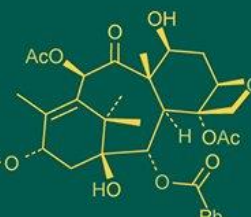
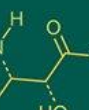
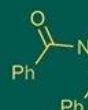


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Intussusception in cattle: Clinical presentation, surgical intervention in 6 cattles under total intravenous Anaesthesia

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Abstract

Intussusception is a significant cause of intestinal obstruction in bovines, often requiring prompt surgical intervention for successful recovery. The present study describes the clinical findings, surgical management, and outcomes of six cases of intussusception in cattle treated under total intravenous anaesthesia (TIVA). Six bovine cases (two heifers and four bullocks) aged between 1.5 and 6 years were presented with a history of anorexia, absence of defecation (4-15 days), colic, and cessation of rumination. Per-rectal examination revealed blood-tinged mucoid discharge and, in five cases, a characteristic sausage-shaped mass. All animals were subjected to right flank laparotomy under TIVA using a diazepam-ketamine-guaifenesin double-drip protocol. Due to severe adhesions and necrosis, enterectomy followed by end-to-end anastomosis was performed in all cases. A partially ripened banana was used as an intraluminal stent to maintain luminal patency during anastomosis. Postoperative management included fluid therapy, antibiotics, and analgesics. Five animals resumed defecation within 24 hours, while one recovered shortly thereafter. All animals recovered uneventfully. The study highlights the effectiveness of TIVA and innovative intraluminal support in successful surgical management of intussusception in cattle.

Keywords: Intussusception, cattle, intestinal obstruction, total intravenous anaesthesia, enterectomy, anastomosis, banana stent

Introduction

Intussusception, defined as the telescoping of one segment of the intestine into the lumen of an adjacent distal segment, represents one of the most common causes of intestinal obstruction (Tyagi and Singh, 1993) ^[18]. The condition is generally associated with disturbances in normal intestinal motility and predominantly occurs in the direction of peristalsis (Horne, 1991) ^[11]. Several etiological factors have been implicated in the development of hyperperistalsis, including parasitic infestations, abrupt dietary changes, and infectious enteritis of viral or bacterial origin. Additionally, structural abnormalities such as mural lesions, intraluminal masses, foreign bodies, and functional disturbances like abnormal contraction or knotting of the intestinal circular muscles may predispose to intussusception. The present study documents the surgical management of intussusception in six cattle performed under total intravenous anaesthesia.

History and clinical observations

A total of six bovine cases, comprising two heifers and four bullocks, were presented with a history of prolonged absence of defecation ranging from 4 to 15 days. The affected animals exhibited clinical signs consistent with intestinal obstruction, including moderate to severe colic, which was intermittently associated with behaviors such as kicking at the abdomen. Additional signs included complete anorexia and cessation of rumination, indicating significant gastrointestinal dysfunction. Prior medicinal management attempted in these cases failed to yield any clinical improvement.

On clinical examination, there was no evidence of ruminal distension in any of the animals, suggesting that the obstruction was likely located distal to the rumen. Rectal temperatures in all cases were within the normal physiological range; however, varying degrees of dehydration were observed, as evidenced by clinical parameters such as skin tenting and sunken eyes.

Per-rectal examination revealed the presence of characteristic blood-tinged, thick mucoid secretions in the rectum, along with a complete absence of fecal material, which is indicative of intestinal obstruction and mucosal irritation. In five out of the six cases, a firm, elongated, sausage-shaped mass was palpated near the pelvic brim on

the right side, which is considered a classical diagnostic finding suggestive of intussusception. However, in one bullock, the intussuscepted segment could not be palpated per rectum, possibly due to its cranial location or deeper abdominal positioning.

Table 1: The signalment of the animals along with detailed clinical observations and physiological parameters are summarized.

Sr. No.	Animal Description	Age (yrs)	Duration of illness (days)	Temp (°F)	Ruminal motility	Ruminal Protozoa-motility	Ruminal pH	Outcome of surgery
01	Deoni (F)	1.5	5	101.8	1/3 min	++	5	Survived
02	Red Kandhari (M)	6	10	100	0/3 min	+	9	Survived
03	Red Kandhari (M)	3.5	4	102.1	2/3 min	+++	6	Survived
04	ND (M)	4	6	102.3	1/3 min	+	8	Survived
05	Deoni (M)	3	8	101.4	1/3 min	++	6	Survived
06	Deoni (F)	2	9	99.9	0/3 min	+	10	Survived

Surgical and Therapeutic Management

All six animals were initially stabilized with intravenous fluid therapy to correct dehydration and electrolyte imbalance. Broad-spectrum antibiotics and antihistaminics were administered preoperatively to minimize the risk of infection and hypersensitivity reactions.

The surgical site (right flank region) was prepared aseptically by thorough scrubbing with antiseptic solutions, followed by application of 5% povidone-iodine. Sedation was achieved using diazepam administered intravenously at a dose of 0.2 mg/kg body weight. After an interval of approximately 5 minutes, general anaesthesia was induced using a double-drip technique consisting of 5% guaifenesin combined with ketamine (1 mg/ml) in 5% dextrose solution, administered intravenously at 1.5 ml/kg body weight. Anaesthesia was maintained using the same solution at a rate of 2.5 ml/kg body weight per hour throughout the surgical procedure.

Following induction, the animals were positioned in left lateral recumbency, and a standard right flank laparotomy was performed. Upon entering the abdominal cavity, the affected intestinal segment was carefully identified and exteriorized. In all cases, the intussuscepted segment exhibited severe adhesions and varying degrees of necrosis, rendering manual reduction impractical. Consequently, resection and anastomosis were performed. The mesenteric vessels supplying the affected segment were ligated, and the necrotic portion of the intestine was excised by enterectomy. The cut ends of the intestine were thoroughly lavaged with sterile normal saline to remove debris and reduce contamination.

To facilitate proper luminal alignment during anastomosis, a partially ripened banana, previously disinfected in 1% potassium permanganate solution, was inserted into both intestinal ends. This served as a temporary intraluminal stent, helping to maintain patency and ease the apposition of the intestinal segments. End-to-end anastomosis was performed using a simple interrupted suture pattern with absorbable suture material (Monocryl 2-0). The mesentery was subsequently sutured using a continuous lockstitch pattern.

After completion of anastomosis, the intraluminal banana was manually crushed and advanced distally to ensure

luminal patency and to check for any leakage or hemorrhage at the suture line. The intestinal loops were then repositioned into the abdominal cavity. Routine closure of the abdominal wall was performed in layers, followed by skin suturing.

Postoperative Management and Outcome

Postoperatively, all animals received intravenous fluids (4-5 liters per day) to maintain hydration. Analgesia was provided using meloxicam at a dose of 0.5 mg/kg body weight administered intramuscularly. Antibiotic therapy consisted of streptopenicillin administered intramuscularly at 10 mg/kg body weight for 7 days. Additionally, vitamin B-complex (10 ml, IM) was administered to support recovery.

Daily postoperative care included antiseptic dressing of the surgical wound using povidone-iodine and application of fly repellent ointment until complete healing was achieved.

Out of the six animals, five resumed defecation within 24 hours following surgery, indicating restoration of intestinal motility. The remaining animal passed feces after 24 hours. All animals recovered uneventfully without any postoperative complications, demonstrating the effectiveness of the surgical and anaesthetic protocol employed in this study.



Fig 1: Intestinal loops showing Intussusception



Fig 2: Banana placed between the resected part of the intestine.



Fig 3: Intestinal clamp applied proximal and distal end of the intussusception mass



Fig 4: Intestinal loop post anastomosis.



Fig 5: Resected mass of intussusception

Results and Discussion

Intussusception is most commonly reported in young calves, particularly those between 0-2 months of age (Strand *et al.*, 1993; Fubini and Trent, 2004; Erol *et al.*, 2015) [17, 10, 9]. However, its occurrence in adult cattle has also been documented (Dhanalakshmi, 2017) [5]. Earlier reports by Dixit *et al.* (1975) [7] indicated a higher incidence in calves aged 1-2 years. In contrast, the present study recorded all cases in adult cattle ranging from 1.5 to 6 years of age, suggesting that although less frequent, intussusception should not be overlooked in mature animals presenting with signs of intestinal obstruction.

Several etiological factors have been implicated in the development of intussusception, including parasitic infestation (Venugopalan, 1994) [19], intestinal inflammation, ingestion of cold water, and the presence of abscesses or neoplastic growths (Aher *et al.*, 1995; Yadav *et al.*, 2006) [1, 20]. Additionally, management-related factors such as feeding and watering immediately after heavy workload have been identified as potential predisposing causes. In the present study, one case involving a 6-year-old Red Kandhari bullock had a clear history of heavy physical exertion followed by excessive feeding, which may have contributed to the onset of the condition. However, in the remaining cases, no definitive etiological correlation could be established, indicating the multifactorial nature of the disorder.

Per-rectal examination remains a valuable diagnostic tool in bovine intestinal obstruction. Mestry *et al.* (2011) [12] reported successful palpation of an elongated, sausage-shaped mass in more than 50% of affected bovines. Similarly, in the present study, five out of six cases were tentatively diagnosed based on per-rectal findings, where a characteristic sausage-shaped mass was palpated near the pelvic brim. The diagnosis was subsequently confirmed through exploratory laparotomy, reinforcing the reliability of clinical examination in field conditions.

Early diagnosis and timely surgical intervention are critical determinants of survival in cases of intestinal obstruction. Delay in treatment can lead to irreversible intestinal damage, reducing the chances of recovery. In the present study, prompt decision-making and immediate laparotomy contributed to a high survival rate. The use of total intravenous anaesthesia (TIVA) with a double-drip technique provided satisfactory anaesthetic depth, excellent muscle relaxation, and ease of handling during exteriorization of the affected intestinal segment. These findings are in agreement with Dhawale (2018) [6], who reported effective muscle relaxation and surgical convenience using the double-drip technique in bovine urogenital surgeries.

Surgical correction of intussusception typically involves resection of the affected intestinal segment followed by end-to-end anastomosis, which is considered the standard approach in both cattle and horses (Constable *et al.*, 1997; Bernard *et al.*, 1998; Dabak *et al.*, 2001) [3, 2, 4]. End-to-end anastomosis is preferred due to its lower risk of postoperative complications such as stricture formation and leakage (Constable *et al.*, 1997) [3]. Erol *et al.* (2015) [9] also emphasized that intestinal resection and anastomosis remain the only viable treatment option when manual reduction is not feasible. In the present study, all cases required enterectomy due to the presence of severe adhesions and necrosis, which precluded manual reduction. Following

resection, end-to-end anastomosis was successfully performed in all animals, resulting in uneventful recovery without postoperative complications.

Manual reduction of intussusception is only possible in early cases where there is minimal adhesion between the intussusceptum and intussusciptens (Erkel *et al.*, 2003). However, such attempts may risk serosal tearing and vascular compromise. In the present cases, advanced pathological changes, including severe adhesions and necrosis, made manual reduction impractical, thereby necessitating surgical resection.

An innovative aspect of the present study was the use of a partially ripened banana as an intraluminal stent during anastomosis. This technique, previously described by Pitlawar *et al.* (2010) ^[14] and Patel *et al.* (2019) ^[13], was found to be effective in maintaining luminal patency and facilitating accurate apposition of intestinal ends. In all cases, the use of the banana aided in achieving a secure anastomosis without any complications such as leakage or obstruction, demonstrating its practical utility in field conditions.

Postoperative recovery in all animals was satisfactory. Skin sutures were removed between 15 to 20 days post-surgery, following complete wound healing. All animals regained normal appetite and resumed physiological functions, including defecation, within a short period, indicating successful restoration of intestinal continuity and function.

References

1. Aher VD, Panchbhai VS, Moregaonkar SD, Salunke VM. Intussusception due to mastocytoma in a Doberman bitch. *Indian J Vet Surg.* 1995;16:62-63.
2. Bernard WA, Reef VB, Reime RJM, Humber KA, Orsini JA. Ultrasonographic diagnosis of small intestinal intussusception in three foals. *J Am Vet Med Assoc.* 1998;194:395-397.
3. Constable PD, St Jean G, Hull BL, Rings DM, Morin DE, Nelson DR. Intussusception in cattle: 336 cases (1964-1993). *J Am Vet Med Assoc.* 1997;210:531-536.
4. Dabak M, Unsaldi E, Gul Y. Diagnosis and treatment of intussusception in a cow. *Turk J Vet Anim Sci.* 2001;25:387-389.
5. Dhanalakshmi S, Naveen M, Satheesha. Surgical management of intussusception-A clinical study of six crossbreed cows. *Intas Polivet.* 2017;18(2):331-334.
6. Dhavale RT. Comparative evaluation of xylazine-ketamine-guaifenesin and ketamine-guaifenesin anaesthesia for urogenital surgeries in male cattle [thesis]. Nagpur, India: Maharashtra Animal and Fishery Sciences University; 2018.
7. Dixit SN, Sadana R, Arora RG. Intussusception in young animals: A report of five cases. *Haryana Vet.* 1975;14:21-22.
8. Erkert RS, Crowson CL, Moll HD, Bentz BG, Confer AW, Blaik MA. Obstruction of the cecocolic orifice by ileocecolic intussusception following jejunocecostomy in a horse. *J Am Vet Med Assoc.* 2003;222:1743-1745.
9. Erol M, Koc Y, Altan H, Erol H. Surgical treatment of a calf with jejunum intussusception: Case report. *Eurasian J Vet Sci.* 2015;31:60-62.
10. Fubini SL, Trent AM. Small intestinal surgery in cattle. In: Fubini SL, Ducharme N, editors. *Farm animal surgery.* USA: Elsevier; 2004. p. 242-252.
11. Horne MM. Colonic intussusception in a Holstein calf. *Can Vet J.* 1991;32:493-495.
12. Mestry GR, Patel PB, Patel JB, Mistry JN, Suthar DN. Intestinal obstruction in bovines and its surgical management-A clinical report of 12 cases. *Intas Polivet.* 2011;12:308-312.
13. Patel JB, Patel A, Sutaria PT, Patel PB, Patel AM. A new technique for correction of intussusception in Kankrej bullock. *Int J Curr Microbiol Appl Sci.* 2019;8(3):2108-2110.
14. Pitlawar SS, Salunke VM, Chaudhari KS, Yadav GU, Sangame AD. Management of intussusception in bullocks-New approach. *Intas Polivet.* 2010;11(2):220-221.
15. Smith DF. Intussusception in adult cattle. *Compend Contin Educ Pract Vet Large Anim.* 1980;11:S49-S53.
16. Smith DF. Bovine intestinal surgery: Part 5. *Mod Vet Pract.* 1985;66:405-409.
17. Strand E, Welker B, Modransky P. Spiral colon intussusception in a three-year-old bull. *J Am Vet Med Assoc.* 1993;202:971-972.
18. Tyagi RPS, Singh J. *Ruminant surgery.* 1st ed. New Delhi, India: CBS Publishers and Distributors; 1993. p. 209-216.
19. Venugopalan A. *Essentials of veterinary surgery.* 8th ed. New Delhi, India: Oxford and IBH Publishing Co.; 1994.
20. Yadav GU, Bhikane AU, Aher VD, Thorat MG, Markandeya NM, Masare PS. On standardization of diagnostic procedures and operative methodology in clinical cases of intussusception in bovines. *Intas Polivet.* 2006;10:4-7.