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EXTRACTION OF THE BULLET FROM POSTERIOR WALL OF THE MAXILLARY SINUS AND EVALUATION OF THE AIRGUN GUNHOT INJURIES

Sami Engin Muz[1*], Sinan Kurkcuoglu[1], Bora Tetik[2], Ayla Kurkcuoglu[3]

[1]Otorhinolaryngologist, Department of Otolaryngology-Head & Neck Surgery, Bismil Public Hospital, Diyarbakır, Turkey.
[2]Neurosurgeon, Department of Neurosurgery, Diyarbakır Gazi Yasargil Training and Research Hospital, Diyarbakır, Turkey.
[3]Departmalet of Anatomy, Faculty of Medicine, Baskent University, Ankara, Turkey.

Corresponding Author:- **Sami Engin Muz**
E-mail: enginmuz@yahoo.com

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ABSTRACT

Air-guns are sold in various stores, in many countries. The lack of adequate legislative regulations about ownership of these dangerous weapons makes them available for children. In this paper we present a case of maxillary sinus injury without any orbital or vascular injuries caused by an air-gun bullet. Endoscopic extraction of the bullet that penetrated deeply to the posterior wall of the maxillary sinus was described and importance of legal restrictions about owning these guns was emphasized.

INTRODUCTION

Maxillofacial injuries are commonly seen among gunshot injuries due to suicidal purposes, assault, or accidentally. The depth of penetration in tissues depends on the physical and ballistic properties of the bullet such as the distance of shooting, the mass, size, shape, speed, and kinetic energy of the bullet [1]. There are different surgical approaches depending on the damage occurred in the orbital content, vascular structures and other significant tissues. In this paper we evaluated the intervention which we performed using minimally invasive techniques and the results in a patient injured with an air-gun bullet, and we emphasized the necessity for limiting availability of these weapons.

Case

A 13 years old male patient admitted with complaint of pain over the right maxillary sinus. He was shot with an air gun bullet in the face two days ago. In the physical examination trace of a three-millimeter scar on anterior wall of the right maxillary sinus was seen but eye movements weren't limited. Direct radiography and computed tomography of the paranasal sinuses a foreign body in the metal concentration which has no relation with the orbit was observed in the posterolateral wall of right maxillary sinus (Figure 1, 2). General condition of the patient was stable. The patient had no orbital, vascular or neural injury and was operated under general anesthesia. An incision was made in the right gingivobuccal area, and both because of easy access and protecting functionality in sinus drainage, entered with endoscope through the perforated maxillary area during the penetration of the bullet. The foreign body was removed (Figure 3). No injury was observed in the orbital content and in the mucosa around the natural ostium of the maxillary sinus (Figure 4).

DISCUSSION

Foreign bodies in the maxillary sinus often lead to chronic sinusitis and fungal infections. The removal of asymptomatic foreign body is controversial [2]. There are

many publications about removal of foreign bodies in the maxillary sinus with endoscopy. The majority of these reports are about removal of teeth and roots of tooth or dental implants which penetrated into the sinus during dental procedures, while there are a few reports about removal of dental bur which penetrated into the maxillary sinus [3]. These foreign bodies are usually located inside the sinus freely and removing of these foreign bodies is easier than those penetrated into the sinus wall. The selection of the surgical technique for removal of bullet depends on the condition of the penetrated tissue and anatomic structures around the injury. In cases with tissue loss, generally, more emphasis is placed on open techniques which facilitate reconstruction. Using the trace of the bullet in removal of the foreign body with endoscopy is preferred to ensure protection of the function by preserving the natural ostium of anatomical structures. Following the trace of the bullet also provides a minimally invasive approach through the existing defect without further enlarging and decrease complications following the removal of foreign body.

The sale of air guns without requiring licensing is another important issue. In England, air pistols and rifles are included in firearms by the law, since 1969. Despite the limitation by law, at least 1-2 fatal injuries caused by air guns are encountered in the emergency service in England, every year. In the United States 20000 cases of injuries due to air pistols, air rifles and paintball guns are reported to admit to emergency services, yearly [4].

Within the scope of laws in Turkey, no licensing is required for purchase and sale of these guns, furthermore possession of these guns are not controlled sufficiently. The "Draft Law on Weapons" was brought into effect, in 2009, within the scope of European Union Compliance program. In this draft manufacturing, importation and purchasing of air pistols and air rifles are restricted whereas transportation is subjected to the specified procedure. The majority of these restrictions is focused on preventing the purchasing of these guns by previously convicted individuals, and does not offer sufficient constraint.

In our case, it is clear that the bullet which caused perforation in both anterior and posterior walls of the maxillary sinus might lead to injury of the orbital content which is only a few millimeters away from the perforated area. In addition, the absence of a psychiatric diagnosis is associated with an increased risk of fatality [5]. However, in our case the patient injured himself while playing with gun and the lack of a deliberate purpose suggest that emergence of these and similar situations may be prevented by making it more difficult to supply these weapons.

Ethical Consideration

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication, and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Informed consent was obtained prospectively from the patients family accordance with the declaration of Helsinki.

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

Fig 1. Lateral view of skull

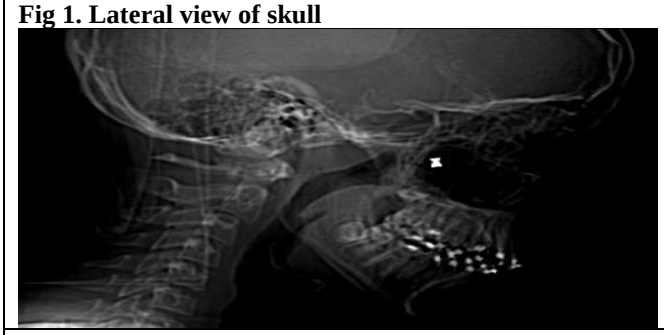


Fig 2. Computerized tomography of paranasal sinuses, coronal and axial planes

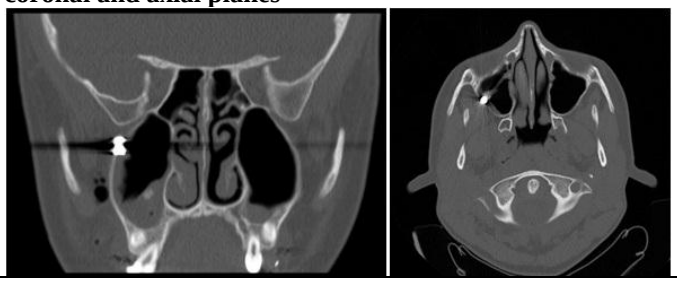
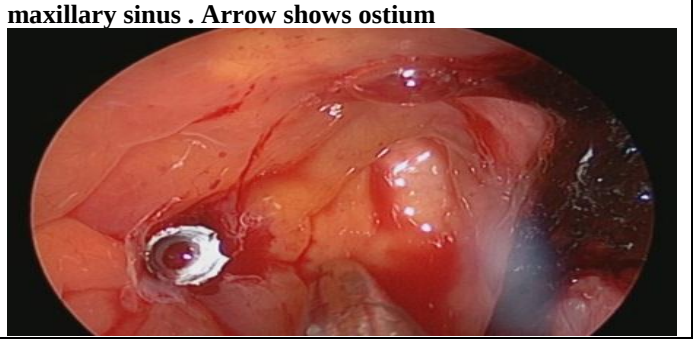


Fig 3. Defect on anterior maxillary sinus wall

Fig 4. Endoscopic image of posterior wall of right maxillary sinus . Arrow shows ostium



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