Surgical correction of an intestinal obstruction in a turtle

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An 18-year-old female red-eared slider (*Trachemys scripta elegans*) was examined because of a 1-month history of dysphagia progressing to partial anorexia. Physical examination revealed a weak, thin, 500-g turtle with a hard, abnormally domed shell.

Radiography of the whole body revealed an area of granular radiopaque material in the middle of the coelomic cavity (Fig 1). The diagnosis was gravel-like foreign material in the gastrointestinal tract.

The turtle was restrained manually and a 9.5-mm endoscope[a] was passed into the stomach through an oral speculum. The mucosa appeared normal and no strictures or foreign bodies were observed. The owner declined further testing so the turtle was sent home, and the owner was advised to administer a commercial gastrointestinal lubricant[b] (2 ml/kg of body weight, q 12 h) by gavage.

Anorexia persisted for another week. Radiography performed 1 week after the initial examination revealed the radiopaque foreign material to be in the same location. An intestinal obstruction was suspected, therefore, a contrast study of the gastrointestinal tract was performed. Ten ml of 60% w/v barium sulphate was administered via stomach tube. Fifteen minutes after administration, the barium had reached the foreign material within the lumen of the proximal portion of the jejunum. Dilatation of a short segment of jejunum was evident on radiographs obtained after 30 minutes, 1 hour, and 2 hours (Fig 2). Barium did not pass beyond the foreign material until 5 hours after its administration. After 9 hours, less than half of the contrast medium had moved into the intestine distal to the foreign material. A diagnosis of partial intestinal obstruction was made. The mucosa of the duodenum and proximal portion of the jejunum had a herringbone appearance (Fig 2).

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aVideoEndoscope, Welch Allyn, Skaneateles Falls, NY.

bLaxatone, Evsco Pharmaceuticals, Buena, NJ.

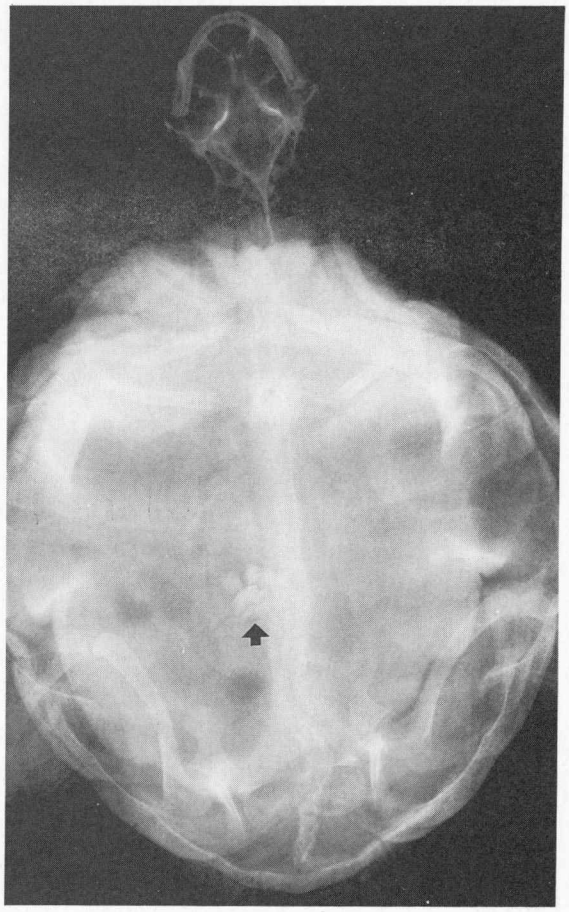

Figure 1—Dorsoventral radiographic view of an 18-year-old turtle with a partial intestinal obstruction. Radiodense material is visible in the small intestine (arrow).

The turtle was given tiletamine/zolazepam[c] (2 mg/kg, IM) in the forelimb. After 15 minutes, the turtle's trachea was intubated with a 14-gauge intravenous catheter.[d] Anesthesia was maintained with a mixture of halothane and oxygen via intermittent positive pressure ventilation.

The turtle was positioned in dorsal recumbency with the hind limbs taped in extension. The

cTelazol, AH Robins Co, 1407 Cummings Dr, Richmond, Va.

dAbbocath, Abbott Hospitals, Inc, North Chicago, Ill.

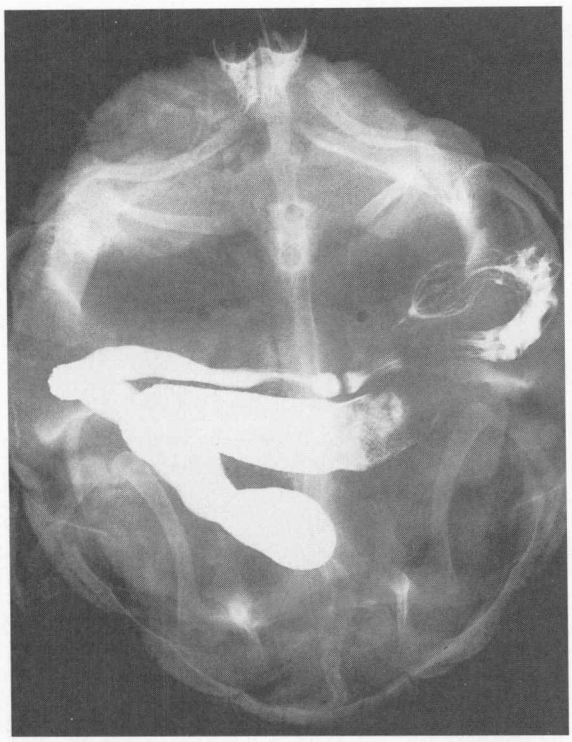

Figure 2—Dorsoventral radiographic view obtained 2 hours after administration of barium sulfate suspension. Notice obstruction in the small intestine and herringbone mucosal pattern.

soft tissue cranial to the left hind limb was prepared aseptically for surgery. A 2.5-cm skin incision was made and the abdominal musculature was incised. Dilated loops of intestine were exteriorized with a spay hook and the area of obstruction was isolated. A transverse enterotomy was performed and sloughed shell material was removed. The intestine was closed with a single layer of 40 nylon[e] in a simple interrupted apositional pattern. The enterotomy site was checked for leaks and, following lavage of the abdomen with a sterile (0.9% NaCl) solution, the abdominal wall was closed with 2 layers using an absorbable suture material in a simple interrupted pattern.[f] The skin was closed using a horizontal mattress pattern of the same suture material. To ensure a waterproof seal, a layer of a cyanoacrylate[g] was placed over the incision. The turtle was kept warm on a hot water heating pad until fully recovered.

After surgery, the turtle remained anorectic for 10 days after which a small piece of chicken was consumed. The turtle's appetite increased rapidly over the subsequent week.

Four months after surgery, the turtle was examined because of a 1-week history of anorexia. Radiography revealed a tubular-shaped area of opaque gravel-like foreign material in the mid to right side of the coelomic cavity. In addition, several segments of intestine were moderately distended with gas. These findings were consistent with a foreign body impaction of the intestine, perhaps secondary to a postoperative intestinal stricture. A commercial lubricant[b] was administered (2 ml/kg, q 12 h) by gavage. Five days later, a large volume of aquarium gravel was defecated. Subsequent radiography revealed resolution of the obstruction.

Enterotomies are performed infrequently in chelonians.[1] This may be attributed to the difficulty in diagnosing intestinal disorders via physical examination because of the lack of specific signs. However, foreign bodies are ingested with some regularity in chelonians.[1-3] Often they pass unassisted, but some cause clinical problems. Scutes are shed intermittently by turtles, and if ingested, they can cause an intestinal obstruction, as occurred in the turtle of this report.[4]

It is common for turtles to swallow rocks and stones after eating. They may aid digestion by helping to break down food items or may act as ballast to affect buoyancy.[5,6] The owner of the turtle in this case commented that the ingestion of the shell material followed a period of neglect during which the turtle was fed infrequently. It is likely that the turtle was simply eating anything available.

The herringbone mucosal pattern detected on radiographs obtained after contrast material was administered was believed to be a normal finding rather than an indication of enteritis, infiltrative disease, or a foreign body. Whether this is a common finding in all chelonians is unknown.

The abnormally domed appearance of the shell was a result of previous nutritional secondary hyperparathyroidism. The turtle had been on a diet of ground beef for the first 2 years of ownership. The shell had become soft until the diet was changed to dry dog food.

The flank approach to the intestines decreased the surgical time and the postoperative healing time. When the plastron is opened, surgical time is increased because of the increased complexity of the procedure. Healing time for an incision through the shell is in excess of 1 year[1] while the skin incision in this case had healed in 30 days.

[e]Ethilon, Ethicon, Inc, Somerville, NJ.

[f]PDS, Ethicon, Inc, Somerville, NJ.

[g]Nexaband Liquid, Bionexus, Inc, 5257 North Blvd, Raleigh, NC.

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