Transnasal Endoscopic Removal of Bullet from Orbit.

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Abstract

A case report of the successful retrieval of a bullet from the eyeball by transnasal endoscopic approach without navigator-assisted intervention. The patient was the victim of a criminal assault. No evidence of eye movement and visual field complications are observed.

Keywords: bullet, transnasal endoscopic approach, orbit

Bullet injuries to the face are not uncommon. They are dangerous due to the complexity of craniofacial anatomy and vital structures. Retrieval of the bullet, especially from within the orbit, can challenge the surgical procedure. At present, the use of endoscopes has changed the scenario remarkably by converting extensive open procedures through external approaches into safe, less damaging, directly visualized approaches of removal.[1] This report presents the case of an 18-year-old male with a gunshot injury due to criminal assault. Treatment was successfully achieved with a transnasal endoscopic removal of the bullet in orbit without navigator-assistance.

Case Report

An 18-year-old male presented with a gunshot injury after a criminal assault. He was struck in the right temple but remained neurologically asymptomatic. Physical examination revealed a wound of entry measuring 0.5x1 cm, swelling of the right eyelid, and a subconjunctival hemorrhage with no light perception of the right orbit. In addition, the movements of the left orbit were restricted to lateral gaze with normal visual acuity (20/20). CT image revealed ruptured right eye globe with intraocular hematoma and air bubbles. The bullet was located at an extraconal location medial aspect of left orbit. Destruction of left lamina papyracea of ethmoidal sinus was demonstrated (Figures.1-2).

A transnasal endoscopic approach without navigator-assistance was used to remove the bullet. Uncinectomy and bullectomy were done along with anterior ethmoidectomy. The posterior ethmoid was entered and a defect was identified in the posterior part of lamina papyracea. The defect was enlarged and the bullet was found lying in the orbital fat. The bullet was delivered through the defect with probes and curetted carefully and then grasped with a Blakesley forcep and removed through the left nostril (Figure.3). Nasal packing was placed for hemostasis and removed the next day.

Postoperatively, the patient was treated with intravenous antibiotics. Eye examination revealed the same visual acuity as prior to surgery. The eye movements were improved in all directions of gaze. The patient was discharged after 4 days of surgery. Postoperative follow-up after 1 week showed improvement in left eye movements and normal fundus examination.

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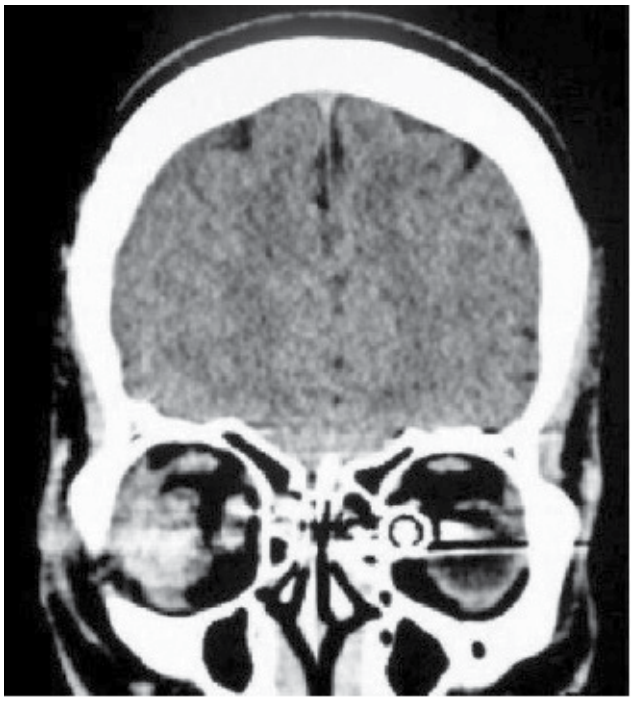

Figure 1: CT image revealed retained bullet at medial aspect of left extraconal location.

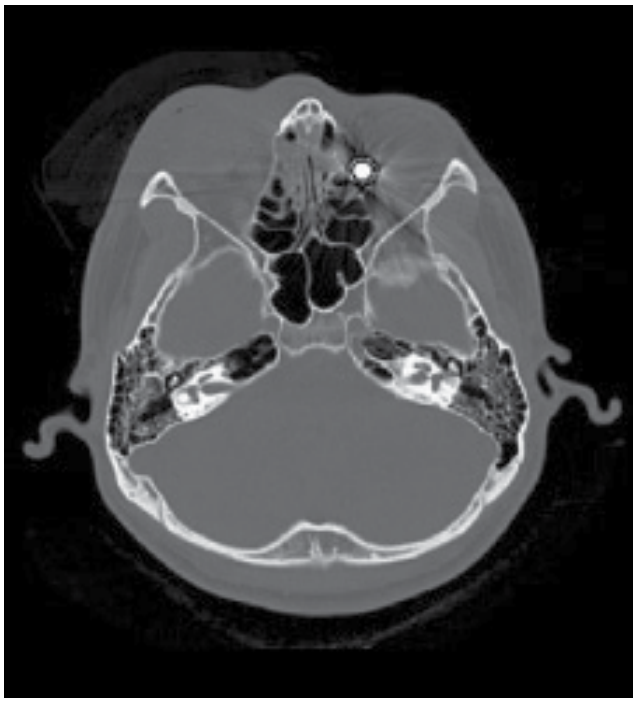

Figure 2: CT image revealed a retained bullet at medial aspect left orbit with destruction of lamina papyracea.

Discussion

Gunshot injuries with localization of the bullet in the orbital cavity can lead to difficult decisions in therapy. The indication of the removal of an orbital foreign body is always to be decided upon individually, taking into account the benefits and risks resulting from an operation.[2]

Minimally invasive surgery preserves anatomical structures and functions without extensive incisions of dissection, providing optimal results with reduced operative trauma.[3] Endoscopic sinus surgery (ESS) is a standard procedure for Otorhinolaryngologists today. With the neighboring structure, the orbit is the organ that we always identify when performing ESS in sinus pathology. In this case, the postero-medial position of the bullet in the left orbit lent itself ideally to a transnasal approach since the access is directly adjacent to the posterior ethmoid sinus. Furthermore, a CT scan helps to pinpoint the exact location of the foreign body and provides the roadmap for safe and precise endoscopic removal.[1] However, some reports combine an endoscopic approach with image-guided navigation[3-6] which allows safer manipulation of instruments and easier location of the foreign body, which is particularly valuable when the normal anatomy has been distorted and the operative field obscured by edema or pus.[4]

Figure 3: The bullet is 0.8 cm in length and 0.75 cm in diameter.

In a nutshell, this case demonstrates that transnasal endoscopy without navigator-assistance provides an effective approach for removal of a bullet adjacent to the medial wall of orbit.

Conclusion

A case report of the retrieval of a bullet from the eyeball by transnasal endoscopic approach without navigator-assisted intervention was completed successfully without any damage to eye movement and visual field. This shows that this method may be considered in cases where a foreign body is located adjacent to the near ethmoid sinus.

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