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Visual Diagnosis in Emergency Medicine

PENETRATING GLASS FOREIGN BODY IN THE DEEP TEMPORAL SPACE

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CASE REPORT

A 14-year-old boy visited the emergency department (ED) with a 1-month history of progressive difficulty opening his jaw and moderate pain when chewing. He reported having suffered a maxillofacial trauma 4 weeks earlier when he accidentally collided with a glass window after fainting. He had previously presented to his local hospital, where a left facial hematoma had been drained and a 1-cm incised wound had been sutured on his left cheek. Initial examination showed a scar on the cheek and revealed a limitation to open his mouth (1 cm), with deviation of the jaw to the left side and pain when moving the jaw. There was no facial paralysis or anesthesia. The palpation of his oral cavity was normal. The rest of his medical history was not contributory. A panoramic radiograph that was initially obtained in the ED revealed a partially radiopaque and well-defined rectangular image of approximately 3.5 cm in length in the tuberosity of the left maxilla (Figure 1). A noncontrast computed tomography (CT) scan was ordered.

The CT scan revealed a radiopaque foreign body (FB), homogeneous and isodense with the bony cortex, compatible with a piece of glass measuring 3.5 cm maximum length × 1 cm wide, which had the shape of a knife blade (Figures 2 and 3). It was located in the left deep temporal space, medial to the zygomatic arch, penetrating through the temporal and lateral pterygoid muscles, and placed between the coronoid process and the zygomatic-maxillary suture. The patient was hospitalized and Oral and Maxillofacial Surgery was consulted. Given the anatomic location and the favorable surgical approach, a glass FB was extracted without complications with the aid of a surgical forceps through an intraoral approach under direct vision (Figure 4). The postoperative course was uneventful. Mandibular movements were recovered within the normal limit range. He has been followed for 6 months with no relevant clinical and radiographic findings.

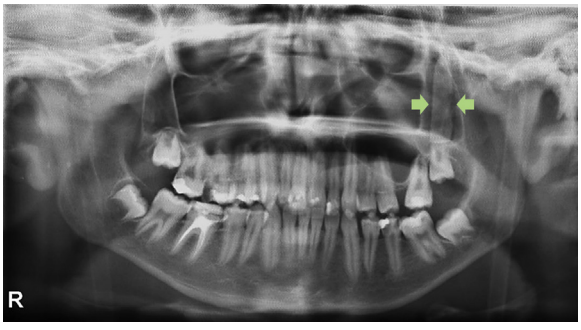

Figure 1. Panoramic radiograph showing a well-defined rectangular-shaped radiopacity 3.5 cm long in the left maxilla (arrows).

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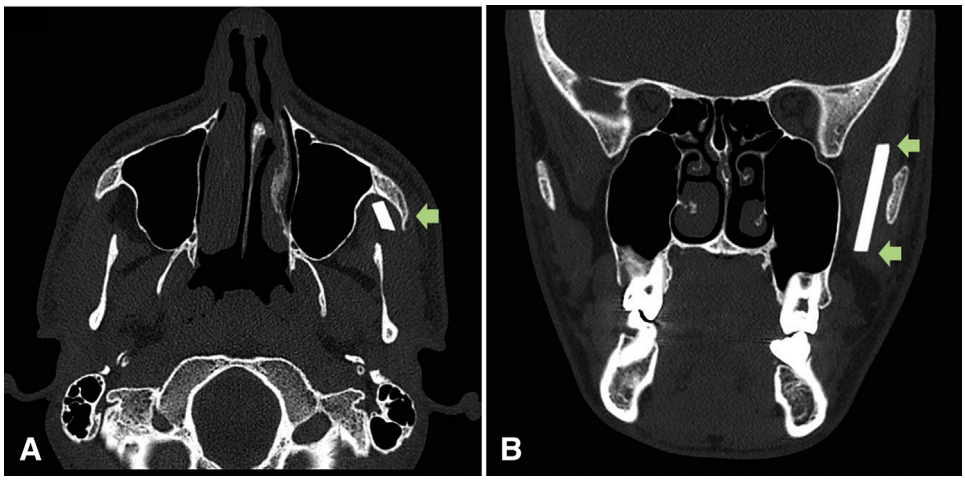

Figure 2. Computed tomography (CT) scan of head and neck without contrast. (A) Axial CT scan revealed a well-delineated radiopacity located between the coronoid process and the zygomatic-maxillary suture (arrow). (B) Coronal CT scan showed a foreign body compatible with a 3.5 cm × 1 cm glass fragment embedded in the temporal and pterygoid muscles (arrows).

DISCUSSION

Wounds and lacerations on the head and neck are regularly seen in the ED, although only a small percentage are complicated by the penetration and retention of FBs, which are usually composed of wood, glass, metal, plastic, or stone (1). The detection of a FB can be difficult because sometimes the patient has not even realized its entry (2). Initially, the symptoms can be vague and, as some objects are not completely visible on radiography, they may go unnoticed if there is no strong clinical suspicion (3). In the present case, the blade-shaped glass fragment had inadvertently impacted in the deep temporal space and was misdiagnosed in a previous center. The clinical suspicion could be established based on the patient's history, his complaint of a limited mouth opening, and the panoramic radiography obtained in the ED.

Panoramic radiography is often the initial imaging test used in patients with maxillofacial trauma. It may be useful to detect radiopaque FBs, but due to the superposition of bone in the two-dimensional image and complexity of the anatomical territory of the middle facial third, a glass FB can be overlooked, given its relative radiopacity and especially if the object is small (4). CT scan has become the criterion standard for evaluating a maxillofacial trauma because it better defines bone structures and, in case of suspicion of the presence of a FB, it serves to assess its trajectory and location, as well as the potential osseous, vascular, or nervous involvement (5).

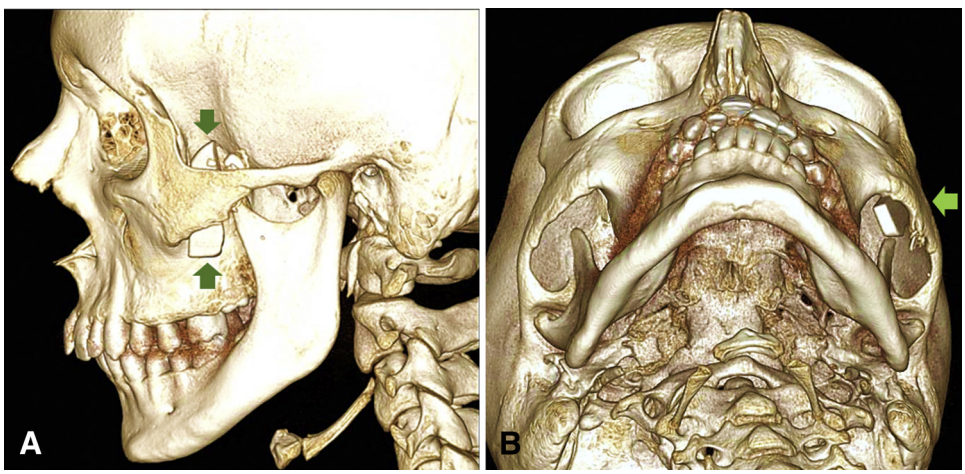

Figure 3. Three-dimensional computed tomography scan of head and neck showing (A) the foreign body (FB) penetrating into the left deep temporal space medial to the zygomatic arch (arrows). (B) Caudal view of the FB projecting onto the maxilla surface under the zygomatic process (arrow).

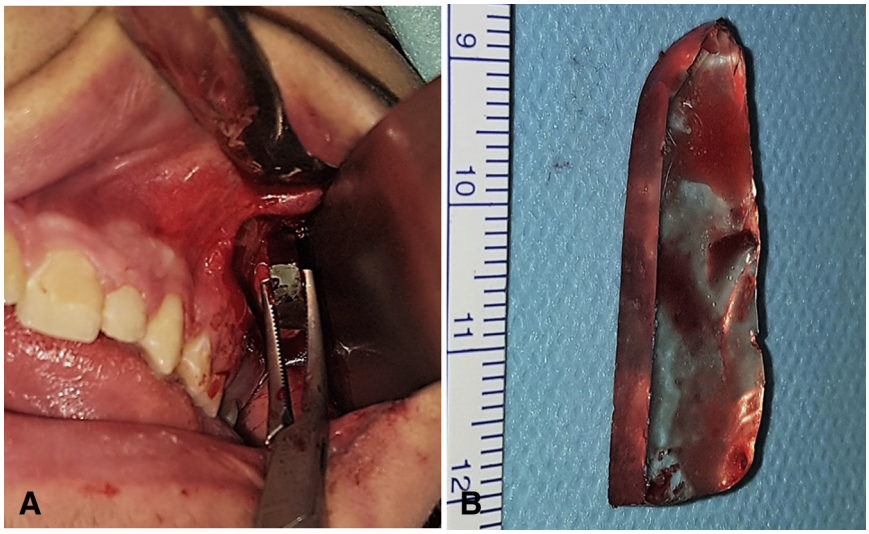

Figure 4. (A) Intraoperative photograph showing the intraoral access to expose the foreign body (FB) for its removal under direct vision with a surgical forceps. (B) Appearance of the glass FB after extraction.

The penetration of a FB into the deep temporal space is a relatively rare event because this area is well protected by the zygomatic bone. Normally, it penetrates through a wound in the temporal region and can damage the masticatory muscles, the internal maxillary artery, or the inferior alveolar artery and nerve, causing difficulty with movement of the jaw, inflammation, hematoma, infection, or paresthesia/anesthesia in the area of the cheek (6).

The extraction of a glass FB in the deep temporal space implies a critical decision that must be individualized in each case according to the characteristics, size, and location of FB, the type of trauma, and the experience of the team. In the present case, the removal of the glass FB was indicated by its relative large size, sharp edges, and compromise in mandibular mobility and pain (the signs with which the patient presented in the ED), together with the CT radiographic appearance. In general terms, a glass FB extraction is recommended as soon as possible to avoid secondary complications and its eventual migration (7). In this case, an intraoral approach was considered, which allowed adequate access, precise localization of the FB, and safe and guaranteed extraction (8).

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