

## CASE REPORT

## Whiptail Stingray Injury

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Stingray injuries to the chest are rare but potentially life-threatening. They may occur in remote areas where advanced emergency healthcare services are unavailable. We describe the case of a 24-year-old man with tension pneumothorax due to a *Himantura fai* stingray injury to the left chest. The chest wound was unremarkable, with no external bleeding or evidence of a foreign body. Decompression was performed at the scene with an improvised knife procedure and a hollow writing pen, which served as a chest tube. At the local hospital, a standard-sized chest tube was inserted, the wound cleaned, and the patient given antibiotics active against marine organisms. Computed tomography visualized the stinger and revealed hemopneumothorax and pneumomediastinum. The local hospital did not have a thoracic surgeon, and the patient was transferred to a larger hospital with a thoracic surgery center. After surgical removal of the stinger, segmental lung resection was required to control bleeding. Management of life-threatening stingray injuries to the chest should begin at the scene. After stabilization, the patient should be transferred to a hospital equipped for cardiovascular and thoracic surgery. Surgery may be required to remove the retroserrated stinger and can be challenging.

*Keywords:* thoracic surgery, trauma, acute long injury, pneumothorax, foreign bodies

## Introduction

The growing worldwide interest in sea sports is increasing opportunities for human contact with marine animals, some of which may be dangerous. Stingrays are fish with 1 or more stingers at the base of their tail. They are ubiquitous in all temperate and tropical oceans worldwide and are even found in many tropical freshwater river systems. They are divided into 2 superfamilies: Myliobatoidea and Dasytoidea. Myliobatoidea have a stinger measuring 5 to 12 cm in length; that of Dasytoidea can be up to 30 cm long. The spine is composed of bonelike cartilaginous material.<sup>1</sup>

Whiptail stingrays flick their tail up to sting their victims. The stinger may break off and remain in the wound. The stinger is hard, with a sharp, pointed tip and retroserrated edges. Venom glands are located along the underside of the

stinger. Thus, the injury consists of both tissue damage and envenomation. The venom causes severe pain. In the United States, 1500 to 2000 stingray injuries are reported per year. Most stingray injuries affect the lower legs or arms, where they usually cause limited damage.<sup>1,2</sup> Injuries to the chest or abdomen, however, can be life-threatening.<sup>3–7</sup>

Mayotte is an archipelago in the Indian Ocean located in the Mozambique Channel between northwestern Madagascar and northeastern Mozambique. Several stingray genera are found in the waters around these islands: 6 Dasytoidea (*Himantura fai*, *Himantura uarnak*, *Neotrygon kuhlii*, *Pastinachus sephen*, *Taeniurops meyeri*, and *Urogymnus asperrimus*) and 1 Myliobatoidea (*Myliobatis aquila*).<sup>8</sup>

We describe the case of a 24-year-old man with tension pneumothorax due to a stingray injury to the left chest while spearfishing in Mayotte.

## Case report

A 24-year-old man who was spearfishing near an isolated coral reef saw an *H fai* stingray (Dasytoidea

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Submitted for publication May 2017.

Accepted for publication January 2018.

family) and swam with it. The stingray struck him suddenly, first in the neck and then in the left chest. He immediately developed respiratory distress but was able to call for help and was rescued by 2 witnesses. Two doctors were nearby and immediately came to assist. The victim had difficulty speaking but was able to report the stingray attack. He had respiratory distress, agitation, severe facial and cervical edema, and a blowing puncture wound in the neck over the trachea. He was brought up on the beach, where there was no telephone network connection or rapid access to emergency medical services.

Examination revealed another puncture wound in the left thorax, with no air escaping from it and no external bleeding. This wound was 0.5 cm in diameter, with no visible foreign body. The cervical edema extended down to the left upper thorax. Crepitus was felt on palpation. Breath sounds were absent over the left hemithorax. The respiratory distress rapidly worsened, with bradypnoea, obtundation, and tachycardia. On inspection, thoracic expansion was only occurring on the right side. A left-sided tension pneumothorax due to stingray injury was suspected.

Decompression was achieved by inserting a fillet knife into the fifth intercostal space on the midaxillary line (Figure 1). A hissing sound was heard through the wound. A pen was then inserted to serve as a chest tube (Figure 2). Sterile technique was impossible on the scene. The patient began to improve, with regression of the subcutaneous emphysema and an increased breathing

rate. When emergency medical assistance arrived 1 hour later, he was stable with a heart rate of 109 beats·min<sup>-1</sup>, breathing rate of 22 breaths·min<sup>-1</sup>, blood pressure of 133/84 mm Hg, and a blood oxygen saturation level of 97%. Morphine was initiated, and the pen was replaced by a chest tube.

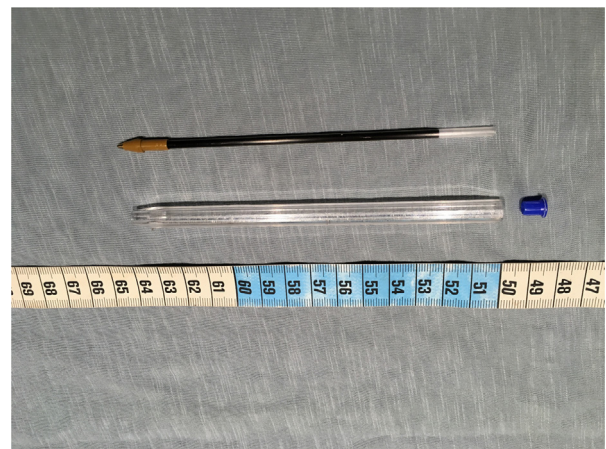
The patient was transferred by helicopter to Mayotte hospital. This local hospital has 371 beds, including an intensive care unit and a surgical department with a 24/7 medical staffing surgical block. A radiology department there can perform standard radiology, computed tomography, and magnetic resonance imaging. The hospital also has an endoscopy department and a laboratory.

Laboratory blood analysis, including hemoglobin level, was normal. Chest radiography was not performed. Computed tomography of the chest revealed pneumomediastinum, left hemopneumothorax with contusion of the upper lobe, cervicothoracic emphysema (Figure 3), and a foreign body. Computed tomography reconstruction was performed at the same time and revealed an 8-cm-long, slender, rodlike, intrathoracic foreign body extending from the first left intercostal space to the center of the chest (Figure 4). The patient was transferred to the intensive care unit, where antibiotic therapy with piperacillin and tazobactam were started. The neck wound was cleaned, disinfected, and dressed.

Unfortunately, there is no thoracic surgeon in Mayotte Hospital and there was only 1 available commercial flight per day for transfer to a higher level of care. Seats are booked every day on commercial flights for medical transfer. If the patient needs to lie down during transfer, more seats are requisitioned and a stretcher is placed on them. When the patient arrived at Mayotte Hospital, the plane had already left. He was transported the next day by commercial flight (air ambulance) to a hospital on



**Figure 1.** Fillet knife used to decompress the tension pneumothorax.



**Figure 2.** Pen used as a chest tube.

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