

Constipation in Snakes with Particular Reference to Surgical Correction in a Burmese Python (*Python molurus bivittatus*)

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INTRODUCTION

Constipation is not an uncommon presentation in reptile practice^{4,3}. The captive environment and in particular diet and water provision play important roles in the etiology of this condition, although diseases of the gastrointestinal tract and metabolic disturbances can also be involved. Chelonia, lizards and snakes can all be affected, but this paper will concentrate on snakes.

Snakes are often considered as naturally lethargic animals, but in captivity the size of their vivaria often prevents normal exercise. Indeed, many larger species of boa and python are often kept in enclosures that do not even allow the snake to fully stretch out. Forced confinement and reduced activity can certainly hinder the proper peristaltic movement of ingesta through the gastrointestinal tract. As a consequence of overfeeding and reduced activity, obesity can also impede the passage of ingesta. Inadequate temperature will obviously slow metabolism, the digestion of food and the rate of peristalsis. The nature of the diet is also important with heavily furred rodents such as guinea pigs or long haired hamsters producing greater quantities of indigestible keratin which forms the bulk of the fecal output. Freezing rodents for a prolonged period reduces the water content of the prey and therefore feeding these items may lead to intestinal dehydration. Snakes which are dehydrated are also prone to constipation probably because of the lack of digestive juices that enter the alimentary tract.

Treatment options

Constipation is in most cases a medical problem and treatment should include an assessment of husbandry and nutrition. Most affected snakes present with a history of anorexia and absence of defecation, of several weeks to several months duration. Lack of defecation usually precedes the anorexia. In neglected cases, distension at the site of constipation may be obvious, and soft to hard swellings may be palpated. The radiographic appearance of several dense fur-balls is usually diagnostic.

In some cases, permitting the snake to bathe in warm water is sufficient to induce defecation. However, if unsuccessful, the hydration status of the snake should be evaluated. The simplest approach is to assess the packed cell volume, but a limited biochemistry panel (total protein,

albumin, globulin, calcium, phosphorus and uric acid) may be useful if dehydration secondary to renal disease is suspected. Unless dehydration is severe, balanced electrolyte fluids at 20-30 ml/kg/day should be given orally by stomach tube. Medicinal liquid paraffin can be used at is best mixed 50:50 with the electrolyte solution with the mixture administered at 20-30 ml/kg/day. Commercial dog and cat laxatives can also be employed. For lower intestinal and colonic constipation, enemas can be given⁵. The author prefers the use of water or a water/paraffin (50:50) mixture for reptile enemas. The use of soapy enemas can cause colitis and cloacitis. The fecal masses may be milked down the body to the cloaca while in the larger, pythons, a lubricated, gloved hand can be inserted into the cloaca and up the colon to facilitate the manual removal of feces. Sedation or anesthesia may be required to adequately relax the snake for such a procedure.

Several days to a week or more of medical therapy and gentle massages may be required before the constipation is resolved. In refractory cases, the use of dioctyl sulfosuccinate (0.3 ml/kg p.o. q 24 hr for 7 day) and metoclopramide (0.06 mg/kg p.o. q 24 hr for 7 day) may be used. In cases that remain unresponsive, intestinal disease or metabolic disturbances should be considered and surgical options explored.

CASE REPORT

To demonstrate a surgical approach to constipation a case involving a female adult Burmese python (*Python molurus bivittatus*) will be described.

The snake presented with a 4 mo history of anorexia. The pronounced swelling of the caudal third of the snake was mistaken as a sign of gravidity by the owner. Radiographs demonstrated the presence of fecal material and no eggs. Several solid fecal masses were removed during cloacal/colonic examination and 300 ml of water was given as an enema. Liquid medicinal paraffin was administered at 100 ml p.o. q 24 hr for 5 treatments. The snake presented 3 wk later having only passed a small hard mass. Intermittent cloacal prolapse had also been recorded by the owner. The snake was admitted for coeliotomy.

The 50 kg snake was premedicated with 0.3 mg atropine (Atrocare, 0.6 mg/ml, Animalcare Ltd) i.m. and 250 mg of enrofloxacin (Baytril, 2.5%, Bayer), i.m. Anesthesia was induced with 2500 mg of ketamine (Vetalar, 100 mg/ml, Parke-Davis) i.v. (diluted 50:50 with sterile water) into the ventral tail vein¹. The snake was intubated with a 2 mm endotracheal tube and placed on halothane gas (1-2%) and oxygen (2 L/min). Intermittent positive pressure ventilation every 30 sec was performed throughout the anesthetic period. An internal examination of the colon revealed the presence of a wall of soft tissue about 50 cm cranial to the cloaca. A 25 cm paramedian incision was made at the junction of the ventral scutes and lateral scales, centered 65 cm from the cloaca. The muscle layers were incised and the extensive fat bodies and connective tissues were reflected to reveal the grossly distended colon. The distended colon appeared to have caused a partial volvulus. The colon was exteriorized and a 6 cm longitudinal incision was made in the wall of the colon. The fecal material was evacuated from the site and as far cranially and caudally as possible. Additional operators massaged material towards the surgical site. The affected segment of colon was very thin and grossly altered in appearance. Given the chronic nature of the constipation and the gross changes that were apparent it was decided to perform a colonic resection and end to end anastomosis using 5/0 Vicryl in a single simple interrupted pattern². A 25 cm segment of colon was removed and the anastomosis removed the flaccid tissue that threatened to cause a cloacal prolapse. The muscle layer was closed using 2/0 Vicryl in a simple interrupted pattern, and the skin was closed with 2/0

nylon in an everting horizontal mattress pattern. Post-operatively, the snake received 250 mg enrofloxacin (Baytril, 2.5%, Bayer), i.m. q 48 hr for 5 treatments.

Nothing was permitted by mouth for 5 day, and then only water for a further 6 wk. Skin stitches were removed and feeding commenced 6 wk after surgery. The owner was advised to feed freshly killed rodents or to inject defrosted rodents with water to increase their fluid content. The snake continued to make a full recovery with normal feeding and defecation reported by the owner.

DISCUSSION

Most cases of constipation in reptiles can be resolved with medical management. However, in long standing cases where chronic changes have occurred to the gastrointestinal tract surgery may be indicated. This case demonstrates a successful surgical outcome despite the chronic nature of the condition and the financial necessity of using ketamine and halothane over propofol and isoflurane.

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