**Stomach (Dog and Equine)**

**In equine**: The stomach is located behind the diaphragm and liver mainly to the left of the median plane. Along the stomach greater curvature the spleen is interposed between stomach and left body wall. The caudal aspect of the stomach is related dorsally to the transverse colon and the greater curvature is normally contact with the left dorsal colon. The stomach is held in position mainly by the pressure of the surrounding viscera and by the oesophagus. The following peritoneal folds connect the stomach to other viscera:

1. Gastro phrenic ligament.
2. The lesser omentum.
3. The gastrospleenic.
4. The greater omentum.
5. Gastropancreatic fold.

**In dog**: It is freely movable around its too cranial attachment , the first of these attachments fixes the cardia to the region of the oesophageal hiatus in the diaphragm and the second the gastrohepatic ligament connects the lesser curvature and pylorus to the hilus of the liver.

Blood supply:

Splenic, left gastric and hepatic branches of the celiac artery. Veins are paired with corresponding arteries.

Innervations:

Is by parasympathetic fibers of the vagi and sympathetic fibers of the celiac plexus. The vagi act parasympathetic motor nerve & splanchnies as inhibition.

Congenital abnormalities:

Pyloric stenosis:

Hypertrophy of the musculature of the pyloric antrum specially its circular fibers leading to reduction in diameter of the pyloric orifice. Acquired as secondary to chronic gastritis.

Clinical signs: In small animals:

1. Vomiting.
2. Dehydration and emaciated.
3. Normal appetite (D.D. from gastritis and enteritis) there is no response to gastric sedatives.

In large animals:

1. Abdominal pain.
2. Salivation.
3. Teeth grinding.
4. Kicking towards the abdomen.

Diagnosis:

1. X – Ray (plane X – Ray or contrast radiography).
2. Fluoroscopy.

Treatment:

Pyloromyotomy or pyloroplasty was used to increase the diameter of pyloric lumen.

Indication:

1. Pylorospasm.
2. Pyloric stenosis.
3. Gastric dilation.

Pylorospasm : probably neurogenic in origin , there is a failure of pyloric sphincter to relax in coordination with propulsive peristaltic contraction of pyloric antrum.

Pyloromyotomy:

Procedure:

1. Under general anesthesia, make a midline incision in between xiphoid cartilage and umbilicus.
2. The hepatodoudenal ligament is severed the pylorus can be elevated by Babcock forceps to the abdominal incision.
3. An incision approximately (4 cm) long was made into the least vascular area of pyloric canal, pylorus and proximal duodenum. The pylorus is the midpoint of incision. The incision extends through tunica serosa and muscle layer (cut and separate by sharp and blunt scissor) care taken not to cut through the mucosa.
4. Closure of peritoneum and abdominal muscles by simple continuous suture with catgut and skin by simple interrupted pattern used silk.

Pyloroplasty:

1. After exposure of pyloric region similar as above, temporary stay suture is placed in least vascular portion of ventral stomach and proximal duodenum.
2. Stap incision was made into lumen and was extended with scissor to a distance of (1 – 2 cm) on each side of pylorus .
3. Longitudinal incision was closed transversely with simple interrupted suture used catgut suture material.
4. Closed abdominal wall as similar to above.

Postoperative care:

1. No food, water or oral medication should be given for (24 hours).
2. I.V. fluid therapy.
3. Antibiotic.
4. A soft diet consisting of small amount of body food (especially in small animals but in large animals' soft diet).

Gastric dilation:

Etiology:

1. Physical obstruction or functional disturbance.
2. Obstruction further down the intestinal tract.
3. Over ingestion of grain. Large amount of dietary starch are not natural in the diet of horses. Gastric fluid is observed by the grain mass and swelling occurs. Shock and metabolic acidosis develop rapidly.
4. Consumption of a large quantity of cold water by an animal soon after exertion may result in pyloric spasm and accompanying gastric dilation.
5. Pyloric stenosis.
6. Acrib – biting horse may swallow a considerable quantity of air and this cause a chronic gastric dilation.
7. Impaction of stomach with dry feed.
8. General anesthesia, abdominal surgery, traumatic injury of spinal cord, ingestion of foreign body and pica.

Clinical signs**:**

1. Colic.
2. Dyspnic and stand with the fourth leg spread a part.
3. Hypovolemic shock may develop with dilation.
4. Abdominal and thoracic cage are distended and corpus amount of saliva drip from the mouth.
5. The mouth hangs open and gum are pale (Dog).
6. Attempt to vomit with little or no success (Dog).

Diagnosis:

1. Case history.
2. Clinical signs.
3. Radiography affords the best means of or confirmation of gastric dilation as a large volume of gas being trapping in the stomach could be visualized.
4. Stomach tube lead to reflex of fluid and gas in typical of primary dilation except grain engorgement with stable systemic pain .

treatment:

1. Decompression by stomach tube.
2. Medical treatment in all cases of grain engorgement, this includes decompression when possible. Mineral oil, analgesia and maintenance of systemic circulation.
3. Surgical relief of gastric impaction. In this case the stomach could be emptied using a tube inserted through a stab incision and lavage.

Gastric stenosis:

The cause was uncertain but considered to be some form of local chronic irritation.

Clinical signs:

1. Recurrent abdominal pain.
2. Salivation.
3. Regurgitation of small quantities of ingesta.

Diagnosis:

Fluoroscopic examination revealed a dilated oesophagus and a structure in the proximal portion of the stomach.

Treatment:

The tissue causing the structure in the cardia was excised using a left thoracotomy approach to the stomach.

Gastric rupture:

Rupture usually occurs along the greater curvature in the fundic area, an area where the wall was considered relatively in elastic. Sudden cessation of signs of pain followed by progressive systemic deterioration is the usual sign of gastric rupture. In some instances when intestinal problems and endotoxic shock are already present occurrence of a rupture may not be recognized until necropsy.

Etiology:

1. Over load occurs particularly if the animal should overeat on grain.
2. Weakening of the wall by nest of habronema megastoma may cause it to burst even if the stomach is not excessively distended.
3. Chronic pyloric obstruction.
4. Neoplasia.
5. Obstruction of the duodenum causing retrograde overfill of the stomach.
6. Pylorospasm from colon impaction so overload of stomach.

Clinical signs:

1. Acute colic.
2. Kicking tend to be toward the epigastrium (Equine).
3. When animal looks back it tends to be toward the observation area as well.
4. Greenish nasal discharge is a sign of severe stomach distension.

Diagnosis:

1. Auscultation of the abdomen usually shows barbarygmis.
2. Negative rectal examination.
3. Sudden cessation of pain.
4. Laparocentesis.

Treatment:

For the impacted stomach sodium sulphate (250 – 800 gm) (5%) to be administrated via stomach tube and siphoned off this should be repeated at (5 – 15 minute) interval.

Gastric foreign body:

In dog bones are the most frequently ingested foreign body. Small quantity can pass through the intestine without causing harm. A variety of metallic objects , stones , rubber balls , bottle naples, toys and small articles of cloth are common foreign body. Sharp objects such as needles occasionally reach the stomach but they usually become lodged in the pharynx or oesophagus. Ingestion of foreign body becomes a significant problem when gastro- intestinal obstruction or perforation occurs or when toxicity results from partial digestion of the foreign body.

Clinical signs:

1. Emesis.
2. Abdominal tenderness.
3. Altered appetite and debility.
4. Foreign body obstruct of pylorus is serious resulting in persistent vomiting, dehydration and shock.

Diagnosis:

1. X – Ray.
2. Clinical signs.

Treatment:

1. Apomorphin (in dog) to produce emesis.
2. Gastroscope.
3. Gastrotomy.

Gastrotomy:

1. Under general anesthesia (especially in dog) made incision from xiphoid cartilage caudally.
2. Exposure of stomach and hold by Babcock forceps, make incision in a less vascular area on ventral aspect of stomach between the lesser and greater curvature (removal foreign body).
3. Close incision in a two layers such as Cushing and Lambert.
4. Omentum may be placed over the incision if desired (two simple interrupted suture are sufficient for local omental attachment).

Indication:

1. Foreign body.
2. Neoplasm.
3. Hypertrophy.
4. Biopsy.
5. Ulcer.

Postoperative care**:**

1. Liquid and soft food the second day posts operatively.
2. Antibiotic for (4 days).
3. Skin suture was removed after (10 days).

**RUMEN**

Fore stomach in ruminant, the rumen, reticulum and omasum lined with squamous strargtified epithelium.The fourth stomach the abomasums has a glandular m.m and equivalent of the glandular part of unilocular stomach of other spaces. The rumen fills the abdominal space on the left between diaphragm and pelvis while the caudal ventral part intrudes on the right side. The parietal surface is in contact with the left and ventral abdominal wall while the visceral surface was related to the liver, omasum, abomasum and intestine. The rumen was divided into dorsal and ventral sac by left and right longitudinal grooves. The reticulum lies between 6-9 intercostal spaces. The cranial wall was in contact with the diaphragm whereas the caudal wall was related to the ventral extension of the atrium ruminis and the cranial face of the ventral sac.

**The omasum**: Rounded, the position in cattle is to the right side of the median line. The contacts with right body wall, between 6-11 inter costal spaces and reaches to a handbreadth below the costal arch. In small ruminant the lie between 8-10 inter costal spaces, but does not contact the right body wall.

**The abomasum**: At birth is largest organ and occupies a major part of abdomen. It is appear-shaped structure lying largely on the left of median line from diaphragm to region of pelvis. At four week it is about double the size of rumen, but its relative decrease progressively. In adult rumen is nine times the size of abomasum. The major curvature of abomasum is in contact with the abdominal floor.

Blood supply: celiac artery first branch of abdominal aorta.

Nerve supply: The right and left vagus nerves each divided in to ventral and dorsal esophageal branches on the level of the tracheal bifurcation. The dorsal branch supplies twigs to the reticulum and innervates the omasum and abomasum but mainly the rumen. The ventral branch divides as soon as it appears through the esophageal hiatus and send branches to the reticulum, omasum and abomasum. Interruption of the dorsal nerve causes no obvious signs, but if the ventral nerve is severed eructation and rumination are inhibited and pylorospasm occurs.

The animal may already be in appetent, otherwise, deprivation of food for 12-24 hours may help to decrease the volume of gastive contents and thus facilitate exploratory surgery.

Incision: rumenotomy, abomasotomy.

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Fistulization: rumenostomy.

Stabilization: abomasopexy, gastropexy

Decompression: centesis, trocarization

Derotation: volvalus.

**Tympany**: Rumen tympany may have several basic causes:

1. Foreign body obstruction of the esophagus or cardiac.
2. Pain in the diaphragmatic area due to pneumonia, focal peritonitis extensive fibrous adhesion of the anterior abdomen, liver abscessation or foreign body penetration of the rumen ,reticum or pericardium .
3. Diaphragmatic hernia of the reticulum, presence of abscess, or tumor.
4. Left abomasal displacement.
5. Frothy bloat associated with dietary changes.

Clinical signs: 1- Tympany (distension of left flank)

2- Anorexia.

3- Dyspnea.

Diagnosis: clinical signs and case history.

Treatment:

1- Tympany can be relieved by passing stomach tube.

2- Administration of surfactant.

3- Rumenotomy or rumenostomy. These treatment depend on causes.

Traumatic gastritis:

The penetration of ruminant fore stomach by foreign objects has been recognized. The objects most commonly contributing to traumatic puncture of the stomach are metallic wire, nails, needle and staples. The symptom shown depends on number of factors including: size, shape, and nature of foreign body, location and degree of damage of the puncture site and degree of contamination. Thus an animal may show signs varying from mild pain, listlessness and anorexia to server pain, recumbency and severe depression. Common signs of traumatic gastritis include:

1. anorexia
2. depression
3. fever
4. ↓ milk production in lactating cattle
5. Pain in the anterior abdomen
6. Expiratory grunt
7. Stiffened gait
8. Constipation
9. Recurrent tympany.

Neutrophilic leukocytosis with a left shift is common, but in severe cases with overwhelming sepsis aleukopenia is present some of the common complication of traumatic gastritis include traumatic pericarditis and vagus indigestion. Traumatic pericarditis is usually associated with foreign body puncture of the reticulum diaphragm and pericardium. If the heart is punctured, death may be sudden otherwise; infection develops with in the pericardium, resulting in a tamponade and signs of heart failure and sepsis. Prognosis of pericarditis was garded to poor fore return of function

**Traumatic reticuloperitonitis (TRP)**: common in cattle and buffaloes because their eating habits especially when the rations are associated with a greater possibility for ingestion of sharp metallic foreign bodies.

Traumatic reticulopercarditis (TRP): pericarditis result from penetration of metallic foreign body in to pericardium in early stage acute pericarditis character by tachycardia fever anorexia, arch pack. While in late stage congestive heart failure representing by Tinkling sound or muffled sound of heart, swelling of sternal region, positive jugular vein , open of mouth, off food, prognosis hopeless.

**Vagal indigestion**: Consequence of traumatic gastritis may he developing of vagal indigestion. Other causes of vagal indigestion syndromes include peritonitis from various causes such as perforating abomasal ulcer or abomasal volvulus. The physiological importance of the vagal nerves can be demonstrated by their role in rumen and reticular contractility, transport of ingesta from the reticulum to the abomasums, eructation, regurgitation, closure of the esophageal groove during suckling, abomasal motility and abomal secretion.

**Rumenotomy**

**Indications**:

1. For removal of foreign body, metallic and nonmetallic.
2. Prior to treatment of abomasal displacement.
3. Tympany of rumen, where medical treament not useful.
4. Prior to treatment of diaphragmatic hernia.
5. Intraruminal medical administration.

Presurgical preparation and anesthesia

1. Food and water should be withheld from the patient 24 hours prior to surgery.
2. The left flank area is prepared for surgery.
3. Anesthesia was by a Para vertebral nerve block or line block or inverted L.

**Technique**

1. 20 can vertical skin incisions in the left flank area 2 finger breadths under the lumbar transverse processes and 2 fingers breadth caudal and parallel to the last rib.
2. The skin incision is continued through the external and internal oblique’s as well as the transverse abdominal muscles exposing the peritoneum which is then opened. Hemorrhage was controlled by hemostats or by ligation of the bl.v.
3. Fallowing opening of the peritoneal cavity, it is necessary to explore the adjacent contents.
4. Methods used for opening the rumen without contamination of the abdominal contents, musculature and peritoneum are by one of the following techniques:

**A-Weingarts technique:**

**a-** Large main drape was applied leaving a small gap over the incision.

**b-** The weingarts frame was them inserted into the upper end of the wound.

**c-** The rumen wall is grasped firmly and withdraw through the wound, a ruminal forceps was then fixed to the upper portion of the rumen and hooked on to the dorsal eye of the frame. Another ruminal forceps was fixed to the lower portion of the rumen and hooked onto the ventral eye of the frame. The distance between the 2 fixed portions of the ruminal wall should measure at least 15 cm. The drape was then pushed under the frame on either side so that the abdominal wall was will covered.

**d-** The part of the rumen intervening the two ruminal forceps was opened with a scalpel at the middle and was then enlarged upward and downwards with scissors. The scalpel and scissor used for opening of the rumen should be discarded.

**e**- The cutedges of theruminal wall were hooked by special ruminal hooks pulled away and hooked around the frame. From 3-4 hooks were used on either side of the ruminal incision.

**B- Goetz's technique:**

**a-** A ruminal portion was sutured to the peritoneum prior to rumenotomy by using of continous catgut suture. The ruminal wall should not be pierced during suturing.

**b-** The extra peritoneal oval portion of the rumen was opened in the middle and the edges of the ruminal incision were pulled out with forceps and fixed laterally to the skin.

**C-Technique** by suturing of a ruminal portion to the skin ruminal portion was suture pattern of silk so that contamination of abd. Ms and peritoneum was avoided during rumenotomy procedure. The ruminal portion was then incised at the middle as mentioned previously. After removal of foreign bodies, the edges of the rumen wound should be cleaned, a double layer of lembert or cushing (or Connell and cushing ) using catgut (2 or 3 ). Removal of weingarts frame and ruminal forceps or removal of the rumen fixation suture. The peritoneum was then closed by simple continous suture of cat gut (2).The ms. layers was sutured by simple continous of chromic catgut 2 or 3. The skin was closed with either vertical or horizontal mattress suture or by simple interrupted pattern by silk. A strip of gauze or cotton was laid on the wound.

**Postoperative care:**

1. Antibiotic must be injected for 3-4 days postoperatively.
2. The animal should be kept on a strict dietary regime for 7 days postoperatively such as small amount of hay and soft food, plenty of water and mild laxative.
3. Removal of skin suture was after 10 days.

**Complications:**

1. Peritonitis.
2. S.C emphysema.
3. Ruminal fistula.
4. Stitch abscess may result from keeping the skin suture to long without removal.
5. Adhesion.

**Rumenostomy**

Rumenostomy was a procedure performed for temporary or permanent alleviation of chronic rumen tympany of any cause. The technique involves make a small 5 cm incision vertically in the upper middle portion of the left Para lumber fossa. The muscles and peritoneum can be separated with use of scissors to allow rumen to be grasped. The rumen was then sutured to the skin and making a fistula. Fibrous c.t may cause a stenosis or closure of opening. Some leakage rumen content may cause peritonitis.

**Abomasums**

The range of surgical conditions include distension, displacement, torsion, ulceration, impaction, neoplasia and probably pylorospasm. In preruminant calf, ingested food enters the abomasums via the esophageal groove.

**Abomasal displacement**

**The etiology of abomasal displacement includes:**

1. **Genetic factor**: The breeding of more production dairy cattle has some time brought about the development of larger and deeper abdomen. Cavities which might allow for more movement of the relatively free abomasums.
2. **Mechanical factor**: placement of animal in right lateral recumbence, enlarge gravid uterus during pregnancy, lack of exercise, dystocia, lameness of the left leg, pain or swelling in the left half of the udder, placement of animal in right lateral recumbence for hoof trimming.
3. **Physiological factor**: Tony or hypomotility of the abomasums with delay passage of ingesta and increase gas accumulation. Metabolic alkalosis which may our during the winter feeding period and increase concentration or decrease crude fiber in take. Previous disease such as metritis, mastitis, toxemia.

The abomasums may be displacing into left side, right side or occasionally in between reticulum and diaphragm.

clinical signs:

1. Selective appetite for forage but not concentrator.
2. Some cow may even have the disease for long time and not show any signs.
3. Show distended at the displace side (dympany).
4. Black scanty feces.
5. Ketosis due to starvation.

Diagnosis**:**

1. Clinical signs
2. Case history
3. Auscultation and percussion of the side of abdominal cavity.
4. Rectal examination

**D.D**. of gas sound heard in the left flank should include rumen tympany, intraperitoneal abscess, dorsal to the rumen and free gas in the peritoneal cavity.

**Treatment:**

1. Left Para lumbar fossa amentopexy
2. Left Para lumbar fossa a bomasopexy
3. Right Para lumbar fossa a mentopexy
4. Right paramedian fossa abomasopexy

**Abomasum** **Displacement**

The abomasum slides under the rumen and dorsally along the left body wall. The attached omasum and cranial duodenum are pulled after the abomasum as it moves to the left. The results is partial impairment of the abomasal out flow. Leading to abomasal gas accumulation, electrolyte pooling with subsequent systemic alterations and depress gastrointestinal moltility and appetite.

**Anatomy :**

Abomasum is the most compartment, follows the three compartments of the fore stomach, it is bear shaped sac. The Abomasum looks much like a simple stomach and consequently has been divided into funds, a body and a pyloric part. It has grater curvature facing ventrally and to the right. The funds and body lie on the abdominal floor caudal to the reticulum. The longitudinal axis of this portion crosses the midline some what obliquely from left cranial to right caudal. Abomasum capacity next to rumen has capacity 10-20 letters.

**Symptoms:**

1. Sever decrease appetite ( complete anorexia ).
2. Sharp decrease milk production.
3. Scanty feces some times diarrhea, if there is diarrhea usually feces greenish.
4. Temperature 90% of cases normal in few cases there is increase in temp.
5. Ketosis with dehydration.
6. Heart Rate are normal but some times elevated.
7. Left paralumber fossa dissented.

\*\*8- Auscultation and percussion of at tympanic area in the left thorax centered on the 9-13 th rib and along or above a line drawn from the left tube coxae th the elbow.

In auscultation can revels high-pitched-tinkling sound (metallic sound).

\*\*9- percussion over 11,12,13 intercostal space give Splashing sound of steel band effect.

**Diagnosis:**

1. Symptoms((تذكر جميع العلامات
2. Auscultation and percussion as describe above.
3. Presence of characteristic serum electrolyte alteration (hypochloremic, metabolic alkalosis with variable degree of hypokalemia and hyponatermia).

**Differential diagnosis:**

**Left sided ping include:**

Penumo-pertoneum and ruminal tempany. Different location can generally be made based on the location and character of the ping both ruminal and pnumoperitoneal pings generally extended more dorsally and caudally along the dorsal paralumber fossa and generally have lower pitched and less Sistine ping. If differination between location of gas in the rumen or abomasum remains a stomach tube may be passed into the rumento allow gas relief resulting in decrease in the size of ruminal but not abomasal ping. Collection sampling of fluid from the source of ping used of trocher and flexible tubing placed through the left paralumber fossa provides a method of differentiating rumen from abomasum based on pH of the liquid.

**Treatment:**

**Principle treatment of LDA include:**

1. Correction of the displacement:

Correction of the displacement may achieved by surgical or non surgical method.

1. Stabilization of the abomasum in a function position.
2. Promotion of normal abomasal motility.
3. Correction of systemic electrolyte and metabolic alterations. Supportive care includes correction of systemic fluid and electrolyte imbalance, fluid therapy for cows with LDA should be base on the severity of dehydration present and expected electrolyte and acid-base disturbance. If dehydration is present balanced or non-alkalinizing saline or ringer’s solution administrated in a volume sufficient to meet the estimated deficient(% dehydration X body weight Kg). calcium supplementation (0.5 L to 1L of 50% calcium solution. I. V. or S.C. incase there is hypocalcemia).

**Right Dilation of the Abomasum :**

**Right dilation of the abomasum** is used in the context to refer to gaseous distention of the abomasum without vascular or complete luminal compromise.

**The pathogenesis** of an RDA is not as well documented as the LDA. The abomasum may present a sac of gas polling when ever overall gastrointestinal motility is impaired. Many of the predisposing factors suggested foe LDA such as those that act by altering motility or promoting gas build up, have been suggested as causative for RDA as well as. Physiological effect of an RDA without volvulus are similar in nature and magnitude to those seen with an LDA.

**Diagnosis** of RDA is base on identification of a tympanic area (ping) on the right side centered over the 10 th to 13 th rib along a line from the tubercoxae th the elbow, if the area of tympany is stable in location and stable or increasing in size or if the cow’s clinical presentation is consistent with abomasl outflow obstruction, either dilation or volvuls may be present and rapid surgical intervention is indicated. Principles of treatment are similar to those of LDA.

**Right Volvous of the Abomasum**

Torsion of the abomasum traditionally marked displacement of the abomasum that result in vascular compromise or luminal outflow obstruction have been referred to as torsion omental attachments of the abomasum prevent true torsion around a long axis through the supporting lesser omentum. Therefore a more accurate term for the syndrome is abomasum volvuls , rather than torsion.

Technically, any degree of rotation could be considered a volvulus, and weather 90, 180.

**Abomasal dilation is generally considered to be a potential precursor of abomsasl volvulus, although some volvulus occur without dilation. The condition that lead to change from dilation to volvus are unknown. Both RDA and RVA typically result in hypochloremic, hypokalemic metabolic alkalosis and frequently associated with hypocalcemia.**

Treatment principle include surgical correction of volvouls, stabilization of abomasums in functional position, correction of systemic fluid, electrolyte acid-base balance and metabolic disturbance.

**Treatment**

**1-Rolling (non surgical technique).**

**2-Surgical treatment of LDA,RDA,RVA Surgical approach**

**A-Standing approaches B-Recumbent Approaches**

**1-Right paralumber fossa. 1-Right paramedaian A**

**2-Left paralmberfossa. 2-Left paramedian A**

**3-Right paracosta A**

**Factors determine Surgical approach:**

1-Surgeon must select approach that allows adequate access to the abomasum for examination.

2-It should be select an approach that does not aggravate coexisting, respiratory, cardiovascular.

3-Must select approach can be treated all problems.

**\*Standing approach:**

**Advantage:**

1-Minimum stress of animal.

2-Minimum restraint required.

3-More familiar orientation of viscera during expletory.

4-Cows with musculoskleital problems.

5-Cows with ruminal distention or in last 2 month of gestation.

**Disadvantage:**

It is contraindicated in cows that already recumbent or likely to become recumbent during surgery Situation that require access to areas of abomasums not possible.

**Methods for treatment**

**1-Rolling(non surgical technique).**

**2-Omentopexy.**

**3-Abomasopexy.**

**1-Rolling (non surgical technique)**

It is reasonably effective method for initial relief of uncomplicated LDA.

When surgery is not possible or practical. Rolling require that the cow be placed in dorsal recumbence and that the contraindication for recumbent approaches should be considered. Rolling is inexpensive, can achieved by one or more assistant and can be repeated. Correction of an LDA by rolling utilize this tendency by placing the cow in dorsal recumbence and allowing the abomasums to rise to it is normal position relative to ventral body wall. Rolling is performed by casting the cow in to right lateral and than in dorsal recumbence, where the cow is maintained for short period of time (10-15 min) to allows the abomasum to reposition and gas to clear. Movement can be promoted by gently by rocking the cow 20 to 30 to either sides. Rolling is not indicated for right dilatation or right volvouls because lack of documented efficacy and the risk of creating or increasing the severity of twist. Rolling may have some value in cow that require only temporary correction of LDA until more effective surgery is possible.

**2-Omentopexy:**

Greater omentum. Adjacent to the pylorus or greater curvature and through some portion of body wall. Since suture are not placed into the abomasums, the risk of fistulation and suture sinus are negligible. Failure of an omentopexy is largely attributed to poor suture placement, either to far caudally or dorsally increasing the amount of movement possible.

**Right paralumber fossa approach**

It can be used to correct and stabilization both LDA,RDA with standing position as well as can be performed with one surgeon.

**Disadvantage of this method continued partial mobility of abomasums and stretching adhesion, loss of stability with friable omentum. Questionable stability of omentopexy in late pregnancy, physical limitation for abomasal reposition by surgeon with short arms. Failure to perform this procedure in the presence of omental or abomasal adhesion, it need good experience to achieve appropriate reposition and stabilization in treatment.**

1-Preparation site of operation, right paralumber fossa, under local infiltration anesthesia.

2-a 15-20 cm long vertical incision is made, incision should carried through the skin, muscles and peritoneum, correction of displacement may be achieved by directly pushing the abomasum down and under the rumen, by placing traction on the omentum attached to the pylorus and duodenum from the right side.

In either cases gas decompression of abomasum before reposition is indicated to improve the case of movement of abomasums under the rumen by needle connected with long tube, the needle must be carried around the back of omental sling injected oblique into the dorsal aspect of abomasum.. Once the return of abomasum and associated structure to their position has been confirmed stabilization procedure must be performed by placement of suture 4 to 6 cm caudal to pylorus in this part of omentumi.

Structure known as (Sow’s ear) using stint or mesh for suture placement to increase surface area across which the suture tension applied.

The suture than passed through the selected site in omentum from cranial to caudal and back from caudal to cranial to create a wide matters pattern than continuing back from the peritoneal surface through all three muscles layer to exit subcutaneously 3 to 4 cm proximal to original site.

Tension is applied to the suture ends to draw the omentum enough to the body wall and suture is tied.

The suture should be pulled tightly enough to avoid a sag between the omentum and body wall which could entrap intestine.

**3-Abomasopexy:**

\*use to Correct Left abomasum displacement only.

\*Approach Left paralumber fossal.

\*Oblique skin incision should be made (normal lapratomy you found abomasum directly in front you).

\*gas should decompression of abomasum before reposition is indicated to improve site for manipulation.

\*make 5-6 simple continuos suturing on the wall of abomasum (not penetrate mucosa) using long thread (silk) and straight needles than push needle after protection with finger down to abdominal wall Assistant make small inscion in skin , so needle penetrate from this opening.

**Conclusion:**

1-Abomasum displacement one of serious affection of abomasums, Condition has no exact causes, but it accur in high producing cattle.

2-Left abomasum displacement more commonly occur compare right abomasum displacement.

3-Diagnosis of the condition depended on auscultation(steel band sound) which is characteristic sound for this condition.

4-The condition occur sporadically in our country, and less common from other part of world due to:

a-high amount of rough food given to normal.

b-unable for diagnosis.

But it present in both cow and buffalo.

5-Correction of the electrolyte and fluid therapy is one of the most important line of treatment.

6-Rolling (non surgical technique) can not considered As method for treatment, only can be done in left abomsum displacement when the surgery can not be performed.

7-Omemtopexy (Right side opening) very efficient treatment however, it needed experience.-