



An unusual transoral penetrating injury by scissors in a child and principles of management

Transoral penetrating injury by scissors

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Abstract

Injuries caused by the penetration of foreign bodies into the hard and soft tissue are called penetrating injuries. Penetrating injuries on the head and neck region are often the result of deliberate injuries performed by another person. A 4-year-old girl was admitted to the emergency room with penetrating injury due to the insertion of scissors to the right cheek. In her physical examination, it was observed that a sharp object of approximately 7cm (tip of scissors) had penetrated towards the base of the skull from the right cheek of the patient. No neurological deficits were detected. After antibiotic therapy and tetanus prophylaxis, the patient was operated on, and the penetrant object was removed. No neurological damage was detected in the postoperative 1-year follow-up.

Keywords

Penetrating Injury; Maxillofacial Injuries; Foreign Bodies

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Introduction

Injuries caused by the penetration of foreign bodies into the hard and soft tissues of the body are called penetrating injuries [1]. Penetrating injuries on the head and neck region are often the result of deliberate injuries performed by another person and are most commonly seen in young men [2].

Even though penetrating foreign bodies on the head and neck region are mostly composed of glass, knives, and bullets, cases of a scythe, harpoon, screwdriver, arrow, and bamboo chopstick have been published. Penetration may be limited to superficial tissues, as well as deep tissues or even intracranial structures [1-4]. The treatment for penetrating foreign bodies is risky regarding surgery, due to the possibility of damage to major anatomical structures during removal of the foreign bodies [5]. In the present study, a case of a child with a penetrating injury of the head region resulting from the insertion of scissors through the cheek to the oral cavity and the treatment have been reported.

Case Report

This case report was conducted in compliance with all ethical standards accord with the Helsinki Declaration of 1975 as revised in 2008 and informed consent was obtained from parents of the patient. A 4-year-old girl was admitted to the emergency room with penetrating injury due to the insertion of scissors to the right cheek. In her physical examination, it was observed that a sharp object of approximately 7cm (tip of scissors) had penetrated towards the base of the skull from the right cheek of the patient (Figure 1). No neurological deficits were detected in her neurological examination. On the patient's plain radiographs and tomography, it was observed that the tip of the foreign body extended to the border of the skull base, however, did not deteriorate the integrity of the skull base (Figure 2). The diagnostic angiography of the patient revealed no damage to the major vessels. After the patient had undergone antibiotic



Figure 1. Preoperative photographs showing the scissors in the cheek of the child

therapy and tetanus prophylaxis, the patient was operated on with a brain surgeon, and the penetrant body was removed. No neurological damage was detected in the postoperative 1-year follow-up of the patient (Figure 3).

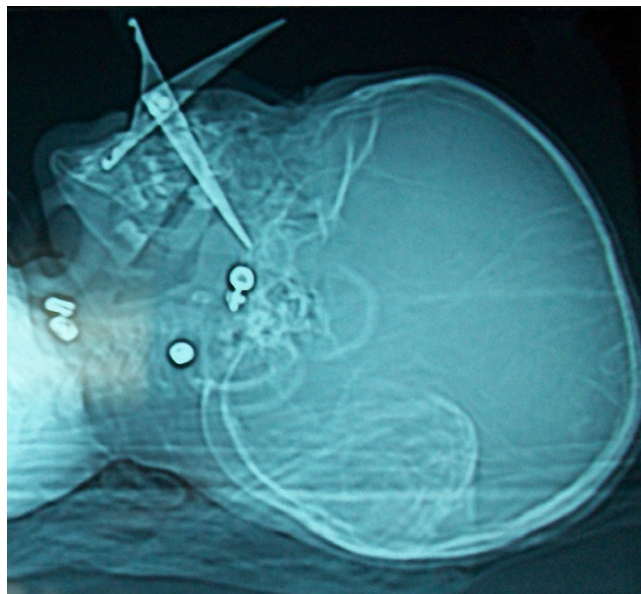


Figure 2. Radiograph showing the extent of penetration of the scissors



Figure 3. Postoperative day 15, photograph showing normal facial nerve function of the child

Discussion

Penetrating injuries of the head and neck region occur in the three anatomical zones of this region. The first anatomical zone is between the sternal notch and cricoid cartilage. The injuries in this zone have high mortality because of the risk of damage to major vessels and intrathoracic structures. The second anatomical zone is between the cricoid cartilage and mandibular angle. Important structures that are at risk of injury in this zone are; the carotid artery, vertebral artery, jugular vein, trachea, larynx, esophagus, and spinal cord. The mortality of injuries to this zone are less than that of the first zone. This is due to the zone being easier to control in case of bleeding and the collage exposure of the structures in this zone. The third and final anatomical zone is between the mandibular angulus and base of the skull. Important structures in this zone include the eyes,

distal part of the internal carotid artery, vertebral artery, salivary glands, pharynx, and spinal cord [1].

As in all trauma patients, the first step in the treatment of patients with penetrating injuries on the head and neck region is to stabilize the patient according to the advanced trauma life support (ATLS) protocol by keeping the airway open, controlling the bleeding, and treating shock [1-6]. After the general state of the patient has been stabilized, a detailed examination of the head and neck region and investigation of additional injury to the cervical spine should be performed. It is important to radiologically determine the extension of the foreign body before surgery. For this purpose, plain radiographs and contrast-enhanced tomography in axial and coronal plans should be taken. In addition, diagnostic angiography should be performed to determine the damage of vascular structures, Magnetic Resonance Imaging (MRI) should be taken in all patients except for cases involving metal objects, tetanus prophylaxis and antibiotic treatment should be implemented. Patients should also be evaluated by both the Departments of Otorhinolaryngology and Neurosurgery. Foreign bodies may remain asymptomatic for long periods of time and therefore removing the foreign body should not be rushed; surgery should be performed after the necessary examinations and appropriate operating room environment have been prepared, and all procedures should be performed under general anesthesia [6,7]. Attempting to remove the foreign body without proper preparation or directly, in an environment other than the operating room, may result in injury, bleeding, and death [2].

The purpose of surgical treatment is the removal of the foreign body, wound exploration, irrigation, achieving normal function of the damaged bone and soft tissues, and morphological reconstruction [5]. Radiologic imaging is recommended in the postoperative period to determine whether or not the foreign body has been completely removed in surgery, and after six weeks of surgery to assess the recovery status of the bone and soft tissues [1].

In the present case, the foreign body penetrated transorally towards the base of the skull. However, the integrity of the bone structures in the base of the skull was not deteriorated. It is very rare for foreign bodies which have penetrated transorally to extend to the base of the skull and cause craniocerebral injury [8]. Penetrating foreign bodies which have caused craniocerebral injury are difficult to treat because of the removal of the foreign body may cause neurological damage in patients. Also, there is no definite acceptance of how the surgery should be performed. The foreign body could be extracted either directly or with a craniotomy. Craniotomy allows direct observation during the removal of the foreign body and prevention of potential bleeding, while direct extraction protects the patient from secondary damage that may occur in the brain due to craniotomy [9].

Conclusion

Transoral penetrating injuries should be treated in a multidisciplinary approach including appropriate examinations, radiological imaging, and appropriate operating room environment. Prognosis is very good when properly treated.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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