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CASE REPORT

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An Extraordinary Case of Maxillofacial Trauma: Injury by Harpoon Shot

ABSTRACT

This case report presents a 24-year-old patient who accidentally received maxillofacial trauma with a speargun. One of the harpoons on the right and the other on the left had penetrated the submandibular region, and the floor of the mouth created lacerations on both sides of the tongue and extended into the nasal cavity by penetrating the hard palate bilaterally. In the maxillofacial computed tomography of the patient, the tip of the harpoon on the right ended in the right nasal cavity; however, it was seen that the tip of the speargun on the left side penetrated the frontal sinus on the left side. Both orbits and intracranial areas were regular. The patient was taken to an emergency operation. Tracheotomy was performed under local anesthesia to ensure airway safety. The harpoon on the left was removed from the body in the direction of the entrance with the help of forceps. While the harpoon on the right was removed in the direction of the entrance, the harpoon was removed by exploring the submandibular region due to the hook opening at the mouth's floor. The patient, who had no complications in the postoperative follow-up, was discharged on the ninth postoperative day.

Keywords: Speargun, atypical firearms, maxillofacial trauma, harpoon, foreign body

INTRODUCTION

Worldwide, trauma is the sixth most common cause of death, and 25% of traumas involve the head and neck region.[1]

Penetrating traumas of the face and facial skeleton can be divided into low-energy and high-energy traumas. The greater the mass and velocity of the traumatic instrument, the greater the extent of damage to bones and soft tissues due to the increase in kinetic energy. High-energy traumas can result from firearms (the bullet's tiny mass and high velocity contribute to the high kinetic energy) or fireworks explosions (associated with high kinetic energy and high temperatures). On the other hand, injuries caused by stabbing a long, thin, sharp foreign body are usually of low energy; however, although not as common as high-energy trauma, head and neck trauma can have fatal consequences.[2,3]

Injuries with atypical weapons such as harpoons, darts, and crossbows are rare.[4-12] Most cases occur during diving, sports, and recreational activities due to a lack of attention. Suicide cases have been reported less frequently in the literature. [13]

Fishing spears are more like crossbows or crossbows in shape and function and can cause injuries similar to those caused by firearms.[10,14]

This case report aimed to contribute to the literature by including an unusual maxillofacial trauma caused by a fishing spear.

CASE PRESENTATION

A 24-year-old male patient was brought to the Emergency Service of Dokuz Eylül University Hospital for consultation after 2 spears on the neck injured him and his face a few hours ago. The patient was cooperative, oriented, and conscious. However, one of the harpoons on the right and the other on the left penetrated the submandibular region and the floor of the mouth, creating lacerations on both sides of the tongue and penetrating the hard palate bilaterally, and extending into the nasal cavity (Figure 1).

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Figure 1. The image of the patient on admission to the emergency department. Both harpoons appear to penetrate the submandibular region.

The patient's mouth opening was limited. On nasal cavity examination, harpoons could be seen penetrating the nasal floor. In maxillofacial computed tomography, the tip of the harpoon on the right ends in the right nasal cavity; however, it was seen that the tip of the harpoon on the left side penetrated the frontal sinus on the left side. Both orbits and intracranial areas were regular. There was no damage to the central vascular structures (Figure 2A and 2B).

MAIN POINTS

- Penetrating traumas can lead to long-term morbidity and even death due to hemorrhagic shock, damage to cerebral structures, or inflammatory complications.
- An "ABC" (airway safety, respiration, and circulation) chart should be made before the patient is transferred and at admission.
- Computed tomography helps us determine the damage's extent and decide the surgical approach.
- Angiography was not required because vascular or neural structure damage was not suspected.
- The critical point is that since a hook opens at the end of the speargun shaft, it should be known that damage can be caused even during the shaft removal, and care should be taken.

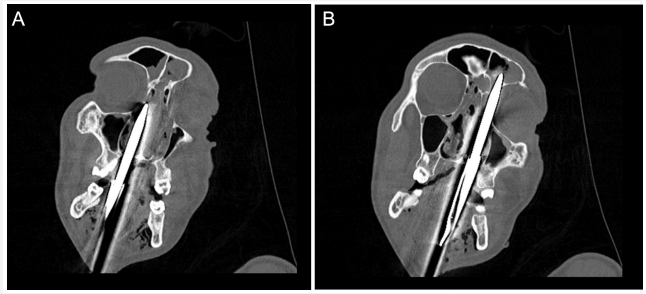

Figure 2. (A, B) Maxillofacial computed tomography image of the patient. While the tip of the harpoon on the right was confined to the right nasal cavity, it was observed that the tip of the harpoon on the left entered the frontal sinus on the left.

The patient was operated on urgently. In order to prevent the intubation of foreign bodies in the oral and nasal cavities of the patients, for preparation for tracheotomy, the help of the fire department was requested, and the remaining parts of the body of the harpoon were shortened to the size of the thyroid notch cell. Tracheotomy was performed under local anesthesia. The harpoon on the left was removed from the body in the direction of the entrance with the help of forceps. The hook at the end of the shaft opened at the base of the mouth, while the right-hand harpoon was removed in the direction of the entrance. For this reason, the harpoon was removed by exploring the submandibular region. (Figure 3).

There were no complications during the operation. A Penrose drain was placed in the neck lodge, the mouth and palate mucosa floor was primarily repaired, and the patient was transferred to the intensive care unit.

TREATMENT AND PROGNOSIS

After the operation, 4 × 600 mg of clindamycin and appropriate analgesia were administered intravenously to the patient during hospitalization. The patient, whose oral intake was closed for 3 days, was decannulated on the third postoperative day, and the Penrose drain was removed. The patient was started on an oral diet with liquid and soft foods on the fourth day and was discharged on the ninth day with a regular diet. It was observed that the patient, who was controlled at the last second month

Figure 3. Harpoon materials removed by operation.

Figure 4. (A, B, C) Postoperative second-month control photos of the patient.

after the operation, did not have any complications/complaints (Figure 4A, 4B, and 4C).

DISCUSSION

Patients who receive penetrating trauma to the face and neck region are at risk of injury to critical anatomical structures of the nervous, respiratory, visual, and circulatory systems. These traumas can lead to long-term morbidity and even death due to hemorrhagic shock, damage to cerebral structures, or inflammatory complications. The consequences of penetrating trauma depend on the anatomical structures affected, the impact and direction of the foreign body, and the resistance of the tissues affected by the trauma.[15]

Judging from the fishing spear, the dimensions of a regular fishing spear can generally vary from 0.5 to 2 meters in length and 28 to 75 mm in diameter. It is a weapon that can work with 2 different mechanisms. The first is pneumatic compression in the barrel, and the second is the static energy storage mechanism by stretching a specific elastic band. Since this type of gun is designed for underwater fishing, its thrust must exceed water resistance. If the gun is used outside underwater, as in the case we presented, it can cause serious injuries. Perforating cranial and facial lesions are associated with a high mortality rate due to significant damage to the brain parenchyma and neurovascular structures.[12]

It is important to note that although the harpoon is considered an atypical firearm, it has lower kinetic energy than an ordinary firearm. In high-velocity penetrating trauma, high kinetic energy causes a radial force that causes severe damage to tissues. On the other hand, low-velocity weapons, such as fishing spears, have lower kinetic energy. For this reason, they usually cause minor injuries as long as they are limited to the areas they penetrate and do not reach vital areas. In addition, it should be taken into account that the distinctive feature of the harpoon is the presence of a hook at the end of the shaft. Therefore, tissue damage can only be obtained in such injuries, even when removing the shaft.[10,14] In our case, the hook at the end of the shaft was opened while removing the shaft of the harpoon on the right, and the floor of the mouth exploration had to be performed on the patient to remove the tool.

Patients with penetrating injuries can have a variety of general conditions. However, the "ABC" (airway safety, breathing, and circulation) scheme should be made before transferring the patient and at admission. This procedure should be followed by further diagnostic investigations, including computed tomography and, if necessary, angiography (in the case of penetrating injuries reaching the central nervous system to exclude possible vascular abnormalities and injuries).[15] When our patient was brought to the emergency room, he was conscious, and his vital signs were typical. Computed tomographic imaging was performed on the patient to see the extension areas of the harpoon shaft. Angiography was not required because vascular or neural structure damage was not suspected. Since the patient could not be intubated before the operation, a tracheotomy was performed.

CONCLUSIONS

As a result, injuries with a fishing spear are rare. However, computed tomography helps us determine the damage's extent and decide on the surgical approach. The critical point is that since a hook opens at the end of the speargun shaft, it should be known that damage can be caused even during the shaft removal, and care should be taken.

Informed Consent: Written informed consent was obtained from the patient to report his condition as a case report.

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