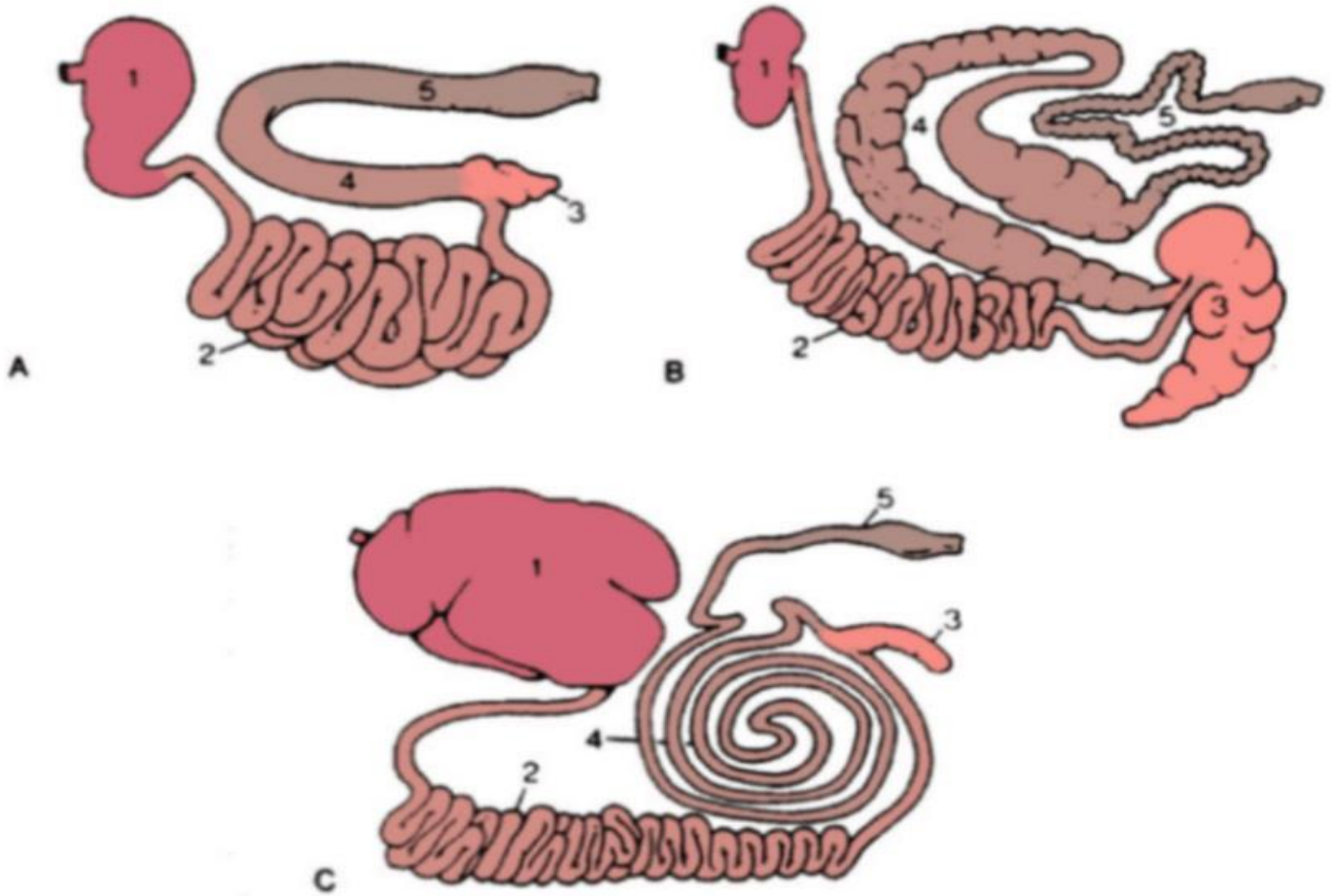
AFFECTION OF LARGE INTESTINE

ANATOMY

The large intestine consists of the cecum, the ascending, transverse, and descending colon, and the rectum .

In dogs and cats, the ileum communicates directly with the colon, and what is referred to as the cecum in the dog and cat is a diverticulum of the proximal colon.



Comparisons of gastrointestinal tracts of, **A**) the dog, **B**) the horse, **C**) and cattle.
1. Stomach; **2**. small intestine; **3**. cecum;
4. ascending colon (dog), large colon (horse), coiled colon (cattle); **5**. descending colon.

The arterial blood supply to the colon is provided by the cranial and caudal mesenteric arteries,

venous return from the colon is transmitted to the main portal vein via the cranial and caudal mesenteric veins.

Lymph is circulated from the colon to the right, middle, and left colic lymph nodes, and eventually into the cisterna chyli and thoracic duct.

Parasympathetic innervation arises from the vagus nerve in the proximal colon, and from the pelvic nerves in the distal colon.

Microscopic Anatomy

As with the small intestine, the cross-sectional structure of the large intestine consists of four distinct layers, that is:

- mucosa
- submucosa
- muscularis
- Serosa

FUNCTION

The primary function of the large intestine is to dehydrate and store fecal material.

Extensive reabsorption of water and salt occurs in the right/proximal colon and continues throughout.

AFFECTIONS OF LARGE INTESTIN

Intestinal obstruction

Intestinal obstruction of large intestine is infrequent in ruminants but common in dogs and cats. Mechanical obstruction may be intra-luminal or extra-luminal.

Intra luminal

Fecalith

Impacted ingesta

Foreign bodies

Parasitic infestation

Extra luminal

Stenosis

Adhesions

Hernia

Abscess

Neoplasms

Functional obstruction (Paralytic ileus)

Trauma

Peritonitis

Heavy concentrate feeding

Congenital defects – agenesis of colon.

Clinical signs

In complete obstruction: Pain in initial stages of obstruction, Cessation of defecation, Anorexia, Distension of abdomen, Looking towards site of pain (colic symptoms), Kicking at the abdomen, Frequent standing and lying down, Increased pulse rate, Faeces is scanty with blood and thick mucus, Hypovolemia, Endotoxaemia (in strangulated obstruction).

Diagnosis

History, clinical signs, rectal examination, laboratory findings, complete absence of defecation also seen in diaphragmatic hernia (radiography will help in diagnosis)

Treatment

General lines- includes Right flank laparotomy Removal of obstruction

Intraluminal mass– enterotomy

If intestinal segment is damaged– enterectomy and anastomosis

Caecal dilatation or torsion

Caecal dilatation or torsion of the caecum involves distension, displacement and torsion of the caecum .

Free end of caecum in cattle is devoid of mesentery and thus prone to rotation. Dilatation may precede or follow the torsion.

In buffaloes caecum is not predisposed to torsion because blind end is not devoid of mesentery

Etiology

Main cause of Caecal dilatation or torsion is excessive feeding of grains, this leads to:

- Results in production of increased concentration volatile fatty acids (VFA)
- Gas due to fermentation of undigested grains
- Volatile Fatty acids cause hypo-motility or atony of the caecum resulting in accumulation of gas and ingesta with subsequent dilatation and possible torsion of the organ

Clinical signs

Abdominal pain– early course of disease

Rapid loss of appetite

Cessation of defecation

Dehydration

tachycardia – in advanced cases of caecal torsion

Hypo motility or atony of rumen

Distended right paralumbar fossa

Tympanic resonance of right paralumbar fossa on auscultation and percussion

Rupture of distended caecum during transportation of animal is a possibility and if it occurs death is sudden.

Diagnosis

History

Clinical signs

Auscultation and percussion

Rectal palpation

Right flank laparotomy

Treatment

*Conservative treatment – when animal is in good condition

*Surgical treatment

Caecostomy

Typhlectomy

Caecostomy

Right flank laparotomy in standing position

Exteriorise the free end of caecum

Milk out the caecal contents following caecostomy

Clean the caecal edges with normal saline

Suture with absorbable suture with Cushing pattern followed by Lembert suture pattern

If torsion is there, correction should be made

Reposition of the caecum into abdominal cavity

Laparotomy wound is closed in a routine manner

Typhlectomy

-In cases where the caecum is necrotic, resection is indicated

After exteriorisation of caecum through right flank

-Intestinal clamps on the distal end of the ileum and proximal end of the colon should be placed.

-Blood vessels supplying the caecum should be dorsally ligated

-The necrosed caecum in resected out and cut edges of ileum and colon are anastomosed by using synthetic absorbable suture material

- Close the laparotomy incision in a routine manner

- Partial resection is sufficient if only a part of caecum is necrosed.

Post operative care

Administration of broad spectrum antibiotics, adequate fluid therapy.

Prognosis is good following surgery

Rectal prolapse

Rectal prolapse is the most common surgical condition involving the rectum in cattle, buffaloes, and small ruminants.

Etiology

Prolonged tenesmus

Increased intra abdominal pressure due to bloat

Rectal inflammation and irritation

Diarrhea

act of parturition

Foreign bodies

Perineal hernia

Constipation

Congenital defects

Classification

Rectal prolapse can be classified in two types-

Incomplete rectal prolapse is the prolapse involving only the mucosa of rectum.

Complete rectal prolapse is the prolapse of whole thickness rectal wall.

Diagnosis

Visual observation of mass of varied length protruding from the anus is the base of diagnosis.

Treatment

-Reduction after lavage with a constricting solution and application of an labricant.

- Purse string suture in the skin around anus by leaving an opening which permits defecation

- Animals should be kept on laxative diet for few days to prevent constipation

Recurrence is common in this method

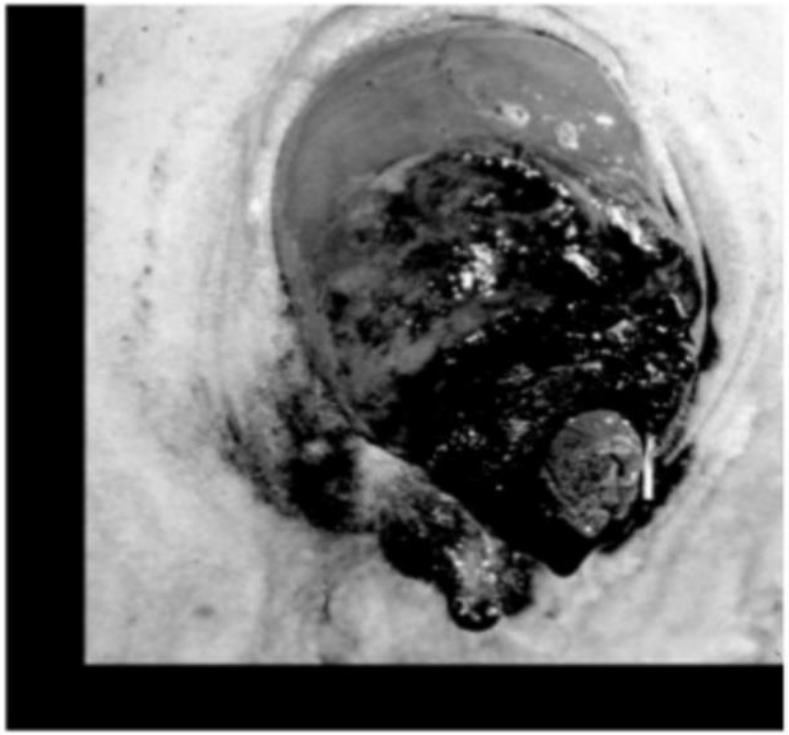
Initiating cause must be treated to effect cure

Post surgical management

Regular cleaning, dressing with topical anaesthetic and use of systemic antibiotics in rectal prolapse

SUBMUCOSAL RESECTION

- Submucosal resection is the preferred technique if the prolapsed mucosa is necrotic, ulcerated, or traumatized, but the underlying tissue is healthy.



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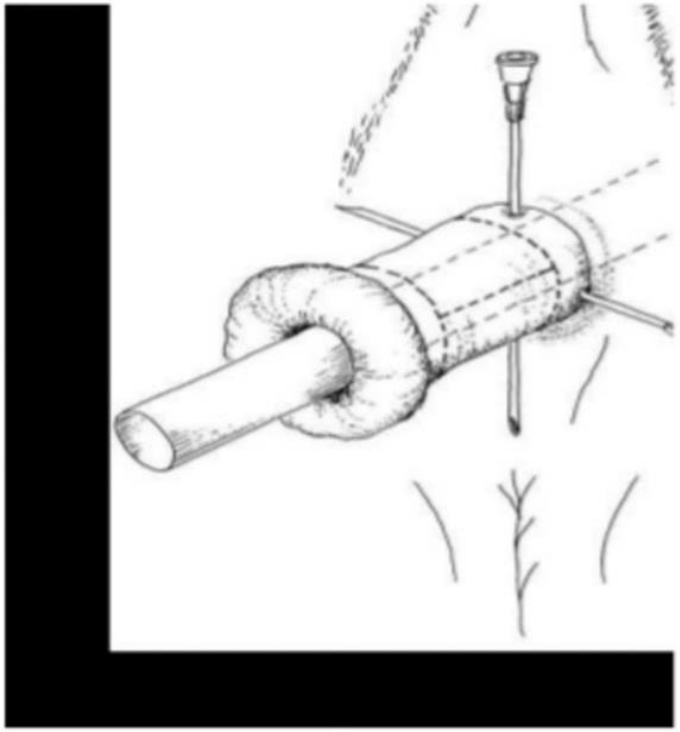
- A piece of flexible tubing of appropriate diameter is inserted into the lumen of the prolapse and cross-pin fixation performed to control movement of the prolapse during surgery.



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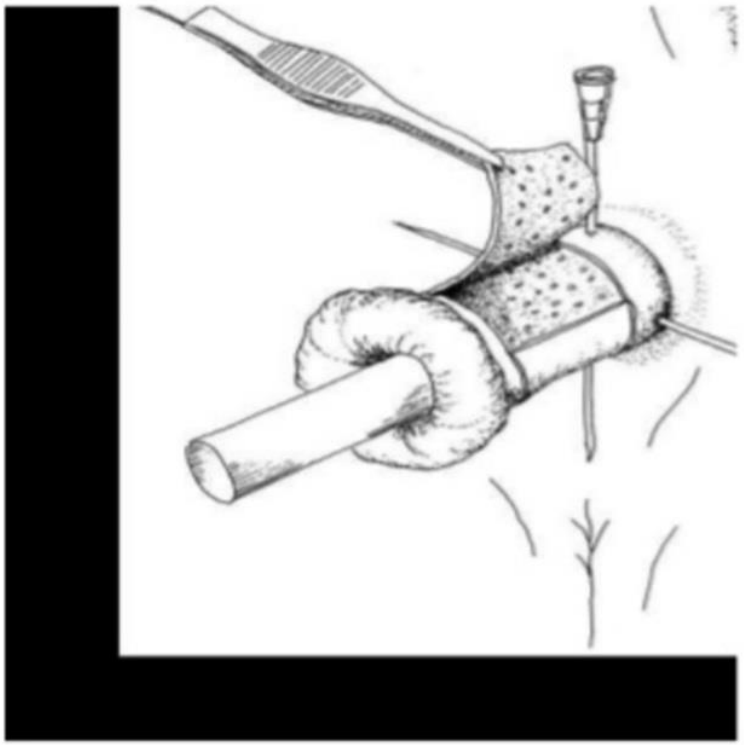
- Two circumferential incisions are made through the mucosa on either side of the tissue to be removed.
- The collar of affected tissue is removed in the healthy submucosal plane by using blunt dissection.



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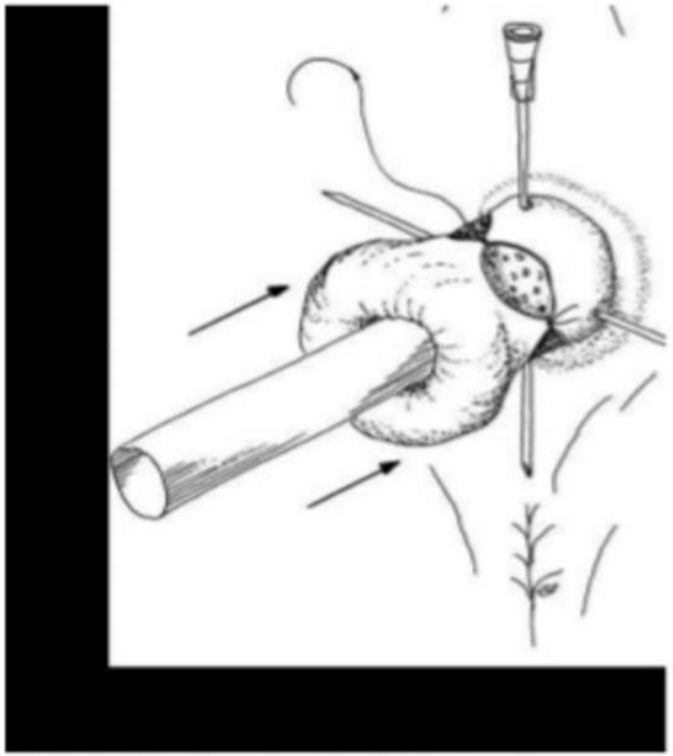
- The mucosa is aligned with four simple interrupted sutures that are placed equidistant around the circumference of the prolapse



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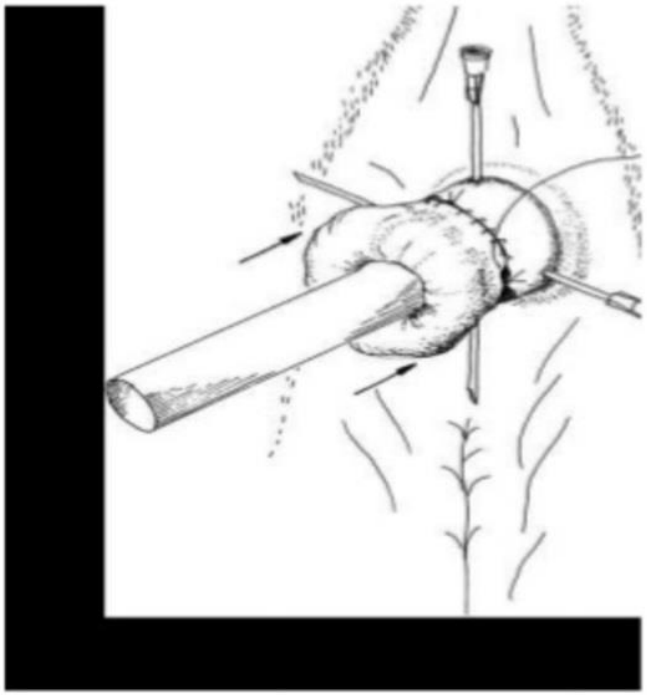
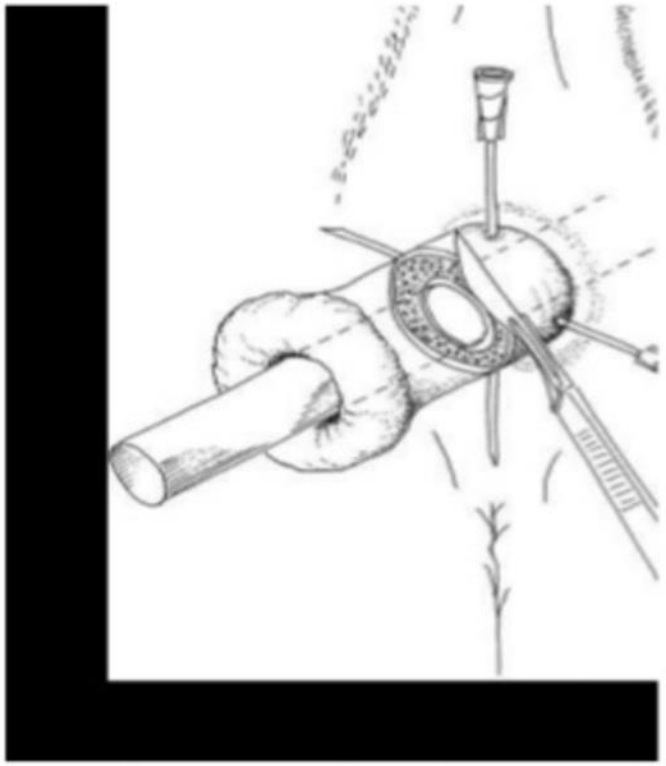
- The four quadrants are apposed separately with one simple continuous suture pattern for each quadrant.



STAIRSTEP AMPUTATION

- When the prolapsed tissue is severely damaged, amputation may be the only alternative.
- A circumferential incision is made just cranial to the necrotic area.
- All tissues except the inner mucosa are incised.



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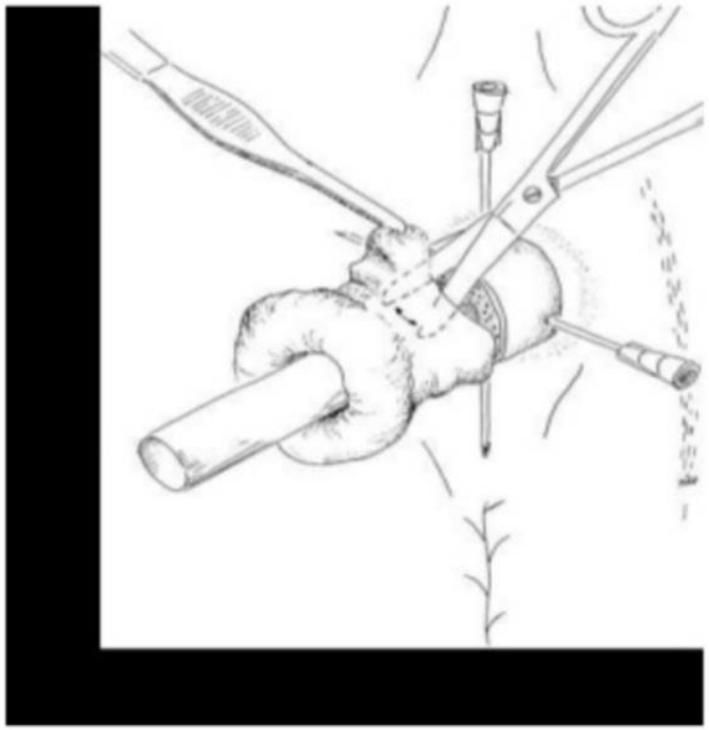
- With blunt dissection, a plane is created towards the caudal aspect of the prolapse within the inner submucosa between the inner and outer segment.



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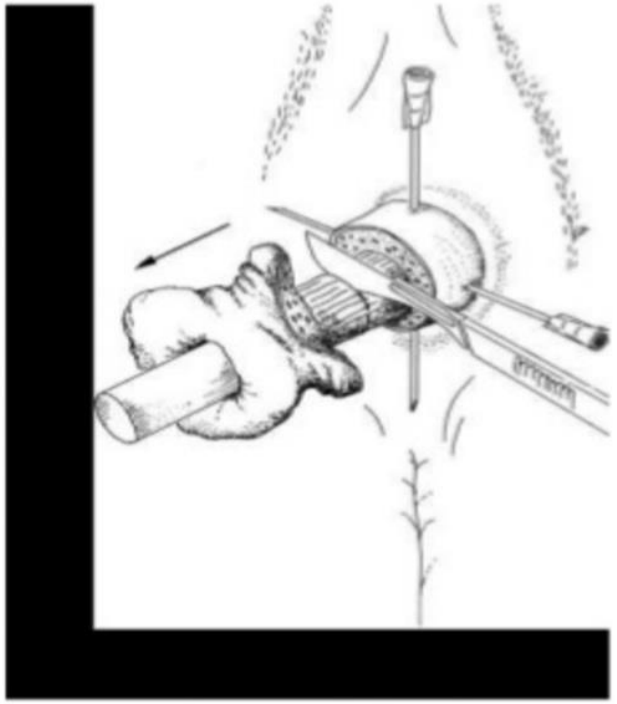
- The outer segment is pulled forward, and the inner segment amputated 2 to 3cm more distal than the outer segment.



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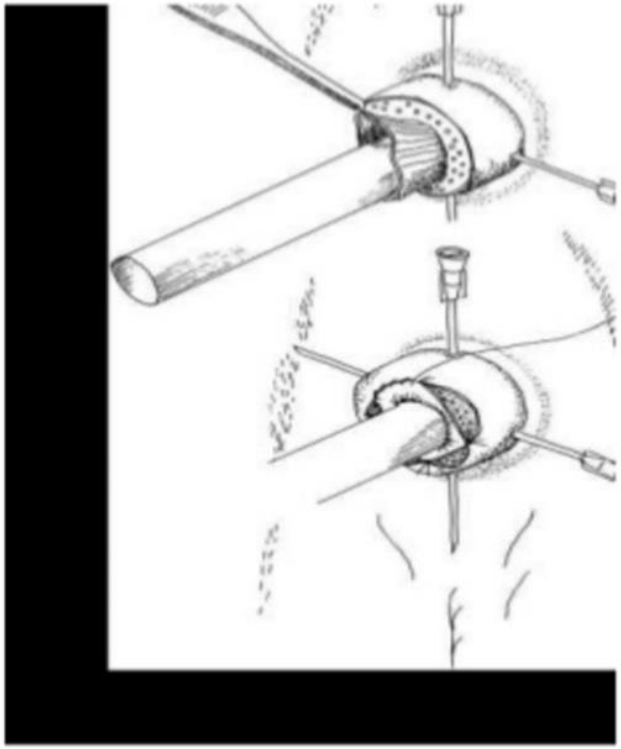
- Suture pattern and material for adaptation of the mucosal layers are identical as described for submucosal resection.



Tumors of Rectum

Warts, cysts, lipomata, sarcomata, adenomata and carcinomata are the tumors of Rectum in animals.

Cysts, polypoid myxomata and fibromata are the most common tumors of the rectal mucous membrane.

Symptoms

Severity of the symptoms vary according to the size of the tumour

Difficulty in defecation

In case of ulcerated tumor– blood and pus may be seen in faeces

Tumor inside the rectum may protrude through the anus during defecation

Diagnosis

Deformity of rectum due to new growth

Rectal examination

Prognosis

Benign tumors are easy to remove

Malignant tumors are incurable

Treatment

-Polypoid growth may removed by ecraseur or by ligation

-Radical surgery for excision of tumor

Atresia ani

a congenital embryological anomaly in which the hindgut fails to fully communicate with the perineum.

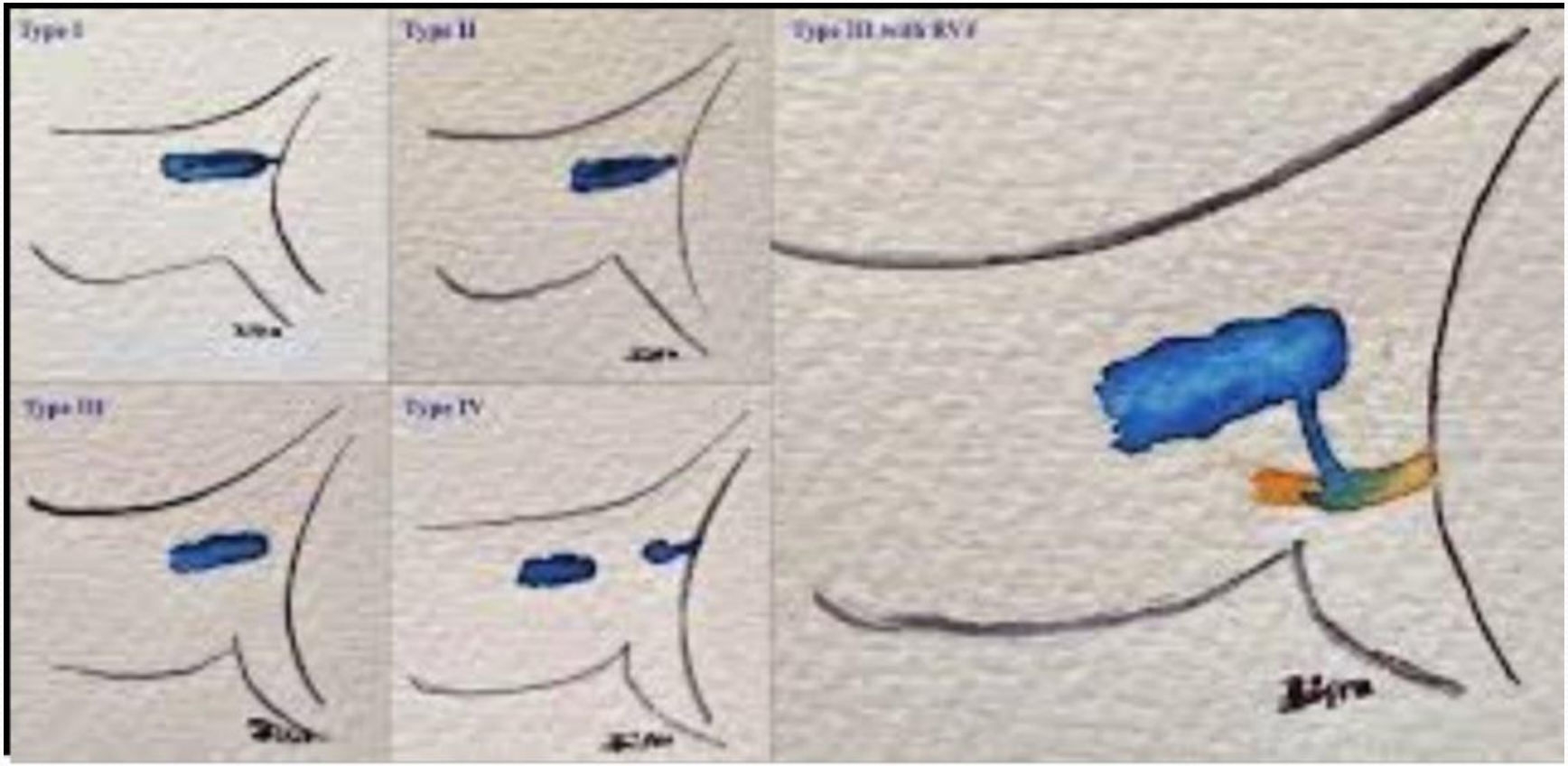
Four types of atresia ani have been reported, including

1-congenital anal stenosis (Type I)

2- imperforate anus alone (Type II)

3- combined with more cranial termination of the rectum as a blind pouch (Type III);

4- discontinuity of the proximal rectum with normal anal and terminal rectal development (Type IV).


Type I
Type II
Type III with RVF
Type III
Type IV

Rectal tear

Rectal tear is primarily due to trauma and it rarely reported in ruminants.

Classification

Rectal tear can be classified in four grades-

Grade 1: Tears involves mucosa or mucosa and submucosa
Grade 2: When only muscular layer gets ruptured
Grade 3: Involves mucosa, sub mucosa and muscular layer
Grade 4: Penetrates all layers and enters peritoneal cavity

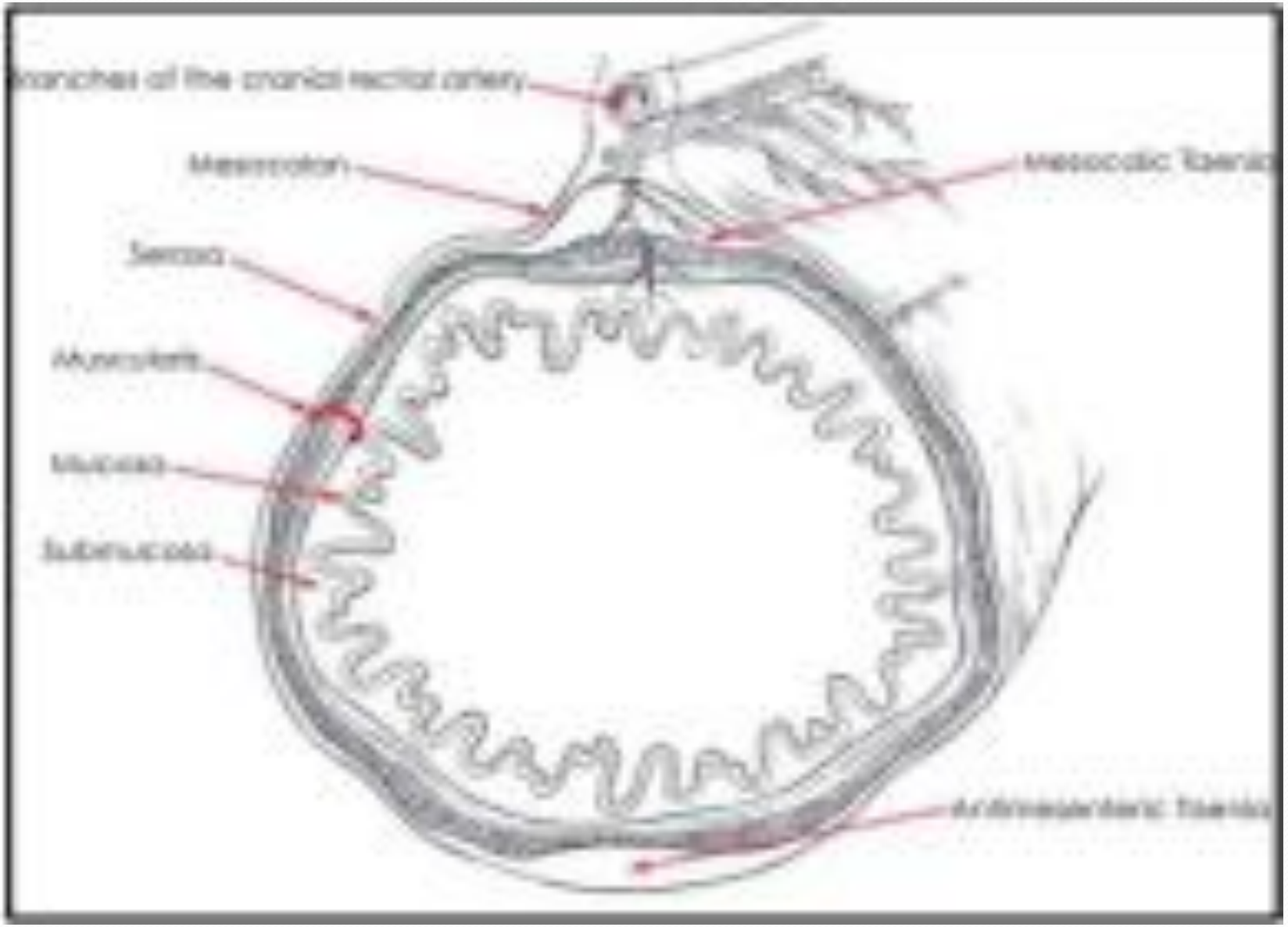
Diagnosis

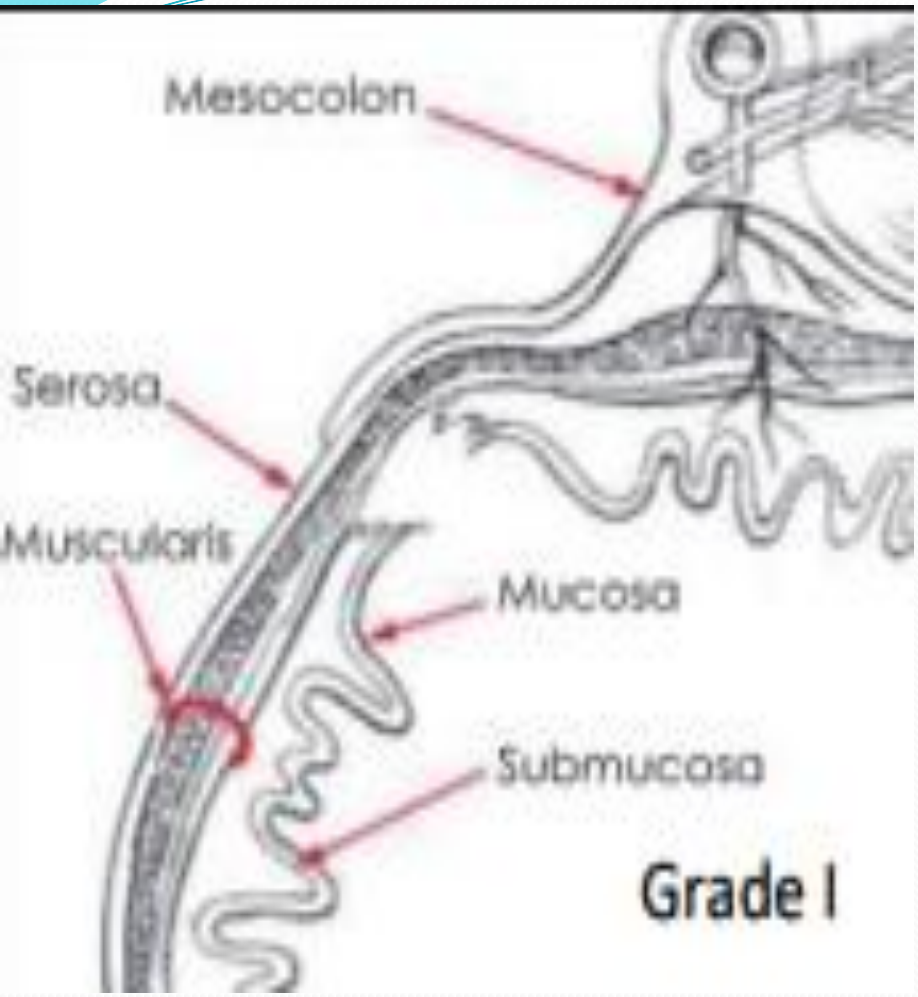
Presence of excessive amounts of blood on glove on rectal palpation

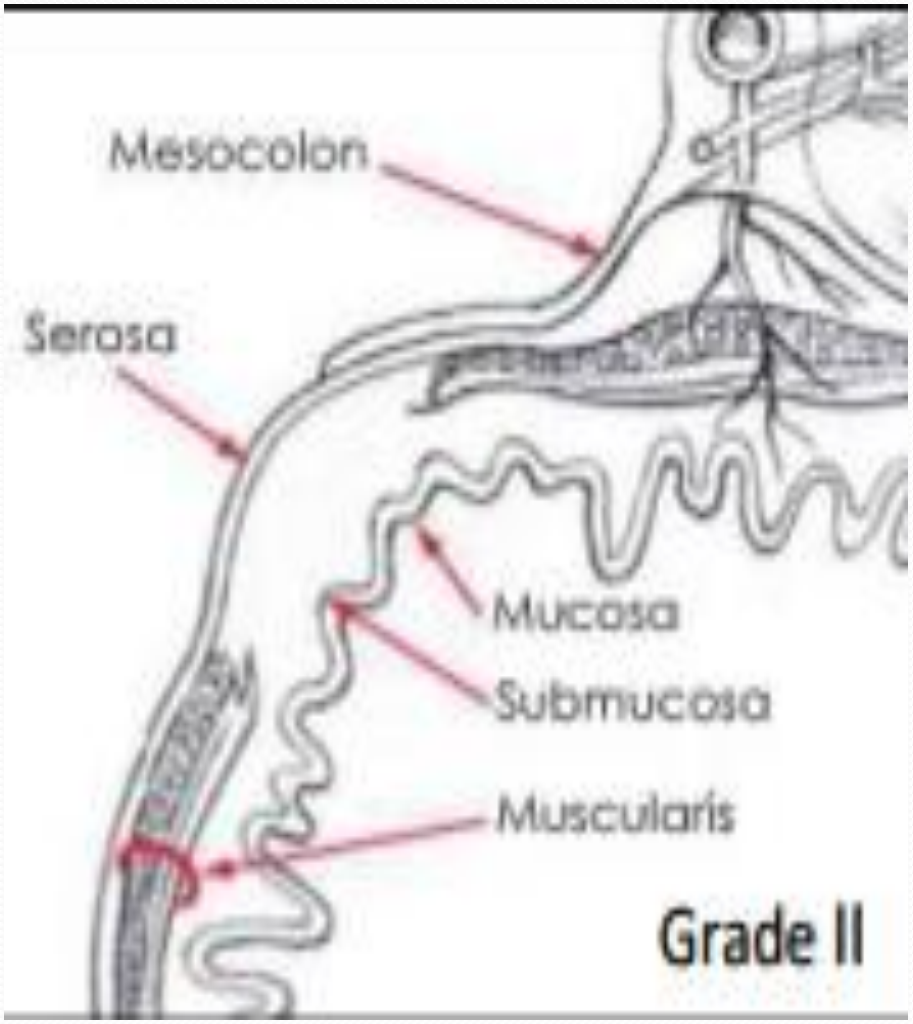
Treatment

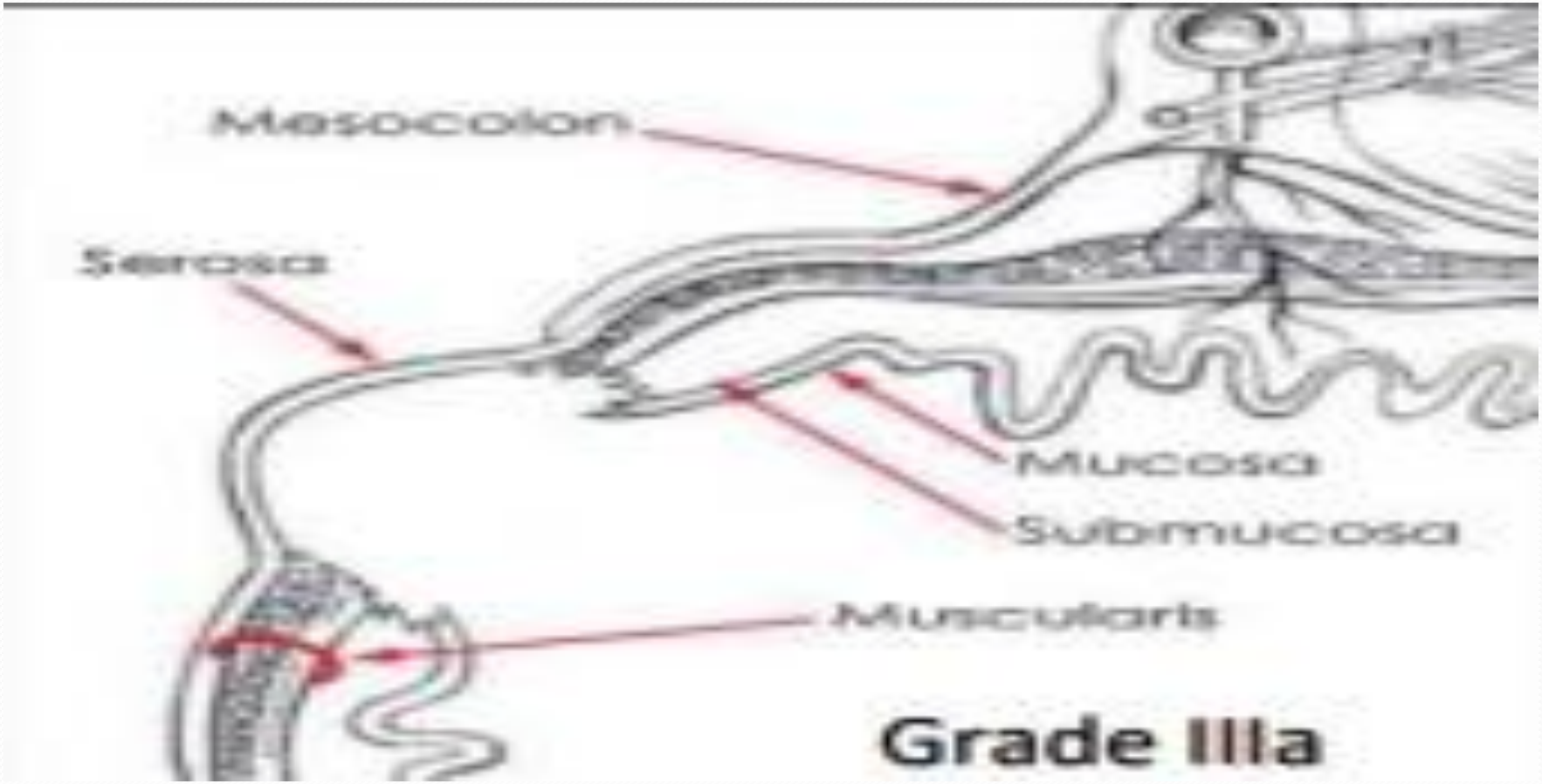
Under epidural anaesthesia the distal rectal tear is corrected using an absorbable suture material using inversion pattern.

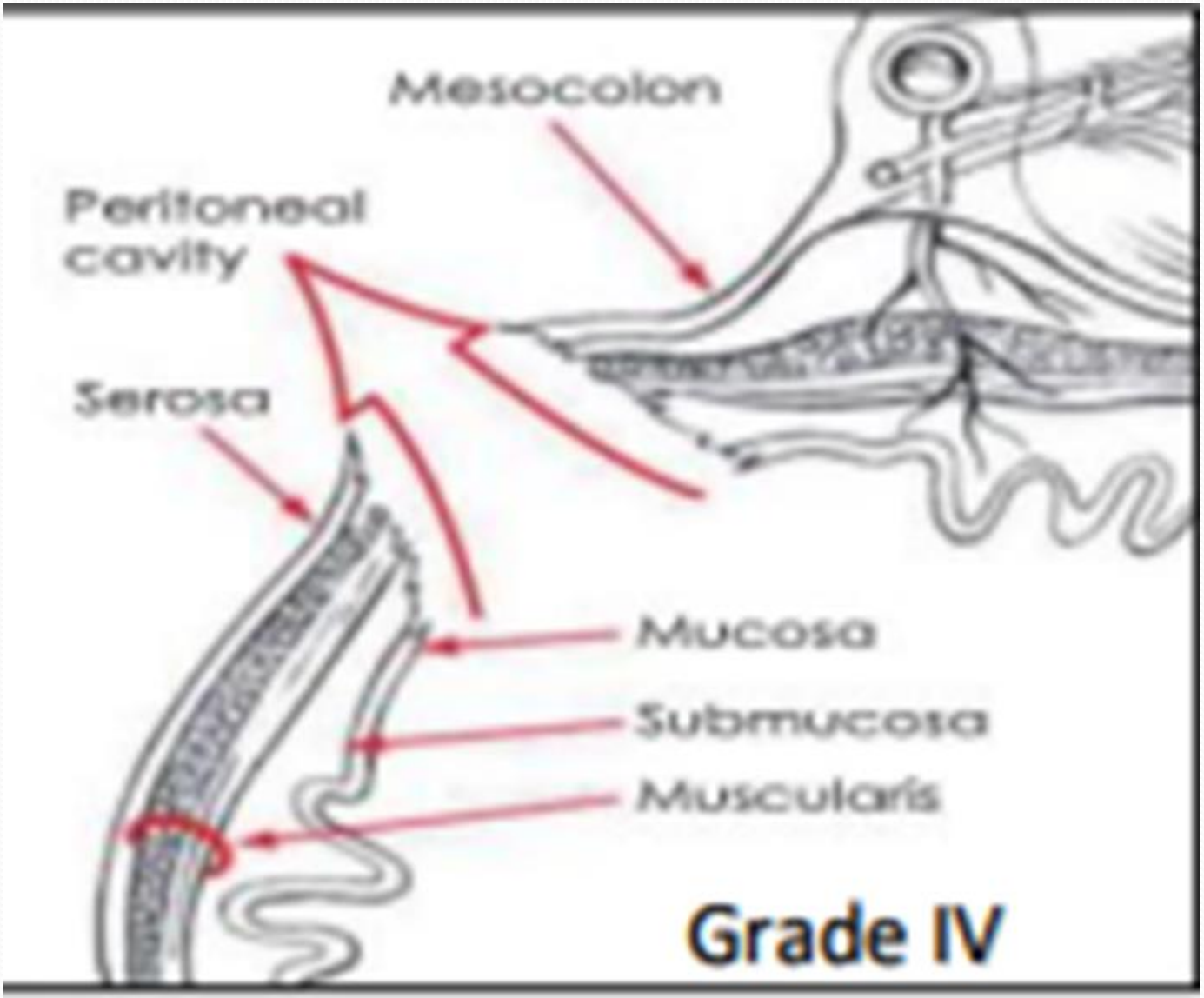
In case of proximal rectal tears– right flank laparotomy has t be performed to repair the rectal tears


Branches of the cranial rectal artery
Mesorectum
Serosa
Muscularis
Mucosa
Submucosa


Mesocolon
Serosa
Muscularis
Mucosa
Submucosa
Grade I


Mesocolon
Serosa
Mucosa
Submucosa
Muscularis
Grade II


Mesocolon
Serosa
Mucosa
Submucosa
Muscularis
Grade IIIa


Mesocolon
Peritoneal cavity
Serosa
Mucosa
Submucosa
Muscularis
Grade IV

Treatment of Grade I and II rectal tears

Medical treatment alone or consider epidural anesthesia, with or without direct suturing in standing animal:

- Broad-spectrum antibiotics and NSAIDs.

- Feed laxative diet.

- Regular administration of mineral oil by nasogastric tube.

Oral or intravenous fluid replacement.

Treatment of Grade III and IV rectal tears

Prompt and aggressive medical and surgical intervention it is necessary:

- Broad-spectrum antibiotics and NSAIDs.
- Feed laxative diet.
- Large colon evacuation through a pelvic flexure enterotomy.
- Surgical repair