An Unusual Case of Trismus and Epistaxis

Aaron M. Wieland, MD,1 Jeremy D. Richmon, MD2, Stacey T. Gray, MD1 and Derrick T. Lin, MD1

1Department of Otolaryngology – Head and Neck Surgery, Massachusetts Eye and Ear Infirmary, Department of Otology and Laryngology, Harvard Medical School, Boston, MA
2Dept. of Otolaryngology, Johns Hopkins, Baltimore, MA

Abstract

Educational Objectives: At the conclusion of this presentation, the participants should be able to explain the clinical presentation of an infratemporal fossa (ITF) foreign body and discuss the various surgical approaches for removal.

Objectives: Head and neck foreign bodies have a variety of distinct clinical presentations. We present an unusual case of an ITF foreign body requiring operative removal and discuss surgical approaches to this space.

Study design: A case report and Medline search of the terms “infratemporal fossa” and “foreign body.”

Results: A 64 year old male sustained a laceration to his right cheek after a window pane shattered over his head. Plain film x-rays were unremarkable and the laceration was closed primarily. He developed mid-right face weakness, progressive trismus to 1.5 cm and salivary-like drainage from his cheek wound. He also developed intermittent right-sided epistaxis that was exacerbated with chewing. After referral to several dentists and an oral surgeon a CT scan revealed a 5 cm foreign body extending through the superior parotid gland into the ITF terminating in the middle turbinate. Through a modified Blair approach to the parotid gland two glass fragments were removed. Nasal endoscopy was used to visualize the glass imbedded in the middle turbinate. At three months follow up he had no trismus and facial nerve function was normal. A review of the literature identified several reports of displaced maxillary molars and traumatic foreign bodies of the ITF. This case is unique in its surgical approach and the concomitant presentation of trismus and epistaxis.

Conclusions: ITF foreign bodies may present a diagnostic and therapeutic challenge. The surgical approach to removal is dictated by the nature of the injury.

CASE REPORT

An otherwise healthy 64-year-old man sustained a laceration to his right cheek when a large window pane he was installing overhead fell and shattered on his head. Initial evaluation in the emergency room revealed no other injuries. Plain radiographs were taken but a foreign body was not appreciated and the laceration was closed primarily. Over the next several weeks he appreciated mid-right face weakness and experienced salivary-like drainage from his wound while eating. Although both of these symptoms resolved, he went on to develop trismus with a maximum interincisor opening of 1.5 cm. In addition, he began to experience intermittent right sided epistaxis that was exacerbated with eating. He was referred to several dentists and a maxillofacial surgeon. A CT scan was obtained revealing a 5 cm foreign body extending through the superior parotid gland just inferior to the zygomatic arch into the ITF and passing through the posterior maxillary sinus terminating in the middle turbinate (Image 1). He presented to our clinic for further evaluation 6 months after the injury.

The patient was taken to the operating room and through a modified Blair approach two pieces of glass were removed from the parotid gland extending through the ITF and into the middle meatus of the nasal cavity (Image 2). Nasal endoscopy was used to visualize the distal tip of the glass imbedded in the middle turbinate (Image 3). The largest was 5 cm in length. A zygomatic branch of the facial nerve was found to be buried in scar tissue overlaying the glass and had to be transected in order to remove the large glass fragment beneath. A neurorrhaphy was performed to reapproximate the two cut ends. Follow up at one week revealed a well healed incision and improvement in his trismus with maximum interincisor opening of 3 cm. Mild right mid-facial weakness was present (Image 4). The patient began home exercises to improve temporomandibular joint range of motion. Subsequent follow up at 3 months revealed a full return of facial nerve function with a greater than 4 cm maximal interincisor opening (Image 5).

DISCUSSION

Foreign bodies of the ITF are uncommon and present a unique challenge to the head and neck surgeon. Physical examination findings vary based on the means of entry but trismus is a common symptom. This patient was referred to several dentists with concern for temporomandibular joint dysfunction. The lateral pterygoid muscles are responsible for protrusion of the mandible and opening of the jaw and irritation or injury of this muscle leads to trismus. Early recognition and removal of foreign bodies in this space may contribute to better outcomes with reference to jaw opening.

Surgical access to the ITF is difficult secondary to its relatively concealed location. The anterior and posterior borders of the ITF include posterior surface of the masseter and the mastoid and tympanic portions of the temporal bone respectively. Superiorty the space is defined by the greater wing of the sphenoid bone and the squamous portion of the temporal bone while the inferior limit is defined by the angle of the mandible and superior extent of the posterior belly of the digastric muscle. The medial limit of the space is the pterygoid process of the sphenoid bone, the lateral limit is the clivus and the inferior surface of the petrous portion of the temporal bone, and the lateral extent is further framed by the zygomatic arch and the ascending ramus of the mandible (1). The nature of the surgical pathology will determine the most suitable approach to maximize the exposure and minimize the surgical morbidity. Surgical approaches to the ITF can be divided into anterior (transfacial, transmaxillary and transoral), lateral (transzygomatic and lateral infratemporal) and inferior (transmandibular and transcervical) (2,3).

There are several approaches to the ITF that have been described in foreign body removal. The most reported ITF foreign bodies are displaced third maxillary molar teeth. Orr described removal of a displaced molar through an intraoral approach combined with the insertion of needle behind the zygomatic arch to manipulate the tooth into the intraoral incision (4). There are reports of maxillary molars displaced into the ITF being removed utilizing a temporal approach and a hemicoronal approach (5,6). In a case report by Lee et al. describing a nail gun injury in which a nail passed through the right superior sublabial sulcus and terminated in the ITF a preauricular approach was used to access this space. After disarticulation of the zygomatic arch and reflection of the temporalis muscle the head of the nail was visualized just lateral to the orbital wall. Ultimately the nail was removed along its original vector of entrance through the sublabial sulcus (7). Removal of long, thin foreign bodies that are introduced by impalement is best accomplished using the vector in which they are introduced to avoid unnecessary damage to adjacent tissues. The location and apparent course of the piece of glass in our case were suitable for a modified Blair approach. This was the safest and least morbid way to identify the large foreign body that traversed the plane of the facial nerve. This permitted minimal sacrifice of a small zygomatic branch of the facial nerve in a controlled fashion and facilitated primary neurorrhaphy. This can be done safely if the appropriate surgical approach and dissection have been carried out such that control of bleeding at the distal end of the foreign body can be readily achieved if needed upon the object’s removal. In our case nasal endoscopy was utilized to visualize the distal tip of the glass shard within the nasal cavity and instruments were available for potential epistaxis control.

Sheremet et al. described the removal of a pen tip under local anesthesia after needle wire localization (8). They employed a vertical incision in the neck just above the level of the zygoma and approached the ITF through the temporalis muscle. Needle localization was helpful for the very small size of the foreign body. Neff et al. described endoscopic removal of a bullet fragment from the ITF with intraoperative fluoroscopy (9). The large size of the piece of glass and entrance scar on the cheek in our case obviated the need for fluoroscopic or needle wire localization. Preoperative imaging was essential to establishing a diagnosis and informative in surgical planning in this case. Given the intimate association with cranial nerves and major vascular structures computed tomography or magnetic resonance imaging should be used to define the trajectory of the foreign body and assess the extent of injury.

CONCLUSIONS

Foreign bodies of the ITF are an uncommon clinical entity. Clinicians should have a high index of suspicion for a foreign body when patients have a history of trauma to the head and neck and present with persistent localizing symptoms, such as trismus. The decision of when to remove a foreign body of the head and neck is the optimal approach will depend upon the type of material, the location of the material and the patients symptoms.

REFERENCES