

Ultrasonography as diagnostic tool for linear foreign body in sea turtles – a report of seven cases

Pires, Juliana ¹, Fragoso, Juliana ^{1 2}, Costa, Daniela³, Cecarelli, Carla^{1 2}, Goldberg, Daphne

¹ MV autônoma, especializada em imagem, ² Anclivepa, ³ Fundação Pró-Tamar, ⁴ Post-doc RRDM-FURG

The incidental capture of sea turtles in fisheries, also known as bycatch, is likely the greatest threat to these animals. Entanglement in active or 'ghost' (lost or unattended) fishing gear might cause skin lesions, necrotising myositis, strangulation and eventually loss of flippers. On the other hand, the ingestion of hooks and monofilament lines may cause ulcerations, intestinal plication and potentially perforation, resulting in a severe and irreversible celomitis. Ultrasound can be a very useful tool in the diagnosis of many diseases affecting sea turtles. In fact, these animals rarely show specific clinical signs and the presence of a carapace hinders physical examination. For this reason, complementary imaging techniques are often required to provide accurate diagnosis. In Brazil, ultrasound examination in sea turtles is rarely performed and even though it is a non-invasive technique, it has been used almost exclusively to assess reproductive status. The present report aims to demonstrate some advantages of ultrasound scanning in the diagnosis of intestinal linear foreign body in sea turtles. Ultrasound examinations were performed on seven turtles, five loggerheads (*Caretta caretta*) and two green turtles (*Chelonia mydas*) of different sizes and weights (both adults and juveniles), with fishing lines protruding from the oral cavity or the cloaca. The scans were carried out using an ultrasound machine (Mylab gamma, Esaote) with micro convex (SC 3123, 4-9 MHz) and linear (SL 3323, 3-13 MHz) probes. Turtles were manually restrained and placed in dorsal recumbency. For assessment of the coelomic cavity the following acoustic windows were used: dorsal cervical, left and right axillary, left and right prefemoral and sometimes the center of the plastron. Four animals exhibited a pleated intestinal pattern due to the presence of a hyperechoic linear structure within the intestinal lumen. The images also revealed a mass with highly echogenic surface and a posterior acoustic shadow suggestive of fecalomas (dry fecal matter) in the cecum/colon of a few turtles. Four out of seven turtles examined died, one was euthanized and two were released back into the wild. Necropsy findings were then compared with the ultrasound results. The pleating pattern exhibited by four turtles (*C. caretta*) occurred due to the peristaltic waves generated by the intestines, trying to propel the free end of the fishing line along the intestinal tract. Although the two *C. mydas* had fishing lines within their intestinal lumen, none of them exhibited the pleating pattern in the US. Maybe because US images are not as detailed as those from CT or MRI scans and the green turtles were much smaller than the loggerheads. Hence, according to our results US has been shown to be very useful in detecting intestinal plication and linear foreign bodies in larger sea turtles and it may be used in conjunction with other imaging techniques such as radiographs and CT scans to diagnose this condition. Through the left and right inguinal acoustic windows, it was possible to visualize the bowel loops and check for the presence of fishing lines, often seen as a discrete echogenic line within the intestinal lumen. Results of the present study indicated that ultrasound examination has a high sensitivity in diagnosing linear foreign bodies and intestinal plication in sea turtles. Since it is considered a noninvasive diagnostic procedure, ultrasound can be used as a screening tool to rule out linear foreign bodies in animals with lodged hooks, avoiding unnecessary surgeries.