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Clinical Article

DIAGNOSIS AND SURGICAL MANAGEMENT OF INTESTINAL INTUSSUSCEPTION IN A YOUNG MURRAH BUFFALO BULL

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SUMMARY

A 2-year-old Murrah buffalo bull was referred to with a history of colic, lack of defecation, anorexia, sham drinking of water, dullness and depression. On physical examination, sunken eyeball, dry muzzle, sluggish rumination, reduced ruminal motility and oliguria were present. On clinical examination, the values for rectal temperature, heart rate and respiratory rate were 100.7° F, 88 beats/minute and 19 breaths/minute, respectively. On hematological examination, the values for Hb (g/dl) 11.5, PCV (%) 29.41, TLC (/µL) 7970, neutrophils (%) 58.80, lymphocytes (%) 36.80, eosinophils (2.90) and monocytes (%) 2.40. Per-rectal examination revealed hard coiled intestinal mass cranial to pelvic brim and mucoid creamish discharge was present in rectum. Based on history, clinical signs, physical examination, clinical examination, hematological examination and per-rectal examination it was tentatively diagnosed as intestinal obstruction. The animal was prepared for standing right flank exploratory-laparotomy under linear infiltration of local anesthesia. Exploratory laparotomy revealed intestinal intussusception. Intestinal intussusception was managed by intestinal resection and end-to-end enteroanastomosis. Postoperatively, the animal was treated with broad spectrum antibiotic, analgesic, fluid therapy and rumenotorics. The bull passed feces on the next day and made an uneventful recovery.

Keywords: Buffalo bull, Intussusception, Exploratory laparotomy, End-to-end enteroanastomosis

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Intestinal Intussusception occurs when a segment of the intestine telescopes into an adjacent intestine leading to intestinal obstruction. The outer receiving segment (intussuscipiens) and the inner inverting segment (intussusceptum) (Constable *et al.*, 1997). Among the ruminant population it is most common in cattle as compared to sheep and goats (Radostits *et al.*, 2000) although it is very rare in buffalo population. The exact etiology of intestinal intussusception is unknown but it is theorized that any of the factors that causes hyper motility of proximal segment and hypomotility of distal segment lead to telescoping of one segment of bowel into another (Fubini and Trent, 2004) leads to the formation of intussusception. Many predisposing factors have been identified such as diarrhea, intraluminal mass such as granulomas, abscess, tumor, drugs affecting GI motility (Nichols and Fecteau, 2017) drinking of cold water, jumping, parasitic infestation, focal lesions, polyps, abscess (Singh *et al.*, 2001; Yadav *et al.*, 2009) and heavy workload (Yadav *et al.*, 2009).

The clinical sign in cases of intestinal intussusception includes discomfort, anorexia and colic (Singh *et al.*, 2021). On per-rectal examination a hard sausage-like (Kushwaha *et al.*, 2012), spiral shaped mass (Singh *et al.*, 2021) tightly coiled (Pearson and Pinsent, 1977), distended loops (Smith, 1990) of intestine were consistent per-rectal findings. Fibrinous adhesions can be felt in the area and the cow may display a painful response to manipulation of the mass (Smith, 1990). Intussusceptions can be surgically treated by means of resection and end-to-end anastomosis or side-to-side anastomosis in both cattle and horses (Constable *et al.*, 1997; Dabak *et al.*, 2001; Fontaine and Rodgerson, 2001). Right flank laparotomy under local infiltration in standing position which is followed by intestinal resection and end-to-end anastomosis is the most common means of surgical correction in cattle (Constable *et al.*, 1997).

A 2 year old Murrah buffalo bull was presented with the history of colic which was evident for approximately 12 hours. There was cessation of feces, passage of creamish mucoid discharge from rectum, anorexia, sham drinking, dull and depressed, since last 2 days. On clinical examination, the values for rectal temperature, heart rate and respiratory rate were 100.7° F, 88 beats/minute and 19 breaths/minute respectively. On physical examination, sunken eyeball, dry muzzle, suspended rumination, reduced ruminal motility and oliguria were evident. On per rectal examination, palpation of hard coiled intestinal mass cranial to pelvic brim and mucoid creamish discharge was present in rectum (Fig. 1). Whole blood was collected for hematological analysis (Table 1). Based on history, signs, clinical and per-rectal examination it was tentatively diagnosed as intestinal obstruction and standing right flank

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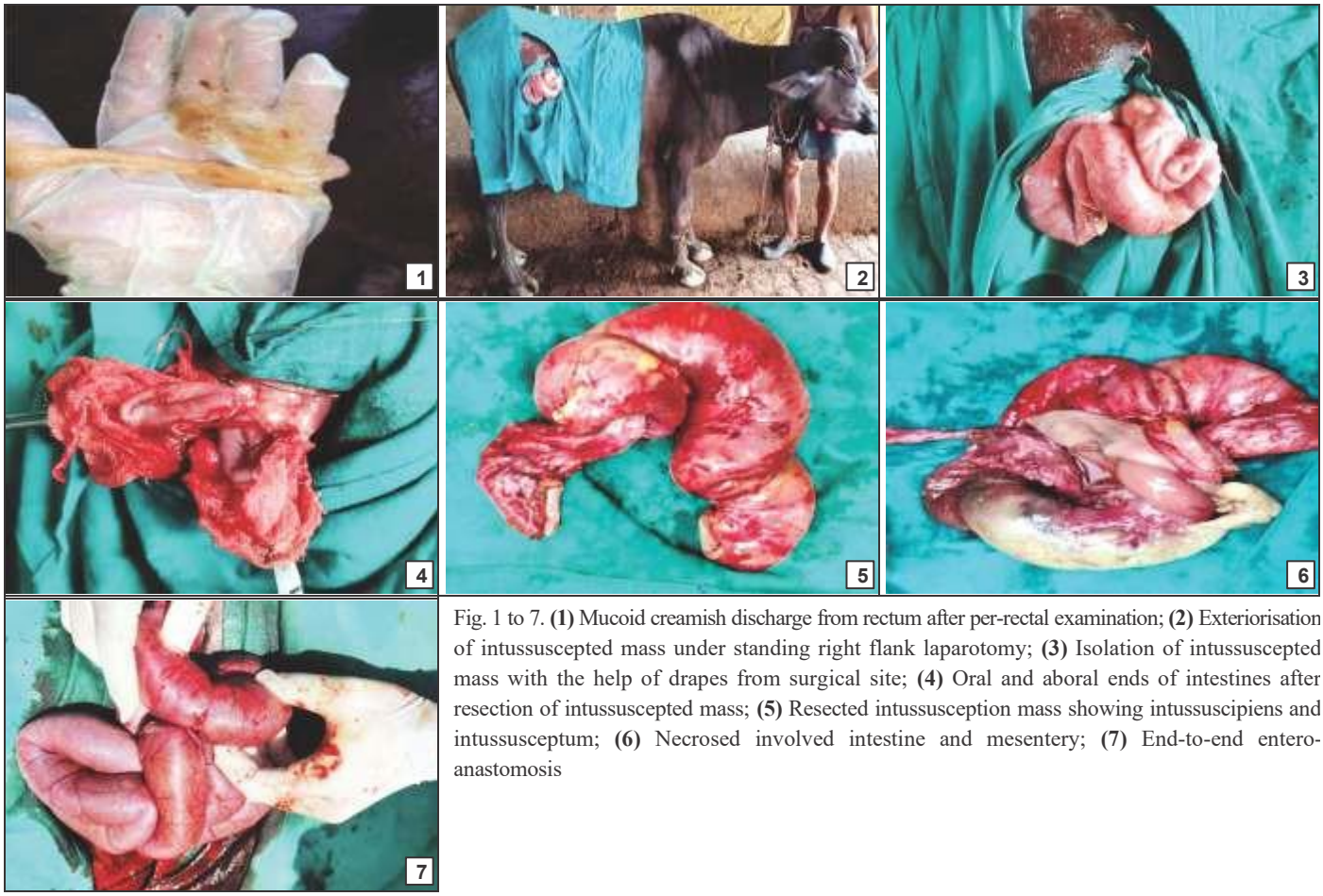

Fig. 1 to 7. **(1)** Mucoid creamish discharge from rectum after per-rectal examination; **(2)** Exteriorisation of intussuscepted mass under standing right flank laparotomy; **(3)** Isolation of intussuscepted mass with the help of drapes from surgical site; **(4)** Oral and aboral ends of intestines after resection of intussuscepted mass; **(5)** Resected intussusception mass showing intussuscipiens and intussusceptum; **(6)** Necrosed involved intestine and mesentery; **(7)** End-to-end entero-anastomosis

exploratory-laparotomy under linear infiltration of local anesthesia was planned for standing right flank exploratory-laparotomy, right paralumbar fossa was aseptically prepared for surgery and linear infiltration at the proposed site of incision with lignocaine was performed. Right flank laparotomy was performed by making 15-20 cm skin incision vertically starting 5 cm below the lumbar transverse processes. On exploratory laparotomy it was confirmed as intestinal intussusception. The intussuscepted mass was exteriorized through laparotomy incision (Fig. 2), isolated with the help of drapes from surgical site (Fig. 3), infiltration of mesentery was done with 2% lignocaine hydrochloride injection and major blood vessels were identified and ligated with Polyglactin 910 No. 1. Oral and aboral ends were identified, clamped and followed by resection of intussuscepted mass (Fig. 5). Oral and aboral ends were laid close (Fig. 4) and end-to-end entero-anastomosis was done with a simple continuous suture pattern followed by Cushing suture pattern by using Polyglactin 910 No. 2-0. Anastomosis was checked for patency and leakage, if any present. Postoperatively, Inj. Enrofloxacin @ 5 mg/kg body weight intramuscularly for 5 days and Inj. Meloxicam @ 0.2 mg/kg body weight intramuscularly for 3 days were administered. Antiseptic dressing of the wound was done with 5% povidone iodine daily. Animal started taking feed next day after passing the feces. The skin sutures were removed on the 10th day post-operative.

Table 1. Hematology of buffalo bull with intussusception

Test	Results	Normal Range[1]
Hb (g/dl)	11.5	8-15
PCV (%)	29.41	26-46
TLC (/µL)	7970.0	7000-10,000
Neutrophils (%)	58.80	25-30
Lymphocytes (%)	36.80	60-65
Eosinophils (%)	2.90	2-5
Monocytes (%)	2.40	5

Intestinal intussusception is most commonly reported in adult cattle among the ruminant population. However, duodenal intussusception was reported in buffalo by Khalphallah *et al.* (2016). The present case reports intestinal intussusception in buffalo bull. To the author's knowledge very little data is present related to intestinal intussusception in buffalo bull. In the present case violent colic and discomfort was expressed by the animal during the first few hours. This colic may be caused initially by the tension on the mesentery as it is drawn into

the intussuscipiens and it persists for 6-12 hours, after the involved segment of intestine along with mesentery becomes necrotic (Fig. 6) and signs of discomfort are reduced later on. The animal becomes dull, depressed and localized followed by generalized peritonitis development (Khalphallah *et al.*, 2016; Nichols and Facteau, 2017; Mann *et al.*, 2019). There was a history of reduced water intake (Mann *et al.*, 2019; Mir, 2018) and sham drinking "mimics normal drinking water" reported by Singh *et al.* (2021). Suspended rumination and anorexia was expected due to atonic rumen (Mann *et al.*, 2019). In haematological examination, there was neutrophilia along with lymphopaenia (Hussain *et al.*, 2015; Singh, 2021). On per-rectal examination no feces was seen, passage of creamish mucoid discharge from rectum was recorded and hard coiled intussusception mass was palpable (Hussain *et al.*, 2015; Khalphallah *et al.*, 2016; Nichols and Facteau, 2017; Mann *et al.*, 2019; Singh *et al.*, 2021). Therefore, if the intussusception is palpable rectally, it feels like tightly coiled loops of the intestine (Singh *et al.*, 2021). Standing right flank laparotomy under linear infiltration of local anesthesia followed resection and end-to-end entero-anastomosis was done and this procedure is mandatory to save the life of animal (Kushwaha *et al.*, 2012).Thus, intussusception in buffalo species is not so common however sporadic cases may occur in buffalo bull. The Buffalo bull showing history of colic evident for 10-12 hours, cessation of feces, per-rectal palpation of intussuscepted mass and evacuation of mucoid discharge from rectum should be suspected for intestinal intussusception. Standing right flank laparotomy under linear infiltration of local anaesthesia followed by resection and end-to-end entero-anastomosis is a mandatory procedure to resolve intestinal intussusception (Kushwaha *et al.*, 2012).

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