

CHAPTER – 3: SURGERY OF THE ABDOMEN

Functional Anatomy of stomach

Capacity: Stomach is highly distensible. It is not palpable and located beneath the ribs, when empty. Full stomach bulges beyond the costal arch. Full stomach is a more constant 'C' shape. The capacity of the stomach of a small dog is about 500 ml and that of an average dog is 700ml and cat 350ml.

Fundus of the stomach is the part dorsal to the cardiac ostium. It is the functional division of the stomach.

Body of the stomach is pushed against the left lobe of the liver.

Pyloric part is found ventrally and mostly on the right and surrounds a funnel shaped pyloric antrum, which opens into the pyloric ostium;

- The cardia is held by relatively immobile esophagus.
- The pylorus and duodenum are tethered to the liver.
- The stomach is loosely anchored in the midline
- The greater omentum arises from the greater curvature of the stomach and clings around the intestines.
- The short lesser omentum stretches from the lesser curvature to the liver.

Coats of the Stomach

The muscular coat of the stomach has three layers and accounts for 1/3 of its weight. The mucosa accounts for 1/2 of its weight and is thrown into abundant transient folds - the **Rugae**.

Glands of the stomach are;

- Cardiac gland – serous secretion.
- Gastric gland – Acid and enzymes
- Pyloric gland – Mucous and gastrin

Vessels and Nerves

- Arteries – Celiac artery
- Veins – Gastrosplenic and Gastroduodenal veins joining the Portal vein.
- Nerves – Vagus (parasympathetic) and Splanchnic nerve (sympathetic).

Gastric Functions

- ◆ Holds food after a meal
- ◆ Regulates its delivery into the small intestine

- ◆ Food mixed with gastric secretion and physically broken down
- ◆ Gastric pepsin kills ingested bacteria and hydrolyses protein into peptides
- ◆ Mucus lubricates the food.

A. Gastric Foreign Bodies

Gastric foreign bodies are found in dogs and cats of all breeds and ages. Indiscriminate chewing behavior is a cause for this condition. The foreign bodies include; needles, coins, stones, rubber balls and small toys. The vomiting is intermittent since, it is triggered only when the foreign body is located in the pyloric antrum.

Clinical Signs

- ◆ Acute onset
- ◆ Intermittent vomiting
- ◆ Gastric emptying may be impaired
- ◆ Large foreign bodies are palpable
- ◆ Metabolic acidosis.

Diagnosis

- History
- Plain and contrast radiography
- Clinical signs
- Endoscop

Treatment

Medical Methods

- Bones are rapidly decalcified and softened and removal is not need.
- Rounded foreign bodies with smooth surface may be removed by inducing vomiting using
 - a). Apomorphine 1 to 5mg s/c. b). Xylazine 1mg/kg i/m in dogs & cats.

Surgical Methods

Surgeons choose various techniques depending upon the shape, size and consistency of the foreign body.

- Small non-toxic foreign bodies may pass through the GI tract uneventfully.
- Small foreign bodies are retrieved by endoscopy. It is a non-invasive technique; several types of grasping forceps are used for retrieval.
- Large foreign bodies with rough surfaces removed by Gastrotomy.

Gastrotomy

Before surgery the entire GI tract should be examined thoroughly by physical examination and radiography for any additional lesions. The patient should be evaluated for fluid and electrolyte imbalance and these should be corrected before surgery.

Indications for Gastrotomy

- ❑ To remove foreign bodies
- ❑ To inspect gastric mucosa for ulcers, neoplasms and hypertrophy.
- ❑ To obtain biopsy.

Surgical Technique

Food and water withheld for 8-12 hours, before anesthesia. After proper aseptic preparations, the abdomen is entered by cranial midline celiotomy. Now the stomach is brought to the site of the abdominal wound. After exteriorizing the stomach stay sutures are placed in the cranial surface of the stomach on both ends of the incision. The stomach is walled off with moist Laparotomy sponges to prevent spilling of gastric contents.

Now the stomach is incised in a relatively hypo-vascular area, midway between the greater and lesser curvature. First the seromuscular layer is cut and the bleeding points ligated. The mucosa is punctured by a stab incision and extended with metzenbaum scissors. Use suction to evacuate the fluids from the stomach to prevent spillage of contents. After inspecting the lumen is closed in a two-layer inverting seromuscular pattern;

- 1) Connell followed by Lembert pattern of sutures (or)
- 2) Cushing followed by Lembert pattern of sutures, using 2-0 or 3-0 synthetic absorbable sutures.

If the abdominal cavity is contaminated it may be thoroughly lavaged with sterile normal saline. Omentopexy is optional. Abdominal wound closed as per standard technique.

Prognosis: Favorable

Postoperative care

- ▶ No food, water or medication is given orally for 24 hours
- ▶ Maintenance fluid requirements are sustained with i/v fluids
- ▶ Feeding may be started, if drinking water given (after 24 hours) is retained
- ▶ If vomiting occurs, stop food start i/v fluids and Metaclopramide 0.2-0.4mg/kg
- ▶ Food- Baby food or soft dog food gruel.

B. Gastric Dilation – Volvulus

Gastric dilation-volvulus syndrome (GDV) is an acute medical and surgical condition related to several pathophysiological effects occurring secondary to gastric distension and malpositioning. It occurs most commonly in large deep-chested dogs. It is a life-threatening surgical disease and requires immediate treatment for shock, surgical repositioning, evaluation of the stomach and prevention of recurrence.

The cause of GDV is not well understood. Some of the factors that have been implicated are:

- Swallowed air (aerophagia)
- Overeating
- Pica
- Postprandial activity
- Diet
- Delayed gastric emptying

Clinical Signs

- ◆ Acute onset of cranial abdominal distension
- ◆ Rapid shallow breathing
- ◆ Non-productive breathing
- ◆ Restlessness and pacing
- ◆ Profuse salivation due to pain
- ◆ Rapid deterioration results in shock
- ◆ Perforation or rupture of stomach-decreased abdominal distension

Diagnosis

- History
- Clinical signs
- Radiography is useful to differentiate simple gastric distention from GDV.
- Hypokalemia is the most common electrolyte abnormality in dogs with GDV.
- Metabolic acidosis is common in GDV and is due to decreased effective circulating blood volume and lactic acid accumulation

Treatment

A) Initial Medical management

- Decompress the stomach by orogastric intubation.

- Place an intravenous catheter and administer fluid.
- Control infection and endotoxemia - Prednisolone, Flunixin injections and broad-spectrum antibiotics.
- Monitor and treat cardiac arrhythmias

B) Surgical Management: The goals of surgical interventions for acute GDV include:

- Repositioning of the stomach and spleen
- Resecting devitalized gastric and splenic tissue
- Permanently fixing the stomach to prevent recurrence.

C) Surgical Procedure: Place the dog in dorsal recumbency and surgically prepare from the mid sternum to umbilicus. Gently place an orogastric tube into the esophagus and advance it until there is resistance. After midline Laparotomy, grasp the stomach and derotate it and reposition the pylorus. Extend the orogastric tube into the stomach and resect, necrotic tissues (Partial gastrectomy), if needed. If there is splenic torsion and necrosis, splenectomy is advised. Perform gastropexy on the right side of the abdomen.

Types of gastropexy

- Circumcostal gastropexy
- Tube gastropexy
- Belt loop gastropexy
- Incisional gastropexy.

Postoperative care

- Close monitoring for four days
- Maintain fluid therapy
- Promote gastrointestinal motility using metaclopramide
- Feeding resumed after 24 to 48 hours.

Prevention by owner education

- ❖ Feed the dog frequent, small portion of food 3 to 5 times per day.
- ❖ Limit water after 1 hour of eating.
- ❖ Restrict exercise after eating, because this may predispose to GDV.

C. Gastric Ulcer

It is defined as mucosal defects associated with bleeding which includes petichae, erosions, and ulcers.

Etiology: General mechanisms of gastric ulcerations include;

- Direct damage to gastric mucosal barrier.
- Increased gastric acid secretion.
- Delayed gastric epithelial renewal
- Decreased gastro mucosal blood flow.

Causes

- NSAIDs – They inhibit prostaglandin synthesis, which decreases the mucosal blood flow and alters the gastric mucus production, thus predisposing to ulceration.
- Glucocorticosteroids
- Hepatic diseases
- Renal failure
- Neoplasia
- Neurologic diseases
- Stress conditions

Clinical Signs

- ◆ Anorexia
- ◆ Vomiting-vomit contains digested blood or fresh blood with clots.
- ◆ Melina
- ◆ Abdominal pain
- ◆ Weight loss
- ◆ Anemia and weakness
- ◆ Ulcer perforation--> septic peritonitis--> acute abdominal pain--> shock and collapse.

Diagnosis

- History- Recent administration of ulcerogenic drugs.
- Physical examination- Pain on palpation, anemic mucus membrane.
- Lab. Test- CBC for anemia, kidney function tests.
- Radiography - Ulcer perforation and pneumoperitonium
 - Contrast study, outlines large ulcers.
- Endoscopy is the most reliable procedure for gastric ulcers and erosions and is performed under general anesthesia.

- Laparotomy – used to diagnose and resect gastric ulcers.

Treatment

A) Medical

1. Agents that control Gastric Acid Secretion

- Antacids - neutralize gastric acid secretion.

2. Agents that Promote Mucosal Cytoprotection

- Sucralfate- selectively binds to injured gastro-esophageal mucosa, forming a protective ‘bandage’
- Misoprostol- synthetic prostaglandin analog is cytoprotective in low doses and has anti-secretory activity in high doses.

3. Antibiotic therapy

Systemic antibiotic based on culture tested used when perforation is suspected or confirmed.

Amikacin + cephalosporin given before culture test.

B) Surgical Treatment- Laparotomy

- ❑ Emergency laparotomy is done when perforation is confirmed
- ❑ Correct the cause of peritonitis (peritonitis)
- ❑ Partial closure of abdominal incision
- ❑ Cover the incision with sterile dressing
- ❑ Abdomen closed after 5-7 days
- ❑ Intravenous fluids most important.

D. Ruminant Stomach

In bovines and small ruminants, the compound stomach occupies nearly three- fourth of the abdominal cavity. Ruminants ruminate their food. They swallow their food, and bring back to their mouth (regurgitation) to chew on it some more before swallowing it again (Rumination or chewing the cud).

The compartments of the ruminant stomach are;

- | | |
|-------------|------------|
| ❑ Rumen | ❑ Omasum |
| ❑ Reticulum | ❑ Abomasum |

The first three are the **non-glandular fore stomach or pre stomach (Fore-stomach)**, and they are regarded as esophageal sacculations and are lined with stratified squamous epithelium. The abomasum is lined by glandular mucous membrane.

Diseases of the Ruminant Stomach

- **Bloat:** It is one of the major problems of the GI tract and it can be either acute or chronic. In both cases it is either accumulation of free gases or gases disbursed into the contents to cause frothy bloat.
- **Rumen Indigestion** due to over feeding of carbohydrates leading to rumen acidosis and over feeding of protein and urea resulting in alkaline indigestion.
- **Rumen Impaction** occurs mostly due to depressed appetite and over feeding of poor quality roughage.
- **Reticular Hernia** is herniation of reticulum through the diaphragm into the chest (Diaphragmatic Hernia).
- **Vagal Indigestion** is a disease process affecting the vagal innervations by mechanical or inflammatory disorders in the areas of pharynx, larynx, esophagus, thoracic and abdominal cavity. The vagal indigestion can produce;
 - Failure of eructation causing free bloat
 - Omasal transport failure
 - Abomasal impaction (secondary to TRP).

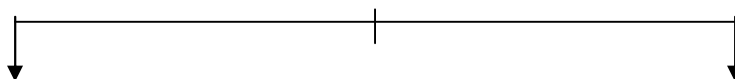
E. Traumatic Reticuloperitonitis (TRP)

In bovines foreign bodies are swallowed straight into the reticulum where they inflict **trauma to the reticulum and the peritoneum causing Traumatic Reticuloperitonitis (TRP)**. If the foreign body crosses the diaphragm and **pierces the pericardium, the condition is Traumatic Pericarditis (TP)** is a common surgical condition of the bovine GI tract and is rare in camels.

Causes: Disorders of the rumen and forestomach compartment in adult cattle can result from a variety of causes, including;

- ◆ Dietary - Indiscriminate feeding, diet inadequate in fiber, grain overload and nutritional deficiency (Pica or Depraved appetite)
- ◆ Inflammatory – FB penetration of reticulum
- ◆ Mechanical – Tricobezors, plastic bags, placenta, neoplasia, etc.

Foreign Bodies



Non- Penetrating FBs

Polythene bags, Nylon ropes
Nuts, coins and stones.

Penetrating FBs

Nails, Needles
Sharp wires.

Pathogenesis

The non- penetrating foreign bodies may lie harmlessly and passed out along with dung and rarely may it cause mechanical obstruction. The **penetrating foreign bodies** once taken by the animal it may get entangled among the molars, pharynx or esophagus. After reaching the reticulum due to the contractions, it can perforate the reticulum and the adjacent organs and causes various lesions.

Lesions Caused by Penetrating Foreign Bodies

- ❖ **Stasis** of forestomach compartments
- ❖ **Perforation** of GI tract → **TRP** → Pericarditis → Myocarditis
- ❖ **Adhesions** interfere with vagal nerve → Vagal indigestion → permanent fore stomach dysfunction.
- ❖ **Diaphragmatic hernia** – Weak Diaphragm due to penetration forms hernial ring → Reticulum herniates into the thoracic cavity
- ❖ **Abscess formation**
 - **Cranial abdominal abscess** → mechanical obstruction of reticuloomasal passage.
 - **Thoracic abscess** → Impaired ventilation, cardiac function and pyothorax.
 - **Abscess of liver and spleen**
 - **Abscess behind the shoulder** → Lance the abscess and recover the FB
- ❖ **Large abscess in the abdomen** Regardless of clinical presentation of vagal indigestion encompasses most fore stomach disorders.

Lesions Caused by Non - Penetrating Foreign Bodies

- ❖ **Mechanical obstruction** of reticulo-omasal orifice by **non-penetrating FBs** like Tricobezors, Plastic bags, Placenta and Neoplasia (mainly lymphosarcoma) → Mechanical obstruction → Ruminal impaction and also affects vagal nerve by infiltration → Vagal Indigestion.

Clinical Signs

- Recurrent tympany
- Decreased rumen motility
- Complete or partial anorexia
- Retarded or suspended rumination
- Significant reduction in milk yield
- Stiffness of forelimbs
- Abduction of elbow
- Grunting and Depressed respiration

- Regurgitation in advanced cases
- Brisket edema
- Pyrexia and cough
- Diarrhea alternating with constipation.

Diagnosis is mostly based on history and clinical signs. Others methods are,

- Pole test
- Whither pinch test
- Rumen fluid test
 - Protozoal motility reduced due to disturbance in the passage of ingesta, lowered buffering capacity, atony of the rumen
 - pH tested for acidosis / alkalosis.
- Hematology
 - Neutrophilia with left shift and Leukocytosis
 - Elevated total protein >10g/dL.
 - Elevated plasma fibrinogen >1000mg/dL (Normal 300- 600mg/dL.
 - Hypokalemia due to decreased feed intake.
- X- Ray- Plain radiograph of the lateral abdomen
- Ultrasound.

➤ **Treatment:**

A. Medical (Conservative) treatment

1. Orogastric intubation is performed first to ensure a patent digestive from the oral to the reticulum & rumen. If an obstruction foreign body is found in the esophagus, push the obstruction in to the rumen by using stomach tube and water. The appropriate treatment for TRP will depend on the stage of the diseases when treatment is requested, the sequel, and the value of the animal, diagnostic and surgical facilities available to the clinical.

2. Installation of a Magnet: Conservative treatment consists of installation of a magnet to recover or immobilize the metal foreign body of the FB is composed of magnetic metal. Affected cattle should also receive 3-7 days of systemic antibiotic therapy (Penicillin, Ceftiofur, ampicillin, or tetracycline), cases of diffuse peritonitis require intensive therapy consisting of IV – fluids, antibiotics, and anti inflammatory agents, but the mortality is high despite aggressive therapy.

3. Use of Magnetic medical Retriever to remove ferromagnetic FBs is also helpful. But the esophageal and pharyngeal trauma has limited its popularity.

Many animals recover after medical (conservative) therapy with resumption of fore stomach motility and appetite within 1-3 days. Those animals not significantly improved by the 3rd day may require a rumenotomy to remove the foreign object.

B. SURGICAL TREATMENT – RUMENOTOMY

Rumenotomy is surgically opening the rumen for various reasons. The procedure is the same for cattle, buffaloes and camels.

Indications

- Persistent rumen impaction.
- For the removal of the FBs and hairballs.
- Frothy bloat.
- Traumatic reticulitis
- Repair of reticular hernia
- Exploratory purpose.

Site of operation

In the left mid-flank, 5cm ventral to the lumbar transverse process is the site. Incision is made near the last rib, in large size animals, for easy access to the reticulum.

Control and anesthesia

The animal is controlled in standing position. **Paravertebral block or inverted “L” block or “T” block or simple infiltration** on the line proposed incision and analgesia is induced using procaine hydrochloride. In addition tranquillization may be needed for difficult animals.

Preparation

The whole left abdominal wall is cleaned with soap and water. The left flank thoroughly shaved, cleaned, scrubbed and painted with antiseptic lotion. After scrubbing, gowning and gloving, the surgical team drapes site. Sterile Instruments are arranged on the instrument table.

Surgical Technique

The skin incision should be long enough to allow the surgeons arm inside the abdomen. The incision extends 3 to 5 cm ventral to the transverse process of lumbar vertebrae to a distance of 20 to 25 cm. The skin incised with a smooth but firm motion. The pressure of the scalpel should be just adequate to ensure complete penetration of the skin.

Then the fascia, oblique muscles and transverses abdominis muscles with peritoneum are incised to enter the abdomen. The length of the incision from the skin to the peritoneum should be in the descending order to facilitate closure. Before opening the rumen the abdominal cavity is explored.

Abdominal Cavity Exploration

The abdominal cavity should be thoroughly explored before opening the rumen for any pathological lesion.

- 1) Left cranial abdomen** is explored for splenic abscess, left wall of rumen, reticulum and diaphragm for any adhesion and reticular abscess.
- 2) Caudal abdominal cavity** explored first, the dorsal and ventral sac of rumen, urinary bladder, uterus, left kidney and intestinal masses.
- 3) Right cranial abdomen** is reached by passing the arm ventral to the superficial layer of greater omentum and directed cranially to locate the pylorus, body and fundus of the abomasum, the omasum, right wall of the reticulum, and left lobe of the liver(for any abscess).

Fixing of the Rumen

1. Weingarth Ring Rumenotomy frame
2. Rumen Skin Suturing Fixation
3. Rumen Board Fixing
4. Rumen Skin Clamp Fixation
5. Stay Suture Rumenotomy.

Weingarth Rumenotomy Frame fixed to the dorsal commissure of the incision by its thumb screw.

Now a portion of the rumen is exteriorized, and grasped with the rumen forceps and hooked to the Weingarth Rumenotomy Frame. In the same way, fix the other forceps in the ventral part and tense the exposed part of the rumen and incise it. Then the rumen hooks are placed into the cut edges of the rumen and pulled and hooked onto the ring.

Rumen fluid sample collected for testing the pH and protozoal motility. After evacuating some contents of the rumen, the hand is extended to the floor for a thorough search for FBs. The hand is then introduced into the reticulum and explored carefully with finger tips and FBs removed.

Transruminal exploration

1. Find out the position, size and consistency of rumen, reticulum and abomasum by palpation
2. Explore the ruminoreticular fold, esophageal orifice and reticuloomasal orifice for lesions
3. Explore meticulously the reticulum for FBs and remove all of them.
4. Then try to invert the reticulum to determine the presence, location and extent of adhesions. Adhesions that limit the mobility of reticulum would be typical of TRP. Probe all the cells of reticulum at the site of adhesion in search of FBs.
5. The reticular wall may be swept with a magnet to find out the leftover ferromagnetic FBs.
6. To enhance the diagnosis an ultrasound probe may be carried into the reticulum for confirmation of reticular abscess, tumor, etc. Any active abscess inside the reticulum is lanced using curved bistuary or BP blade.
7. The hand may be introduced through the reticuloomasal orifice into the omasal canal to evaluate the omasum and the abomasal lumen and mucosa.
8. The adhesion of the ventral sac of rumen is suggestive of localized peritonitis due to perforated rumen or abomasal ulcer.
9. Any active abscess inside the reticulum is lanced using curved bistuary or BP blade carefully.

Replenishing the Rumen: Before closure the rumen for effective restoration of normal microflora, ruminal cud is introduced. The ruminal cud is usually obtained from slaughtered animals or regurgitated ingesta from live animals may be used. Rumen may be replenished with concentrates and teff hay cut into small pieces.

It would be ideal to introduce 8 boli of **sybiotic preparation** (combination of probiotics and prebiotics) along with the cud, followed by 3-4 boli daily orally. It will increase the viability of ruminal flora, increase cellulolysis, establish the anaerobic environment, reduce the operative stress and restore early normalcy. The pH of the rumen, if disturbed should be corrected.

Closure of Rumen, Muscles and skin

The rumen wound edges should be thoroughly cleaned with sterile normal saline, without contaminating the peritoneum. The surgeon must rescrub again before suturing the wound. The rumen is sutured with No. 2 or 3 chromic catgut using Cushing followed by Lembert pattern.

Muscles and peritoneum closed by interrupted horizontal mattress followed by a simple continuous pattern for reinforcement, using No. 2 or 3 catgut.

Skin closed by simple interrupted sutures using silk or cotton thread.

Postoperative care

It includes dressing of the skin wound, a course of antibiotics and suture removal on the 10th postoperative day. Any failure in asepsis during surgery might produce a discharging sinus at the site. In some cases subcutaneous emphysema may get absorbed spontaneously in a few days.

Postoperative Complications

1) Sinus Wound

Sinus wound at the operative site - Any operative failure in maintaining asepsis during surgery might encourage infection and result in tubular inflammatory tracts leading from the rumen with one or more external openings upon the cutaneous surface.

The Sinus wound may be removed surgically from the deeper layers and sutured.

2) Subcutaneous Emphysema

Subcutaneous Emphysema occur as a result of entry of air into the abdominal cavity during surgery and subsequently when the rumen gets filled up with ingesta the air forces through the muscle sutures to the subcutaneous area. It gets absorbed spontaneously in a few days.

3) Peritonitis may be a major complication if there is compromise in maintaining sterile precautions.

Prognosis

Prognosis depends upon the location of the reticular perforation and duration of illness.

- 1) Foreign body perforation that does not affect the thoracic cavity or the right side of the reticulum gives a **favorable** prognosis.
- 2) Even if the adhesion is extensive in the cranial abdomen, if it is not involving the vagal nerve the rumen motility will not be affected and the prognosis is **favorable**.
- 3) Single abdominal abscess of the reticulum or liver, if drained or resected the prognosis is **favorable**.
- 4) Perforation of the right wall of the reticulum and adhesion involving the ventral branch of vagus results in vagal syndrome and the prognosis is **guarded**.
- 5) If the foreign body has perforated the diaphragm, the possibilities are septic pericarditis, Myocarditis or thoracic abscess and the prognosis is **poor**.

F. Abomasal Impaction

Abomasal impaction is seen more frequently in calves, goats, and sheep and buffaloes and seldom reported in camels.

Causes

- ❑ Excessive consumption of poor quality indigestible roughages.
- ❑ Inadequate mineral supplementation with restricted access to water.
- ❑ Foreign bodies such as phytobezoars, sand and occasionally placenta eaten by cows.
- ❑ Secondary impaction may be due to affected motility due to traumatic reticuloperitonitis
- ❑ Abomasal lymphosarcoma and development of fat necrosis.

Clinical Signs

- ◆ Complete anorexia
- ◆ Scanty dung
- ◆ Moderate distension of abdomen on the right side
- ◆ Marked dehydration
- ◆ Pear shaped appearance of lower abdominal quadrant, when viewed from behind.

Laboratory Findings

- Metabolic alkalosis
- Hypokalemia
- Hypochloremia
- Hemoconcentration

Treatment

Success of treatment depends on early diagnosis. Animals with heart rate of 100 or more/minute have poor prognosis.

A) Medical treatment

- ◆ Softening of impacted contents with lubricants and cathartics along with correction of dehydration.
- ◆ Cathartics- Magnesium sulphate or Magnesium hydroxide
- ◆ Lubricants
 - Mineral oil
 - Dicoctyl sulphosuccinate 5% 120 to 180ml with 10 to 15 liters of warm water directly into the rumen by stomach tube for 3-5 days.

B) Surgical Treatment - Abomasotomy

I. Stage - Left flank exploratory rumenotomy is done at first, for diagnosis and conformation. Then re-exploration of right abdomen is performed, after rumenotomy. Initial palpation of caudal abdomen includes, close evaluation of lymph nodes, uterus, then the size, position and consistency of the abomasum should be evaluated, by reaching around the caudal aspect of rumen. If any masses

diagnosed in the abomasum, then abomasotomy may be planned on the same day or within 12 to 24 hours, depending upon the condition of the animal and convenience of the surgeon.

II. Stage - Abomasotomy The approach is by paracostal or paramedian celiotomy, with the cow positioned in left lateral recumbency. After celiotomy the abomasum is partially exteriorized and opened after careful isolation of the surgical site with sterile impervious drapes, to avoid contamination of the abdominal cavity. Closely examine the pyloric antrum for Intraluminal obstruction, patency of pyloroduodinal juncture and for masses, foreign bodies, impaction from poor quality food or compacted ball of feed and remove it.

- Ruptures, ischemic necrosis and ulcerations are fatal complications of abomasal impaction.
- After thorough evacuation, the exposed serosa washed with sterile isotonic fluid.
- Abomasal incision closed using double row of inversion sutures.