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## Metallic Dental Burr as an Iatrogenic Foreign Body in Maxillary Sinus- A Case Report

By Professor Dr. S. K. Ballav, Dr. Shailendra Nath Biswas,  
Dr. Seikh Farid Uddin Ahmed & Dr. Shahidur Rahman

**Abstract-** The foreign body in the maxillary sinus is quite a rare incidence. It may found in the case of maxillofacial trauma causing displacement of the tooth into maxillary sinus. The metallic foreign body may happen in case of gunshot injury and bullet, or pellet may retain in the maxillary sinus. Very rarely metallic foreign body like a dental burr may get lodged into maxillary sinus during dental procedure. If it happens ENT surgeon may be called upon to deal the foreign body. In this article we will describe a case that was referred to the ENT department, Khulna Medical College Hospital for removal of a dental burr retained in maxillary sinus. The accident happened in Dental department of the same hospital. We reviewed the options for the removal of the foreign body. There are two accepted approaches open and endoscopic for management of such cases. We successfully removed the foreign body through open approach.

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# Metallic Dental Burr as an Iatrogenic Foreign Body in Maxillary Sinus- A Case Report

Professor Dr. S. K. Ballav<sup>α</sup>, Dr. Shailendra Nath Biswas<sup>σ</sup>, Dr. Seikh Farid Uddin Ahmed<sup>ρ</sup>,  
& Dr. Shahidur Rahman<sup>ω</sup>

**Abstract-** The foreign body in the maxillary sinus is quite a rare incidence. It may be found in the case of maxillofacial trauma causing displacement of the tooth into maxillary sinus. The metallic foreign body may happen in case of gunshot injury and bullet, or pellet may retain in the maxillary sinus. Very rarely metallic foreign body like a dental burr may get lodged into maxillary sinus during dental procedure. If it happens ENT surgeon may be called upon to deal the foreign body. In this article we will describe a case that was referred to the ENT department, Khulna Medical College Hospital for removal of a dental burr retained in maxillary sinus. The accident happened in Dental department of the same hospital. We reviewed the options for the removal of the foreign body. There are two accepted approaches open and endoscopic for management of such cases. We successfully removed the foreign body through open approach.

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## I. INTRODUCTION

Foreign body in the maxillary sinus is very rare. The causes of foreign bodies in maxillary sinus may be due to penetrating trauma or iatrogenic escape of tooth during extraction or escape of tooth impression material through a preexisting oroantral fistula. At literature search we found only four case reports of dental burr as maxillary sinus foreign body. Patients with this complication usually referred to ENT department. So, it is important to be familiar with these complications and its management.

## II. CASE REPORT

A female patient aged about 32 years presented to us with the history of 2nd left upper molar tooth extraction in Dental OPD of Khulna Medical College Hospital. During the procedure powered dental drill was used. The burr of the drill was displaced in the tooth socket and identified by the dentist who attempted to remove it while the burr got entry into the maxillary

sinus. The patient was sent to ENT department for checkup. On routine clinical examination we found no active bleeding from the tooth socket, no nasal discharge, and no obvious evidence of oroantral fistula. Patient was bit anxious but otherwise not associated with any other health issue. Xray of paranasal sinuses done and it showed a radio opaque foreign body looking like a dental burr in the left maxillary sinus and no retained tooth route. (Figure-1).



(Figure-1)



(Figure-2)

**Corresponding Author α:** Ex Principal and Head of the Department, ENT & Head-Neck Surgery, Khulna Medical College and Hospital, Khulna, Bangladesh. e-mail: ballavsk@yahoo.com

**Author σ:** Junior Consultant, Department of Medicine, Khulna Medical College and Hospital, Khulna, Bangladesh.

**Author ρ:** Associate Professor, Department of Anaesthesiology, Khulna Medical College and Hospital, Khulna, Bangladesh.

**Author ω:** Associate Professor, Department of Dentistry, Khulna Medical College and Hospital, Khulna.



(Figure-3)

We planned for removal of the foreign body through open approach. Next day we performed left Caldwell-Luc procedure under general anesthesia. We found and removed the dental burr from the left maxillary sinus (Figure -2, 3).

We did trans antral endoscopic examination and found no evidence of oroantral fistula. The patient was discharged after 48 hours and followed up after 7 days. The patient had recovered completely. Nasal Endoscopic approach may also be considered to

remove the foreign body depending upon the size and location of the foreign body.

### III. DISCUSSION

The floor of the maxillary sinus is separated from the roots of upper premolar, molar sometimes canine teeth by very thin plate of bone of alveolar sockets<sup>1</sup>. In some people alveolar roof is dehiscant and only covered by sinus mucosa. So, any dental procedure in these teeth may cause complications in the sinus. In this case report a metallic dental burr was accidentally displaced into left maxillary sinus during surgical extraction of left upper second molar tooth.

Accidental dislodgment of dental burr into maxillary sinus during dental procedures is extremely rare<sup>3</sup>. We searched international medical literatures and found only five reported cases of dental burr foreign body in maxillary sinus like our case. All of them happened during dental procedures. Three such cases dealt with by Caldwell-Luc approach<sup>2</sup>. We also removed the dental metallic burr through Caldwell-Luc approach. Table 1 presents the cases in medical literature. We had added one more such case.

Case	Cause	Method of removal
Abe et al	Tooth extraction upper molar	Through the alveolar socket by forceps
Abe et al	Tooth extraction upper molar	Caldwell-Luc
Smith and Emko	Extraction upper premolar	Caldwell-Luc
Voss et al	Extraction upper molar	Combined transconjunctival & transnasal
Kalyvas Kapsalas	Extraction upper molar	Caldwell-Luc
Ballav et al	Extraction upper molar	Caldwell-Luc (present)

In our case probable explanation is the ill fitted burr into hand piece by the assistant and not checked by the dentist thereby the burr dislodged into the sinus through the alveolar socket. There was no retained tooth root. Though the burr made its way to sinus we did not find any oroantral fistula on trans antral endoscopic examination of the sinus. The removal of foreign body from maxillary sinus may be done by endoscopic approach too through nasal cavity or by classical Caldwell-Luc procedure<sup>3</sup>. The selection of method depends on type of foreign body. The endoscopic approach is less invasive than Caldwell-Luc<sup>4</sup>. On the other hands Caldwell-Luc is more invasive than Endoscopic procedure<sup>5</sup>. Caldwell-Luc is most suitable for any type of foreign bodies specially the elongated foreign body like dental burr located in the floor of the sinus<sup>6</sup>. It ensures direct visualization and removal of foreign body irrespective of size and shape and location of foreign body inside the maxillary sinus. With

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.<sup>7</sup> Oroantral communications should be treated by establishing a physical barrier between oral cavity and maxillary sinus, and numerous surgical techniques have been introduced for repair, including rotating or advancing local tissues such as the buccal or palatal mucosa, buccal fat pad, submucosal tissue, or tongue tissue.<sup>8</sup> Small foreign bodies may be transported by the cilia of the epithelial lining in the maxillary sinus in the mucus-containing fluid against the influence of gravity, up the nasal wall of the sinus and out into the nose via the ostium<sup>9</sup>. Iatrogenic foreign body migration into maxillary sinus remains relatively rare complication, though exact morbidity seems to be underestimated and still rising.<sup>10</sup>

#### IV. CONCLUSION

Rare things are not rare. Any suspected foreign body in the maxillary sinus should be confirmed by radiography and removed. The reaction of mucosa to foreign body may interfere the muco-ciliary clearance leading to chronic sinus infection. Dental burr foreign body in maxillary sinus only can happen during dental procedure while using the drill due to inappropriate fitting of the burr into the hand piece or may be due to defect in hand piece. So, these tools should be checked before use. The classical surgical method of removal of foreign bodies from maxillary sinus is Caldwell-Luc procedure that requires a sublabial maxillary antrostomy. Due to recent technological advancement trans nasal endoscopic approach may also be considered. The ENT surgeons may be called upon to deal with this problem of foreign body in maxillary sinus. ENT surgeons should be knowledgeable to manage this kind of accidental foreign body in maxillary sinus.

#### *Conflicts of interest*

The authors declare that there is no conflict of interest.

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