Table 3. Serum Enzyme Data for Seven Animals with Clinical Illness.

Condition	SGOT	СРК	LDH	Alk. P'tase
Jaw abscess	80	14	200	36
Retained placenta	88	10	210	28
Catarrhal bronchitis	880	3190	1380	910
Encephalitis	300	3410	760	230
Jaw abscess	190	36	250	92
Jaw abscess	54	108	197	158
CNS problem	71	1482	512	328

All enzyme units are mIU/ml

# RECTAL MUCOSAL PROLAPSE IN AN INDIAN RHINOCEROS (*Rhinoceros unicornis*) P.K. Ensley, D.V.M.\* M. Bush, D.V.M.\*\*

#### INTRODUCTION

A rectal prolapse occurs when the terminal portion of the digestive tube falls out. When this occurs in the breeding female Indian Rhinoceros at the National Zoological Park, the veterinary staff falls out.

Rectal prolapse has been observed in all species of domestic animals. Although rectal prolapse in an adult animal is usually associated with conditions that stimulate excessive straining or increased abdominal pressure, mucosal prolapse, without accompaniment of the rectal wall, generally occurs without apparent cause<sup>1</sup>.

\*Intern, Exotic Animal Medicine and Surgery, National Zoological Park, Smithsonian Institution, Washington, D.C. 20009

\*\*Head, Office of Animal Health, National Zoological Park, Smithsonian Institution, Washington, D.C. 20009

## CASE HISTORY

A 13-year-old Indian Rhinoceros (Rhinoceros unicornis), estimated weight 2,100 kg. was examined because of a pendulous mass protruding from the rectal opening. A closer inspection was facilitated after immobilization with  $etorphine^{a}$  (2 mg) intramuscularly. The patient reached sternal recumbency 9 minutes after etorphine administration. The mass (Fig. 1) was determined to be edematous rectal mucosal tissue protruding from the ventral floor of the rectum from about 3 o'clock to 9 o'clock and suspended 15 cm from the rectal orifice. The edematous mucosal surface was not significantly traumatized. After cleansing the prolapsed portion of the mucosa, granulated sugar was massaged gently on the surface for its hydroscopic action. Reduction of the prolapse was accomplished with relative ease.

a M-99. D-M Pharmaceuticals, Inc., Rockville, Md.



## Figure 1

Lidocaine<sup>b</sup> and corticosteroid<sup>c</sup> ointments were applied to the reduced mucosal surface areas. A temporary purse string suture of # 4 gut was placed 2 cm outside the mucocutaneous junction. Systemic steroids<sup>d</sup> and antibiotics<sup>e</sup> were given subcutaneously.

b Xylocaine Ointment 5%. Astra Pharmaceutical Products, Inc., Worcester, Mass.

c Panalog Ointment. E.R. Squibb and Sons, Inc., Princeton, N.J.

d Azium. Schering Corporation, Kenilworth, N.J.

e Flo-Cillin. Bristol Laboratories, Syracuse, N.J.



#### Figure 2

Forty minutes following etorphine administration, diprenorphine<sup>f</sup> (4 mg) was given intravenously in the ear vein. The animal was standing 3 minutes following antagonist administration. Ten minutes after standing, the purse string suture broke with the first passage of fecal material and the mucosal prolapse reoccurred.

Sixteen hours later, a second immobilization was initiated<sup>2</sup>. Again, etorphine (2 mg) was given intramuscularly. Sternal recumbency was reached 27 minutes after etorphine administration. The prolapsed edematous tissue remained relatively untraumatized. To greater

f M50-50. D-M Pharmaceuticals, Inc., Rock-ville, Md.

facilitate the reduction of the edema within the mucosa, multiple punctures were made with a 16-gauge needle prior to and during massage with granulated sugar. This procedure dramatically reduced the edematous mucosal mass by two-thirds (Fig. 2). It then became easier to observe the mucocutaneous junction (Fig. 3) prior to reduction of the prolapse. The second attempt at a purse-string suture technique consisted of suturing several umbilical tape loops in a circumferential pattern 5 cm distal from the mucocutaneous junction (Fig. 4)<sup>3</sup>. A single piece of umbilical tape was used to lace together the preplaced umbilical tape loops (Fig. 5). A purse-string closure was used on the ventral one-half of the rectal orifice. The rectal opening appeared only slightly inverted (Fig. 6). Again, lidocaine and corticosteroid ointments







Figure 4



Figure 5

Figure 3



### Figure 6

were instilled over the affected mucosal tissue. A tranquilizer<sup>g</sup> (30 mg) was given intramusculary to the patient 42 minutes after etorphine administration to produce a calming effect after recovering from etorphine. No antagonist was given as the patient was standing calmly 95 minutes after immobilization. Two hours after standing, fecal material passed successfully without incident.

For the following three days, the patient remained calm. All roughage was removed from the diet and minimal amounts of sprouted barley and pelleted food were allowed. Bulk fecal formation was reduced and the stools produced were relatively loose. Five days following the

g Acepromazine. Ayerst Laboratories, Inc., New York, N.Y.

second immobilization, an examination of the rectal area showed some of the umbilical tape loops and purse-string suture to be missing. Rectal palpation revealed the presence of a 2 to 3 cm elevation of mucosa 15 cm inside the rectal opening on the rectal floor. The remaining umbilical tape loops were removed. Two weeks following the prolanse, a gradual return to the original diet was made without incident.

## DISCUSSION:

Several factors contributed to the successful outcome of this case and deserve attention. The reduction of the edema in the prolapsed rectal mucosa was successfully accomplished by making numerous punctures in the mucosa in conjunction with granulated sugar. A suture pattern reinforcing the ventral-most portion of the rectal orifice prevented further reoccurrence of the prolapse but allowed passage of feces dorsally. By using a tranquilizer and not administering the etorphine antagonist after the second immobilization, the patient remained quiet and demonstrated only a mild appetite. The removal of roughage and reduction of food intake to minimal amounts aided in reducing the gastrointestinal activity.

These factors, in concert, determined the successful outcome of this case.

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