CASE REPORT

Endoscopic Removal of Orbito-maxillary Foreign Body: A Case Report

Sunil Kaniyar Chakrapani[1], Princy Maria Suvaries[2], Rizwaan Nasser[3], Saloni Mittal[4], Harsha Kottiyat[5]

Received on: 05 December 2022; *Accepted on:* 20 October 2023; *Published on:* xx xx xxxx

Abstract

Introduction: Foreign body piercing orbital floor and entering maxillary antrum is a rare scenario, and has to be managed in a meticulous fashion to avoid further complications. Transnasal endoscopic surgery is one of the methods for gaining access to both orbit as well as the maxillary antrum through a single approach.

Case description: We report a case of a 40-year-old female with history of assault to the right eye using a pen. There was a J-shaped sutured wound present over medial aspect of the right eye with upper eyelid edema and a swelling medial to the right medial canthus. Computed tomography scan showed the presence of well-defined cylindrical structure measuring 46 × 9 mm noted in extraconal compartment inferomedial to right eyeball penetrating to floor of the orbit and reaching till posterior wall of right maxillary sinus. Patient was managed using transnasal endoscopic approach under general anesthesia. The postoperative period was uneventful, with complete resolution of complaints.

Conclusion: A detailed history with relevant radiological imaging plays an important role in diagnosis of orbito-maxillary foreign bodies (FB) and also for planning the management. Approach to these FB varies based on their composition, size, and location. Therefore, proper surgical planning is important and will result in a good outcome with minimal complications.

Keywords: Case report, Orbito-maxillary foreign body, Transnasal endoscopic approach.

Clinical Rhinology (2023): 10.5005/jp-journals-10013-1387

Introduction

Intraorbital foreign bodies (FB) are usually encountered following cases of assault and road traffic accidents. Such FB have to be removed on an emergency basis and in a meticulous fashion as they may result in injury to orbital and periorbital vital structures. Foreign body piercing the orbital floor and involving the maxillary antrum without any injury to the conal structures is a rare scenario[1] and detailed history, suspicion, and radiological imaging play a major role in planning management and avoiding complications. Transnasal endoscopic surgery is one of the methods for gaining access to both the orbit as well as the maxillary antrum through a single approach. Here, we present a case of orbito-maxillary foreign body that was managed using a transnasal endoscopic approach.

[1–5]Department of Otorhinolaryngology, Mysore Medical College and Research Institute, Mysuru, Karnataka, India

Corresponding Author: Princy Maria Suvaries, Department of Otorhinolaryngology, Mysore Medical College and Research Institute, Mysuru, Karnataka, India, Phone: +91 9731654085, e-mail: suvariesprincy23@gmail.com

How to cite this article: Chakrapani SK, Suvaries PM, Nasser R, *et al*. Endoscopic Removal of Orbito-maxillary Foreign Body: A Case Report. Clin Rhinol 2023;xx(x):xx–xx.

Source of support: Nil

Conflict of interest: None

Patient consent statement: The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.

Case Description

A 40-year-old female with an injury to the right eye was referred to the Department of Otorhinolaryngology, Mysore Medical College after a computed tomography (CT) scan by the Ophthalmology Department that depicted a foreign body involving the orbito-maxillary region. History revealed assault to the right eye using a pen which was initially treated at a local hospital where primary aid and suturing of the laceration was done.

On examination, there was a J-shaped sutured wound present over the medial aspect of the right eye with upper eyelid edema and a swelling medial to the right medial canthus (Fig. 1). Pupil was reactive, extraocular movements were normal, anterior segment of the eye and fundoscopy were found to be within normal limits. Patient had a visual acuity of 6/9.

Patient was subjected to CT head with facial cuts which revealed a fracture of floor of right orbit with a well-defined cylindrical structure with peripheral hypo- and hyperdense rim measuring 46 × 9 mm noted in extraconal compartment inferomedial to right eyeball penetrating to floor of the orbit and reaching till posterior wall of right maxillary sinus, there was no evidence of muscle entrapment (Fig. 2). Patient was started on broad-spectrum antibiotics.

Patient was taken up for an emergency transnasal endoscopic surgery under general anesthesia. Following decongestion of the turbinates, medialization of the right middle turbinate was done followed by uncinectomy and wide right middle meatal antrostomy. A bluish foreign body was visualized in the right maxillary antrum penetrating through the medial aspect of the right orbital floor with orbital fat prolapse (Fig. 3). Right anterior ethmoidectomy was performed and right lamina papyracea was removed to gain access to the orbital cavity. The foreign body was gently grasped and delivered out using upturned Blakesley forceps. The foreign body was a cylindrical appearing piece of a ball pen

Fig. 1: Pre-op image showing a J-shaped sutured wound, upper lid edema and a swelling medial to right medial canthus

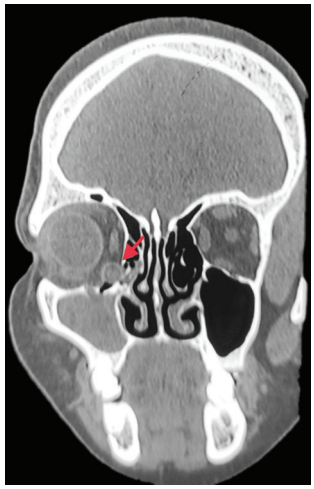

Fig. 2: A coronal cut section of CT image showing cylindrical foreign body embedded in medial extraconal compartment of the right orbit (red arrow)

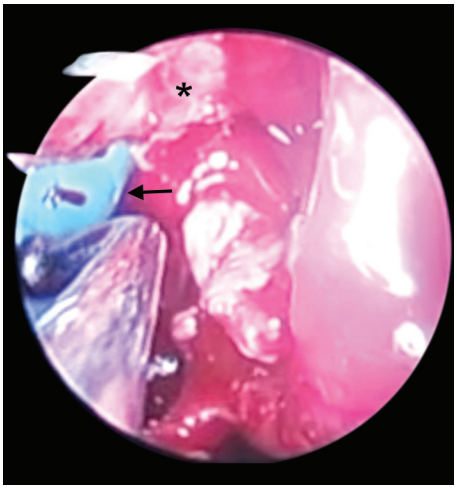

Fig. 3: Intra-op image showing the first foreign body in the maxillary antrum (black arrow) penetrating through the floor of the orbit; asterisk shows the prolapsed orbital fat

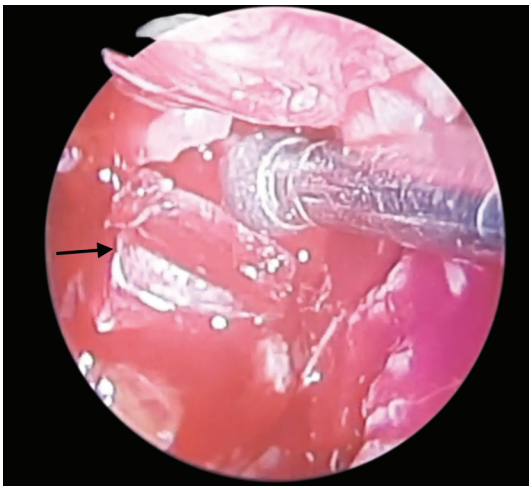

Fig. 4: Intra-op image showing the second foreign body (black arrow)

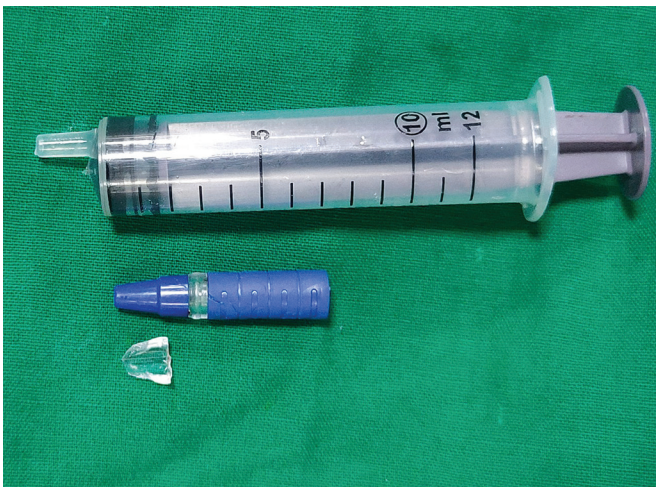

Fig. 5: The retrieved foreign bodies

measuring 3.8 × 0.8 cm. Further exploration of the maxillary antrum resulted in visualization of a second foreign body of size 1 × 1 cm (Fig. 4), a plastic piece that was successfully removed (Fig. 5). The maxillary antrum was irrigated with normal saline and merocele nasal packing was done. Postoperative vision was found to be same as the preoperative vision. Nasal pack was removed on postoperative day 1 and the patient was discharged on postoperative day 2. Patient was followed-up after 10 days and was found to have normal extraocular movements, with visual acuity of 6/9 (Fig. 6).

Discussion

An intraorbital foreign body is an important cause of vision loss. Depending upon its location in the eye it can be divided into (a) global FB; intraglobal, extraglobal, intramural (b) adnexal FB; lids and palpebrum, orbit, lacrimal passages, conjunctiva (c) mixed FB; mixed global–global, mixed adnexal–adnexal, mixed global–adnexal and mixed para-orbital.[2] These FB can be classified into (1) metallic inorganic, e.g., steel, iron, lead (2) nonmetallic inorganic, e.g., glass, plastic, silicone, and (3) organic materials, e.g., wood or vegetable material.[3] Zhou et al.[4] in his analysis of missed diagnosis of orbital FB, presented 12 cases that had debridement and suturing

Fig. 6: Follow-up after 10 days showing scar over medial aspect of right eye and reduced lid edema and reduced swelling medial to medial canthus

before removing the FB, out of which 1 case had plant bodies taken out in two separate operations and the shortest missed diagnosis time was 3 days and longest being 15 months. They concluded that a detailed history of the type of injury is an important factor and cases with repeated local inflammation should be paid attention to for the possible chances of the presence of a foreign body. The severity of injury in penetrating trauma of the orbit is usually underestimated in a physical examination and hence radiological imaging plays a vital role.[5] Computed tomography is usually the first imaging performed and helps in ruling out the presence or absence of a FB, its nature, and extent.[6] Magnetic resonance imaging (MRI) is generally contraindicated as first-line imaging due to the risk of dislodgement in the case of metallic FB, which can pose damage to ocular structures.[6]

However, foreign body in the paranasal sinus entering via the route of orbit sparing the vital structures is extremely rare[7] as in our case, and if not evaluated and missed they can have varying presentation such as orbital cellulitis, abscess, chronic draining sinus, and chronic unilateral mucopurulent nasal discharge. Therefore, high suspicion and detailed evaluation with CT of paranasal sinus and orbit is the mainstay. Mundra et al.[7] in 2015 reported a case of successful removal of longest wooden stick penetrating the sino-orbital region for 1 month. Surgical management of such cases can be done through an open or an endoscopic approach. Open approaches pose injury to the orbit and cause visual impairment, severe tissue loss, or a long recovery process.[8] Minimally invasive procedure such as transnasal endoscopic surgery allows better visualization and lesser complications, however, it has its limitations in case of large FB, organic FB that might break during removal, and in cases of delayed presentation of organic FB which could have caused adherence to the surrounding structures.[7] Therefore, rightly selection of surgical approach depending upon the type of FB and its location is important and also following the removal of FB, the surgical field should further be explored in either approach to avoid the risk of leaving behind any other FB or a fragment of the original FB and subjecting the patient to revision surgery.

In this study, we report an individual with orbito-maxillary foreign body which was initially missed and later picked up on radiological imaging and managed through a transnasal endoscopic approach.

Conclusion

Orbito-maxillary FB are extremely rare and need timely management to avoid complications. A detailed history with relevant radiological imaging plays an important role in diagnosis and planning the management. Approach to these FB varies based on their composition, size, and location. Therefore, proper surgical planning is important and will result in a good outcome with minimal complications.

Orcid

Sunil KC https://orcid.org/0000-0002-7290-6560
Princy Maria Suvaries https://orcid.org/0000-0003-0225-1260
Rizwaan N https://orcid.org/0000-0002-7825-1518
Saloni Mittal https://orcid.org/0000-0003-2973-1491

References

1. Jagannathan M, Nayak BB, Baliarsing AS, et al. An unusual case of orbital trauma with a large foreign body in the maxilla. Br J Plast Surg 1999;52(6):507–508. DOI: 10.1054/bjps.1999.3158.
2. Shukla B. New classification of ocular foreign bodies. Chin J Traumatol 2016;19(6):319–321. DOI: 10.1016/j.cjtee.2015.09.012.
3. Kadir SMU, Haider G. Retained intra orbital foreign bodies (IOFB). IP Int J Ocul Oncol Oculoplasty 2017;3(1):14–18. DOI: 10.18231/2455-8478.2017.0004.
4. Zhou L, Li SY, Cui JP, et al. Analysis of missed diagnosis of orbital foreign bodies. Exp Ther Med 2017;13(4):1275–1278. DOI: 10.3892/etm.2017.4146.
5. Ho N, Catherine Bastion M, Mustapha M, et al. The lucky ones: A report of two cases of intraorbital foreign bodies. Cureus 2021;13(7):e16685. DOI: 10.7759/cureus.16685.
6. Pinto A, Brunese L, Daniele S, et al. Role of computed tomography in the assessment of intraorbital foreign bodies. Semin Ultrasound CT MR 2012;33(5):392–395. DOI: 10.1053/j.sult.2012.06.004.
7. Mundra RK, Gupta Y, Raikwar RS, et al. Longest wooden stick penetrating sino-orbital region: Unbelievably sparing vital structures. J Otol Rhinol 2015;4:1. DOI: 10.4172/2324-8785.1000208.
8. Huang YT, Kung WH, Chang CH, et al. Endoscopy-assisted extraction of orbital and nasal foreign body. Taiwan J Ophthalmol 2021;11(4):421–424. DOI: 10.4103/tjo.tjo_47_20.