

Surgical Removal of an Uncommon Iatrogenic ForeignBody from the Maxillary Sinus: A Dental Surgical Bur¹Dr. Jay N. Goyal, Senior Lecturer, Dhule Department of oral and maxillofacial surgery, ACPM Dental College, Dhule²Dr. Snehal Thakkar, Consultant Oral Surgeon, Department of oral and maxillofacial surgery, ACPM Dental College, Dhule³Dr. Punit Shah, Senior Lecturer, Department of Oral And Maxillofacial Surgery, ACPM Dental College, Dhule⁴Dr. Priti Goyal, Consultant Pedodontist, Department of Oral And Maxillofacial Surgery, ACPM Dental College, Dhule**Corresponding Author:** Dr. Jay N. Goyal, Senior Lecturer, Dhule Department of oral and maxillofacial surgery, ACPM Dental College, Dhule**Citation of this Article:** Dr. Jay N. Goyal, Dr. Snehal Thakkar, Dr. Punit Shah, Dr. Priti Goyal, “Surgical Removal of an Uncommon Iatrogenic Foreign Body from the Maxillary Sinus : A Dental Surgical Bur”, IJDSIR- September - 2021, Vol. – 4, Issue - 5, P. No. 393 – 399.**Copyright:** © 2021, Dr. Jay N. Goyal, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.**Type of Publication:** Case Report**Conflicts of Interest:** Nil**Abstract**

The presence of a non-dental foreign body in the maxillary sinus is very uncommon. The presence of foreign body in the sinus usually resembles symptoms of sinusitis which often requires throughout history, clinical and radiological examination for confirmatory diagnosis. We are reporting a case report of a 30-year-old male referred to our clinic with the chief complaint of headache and nasal obstruction. After taking a brief history patient revealed that he underwent extraction of the left upper 1st molar. An OPG revealed the dental surgical bur (foreign body) lodged in the left maxillary sinus. We have performed the Caldwell-Luc procedure to remove the foreign body. The patient was recovered without any complications. While performing any procedure in the maxillary posterior area one should be careful of sinus and patient complaining of sinusitis

without any specific aetiology and history of dental procedure in that area should be suspected of foreign body in the sinus.

Keywords: foreign body in maxillary sinus, sinusitis, unilateral sinusitis**Introduction**

Foreign bodies are occasionally found in the Para nasal sinuses.^{1, 2} However, the larger percentages of Para nasal sinus foreign bodies are iatrogenic (60%), while only about 25% occur following accidents.³

The maxillary sinus is most commonly involved (80%).⁴ The maxillary sinus anatomy and its relation to the roots of maxillary molars, premolars, and canines are in a way that many of the odontogenic infections and procedures can cause complications in the sinus. In addition, a thin floor of the maxillary sinus can lead to projection of the posterior teeth roots in some people.⁵

The most commonly found foreign bodies are the displaced fractured roots of teeth and in some instances displaced whole teeth. Other foreign bodies include dental burs, dental implants, GP points, and silver points.⁶⁻⁹

Far rarer of maxillary sinus foreign bodies are of non-dental origin. Foreign bodies may be introduced willingly by the patient or accidentally usually through an oroantral fistula.¹⁰

This paper reports a case of chronic unilateral maxillary sinusitis secondary to the penetration of a high-speed surgical dental bur into the maxillary sinus probably through a previously healed oroantral communication that developed after the first molar tooth extraction. The systematic work-up of the case with surgical management is described.

Case description

A 30-year-old male patient reported to the primary health care center with persistent complaints of headaches, nasal obstruction, and discharge from his left nostril. The patient gave a history of dental procedures a few months back. He received antimicrobial therapy for sinusitis three times, but his complaints persisted.

On physical examination, he had purulent and foul-smelling discharge from his left nostril. He had no history of surgery for nasal or sinus pathologies, and he had no chronic medical condition. Due to the recurrent visits, the physician referred to a general dentist to rule out a dental cause. In his oral examination, there was no obvious dental problem (cavities, mobility, etc.), but his left upper first molar tooth was absent due to extraction for root abscess around a year ago, yet there was no sign of oroantral fistula. The dentist, however, after examining, ask him to seek an opinion of an oral and maxillofacial surgeon.

On dental examination by an oral and maxillofacial surgeon, healed extraction socket was seen with the upper left first molar (26) region. The patient also gives a history of surgical removal of 26, 11months back. The patient was then sent for an Orthopantomogram (OPG). An OPG revealed the dental surgical bur (foreign body) lodged in the left maxillary sinus (fig.1). This concluded that a surgical bur might have accidentally been pushed into the maxillary sinus while removing the upper first molar surgically.

Operative procedure

The surgical treatment proposed to the patient was the Caldwell-Luc procedure, which the patient accepted. An incision was placed in the upper left vestibular area from the lateral incisor to the first premolar(fig 2). After which, the mucosa was reflected and the canine fossa was identified. With the help of carbide bur, a window was created in the anterior wall of the maxillary sinus, and the lining was curetted and haemostasis was achieved. After careful evaluation surgical bur was found lying along the floor of the sinus which was removed with help of a curved artery forcep (fig3,4). Thorough irrigation was done using 10% povidone-iodine solution and closure was done with 3-0 vicryl. The foreign body, in this case, a surgical bur was successfully removed by Caldwell-Luc procedure.

The postoperative period was favourable and without complications. The patient was given antibiotics and topical decongestants for a week following surgery. The patient received both verbal and written routine postsurgical instructions. The patient was instructed not to blow through their nose to avoid oroantral communication. A week after the procedure, the surgical site was examined for any evidence of infection or oroantral communication. The patient had uneventful healing. The patient improved dramatically from the

symptoms. At the 1-year follow-up, the patients' physical examination and radiological investigations were normal.

Discussion

Many cases of the foreign body in the middle third of the face, especially the antrum and nasal cavity, are reported in the literature.¹¹⁻¹⁵

The foreign bodies of the middle third of the face can be classified as:

Traumatic foreign bodies, e.g., air gun bullets, missile foreign body, etc.¹¹

Iatrogenic foreign bodies, e.g., tooth, dental burs, broken forceps, root canal instruments.^{14, 15}

Within this group of foreign bodies, the most frequent are those related to iatrogenic dental manipulation that can reach the maxillary sinus by apical migration through the canalicular canal or when abrupt accidental maneuvers are performed. There is a much less prevalent group of foreign bodies, which are those of non-dental origin (projectiles, shrapnel, etc.), and are related to facial trauma and may initially go unnoticed.¹⁶

Antral perforation following a dental procedure involving apical surgery of the maxillary molar teeth often creates a pathway for foreign bodies to enter the maxillary sinus.^{2, 17}

Oroantral communications are rare complications of oral surgery, which recognize upper molars extraction as the most common etiologic factor (frequencies between 0.31% and 4.7% after the extraction of upper teeth).¹⁸ Similar complications were observed in this case.

Odontogenic foreign bodies in the sinus can be an excellent niche for the growth of fungi and bacteria, thus its removal is needed even if it is asymptomatic.¹⁹ The pathophysiology of sinusitis caused by foreign bodies is still unclear. Tissue reactions and chronic irritation of

the mucosa caused by foreign bodies could lead to a degree of ciliary insufficiency and then sinusitis.¹

Odontogenic maxillary sinusitis, whether chronic or acute, resulting from endodontic and periodontal infections represents the most classic and somewhat common scenario. Nevertheless, odontogenic sinusitis may also result from extractions, dislocation of foreign bodies into the maxillary sinus (teeth or tooth fragments), or iatrogenic penetration of dental materials in the maxillary sinus (as a result of endodontic treatments). Moreover, the inflammatory process of the maxillary sinus, initially present in the vast majority of cases, may extend to other Para nasal sinuses as well.²⁰

Unilateral maxillary sinusitis can be caused by various diseases, such as those affecting the teeth, fungal infections, trauma, tumors, or foreign bodies.^{21, 22}

Patients may be asymptomatic or may experience mild fever, facial pain, headache, nasal obstruction, or chronic mucopurulent discharge.²³ Presenting symptoms range from mucopurulent, often unilateral, discharge; cheek and/or facial pain; perception of foul smell and/or taste; postnasal dripping and gingival swelling.²⁴

The identification and treatment of the underlying dental condition are mandatory for proper management.^{25,}

²⁶Identification and localization of foreign bodies are based on history, clinical and radiographic examinations. Periapical radiographs are the primary diagnostic aid used in identifying foreign bodies.²⁷ In this case, an OPG revealed the dental surgical bur (foreign body) lodged in the left maxillary sinus.

Classically, Odontogenic maxillary sinusitis (OMS) is considered in patients with upper tooth pain, dental infection, dental surgery, unilateral maxillary sinusitis, foul drainage or smell, and resistance to conventional sinusitis therapy.²⁸⁻³¹ Recognition of OMS is important because failure to address the dental pathology can fail

medical and surgical therapies and the persistence of symptoms.^{32, 33}

Previously, the most common surgical technique used was the Caldwell–Luc procedure, which involves opening the anterior wall of the maxillary sinus.^{1, 2}

With the advancement of imaging and endoscopic techniques, nasal and sinus endoscopic surgery is becoming the first-line approach for the removal of a foreign body from the maxillary sinus. If the foreign bodies are large enough, then their removal may not be easy by routine endoscopy.³⁴ In this case, the Caldwell–Luc technique was used due to its affordability to the patient.

Conclusions

Foreign bodies in the maxillary sinus are fairly atypical. They usually enter the sinus occurring during or secondary to a dental procedure. Whatever the nature of the foreign body might be, it must be removed to prevent chronic infections even if it is asymptomatic. Any patient presenting with unexplained recurrent unilateral facial pain or unilateral symptoms with/ without previous history of sinusitis should raise the suspicion of a foreign body in the sinus regardless of any previous history of dental procedures.

Clinicians should identify the underlying causes that are responsible for symptoms of chronic sinusitis. This case emphasizes the significance of history-taking and a broad differential diagnosis. The removal of a foreign body requires systematic management with the medical and surgical approaches.

Consent

Written informed consent was obtained from the patient.

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Legend Figures



Figure 1



Figure 2



Figure 3



Figure 4