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Surgical management of enterocutaneous fistula secondary to dog bite wound in a malabari goat

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Abstract

Enterocutaneous fistula is a rare case reported in animals. The underlying cause for the development of enterocutaneous fistula varies with every case. The goat was presented with the history of passing greenish fluid via a wound in the right lateral abdominal wall which occurred before one week due to dog bite. Clinical examination revealed normal physical parameters. The animal was having a normal feed intake with normal defecation and urination. Pain evinced on palpation of the wound followed by passing of greenish fluid through the wound. From the history and clinical examination the condition was tentatively diagnosed as a case of enterocutaneous fistula and decided to perform an emergency exploratory coeliotomy to correct the condition. A right flank coeliotomy was performed by making an incision across the wound. The necrosed ends of the intestine was resected along with the accompanying mesentery. The ends of the resected intestine was anastomosed. The abdominal wall muscles were closed in the standard surgical protocol. Post-operatively animal was treated with antibiotics and non-steroidal anti-inflammatory drugs. Animal made an uneventful recovery after the course of antibiotics along with supportive therapy.

Keywords: Enterocutaneous fistula, Enterectomy, Goat, Intestinal anastomosis

Introduction

Enterocutaneous fistula is defined as a fistulous tract connecting intestine to the skin. The underlying cause for the development of enterocutaneous fistula varies. It can develop due to pelvic trauma, intraperitoneal foreign body, dog bite and as a complication of surgery [1]. It is also reported that enterocutaneous fistula can also develop without any history of trauma or surgery [2]. Enterocutaneous fistula is commonly reported in large animals as a complication of umbilical hernia [3]. Complications secondary to umbilical hernia is the single most cause of enterocutaneous fistula in case of large animals [4,5].

The ruptured and necrosed intestine associated with enterocutaneous fistula has to be corrected by surgical resection followed by end to end anastomosis of the healthy intestinal segments. Failure to do so can even cause mortality in such cases. Improper technique of intestinal anastomosis can cause intestinal lumen impaction and obstruction at the site of anastomosis in case of goats [6]. Advanced techniques like staplers can be used for intestinal anastomosis. But suturing techniques are still commonly used for intestinal anastomosis in developing countries. This report describes the clinical findings and surgical management of enterocutaneous fistula secondary to dog bite wound in a Malabari goat.

Case history and Observation

A three year old female Malabari goat was presented to Veterinary Polyclinic, Mannarkkad with the history of passing greenish fluid from a wound in the right lateral abdominal wall which occurred one week back due to dog bite (Fig. 1a). On clinical examination all the parameters were found to be normal. The animal was having a normal feed intake with normal defecation and urination. On palpation of the abdomen surrounding the wound animal evinced pain followed by passing of semisolid greenish fluid from the wound. From history and clinical examination the condition tentatively diagnosed as a case of enterocutaneous fistula secondary to dog bite wound. It was decided to perform an emergency exploratory coeliotomy to correct the condition.

Surgical Technique

The doe was sedated using an intramuscular injection of xylazine hydrochloride at the dose rate of 0.1 mg/ kg body weight. Local infiltration analgesia was achieved by inverted L block in the right flank using 2% Lignocaine hydrochloride. The animal was placed on the surgical table at left lateral recumbency. The right lateral abdomen was prepared for aseptic surgery by scrubbing with povidone iodine.

A right flank coeliotomy was performed by making an incision across the wound. Carefully separated the muscle layers surrounding the fistula to enter the abdominal cavity. A part of the intestine was found to be adhered to the abdominal peritoneum near the opening of fistula. Manually separated the intestinal segment adhered to the abdominal wall (Fig. 1b). Ruptured intestinal segment with necrosed ends were identified. The necrosed ends of the intestine was resected (Fig. 1c) along with the accompanying mesentery leaving a V-shaped space in the mesentery which was closed using simple continuous suture pattern. The ends of the resected intestine was sutured using size 3-0 vicryl^b in an end to end simple continuous suture pattern to create intestinal anastomosis (Fig. 1e). Peritoneum along with muscle layers was sutured in two layers using size 1-0 vicryl^b in a simple continuous pattern (Fig. 1f). The subcutaneous tissue was sutured with size 1-0 vicryl^b in a continuous pattern (Fig. 1f). The skin was opposed using nylon by a horizontal mattress suture pattern.

Post-operatively animal was given Dicrysticin-S^c 3 ml intramuscularly for seven days and meloxicam 2 ml intramuscularly for three days. A single dose of tetanus toxoid was also given intramuscularly. Animals recovered from anaesthesia without any complication and recovered uneventfully. Oral feeding was restricted for initial 24 hours after surgery.

^b A product of Ethicon US, LLC

^c A product of Sarabhai Zydus Animal Health Limited.

Discussion

Although single and double layer suturing techniques are used in intestinal anastomosis, single layer suturing have shown superior result in intestinal anastomosi^[7]. Over the years different techniques of suturing has been tried in intestinal anastomosis with almost similar results. The ends of intestine has to be properly apposed for preventing post-operative complications. In a study conducted by Adamu *et al.* (1998) invaginating intestinal anastomosis was found to be better technique than everting intestinal anastomosis in goats^[6]. A simple full-thickness, continuous suture pattern provides a better apposition and less reduction in lumen diameter compared to other suture techniques^[8]. Medical management with antibiotics and nonsteroidal anti-inflammatory drugs before surgical correction can reduce infection and other adverse tissue reaction^[5]. This will provide a suitable condition for surgical correction of enterocutaneous fistula. The amount of intestinal fluid lost through the fistula will be minimal if the passage of intestinal contents are not affected^[9].

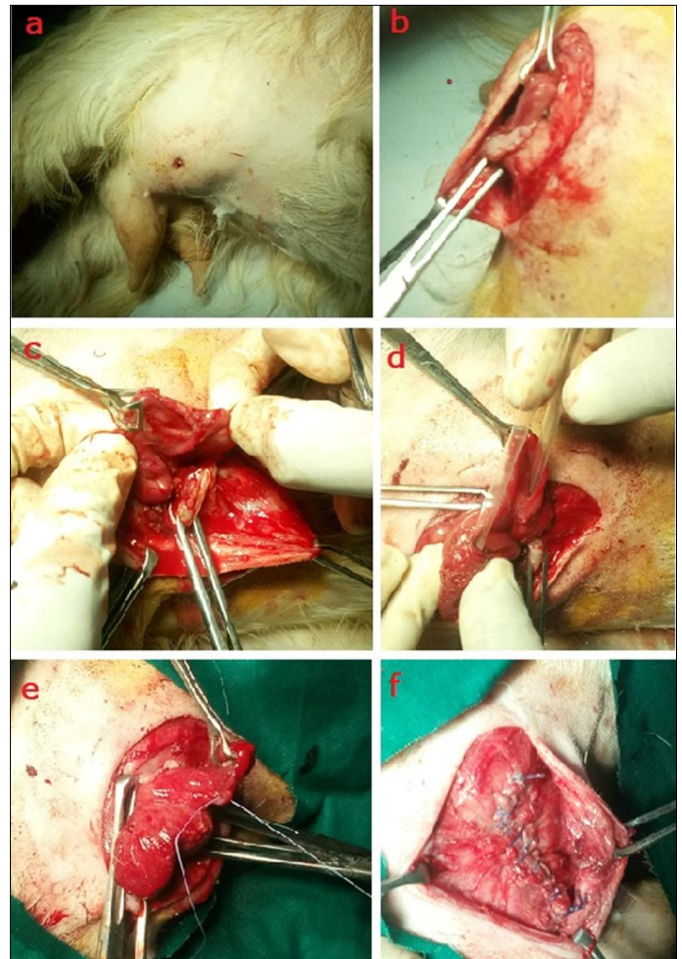


Fig 1a: Enterocutaneous fistula in right lateral abdomen. **B:** Separating the adhered intestine. **C:** After resection of the intestine. **D:** Checking patency of the intestine using sterile sheath. **E:** End to end intestinal anastomosis using simple continuous suture pattern. **F:** Muscle layers closed in simple continuous pattern

Bailey and Fretz (1983) reported that the calves suffering from enterocutaneous fistula will be in poor condition due to continuous loss of fluid and electrolytes^[10]. The need of emergency surgical correction in enterocutaneous fistula depends upon the physical condition of patient, uncontrolled and massive fluid loss from the fistula, severe electrolyte imbalances, weight loss, peritonitis, severity of infection and intestinal obstruction^[9].

Conclusion

Enterocutaneous fistula due to dog bite is uncommon in animals. In the present case the loss of intestinal contents through the fistula was not excessive. This might be the reason for normal physiological parameters and absence of any systemic illness. This paper describes about a rare case of enterocutaneous fistula secondary to dog bite wound and its surgical management in a Malabari goat by enterectomy and enteroanastomosis.

Ethical approval

This article does not contain any studies with human or animal participants performed by any of the authors. The article reports a clinical case presented at the Veterinary Polyclinic, Mannarkkad, Palakkad, Kerala. All protocols followed were as per the guidelines from the standard textbooks in Veterinary Surgery and were ethical.

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