

A novel approach to address rectal sacculation associated with perineal hernia in dogs: a report of eight cases

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Perineal hernia is a common condition in older intact male dogs and is frequently associated with rectal sacculation, leading to chronic constipation, dyschezia, and straining. This study evaluated a novel surgical technique for the correction of rectal sacculation associated with perineal hernia in eight client-owned dogs. Diagnosis was established through clinical examination, plain radiography, and barium enema, which demonstrated a distinct lateral outpouching of the rectal wall. Following castration and routine presurgical management, the sacculated rectal segment was exteriorized through the hernial approach. A series of longitudinal inversion sutures, similar to Lembert's pattern, was placed to reduce the sacculation without entering the rectal lumen or excising rectal tissue. Standard perineal herniorrhaphy was subsequently performed. All dogs recovered uneventfully, with no postoperative complications, recurrence, infection, or suture dehiscence observed during a one-year follow-up period. The technique proved to be simple, effective, and less invasive, minimizing contamination risks associated with rectal resection procedures.

Keywords: Dog, Lembert's suture, Perineal hernia, Rectal sacculation

Perineal hernia is one of the most common disorders of the old uncastrated male dogs. This disease is characterized by rupture of one or more muscles of pelvic diaphragm. The rectal sacculation co-exists with chronic perineal herniation in dogs due to unilateral loss of support that allows expansion of the rectal wall to one side (Krahwinkel, 1983). This can lead to rectal deviation which can cause persistent rectal distension, impaired defecation, and straining. One of the techniques for the repair of this condition includes lateral resection of the sac as reported by Moraes *et al.* (2013), which demands the postoperative care like that of enterectomy and entero-anastomosis. In the present paper, a novel approach to address rectal sacculation associated with perineal hernia in dogs is discussed.

Eight client owned dogs that were presented to the Department of Veterinary Surgery and Radiology, NTR College of Veterinary Science, Gannavaram and diagnosed with perineal hernia with rectal sacculation (Fig.1A) were selected for the study. In these cases, chronic constipation, straining and weakening of the pelvic diaphragm led to rectal deviation (rectum

curves or bends to one side within the hernia sac) and sacculations. Rectal diverticulum (an outpouching of mucosa that occurs through a defect in the rectal wall) was precluded from the present study. The clinical signs noticed included swelling of one or both sides of the anus, severe constipation, dysuria, dyschezia, lethargy and inappetence. Rectal examination revealed hard fecal masses. The plain radiographs revealed distinct, localized bulge or pocket extending outward from the rectum with intact rectal wall. Barium enema highlighted the pouch and allowed for better differentiation from other potential abnormalities.

Radiographic signs of dogs having perineal hernia with rectal sacculation included an out pouching of the rectal wall (Fig. 1B). Barium enema clearly showed a distinct radiopaque pouch like structure that was present lateral to the main segment of the rectum (Figs. 2 A and B). These sacculations were identified on the right lateral aspect in seven cases while it was on the left lateral aspect of the rectum in one case. In a few cases, pneumocystography was performed to diagnose prostatomegaly and the biometry of prostate gland was assessed in terms of horizontal and conjugal diameters. The latter were found to exceed 70% of the sacro-pubic distance (the distance between the sacral promontory to pubis). The mean total erythrocytic count was $4.2 \times 10^6/\mu\text{L}$, the mean PCV was 35% and mean haemoglobin concentration was 9.2 g/dL, indicating anemia. The mean total leucocyte count was $15,620 \times 10^3/\mu\text{L}$, which was suggestive of varying degrees of bacterial infection. The mean serum potassium concentration was 3.9 mEq/L, indicating mild hypokalemia in all the cases.

Following routine presurgical screening, castration was performed in all cases. Enema was carried out to relieve the constipation and radical surgery was performed for the perineal hernia 1-2 weeks after castration. On the day of surgery, the animals were premedicated with atropine sulphate (0.044 mg/kg body weight, s.c.) 15 min prior to induction of anaesthesia. After intravenous catheterization, midazolam was administered (0.2 mg/kg, i.v.) followed by ketamine HCl (0.5 mg/kg, i.v.). After successful endotracheal intubation, general anaesthesia was maintained with isoflurane (3-4%) with oxygen. After preoperative preparation for aseptic surgery, the dogs

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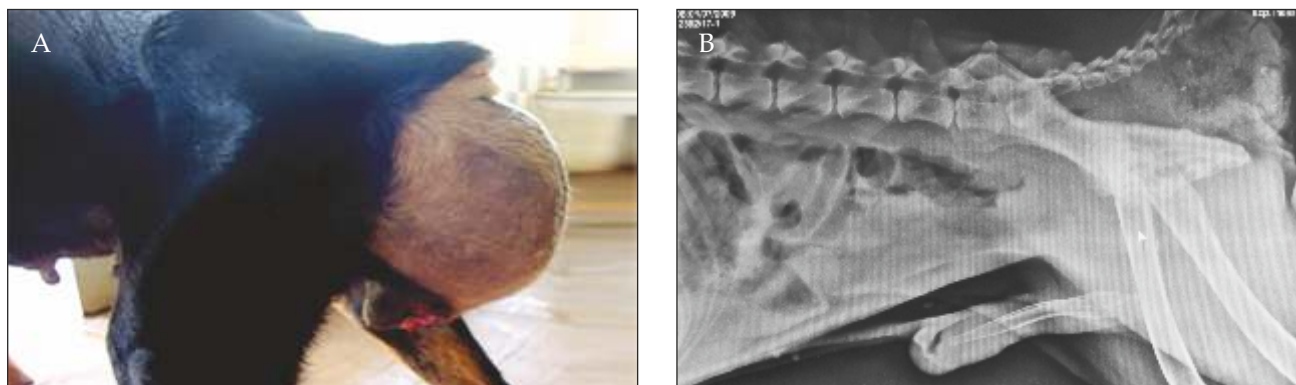
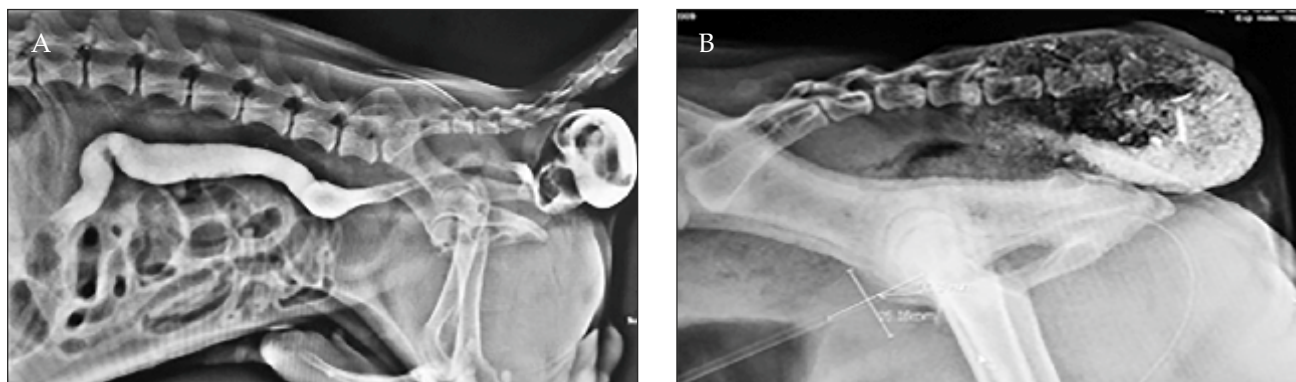


Fig. 1: (A) Perineal hernia with rectal sacculcation; (B) Plain radiograph showing elevated tail head due to the rectal sacculcation.



Figs. 2: (A and B) Distinct radiopaque pouch like structure present lateral to the main segment of the rectum.

were controlled in sternal recumbency with the hind quarters elevated. The tail was elevated and was fixed to the neck belt with the help of sterile gauze. The anal orifice was plugged with a sterile mop and was sutured with a purse string suture.

Schematic representation of the surgical procedure is detailed in fig. 3.

A skin incision was made over the hernial sac of the affected side, parallel to the anus and extending ventrally up to the ischial tuberosity. The subcutaneous tissues were dissected and the hernial ring was identified. The hernia contents were repositioned. The rectal sacculcation was recognized through digital palpation, and gently exteriorized (Fig. 4A). A series of inverted sutures resembling Lambert's pattern were placed involving the sacculated portion (Fig. 4B). The sutures were placed along the long axis of the rectum till the diameter of the sacculcation approximated that of the normal segment. The bites were taken carefully so that the mucosa was not penetrated in any instance. During the entire procedure, rectal lumen was not entered. After completion of the suturing, the rectum was relocated and perineal herniorrhaphy was carried out using standard operative protocols.

Postoperatively, Ringer's Lactate (20-40 mL/kg, i.v.) was administered for a couple of days. Antibiotic therapy with ciprofloxacin (10 mg/kg) and metronidazole (10 mg/kg) infusions were given i.v. for three days. Administration of cefotaxime (50 mg/kg) was started from three days prior to surgery and continued

up to one week following surgery. The dogs were advised to be maintained on liquid diet for initial 3-4 days followed by bland and laxative diet for another 10-15 days. All the dogs made an uneventful recovery. No complications were recorded during the follow up period of one year.

Perineal hernia may occur independent to other rectal diseases and the occurrence of rectal disease is a consequence of perineal hernia which develops initially (Krahwinkel, 1983). In the present study, perineal hernia was recorded on the right lateral side in 7/8 cases as also reported by (Gebretsadik *et al.*, 2024). The clinical manifestations of perineal hernia noticed in the present study included chronic constipation, dyschezia, a soft to hard swelling at the perineal region with or without pain as also reported by Rhodes (2004). The swelling at the perineal region was very hard and mimicking the texture of rectal tumour. Typically, in most cases of perineal hernia, the swelling is soft due to the contents like retroperitoneal fat, omentum, normal rectum, prostate gland, urinary bladder, or small intestines. But in the present study, the swelling was very hard due to the presence of dried faeces in the sac like extension of the rectum.

Radiographic findings of rectal sacculcation disclosed the presence of an external and intact pouch on the rectum and were consistent with those of Nanaboina *et al.* (2018). Further, to differentially diagnose various rectal diseases, sometimes contrast radiography like barium enema was also essential. Contrast radiographic findings of rectal sacculcation

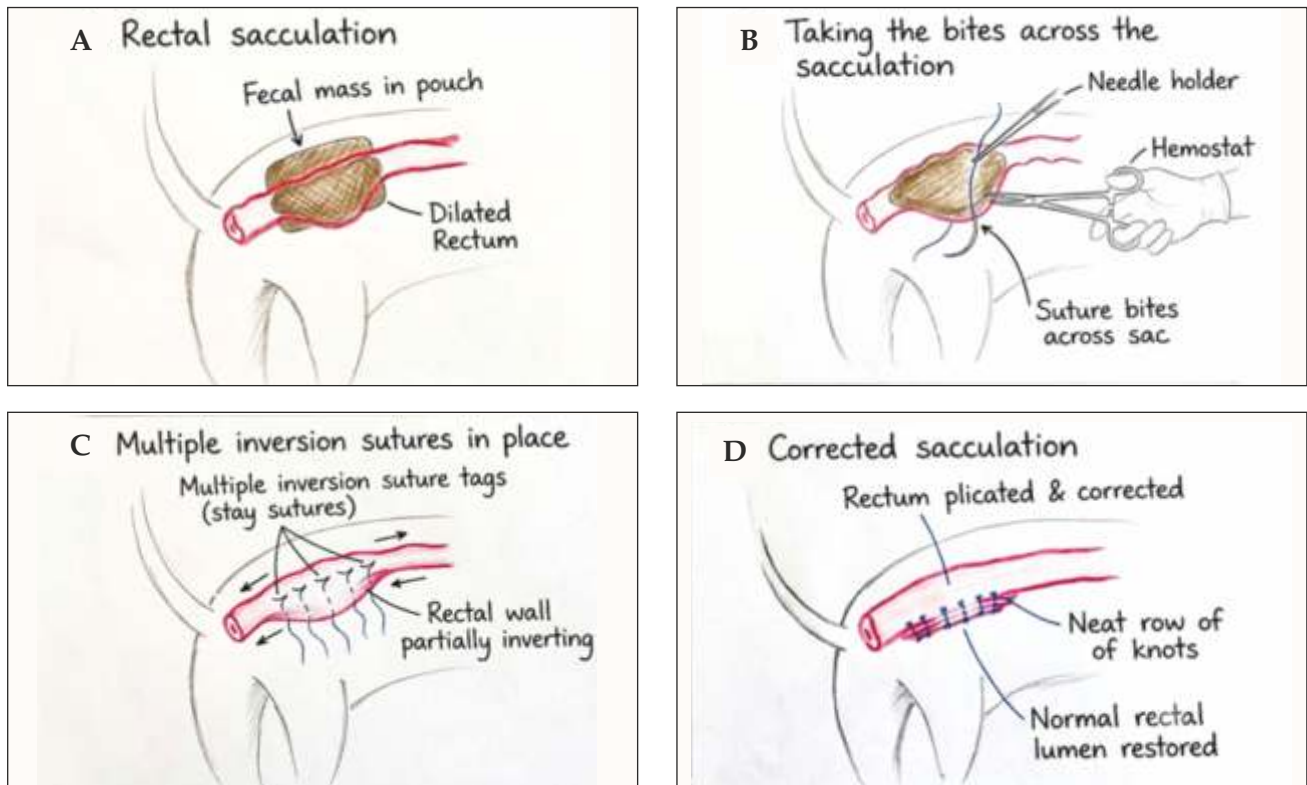


Fig. 3: Diagrammatic representation of the surgical procedure: A. Rectal sacculation, B. Taking the bites across the sacculation C. Multiple inversion sutures in place D. Corrected sacculation

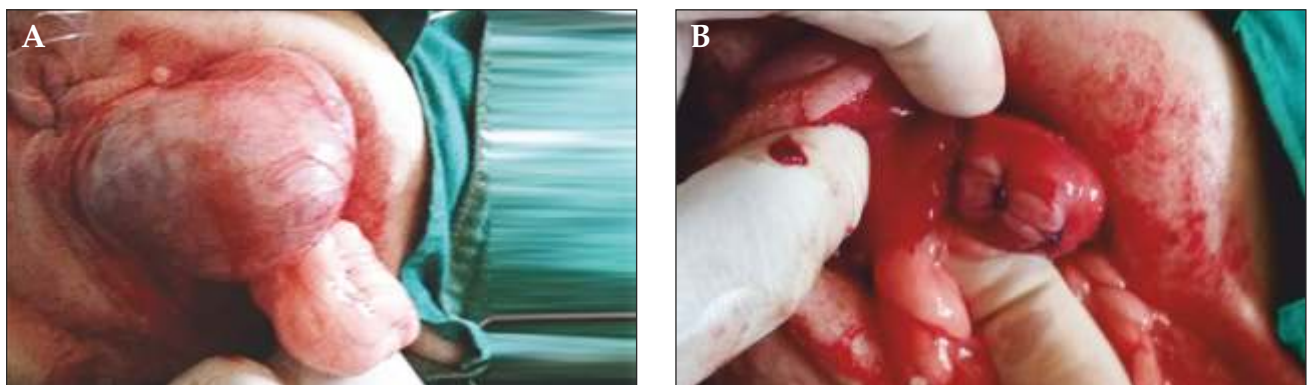


Fig. 4: (A) Exteriorization of the rectal sacculation; (B) Multiple bites taken across the sacculation.

were suggestive of an external and intact pouch on the rectum wall as also observed by Moraes *et al.* (2013).

Protrusion of the mucous membranes through a defect in the muscular coat of the rectum is diagnosed as a rectal diverticulum (Mehrjerdi *et al.*, 2013) and that can be excised using a lateral approach followed by standard herniorrhaphy. Some techniques for correction of rectal sacculation were described in literature (Nanaboina *et al.*, 2018; Lalzawmliana, 2019; Kumar *et al.*, 2023). Successful correction of rectal sacculation through lateral resection in dogs was also reported by Moraes *et al.* (2013). However, during diverticulectomy or sacculotomy, due to the rectal wall opening, the risk of possible contamination can be expected (Vnuk *et al.*, 2008). To minimize the risk of infection, a

series of inverted sutures was placed across the rectal sacculation in all cases, while carefully avoiding involvement of the mucosa. This approach yielded encouraging results. The simplicity of the technique, combined with the larger diameter of the rectal segment, may have contributed to the favorable outcomes observed. No evidence of suture dehiscence or postoperative infection was detected in any of the cases included in the study.

To eliminate the risk of recurrence due to possible hormonal imbalance (Machado *et al.*, 2020) and to minimize the surgical stress, the surgery was performed in two phases in the present study *i.e.*, castration in the first phase and perineal herniorrhaphy in the second phase. Although, it has not been possible to

show any appreciable variations in serum concentrations of either oestrogen/testosterone between dogs with and without perineal hernias (Ragni and Moore, 2011). The female dogs have larger and stronger pelvic diaphragm muscles and a larger sacrotuberous ligament which can be attributed to the lower incidence of perineal hernia in females. But contrary to this fact, one case of perineal hernia was diagnosed in a female dog, which could be attributed to the lethargic life style of the dog coupled with hand feeding with commercial foods.

In conclusion, placement of a series of inversion sutures along the longitudinal axis of the rectal sacculum represents a simple and effective technique for the management of rectal sacculum associated with perineal hernia in dogs, while potentially minimizing the complications associated with lateral resection.

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