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A Case Report of Hook Ingestion and Expelling by a Green Turtle

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The coast of São Paulo state, in Brazil, is an important feeding area for juvenile green turtles, *Chelonia mydas* Linnaeus 1758 (Gallo *et al.* 2006). Sea turtles are frequently captured by the different types of fisheries occurring in this region (Bertozzi *et al.* 2002; Gallo *et al.* 2006). In January 2005, a green turtle was found by fishermen in the city of Guarujá (23.9946°S, 46.2571°W) and, taken to the Projeto TAMAR-ICMBio Sea Turtle Rehabilitation Centre in Ubatuba, São Paulo.

The turtle measured 51.5 cm curved carapace length, 47.0 cm curved carapace width and weighed 15 kg. A clinical exam showed that the animal was in good condition with no external wounds. However, a small piece of monofilament nylon line was extruding from the cloaca. A radiograph revealed the presence of two foreign bodies: a hook and a swivel (Figure 1). The hook was located in the right side of the coelomic cavity, above the hypoplastron and hyoplastron junction, in its distal portion. The swivel occupied the left side of the coelomic cavity, overlapping the lateral branches of the hypoplastron.

The radiographs indicated that both hook and swivel had passed through the upper parts of the gastrointestinal tract, making safe surgical removal difficult. As an alternative, we treated the turtle with metoclopramide (0.3 mg/kg IM) and mineral oil (2.5 ml/kg PO), to increase gastrointestinal tract motility (Walsh 1999). The treatment was stopped after one week when the hook and swivel were not expelled from the turtle. After 108 days of rehabilitation, another radiograph examination revealed that the hook was still on the right side of the coelomic cavity, but overlapping the hypoplastron. The swivel was more proximal relative to the first radiograph. Although we noted that the hook and swivel had moved, it was not possible to identify their exact locations in the digestive tract.

The turtle was kept in a solitary tank during its staying at the Rehabilitation Centre. Algae (*Ulva* spp. and *Pterocladia* spp) were offered daily; however, the turtle started to eat the algae only

from the second week of treatment onwards. After 191 days in the Rehabilitation Centre, the animal defecated the hook and swivel. The turtle was tagged with Inconel tags (style 681, National Band and Tag Company; numbers BR45198 and BR34758) and was released on 27 July 2005, at Itaguá beach, Ubatuba, São Paulo (23.4502°S, 45.0657°W).

The expelled line was 0.4 mm monofilament nylon, the swivel was #9 and the hook was model Marusseigo/ nº 18. This type of hook is often used by sport fishermen that target marimba (*Diplodus argenteus*) and salema (*Anisotremus virginicus*), among other species that live in association with the rocky shores where they feed on benthic fauna (Filho 1999). The rocky shore is the main substrate for algae growth in the region and algae are the main items in the green turtle's diet (Bjorndal 1997; Sazima & Sazima 1983). It is unknown if the turtle ingested the hook because it purposefully ingested the bait or because it incidentally swallowed the hook while foraging in the algae bank. The date the turtle was first hooked is unknown, but the minimum time that the hook and the swivel remained in the animal was 191 days. Aguilar *et al.* (1992) analyzed captive loggerheads that had incidentally swallowed longline hooks and found that the turtles expelled the hooks between 53 and 285 days post-capture.

Orós *et al.* (2004) suggested that a large part of the wounds found in the digestive tract in sea turtles is caused by ingestion of nylon monofilament and/or hooks. The authors considered these objects in the digestive tract as potentially fatal, especially because of the possibility that the hook may get stuck in the tract or wounds may form in the intestinal loops due to the nylon monofilament (linear foreign body syndrome). In addition, secondary infections caused by gram negative bacteria may also increase risk of mortality.

Calabuig (1999) recommended that all the animals sent to rehabilitation should be radiographed when it is believed that they have ingested foreign bodies such as hooks. Walsh (1999)

recommended the removal of hooks and other foreign bodies by traction, surgery or endoscopy. In the case reported here, removal by endoscopy was not chosen since the hook and swivel were deep in the gastrointestinal tract.

The types of lesions and the consequences suffered by turtles that ingest hooks may be directly linked to the size and shape of the hook as well as the size of the turtle. Sea turtles may expel swallowed hooks without surgical intervention, as reported here and in other studies (e.g. Aguilar *et al.* 1992). Nevertheless, this treatment may require that the animal remain in captivity for an extended period. Alternatively, surgical removal requires precise localization of the ingested hook in order to avoid accidental displacement of the artifacts to deeper areas in the digestive tract. Regardless, the presence of nylon lines exiting the mouth or cloaca of a turtle likely indicates the presence of a hook in the digestive tract, and a radiographic exam is highly recommended for a more precise diagnosis and localization of the hook in question.

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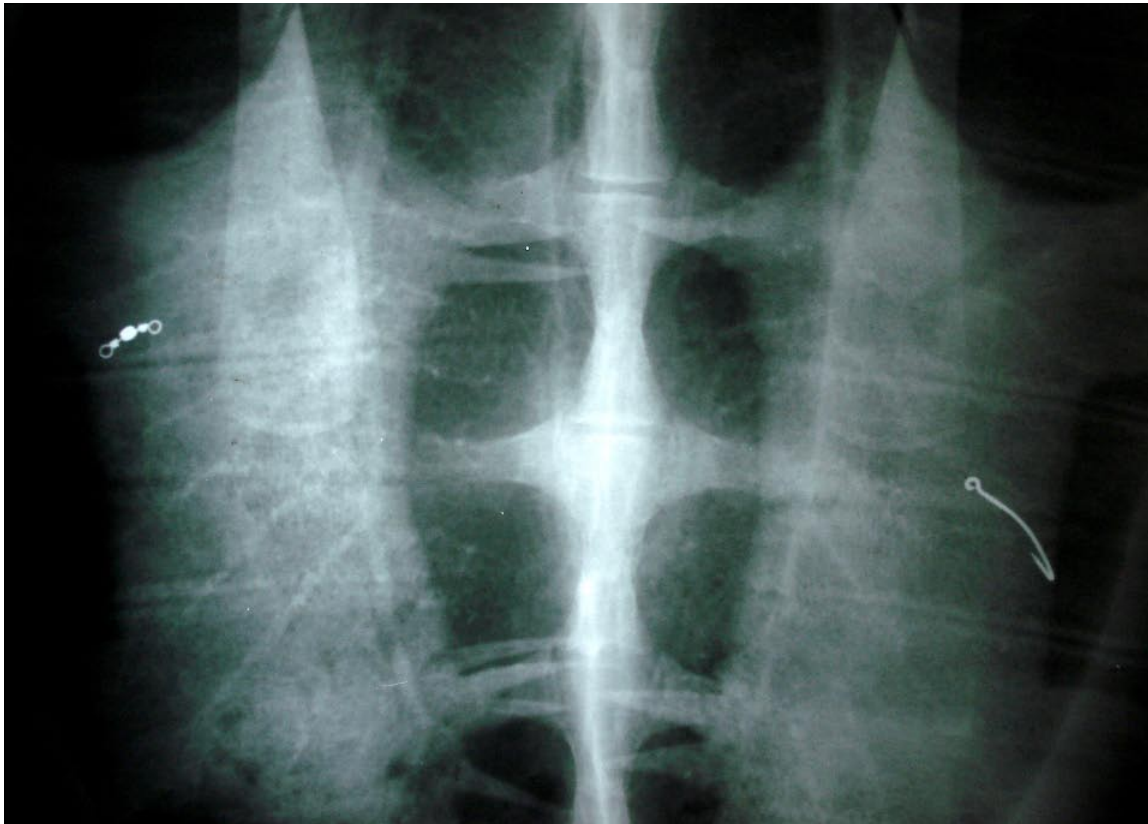


Figure 1. Radiograph D/V of a juvenile green turtle that had been caught on a fishing line. Note the distance between the hook and swivel associated with the line.