EVIDENSIA
SPECIALISTDJURSJUKHUSET
STRÖMSHOLM

GASTRIC DILATATION AND VOLVOLUS

Susanne Åkerblom
Chief of Surgery
Swedish Specialist in Surgery (Small Animal)

ETIOLOGY

- Breed
  - Great Dane, Irish setter, Gordon setter, Weimaraner, St Bernard, standard poodle, Bassett hound
- Increased thoracic depth-to-width ratio
- Relatives
- Fewer meals per day
- Rapid eating
- Decreased food particle size
- Increased hepatogastric ligament length
- Excercise or stress directly after feeding

- Can also occur in cats

- Unclear wether dilatation or rotation occur first
  - Rotation prevents eructation, vomiting and pyloric outflow
  - Mechanism for gas entrapment before volvolus not understood

- Pylorus and proximal duodenum moves ventrally and cranially
- The hepatoduodenal ligament stretches
- Pylorus continues to migrate from right to left to end up on the left side of the abdomen dorsal to the esophagus

PATHOPHYSIOLOGY

- Alterated blood flow
  - Decreased venous return → cardiogenic shock
  - Portal hypertension → mucosal death and bacterial translocation
  - Pressure on the diaphragm → decreased oxygen delivery
  - Anaerobic metabolism
- Cardiac dysfunction
  - Inadequate coronary blood flow → myocardial ischemia
  - Myocardial depressant factor
  - Myocardial ischemia → arrythmias
- Gastric wall necrosis
  - Increased intragastric pressure → collaps of capillaries
  - Systemic hypotension
  - Avulsion of short gastric arteries

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PREOPERATIVE MANAGEMENT

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- Fluid therapy the most critical component
  - At least two large-bore iv catheters
  - Rapid expansion and maintenance of intravascular volume
  - Combination of crystalloids and colloids
  - Vasopressor therapy if necessary
- Oxygen supplementation
- ECG-monitoring
  - Arrythmias treated if pulse deficit or poor periferal perfusion
- Correction of acid-bace, electrolyte and blood pressure abnormalities
- Antibiotics?

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- Pain control
  - Methadone, butorphanol, buprenorphine, diazepam, midazolam
- Gastric decompression after initiation of fluid resuscitation
  - Orogastric intubation
  - Trocar or over-the-needle catheter percutaneously into the stomach
  - Emergency temporary gastrotomy

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Emergency temporary gastrotomy

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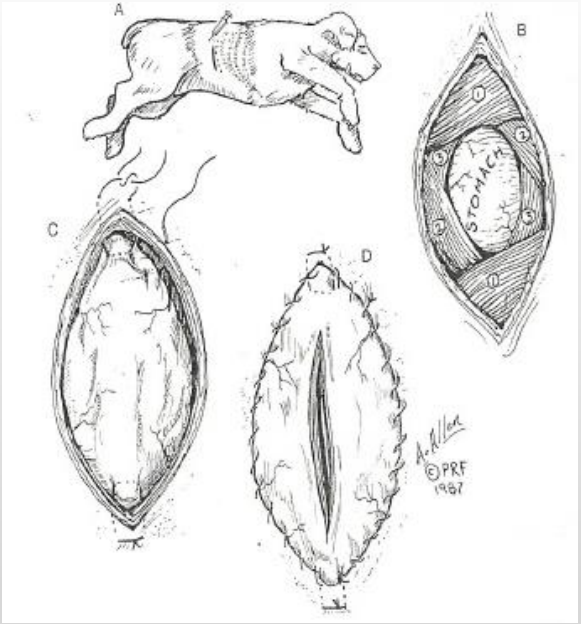
- Sedation often necessary
  - Opioid in combination with benzodiazepine
- Make a local anaestetic block at incision site
- Make a 10 cm long incision in the abdominal wall
- Separate the muscles along the fibers
- Grasp the stomach and suture the gastric wall to the full circumference of the skin incision
  - Continuous pattern, 2-0 to 3-0 monofilment suture
- Make a 3-5 cm incision in the gastric wall in the centre of the exposed gastric wall
- Cover with semipermeable bandage
- Close the gastric wall, muscles and skin before celiotomy for gastropexy



ANAESTHESIA

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- Preoxygenation
- Premedication with agents that are not cardiovascular depressants or arrythmogenic
- Control arrythmias
- Preparation with patient in lateral recumbency

POSTOPERATIVE MANAGEMENT

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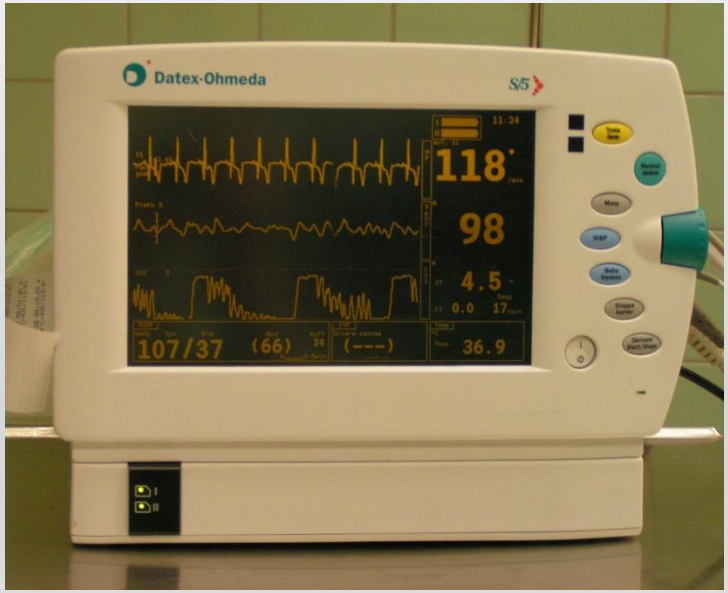
- Fluid therapy
  - Maintain hydration
  - Correct electrolyte imbalances
- Treat cardiac arrythmias
  - lidocaine
- Analgesics
- Assessing coagulation parameters
  - Plasma transfusion and heparin if DIC
- H_2 -receptor antagonists
  - Ranitidine, famotidine, cimetidine, sucralfate
- Prokinetics if necessary
  - Metoclopramide, cisapride
- Start feeding 12-24 hrs postoperatively
- Antibiotics?



RECURRENCE RATES AND PROGNOSTIC FACTORS

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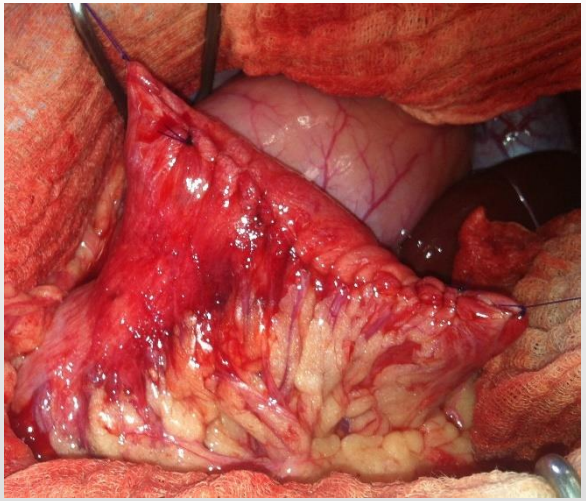
- Clinical results similar for all different techniques
- Factors associated with increased mortality
  - Duration of clinical signs >6 hrs
  - Concurrent gastrectomy or splenectomy
  - Hypotension
  - Gastric necrosis
  - Preoperative cardiac arrythmias
  - Peritonitis
  - Sepsis
  - DIC
- Factors associated with decreased mortality
  - Increased duration of time from presentation to surgery
- Lactate can be used as a prognostic indicator



GASTROPEXY

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- Indicated for
  - Gastric dilatation volvolus
  - Hiatal hernia
- Between pyloric antrum and right abdominal wall
- Key to success is incision into the muscular component of both the ventricle and abdominal wall
- Frequent error to suture the gastropexy too ventral
- Consider gastrectomy and splenectomy

Incisional Gastropexy

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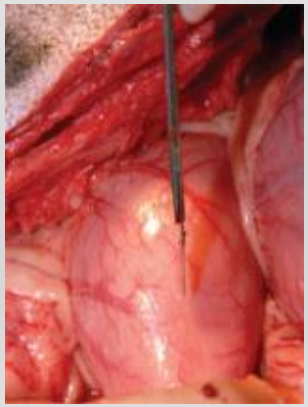
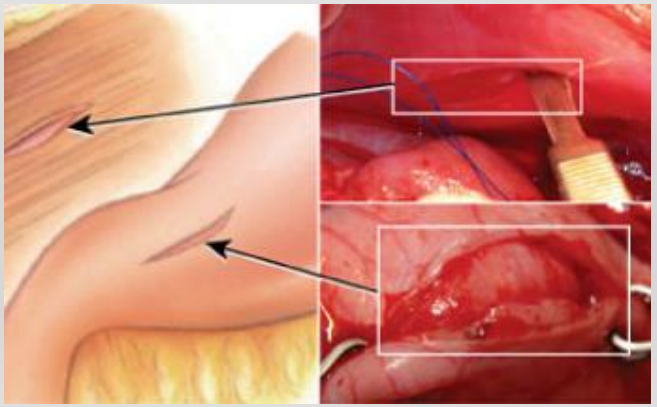
- Make a 4-5 cm seromuscular incision in the gastric antrum
- Make an incision through peritoneum and transverse abdominis muscle on the lateral or ventrolateral abdominal wall 2-3 cm caudal to the last rib on the right side





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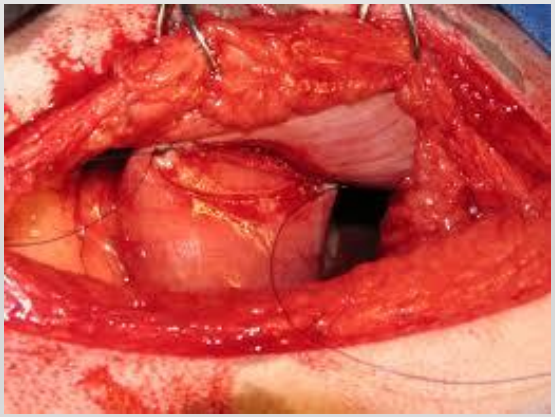
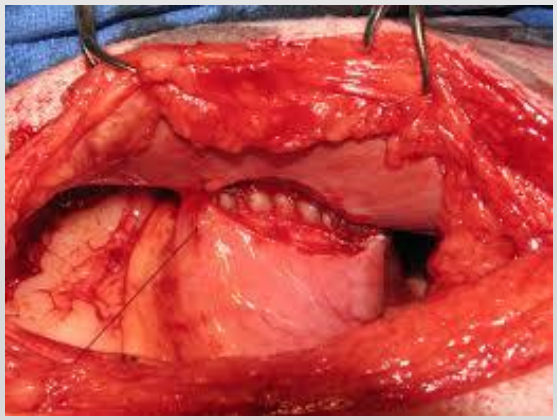
- Appose incisions using two continuous suture lines
  - 2-0 monofilament absorbable suture

- Same procedure for hiatal hernia except performed on the left side





Belt-Loop Gastropexy

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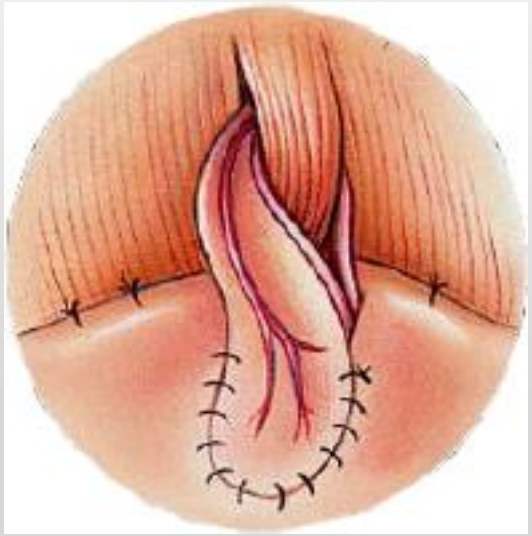
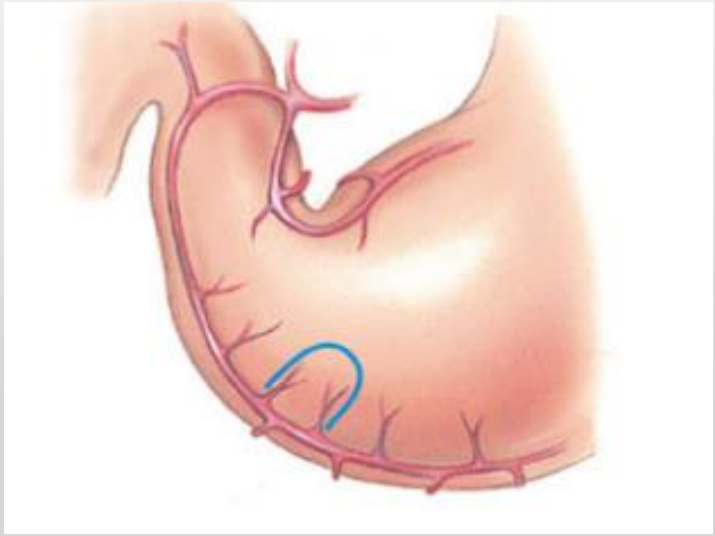
- A seromuscular flap is elevated from the pyloric antrum and passed through a tunnel in the abdominal wall
- Flap based along the greater curvature
- Branches of the gastroepiploic artery should be incorporated





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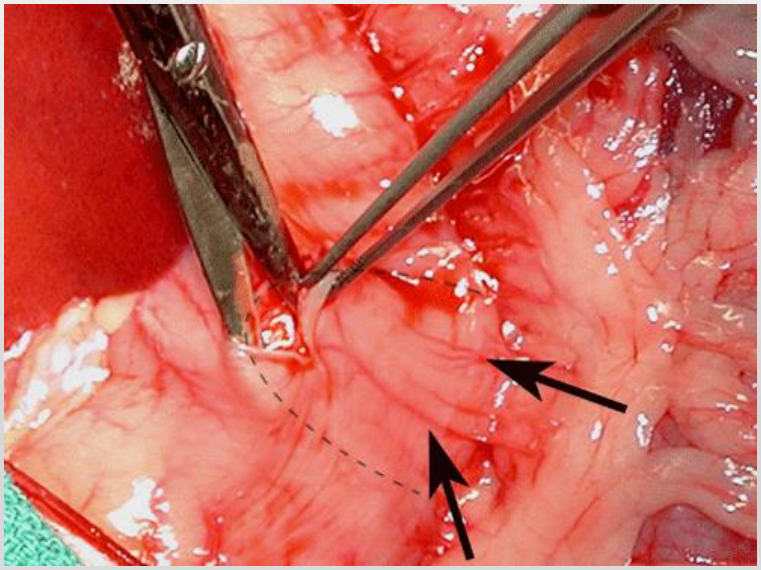
- Make two parallel seromuscular incisions 4 cm long and 3 cm part at the pyloric antrum and connect them cranially

- Undermine the flap from the mucosal layer



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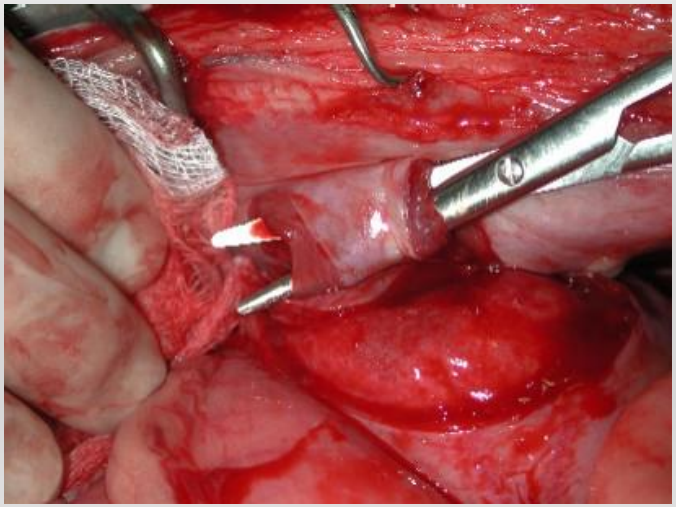
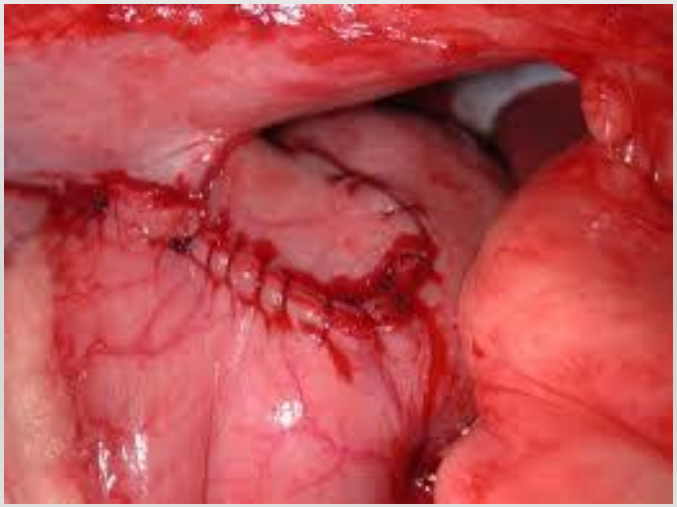
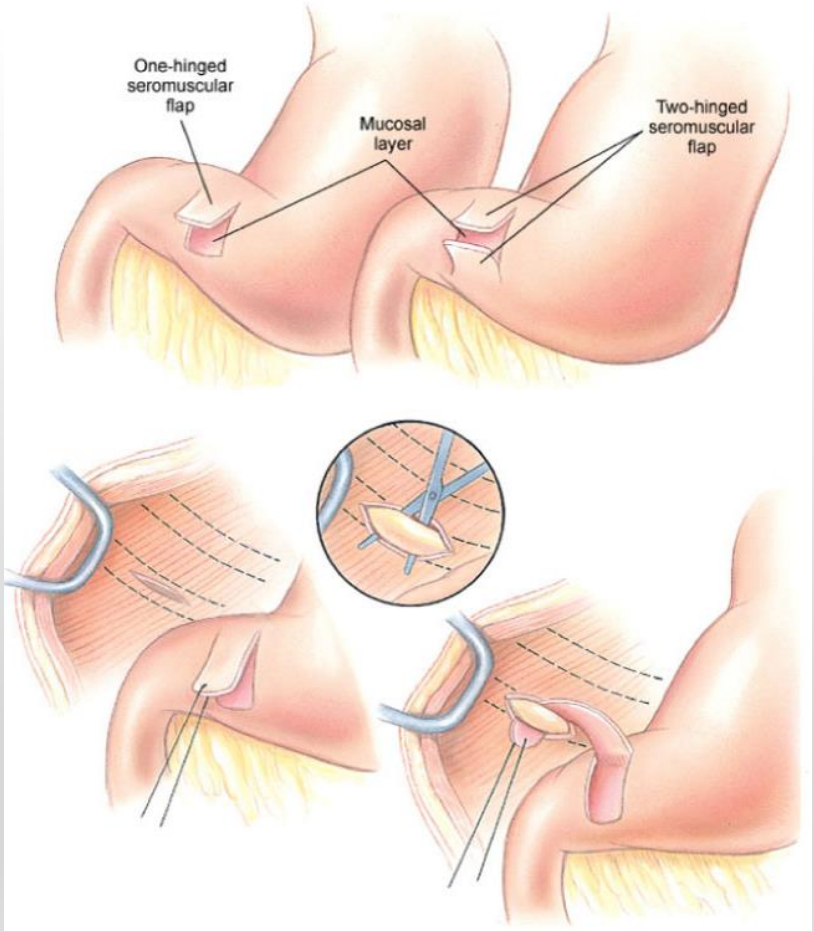
- Make two 5 cm long incisions 3 cm apart in the abdominal wall penetrating peritoneum and transverse abdominis muscle
- Undermine the muscle between the incisions to create a tunnel
- Pass the flap through the tunnel and suture it back to the site from where it was elevated
  - Simple interrupted or continuous pattern
  - 2-0 or 3-0 absorbable monofilament suture





Circumcostal Gastropexy

- Raise a double or single hinged flap from the pyloric antrum
  - Single hinged based from the lesser curvature
- Make a 5-6 cm long incision directly over the 11th or 12 ribth at the level of the costochondral junction
- Bluntly dissect circumferentially close around the rib
- Passs the flap cranial to caudal through the tunnel and suture it back to its origin
  - 2-0 to 3-0 absorbable suture



Incorporating Gastropexy

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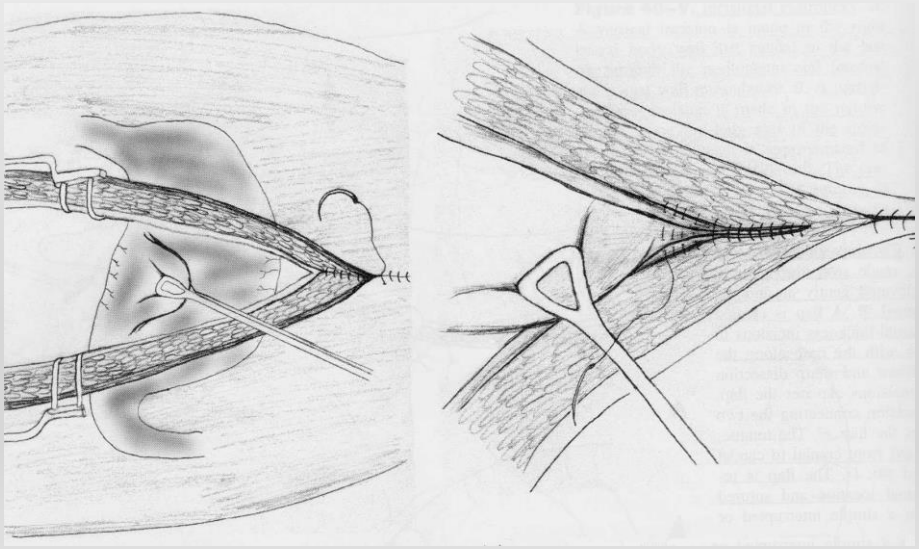
- Approximately 5 cm of gastric wall near the pyloric antrum is included in the cranial portion of the linea alba suture
  - Absorbable suture
- No incision is made in the stomach wall

- Risk of inadvertent penetration into stomach if repeated celiotomy



PROPHYLACTIC GASTROPEXY

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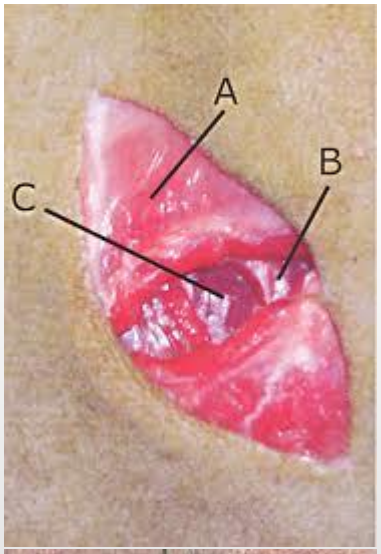
- Grid approach
- Endoscopcally aided
- Laparoscopic

Grid Approach

- Performed via minilaparotomy on the right side

- Make a 6 cm vertical skin incision immediately caudal and ventral to the last rib
- Cut through both of oblique abdominal muscles and transverse abdominal muscle by blunt dissection
- Penetrate the peritoneum and retract the gastric antrum
- Place stay sutures in the ventricle and make a 3 cm longitudinal incision through the gastric serosa and muscularis
- Appose the gastric incisions to the transverse abdomins muscle
  - Continuous suture pattern, absorbable monofilament suture
- Close superficial muscule layers individually



Endoscopically Assisted Gastropexy

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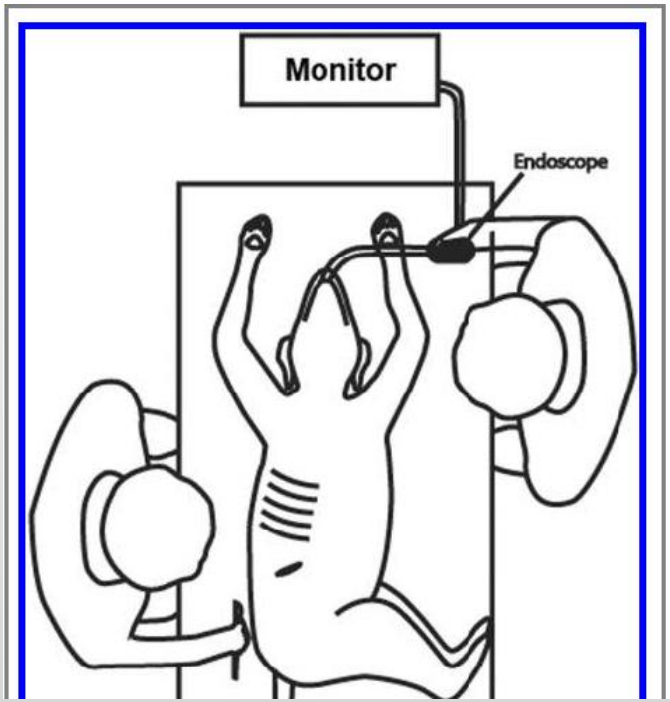
- Left oblique recumbency
- Visualise the pyloric antrum through the gastroscope
- Palpate the abdominal wall to identify appropriate location
- Stabilize stomach with two stay sutures percutaneuously
  - 2 polypropylene
- Incise the body wall and transect the muscles between the stay sutures
- Make a longitudinal incision through the gastric serosa and muscular layers
- Appose the gastric incisions to the transverse abdominis muscle



Laparoscopic gastropexy

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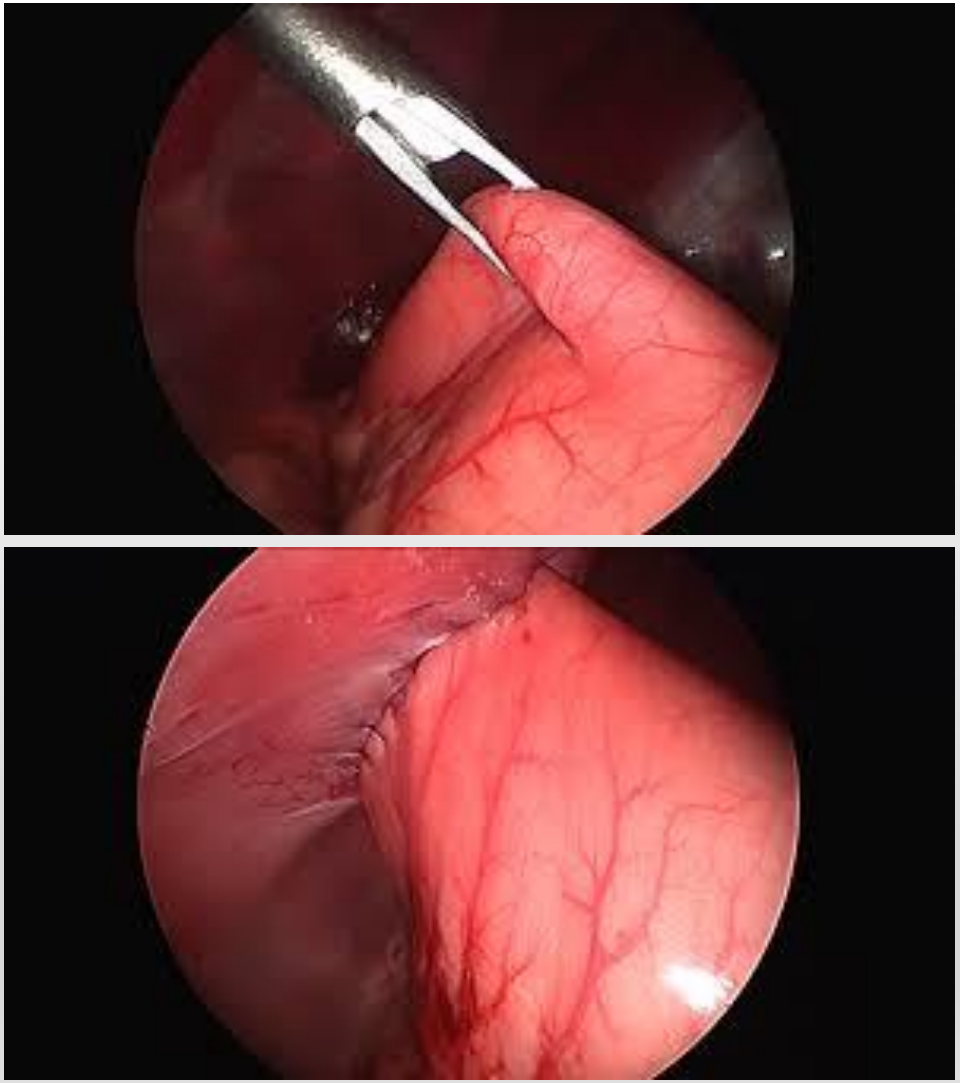

QUESTIONS?

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