

Intestinal intussusception in an advanced pregnant Red Sindhi cow: Diagnosis and surgical management

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Abstract

A nine-month pregnant Red Sindhi cow was presented to the department with clinical signs of anorexia persisting for three days and the passage of mucoid feces mixed with blood clots from the rectum over last two days. Diagnostic investigations were undertaken and based on the findings, an emergency cesarean section was performed in conjunction with an exploratory laparotomy. Intraoperatively, the case was diagnosed as intestinal intussusception after extracting a live female calf through cesarean section. Surgical correction involved enterectomy followed by enteroanastomosis. Postoperative management included supportive and medicinal therapy. The cow made an uneventful recovery.

Key words: Intestinal intussusception; Red Sindhi cow; Caesarian section

Introduction

Intussusception is a serious and relatively uncommon form of intestinal obstruction in cattle, characterized by the telescoping of one segment of the intestine (the intussusceptum) into an adjacent segment (the intussusciens) (Bhavani and Kumar, 2023). Intussusception most commonly occurs in the small intestine (particularly the jejunum) or at the junction where the small intestine meets the large intestine or colon i.e. the ileoceco-colic junction (Suryawanshi et al., 2021). Intussusception appears to be more common of all cases of intestinal obstruction in cattle (Chakrabarti, 2014). Although the underlying cause is often unknown, intussusception can develop secondary to factors such as enteritis, intestinal parasites, abrupt dietary changes, mural granulomas or abscesses, intestinal tumors (particularly adenocarcinoma), mural hematomas, intense physical exertion, or the use of medications that impact intestinal motility (Mann et al., 2019). This condition can compromise blood flow, leading to ischemia, necrosis of the affected bowel segment, and, if untreated, death. While intussusception has been reported across all age groups in bovines, it is more frequently observed in calves than in adult cattle. Early signs of intussusception include abdominal pain, gradually decreasing appetite, lethargy, little to no fecal output, abdominal distension, and dehydration. Any remaining feces in the rectum may appear dark and may contain blood or mucus. As abdominal pain, intestinal necrosis, and dehydration worsen, the heart rate typically increases (Braun et al., 2023). Diagnosis relies on clinical examination supported by rectal palpation, ultrasonography, and exploratory laparotomy. This report describes the complete surgical management of intussusception in a full term red sindhi cow highlighting the challenges and considerations involved in treating such a case in late gestation.

Case history and Observation

A three-year Red Sindhi heifer cow after completing the nine months of pregnancy was presented to the Department of Veterinary Clinical Complex, Dr. G.C. Negi College of Veterinary & Animal Sciences with the history of anorexia since last three days. The animal was showing the signs of straining along with the presence of mucoid faeces since last two days. The owner also reported white colored discharge from the vulva once. The animal was previously treated with the rumenotronics and probiotics. Upon clinical examination the physiological parameters were recorded as mentioned in Table 1. No ruminal motility was found along with the tachycardia in the animal.

The trans rectal gynecological examination revealed Grade 3 fremitus, palpable fetal parts and positive fetal reflex. Because of 9 months pregnancy not much of the intestinal loops were palpable transrectally. The right side abdominal ultrasound scan was also done to check for any signs of obstruction. Distended intestinal loops were visible in the ultrasound (Fig. 1 and Fig. 2). Not much area of the intestines could be scanned because most of the area of the abdomen was occupied by the fetus. The estimation of electrolytes in the rumen liquor was also done (Table 1) along with the serum electrolytes estimation and the hematological and biochemical parameters (Table 2).

Treatment

As the animal was in the last month of gestation the induction of the animal was planned and done with Inj. dexamethasone sodium phosphate (40 mg) intramuscularly, Inj. Cloprostenol sodium (500 µg) was given through parenteral (intra-muscular) and 500 µg through intracervical route (Ahuja et al., 2024) along with the fluid therapy. After 20 hours trans vaginal examination was done and the status of external os and internal os was checked. The examination revealed 2-3 fingers dilation of the external os and the internal os was palpable. As the parturition has not occurred therefore, keeping in mind the condition of animal the decision was taken to perform the caesarean section that too from the right flank approach so that from the same incision exploratory laparotomy could be performed as the clinical signs were suggestive of the intestinal obstruction.

Table 1: Physiological Parameters (Day 1)

Parameter	Recording	Parameter	Recording
Heart Rate (60-80 beats/min)	148 bpm	pH	7-8
Respiration rate (15-30 breaths/min)	28/min	Protozoal motility	Grade 2
Mucus Membrane	Pink	Potassium (K)	13.897 mMol/L
Ruminal Motility	nil	Chloride (Cl)	66.2 mMol/L
Protozoal motility	Grade 2	Total calcium (TCa)	8.864 mg/dl

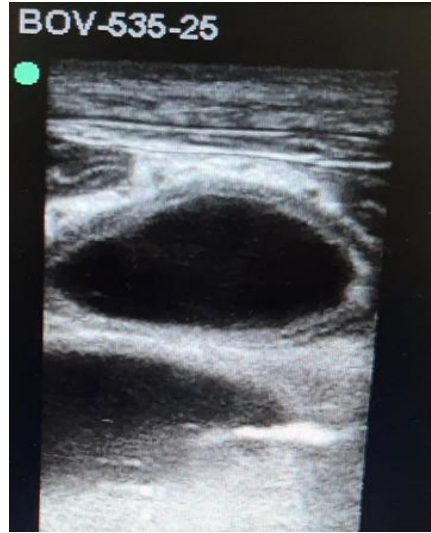
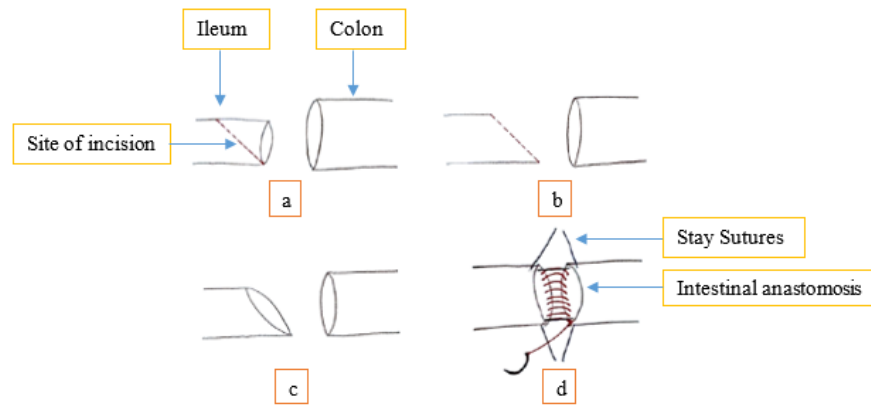


Fig. 1: Anechoic fluid filled intestinal loops



Fig. 2: Distended Intestinal Loop showing swirling movement (*)

**Plate 1:** Pictorial presentation of the intestinal anastomosis technique used

The procedure was done keeping the animal in standing position and linear infiltration of Inj. Lignocaine (2%) was done in the mid right flank region. After incision on the skin the abdominal muscles were incised and the uterus was palpated. During the exteriorization of the uterus the intussuscepted mass of the intestine was palpated and was tried to pull out the same. But it can't be done because the mesentery of the intussuscepted mass was stretched beneath the weight of the gravid uterus. Then the caesarean section was performed and single live female foetus was retrieved from the uterus. The uterus wall was then sutured with suture Polygalactin 910: No. 1. After suturing the uterus Inj. Oxytocin (100 IU) diluted in normal saline was administered for the involution of the uterus through intravenous route and then the intussuscepted mass was located and exteriorized (Fig. 3).

It was found that the intussusception has occurred at the ileocaeco-colic junction. Then, Inj. Lignocaine (2%) was infiltrated in the mesentery of the affected segment of the intestine (intussuscepted mass). The mesentery was then ligated with suture Polygalactin 910- No. 1 (Fig. 4) and the intussuscepted portion of intestine was resected (Fig. 5). So, after resection the incision on the ileum was made diagonal for the perfect apposition with the colon (Plate 1). The entero-anastomosis was done using suture polydioxanone No. 2-0 in two layers first of mucosa to mucosa and other serosa to serosa (Fig. 6). Then Inj. Metronidazole was poured into the peritoneal cavity and muscle layers were sutured with suture polygalactin 910 no. 1 in the routine manner followed by the suturing of skin with suture Polyamide No. 1. Inj. Dicrysticine 5 gm i/m b.i.d and inj. Megludyne @ 1.5 mg/kg b.wt i/v once a day was given to the animal post-operatively for next five days along with the rumenotronics. The animal was kept on liquid diet for next 7 days. Inj. Metronidazole @20 mg/kg b.wt was given intravenously for next two days after surgery.



Fig. 3: Intussuscepted Mass

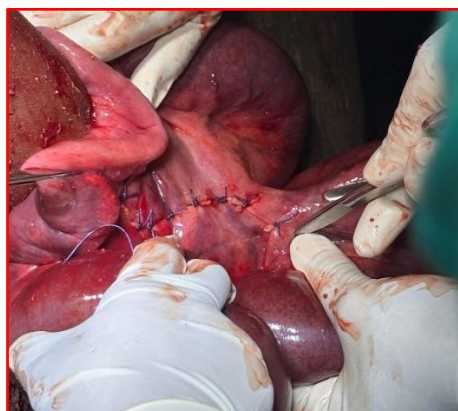


Fig. 4: Ligations of the Mesentery

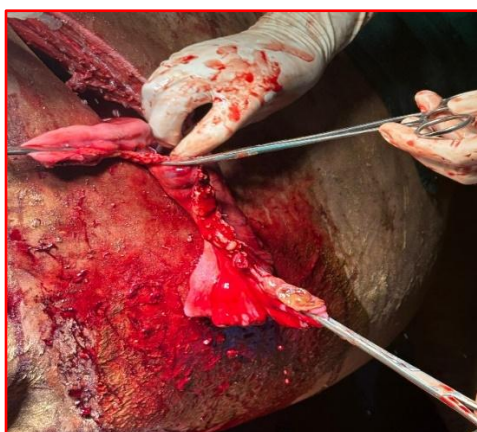


Fig. 5: Enterectomy



Fig. 6: Entero-Anastomosis

Table 2: Haemato-biochemical and Blood Electrolytes Parameters

S. No.	Parameter	Reference Range values	Recording	
			Day 1	Day 3
1.	WBC ($\times 10^3 / \mu\text{l}$)	1-12	9.06	7.44
2.	RBC ($\times 10^6 / \mu\text{l}$)	5-10	10.33	7.04
3.	Hb (g/dl)	8-15	17.5	12.3
4.	HCT (%)	24-46	47.4	32.4
5.	Glucose (mg/dl)	40-75	103.43	70.90
6.	Bilirubin (g/dl)	0-1.6	0.76	0.89
7.	SGOT (u/l)	9-49	88.02	127.25
8.	SGPT (u/l)	8-57	20.49	13.93
9.	ALKP (u/l)	47-127	150.23	127.46
10.	GGT (u/l)	6-17.4	35.10	25.10
11.	Albumin (g/dl)	2.5-3.8	3.53	2.94
12.	Total Protein (g/dl)	6.7-8.8	6.49	4.56
13.	Creatinine (mg/dl)	0.5-2.2	1.64	1.44
14.	BUN (mg/dl)	10-25	59.59	38.84

Next day after the surgery complete blood profile, blood biochemical and electrolytes estimation (Table 2) was done which revealed no major changes and the animal was then discharged. On follow up telephonically after 14 days it was found that the animal recovered uneventfully and the calf was also alive and doing well.

Discussion

Intussusception is a critical surgical emergency in bovines that can rapidly become life-threatening if not diagnosed and treated promptly. In the present case, the 9-month pregnant Red Sindhi crossbred cow developed signs of intestinal obstruction, including anorexia, abdominal pain, and passage of blood-tinged mucoid feces, which are classical clinical features of intussusception (Dabas et al., 2014). Intussusception represents a diagnostic challenge in the veterinary practice. The common diagnostic tools/methods used for the diagnosis include the history, location of the intussuscepted mass or palpation of the distended small intestinal loops in per-rectal examination (Kushwaha et al., 2012) and trans-rectal/abdominal ultrasonography of intussuscepted mass showing characteristic bull's eye appearance (Dabas, 2014). Pregnancy presents additional complications in diagnosing and managing abdominal disorders due to anatomical displacement of abdominal organs and altered physiological responses. The decision to perform a cesarean section prior to enteric surgery was critical for two reasons: to reduce intra-abdominal pressure and to safely access the site of obstruction without compromising the viability of the fetus or the dam. The ruminal pH was slightly alkaline which can occur after withdrawal of feed for 24 hours or longer or when microflora gets inactivated (Kiro, 2017). The ruminal chloride level was highly increased. Similar findings were made by Braun et al. 2023.

Conclusion

Right flank approach should be used for the caesarian section if it is to be done along with exploratory laparotomy. So that from same incision both procedures can be done as laparotomy for the intestinal intussusception/obstruction cases is difficult with the gravid uterus inside in the advanced pregnant animals. Surgical intervention via enterectomy and enteroanastomosis remains the gold standard for treating intussusceptions in ruminants. Early intervention, sterile surgical technique, and rigorous postoperative care are essential to the favorable outcome.

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