnosis and prompt treatment.

References