

Clinical Showcase

Endoscopically Assisted Caldwell-Luc Procedure for Removal of a Foreign Body from the Maxillary Sinus

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Traditionally, foreign bodies displaced into the maxillary sinus are retrieved either through the entrance wound (such as an extraction site) or through a secondary site. The Caldwell-Luc approach was the gold standard for access to the maxillary sinus for treatment of various problems, including retrieval of foreign bodies, until the development of functional endoscopic sinus surgery (FESS). Both techniques have limitations and potential complications. This case presentation demonstrates the use of a modified Caldwell-Luc approach for retrieval of a foreign body from the maxillary sinus in a case where retrieval would not have been possible with the FESS technique because of the large size of the foreign body. The technique employed in this case takes advantage of lessons learned from minimally invasive surgery and FESS.

Case History

A 54-year-old man was seen for an emergency consultation after removal of teeth 26 and 27. The patient's history indicated that the high-speed surgical bur used for removal of the teeth had become dislodged somewhere within the patient's oral cavity. The patient had well controlled hypertension and bipolar disorder.

Clinical examination identified active epistaxis and bleeding from a patent oroantral fistula. The findings on neurological examination were unremarkable. The patient had no visual disturbance, and he was hemodynamically stable.

Patient Management

Primary treatment included local measures to achieve hemostasis and an attempt to locate the dislodged bur. The bur could not be visualized clinically at that time, and the wound was closed primarily to achieve hemostasis and close the oroantral fistula. Panoramic and plain film radiography indicated that the surgical bur was within the maxillary sinus (Fig. 1). The patient was admitted to the oral and maxillofacial surgery service for further investigations, including computed tomography. This imaging confirmed that the surgical bur lay within the sphenoidal recess of the maxillary antrum (Figs. 2 and 3).

The surgical plan was to encourage closure of the oroantral fistula and then to retrieve the foreign body by an endoscopically assisted Caldwell-Luc procedure. It was felt

that the endoscope would allow for direct visualization of the surgical bur and would facilitate controlled removal. The patient was given antibiotics and topical and systemic decongestants and was discharged. After approximately 3 weeks of healing, the oroantral fistula had closed, and an appointment was scheduled for retrieval of the foreign body.

With the patient under general anesthesia, standard surgical technique was used to create a small osteotomy in the lateral antral wall superior to the root apices of the premolar teeth. The position of the infraorbital nerve was identified, and the nerve was protected. The size of the opening was restricted but sufficient to allow passage of a 4.0-mm endoscope (Karl Storz Endoscopy America Incorporated, Culver City, Calif.) and a probe. The aperture of the ostium was approximately 1.25 cm in diameter. The antrum was thoroughly examined through the endoscope (Fig. 4). The surgical bur was easily identified; it was embedded in the medial–superior recess (Fig. 5), as had been predicted by the radiographic assessment. A surgical grasper was inserted, and the bur was gently removed (Figs. 6 and 7). Associated inflammatory tissue was debrided. The wound was irrigated copiously and closed primarily. The patient was maintained on a course of postoperative antibiotics and decongestants for 10 days following surgery.

Outcome

The patient's immediate and long-term recovery was uneventful. There was minimal surgical edema. The integrity of the maxillary division of the trigeminal nerve was preserved; the patient had no complaints and testing showed no signs of nerve injury. There were no postoperative antrum-related complaints; the wounds healed completely, and there was no residual oroantral fistula.

Lessons to be Learned

Special care must be taken to ensure that adjacent hard and soft tissues are protected at all times from iatrogenic injury. This case demonstrates the potential for a surgical instrument to become embedded in contiguous structures. In this case, a surgical bur lodged just millimetres from the orbital contents within the ethmoidal recess of the maxillary antrum. It is the authors' opinion that the surgical bur



Figure 1: Preoperative panoramic radiograph. The foreign body, a surgical bur, appears to be lodged within the left maxillary sinus (black arrows).



Figure 2: Computed tomography (sagittal view) demonstrates the surgical bur in the superior aspect of the left maxillary sinus (black arrow).



Figure 3: Computed tomography (axial view) demonstrates the surgical bur in the most medial and posterior part of the left maxillary sinus (black arrow).



Figure 4: A 4.0-mm endoscope is passed through a modified Caldwell-Luc opening into the left maxillary sinus.



Figure 5: Endoscopic view of the surgical bur lodged within the left maxillary sinus.

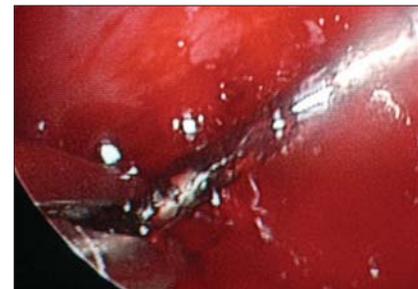


Figure 6: Endoscopic view of the surgical bur being removed from the left maxillary sinus with a micro rongeur.



Figure 7: Surgical bur after its removal from the left maxillary sinus.

used for removal of 2 of the patient's teeth was not suited to the standard dental high-speed handpiece. Therefore, care must be taken to ensure compatibility between the surgical bur and the handpiece.

A minimally invasive approach to retrieval of a foreign body from the maxillary antrum, as in this case, has numerous short-term and long-term benefits. In the immediate perioperative period the reduced exposure of the lateral maxilla required to facilitate this approach decreased swelling, pain and bleeding. Over the long term, the resulting bony defect of the lateral antral wall will be smaller than with other methods, and there will be less expression of antral inflammation in the overlying soft tissues. Perhaps most important, this approach clearly decreases the inherent risk of damage to adjacent vital structures, particularly when retrieving a large, sharp foreign body from the maxillary antrum. ♦



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Further Reading

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