

MANAGEMENT OF A RECTAL PROLAPSE IN A JUVENILE BLACK RHINOCEROS (*Diceros bicornis*)

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Abstract

An 11-mo-old female black rhinoceros (*Diceros bicornis*) presented with an 18 cm long rectal prolapse. Within 2 hr, condition of the prolapsed tissue deteriorated which required surgical correction. Postoperative care included feeding mineral oil and fruits to keep the stool consistency soft, and anti-inflammatories. The animal was asymptomatic for 3 mo. One short episode of prolapse was observed at 3 mo. It resolved spontaneously but mineral oil was reinstated prophylactically. No etiology could be determined for the prolapse.

Resumen

Un rinoceronte negro hembra de 11 meses de edad presentó un prolapso rectal de 18 cm. de longitud. Dos horas después la condición del tejido prolapsado se deterioró al grado de requerir corrección quirúrgica. Los cuidados postquirúrgicos incluyeron alimentación con aceite mineral y frutas para mantener suave la consistencia de las heces. Además, se administraron anti-inflamatorios. El animal estuvo asintomático durante tres meses. Un pequeño prolapso fue observado a los 3 meses. Este se resolvió espontáneamente pero el aceite mineral fue reinstaurado profilácticamente. La etiología del prolapso no ha sido determinada.

Case Report

An 11-mo-old female black rhinoceros (*Diceros bicornis*) presented one morning with an acute onset of rectal prolapse. The juvenile was housed with her dam; they had access to a yard during the day and to a cement barn at night. There was no previous history of medical problem except intermittent soft stools. The soft stools were attributed to various “treats” (apples, bananas, corn-on-the-cob) that had been recently eliminated from their diet. Fecal analysis for ova and parasites had been consistently negative.

Visual examination revealed an 18 cm long rectal prolapse; the mucosa was bright red in color with no sign of necrosis. Fresh blood was observed on the tail. The animal appeared to be straining intermittently and feces were observed passing through the center of the prolapsed mucosa. The rhinoceros was otherwise alert, bright, and responsive.

Food and water were withheld in the event of a surgical intervention. Initial treatment was aimed at reducing the swelling and allowing the animal to retract the mucosa on its own. It included

application of a 50% dextrose solution (The Butler Co., Columbus, OH, USA) using a spray bottle. This was done twice at 30 min intervals with no significant improvement. Preparation H[®] (Whitehall Laboratories, Incorporated, New York, NY, USA) in mineral oil was also sprayed, but with no visible effect. Two hours after the initial discovery of the problem, the prolapse increased to 30 cm and shortly after, a few black spots started to appear on the rectal mucosa, indicating loss of vascularization. Immobilization for examination and reduction was elected.

The dam was sedated using a combination of butorphanol (Fort Dodge Laboratories, Incorporated, Fort Dodge, IA, USA) 30 mg i.m. and detomidine (Pfizer, Incorporated, West Chester, PA, USA) 20 mg i.m. via dart in the neck. Eighteen minutes later, she was walked into an adjacent pen and separated from her offspring. The juvenile was induced with carfentanil (Wildlife Laboratories, Incorporated, Fort Collins, CO, USA) 0.9 mg i.m. via dart in the neck. She became ataxic within 3 min; head pressing occurred at 4 min. A blindfold was placed at 6 min and the animal became recumbent. She was positioned in lateral recumbency with several pads under her shoulder to prop her up. The neck was extended and oxygen lines were placed into each nares (15 L/min). Two intravenous catheters were placed, one in the left radial vein and the other in the right ear vein.

Examination of the prolapsed tissue suggested that the mucosa was viable and replacement was elected over resection. Direct application of granulated sugar to the inflamed mucosa reduced the swelling within 7 min and allowed manual reduction of the prolapse. Two layers of purse string sutures were placed using #2 Dexon (Davis and Geck, Incorporated, Manati, PR). A 6 cm diameter opening was secured.

During the procedure, the animal received 250 mg flunixin meglumine (Banamine[®], Schering-Plough Animal Health Corporation, Kenilworth, NJ, USA) i.v., 3,600 units vitamin E (Schering-Plough Animal Health Corporation, Kenilworth, NJ, USA) i.m., 12.0 ml BoSe[®] (Schering-Plough Animal Health Corporation, Kenilworth, NJ, USA) i.m., 5.4 million units penicillin G benzathine/procaine (The Butler Company, Columbus, OH, USA) i.m., 1,500 units tetanus antitoxin (Sanofi Animal Health Incorporated., Overland Park, KS, USA) i.m., and 1.0 ml tetanus toxoid (Bayer Corporation, Shawnee Mission, KS, USA) i.m. Blood was collected for complete blood count, chemistry panel and serum banking. Reversal was achieved with 40 mg ($\frac{1}{4}$ i.v., $\frac{3}{4}$ s.c.) naltrexone (Wildlife Laboratories Incorporated, Fort Collins, CO, USA). The rhinoceros was standing within 4 min. The mother was partially reversed with yohimbine (Lloyd Laboratories, Shenandoah, IA, USA) 48 mg i.m. and was reunited with her baby shortly after.

Post surgical treatment was aimed at reducing inflammation (flunixin meglumine, 250 mg p.o. b.i.d.) and maintaining soft stool consistency (mineral oil 1 L mixed with pelleted diet, bananas and apples as laxatives). Tenesmus and diarrhea occurred for the first 48 hr. Tenesmus continued for an additional 18 hr without producing feces. Mineral oil was increased to 1.2 L b.i.d. and stools were passed again. No straining was observed after day 4. A short prolapse (2-3 cm long) was observed on postoperative days 7 and 8 with very loose stools. Mineral oil was decreased to 1 L b.i.d. Flunixin meglumine was discontinued on day 11. By day 21, the stools had a normal consistency and mineral oil was decreased to 250 ml b.i.d. Mineral oil was decreased to 125 ml b.i.d. on day 23, to 125 ml s.i.d. on day 25 and discontinued on day 36. At this time, fecal consistency was normal and no prolapse was observed. On day 97, the keeper reported an 8 cm prolapse of bright red mucosa. They washed her twice and the prolapse retracted spontaneously within 5 min. She was placed under

observation for 48 hr and 1 L of mineral oil was given s.i.d. on pellets. The recurring prolapse decreased progressively over the next 48 hr and resolved by the third day.

Discussion

Four types of rectal prolapse (I-IV) have been described, based on the severity of the condition and the structures involved (Table 1). In this case, a type III was suspected and evolved rapidly to a type IV (complete prolapse with intussusception of rectum through the anus). Standing reduction with sedation is recommended in domestic animals. However, general anesthesia was elected for easier access and manipulation of the animal. The reduction technique used was similar to the one described for domestic animals. However, because of the noncompliance of the patient, it was impossible to open the purse string four times per day to allow for defecation. The purse string is usually removed 2-4 days postoperatively. Instead, we allowed an opening of about 6 cm and used an absorbable material. Laxatives and anti-inflammatory drugs were administered as excessive straining was anticipated. Because of the length of the sphincter, two layers of sutures were placed 3 cm apart. No mucosal resection was necessary since the mucosa appeared viable and was easily reduced at the time of reduction.

Rectal prolapse may occur secondary to parasitism, pneumonia, dystocia, space occupying lesions, obesity, enteritis, colitis, liver disease, etc. Prognosis for rectal prolapse depends on early identification, rapid intervention, and on the amount of damage to the mucosa. Complications include recurrence, rectal strictures, pararectal abscess and obstipation. In our case, the cause of the prolapse remains obscure but the intermittent, chronic soft stool may be at the origin of the problem. Irritation of the colon by protozoans has also been considered.

LITERATURE CITED

1. A.B. Pipkin. 1990. Rectal prolapse in ruminants and horses. In: B.P. Smith Large Animal Internal Medicine. First ed. pp. 835-836.

Table 1. Classification of rectal prolapse.

Type I	-rectal mucosal and submucosal tissue protrudes through the anus -small circular swelling
Type II	-complete prolapse with eversion of part or all of the ampulla recti through the anus -small circular swelling
Type III	-complete prolapse with invagination of the small colon into the rectal canal but it does not extend past the anus -appears larger than Type I and II
Type IV	-complete prolapse with intussusception of the rectum through the anus -appears as a long tubular structure hanging from the anus.
