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Surgical Resection and Anastomosis of Gangrenous Rectal Prolapse in a Heifer

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Abstract

A one-and-a-half-year-old non-descript heifer weighing approximately 180 kg was presented to the Veterinary Clinical Complex with a history of rectal prolapse since five days. Clinical examination revealed a severely edematous, congested and gangrenous prolapsed rectal mass measuring 18cm in length. Due to the irreversibility of tissue damage, surgical resection of the gangrenous mass followed by end-to-end rectal anastomosis was planned. After thorough cleansing and aseptic preparation, the gangrenous segment was circumferentially incised and resected. The healthy rectal ends were apposed and anastomosed using interrupted absorbable sutures. Post-operatively, broad-spectrum antibiotics, anti-inflammatory drugs, fluid therapy and were administered. The animal showed uneventful recovery with restoration of normal defecation within five days and complete healing without recurrence during the follow-up period of one month.

Key words: *Rectal prolapse, gangrene, heifer, rectal resection, anastomosis.*

Introduction

Rectal prolapse refers to the protrusion of one or more layers of the rectal wall through the anal opening. It is a relatively frequent surgical condition in large animals, particularly in young calves and heifers (Gopalakrishnan *et al.,* 2017).

The condition is commonly associated with persistent tenesmus resulting from enteritis, severe diarrhea, parasitic infestations, coccidiosis, urolithiasis, dystocia, chronic coughing, and nutritional factors. Environmental conditions such as overcrowding and poor management may also predispose animals to the development of rectal prolapse (Jeong and Swon, 2023.

Rectal prolapse in cattle is generally classified into four types depending on the extent of tissue involvement. Type I involves only the mucosal layer, whereas Type II consists of complete prolapse of the rectal wall. Type III includes intussusception of the colon and rectum, and Type IV involves prolapse of the peritoneal reflection and may include abdominal viscera (Colahan *et al*., 1999).

Early cases can often be corrected by manual reduction and purse-string sutures. However, prolonged exposure of the prolapsed tissue leads to edema, venous congestion, ulceration, and ultimately gangrene. Gangrenous rectal prolapse constitutes a surgical emergency because the devitalized tissue cannot be replaced and poses a serious risk of septicemia and death. In such cases, surgical resection of the non-viable tissue followed by anastomosis of healthy rectal segments is the treatment of choice (Samy *et al*., 2022).

The present report describes the successful management of gangrenous rectal prolapse in a heifer by surgical resection and end-to-end rectal anastomosis.

Case History

A non-descript female heifer aged approximately 18 months and weighing around 180 kg was presented to the Veterinary Clinical Complex with a history of protrusion

of a mass from the anus for the past five days. The owner reported persistent straining and progressive enlargement of the prolapsed mass. No previous treatment had been administered.

Clinical examination revealed depression, reduced appetite and intermittent tenesmus. The rectal mass measured 18cm in length and was markedly edematous, congested and contaminated with fecal material and soil. The prolapsed tissue was dark red to black in color, cold on palpation and exhibited signs of necrosis and gangrene (Fig.1). The physiological parameters recorded were- rectal temperature: 102.5°F, heart rate: 72 beats/min, respiratory rate: 28 breaths/min. The animal exhibited mild dehydration and moderate discomfort. Based on history and clinical findings, the condition was diagnosed as gangrenous complete rectal prolapse (Type II).

Fig.1. Rectal prolapse

Because of extensive tissue necrosis and the impossibility of manual reduction, surgical resection and rectal anastomosis were undertaken.

Surgical Procedure

The animal was sedated using Xylazine @ 0.1 mg/kg body weight (bw) and ketamine @ 3 mg/kg bw. Caudal epidural anesthesia was administered at the first intercoccygeal space using 5ml of 2% lignocaine hydrochloride to abolish straining and provide adequate analgesia.

The animal was restrained in lateral recumbency with the hind quarter slightly elevated. The tail was secured and the perineal region was clipped and prepared aseptically. The prolapsed tissue was thoroughly cleaned with potassium permanganate solution to remove debris and contamination. Then povidone-iodine liquid was applied over the prolapsed mass. Sterile drapes were placed around the surgical field.

Fig.2. Application of stay suture to healthy rectal wall

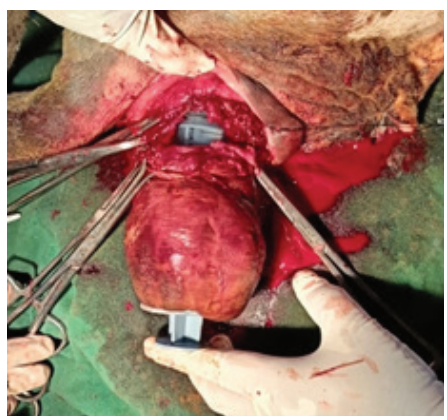

Fig.3. Surgical resection of prolapsed rectum

Fig.4. Anastomosis of rectal wall

Two stay sutures using silk were placed on opposite sides of the prolapsed rectum to prevent retraction of the healthy rectal segment during surgery (Fig.2). A 50 ml dispovan syringe was inserted in to the lumen of prolapsed rectum to guide the depth of incision. A semi circumferential incision was made through the gangrenous tissue approximately 2 cm distal to the viable tissue margin (Fig.3). The rectal lumen was carefully opened and the necrotic portion was partially resected. As the resection progressed, interrupted sutures of chromic catgut No. 1 were placed sequentially between the proximal and distal healthy rectal edges to maintain apposition and avoid contamination. Then, rest of the prolapsed mass was excised (Fig.5) and end-to-end anastomosis of the healthy rectal tissue was completed using simple interrupted sutures placed approximately 0.5 cm apart (Fig.4). Hemostasis was done using ligation and application of haemostatic forcep.

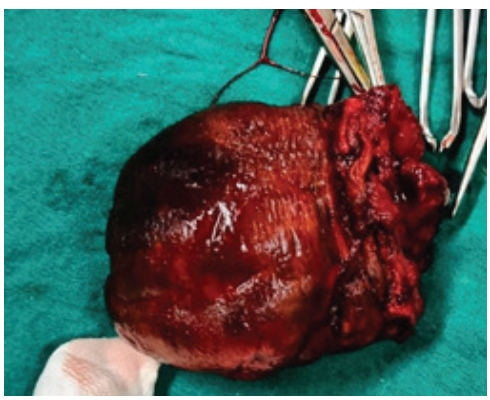

Fig.5. Excised rectal mass

Fig.6. After surgery

After completion of the anastomosis, the repaired rectum was lubricated with solution of glycerine and chramphenicol and gently replaced into the pelvic cavity (Fig.6). The anal opening was examined for patency and normal alignment of the anastomosed segment. The surgical site was again cleaned with sterile saline and antiseptic solution.

Post-operative Care

Post-operative management consisted of Inj. Enrofloxacin @5 mg/kg body weight intramuscularly for five consecutive days, Meloxicam at 0.5 mg/kg body weight intramuscularly for three days, intravenous fluids as required tocorrect dehydration, Vitamin B-complex supplementation for five days. The animal was maintained on fluid therapy and liquid diet for first five days of surgery. Then, soft and easily digestible feed consisting of green fodder and wheat bran were given for two weeks. Adequate drinking water was provided to prevent constipation. The owner was advised to avoid feeding coarse roughages during the recovery period. Daily monitoring was performed to observe defecation, appetite, and recurrence of prolapse.

Results and Discussion

The animal recovered uneventfully following surgery. Mild edema of the perineal region persisted for the first two postoperative days but subsided gradually. Defecation started within twenty-four hours with presence of slight amount of blood in faeces. Normal faeces resumed after five days of surgery and no signs of straining or constipation were observed. The animal's appetite improved significantly by the third postoperative day and complete clinical recovery was observed within two weeks. Follow-up examination after one month revealed no recurrence of prolapse or postoperative complications. These findings are supported by Sadan, 2019.

In advanced cases, gangrenous changes make replacement impossible and necessitate surgical excision. Resection and anastomosis of the rectum have been reported to provide satisfactory outcomes when performed under proper aseptic conditions and with meticulous tissue handling as reported by Haskell (2004).

The present case confirms that resection and anastomosis is a safe and effective procedure for the treatment of gangrenous rectal prolapse in cattle and can successfully restore normal rectal function with minimal complications. The success of the present case can be attributed to several factors such as prompt surgical intervention after diagnosis, complete removal of devitalized tissue, accurate end-to-end anastomosis with absorbable suture material, effective postoperative antibiotic and supportive therapy, appropriate dietary management to minimize straining during healing.

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