

CASE REPORT



## Retrieval of fractured Gracey's curette from maxillary sinus - A rare case report

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### Abstract

This case report aims to present the management of fractured tip of Gracey's curette from the maxillary sinus. The broken tip of Gracey's curette was intruded in the maxillary sinus during periodontal treatment of maxillary left first molar. It was then retrieved successfully with the Caldwell-Luc procedure. The close anatomic relation between maxillary molars, maxillary sinus, and infratemporal fossa calls for a meticulous clinical and radiological examination before any treatment to prevent inadvertent injuries.

**Keywords:** Caldwell-Luc, Gracey's curette, inadvertent injuries, infratemporal fossa, maxillary sinus

### Introduction

Clinicians quite often experience the accidental breakage of an instrument while performing root canal, but it is very rare to break the instrument while performing a periodontal procedure. Moreover, the separated instrument getting displaced in the deeper areas of maxilla is an extremely rare entity with reporting in literature being scarce.

On literature search, it was found that there are just two British and two Japanese published case reports of dental burs displaced into the maxillary antrum and single Indian published report of periosteal elevator tip displaced in maxillary sinus.<sup>[1]</sup>

Most foreign bodies may lead to abscess formation, septicemia or may cause hemorrhage. If foreign material is left behind within a soft and/or hard tissue, it may provoke local inflammation and infection that may lead to pain and/or destruction within the surrounding tissues.<sup>[2]</sup>

For any interventional procedure on a bicuspid or a molar in either arch, it is prudent to consider anatomical vicinity of the maxillary sinus, infratemporal fossa, mental foramen and mandibular canal. The proper radiographic imaging should be utilized to acknowledge the proximity of the roots of molars and the bicuspids to the above-mentioned vital structures.

Bearing these anatomical relations in mind, a clinician should be aware of the extent of instrumentation during any procedure in the apical region to which, otherwise, can lead to neurological and sinus-related complications.

Patients with these complications are more likely be referred to an otolaryngologist for the treatment. Therefore, being familiar with this complication and its management is important. A successful search for the broken fragment and its removal entails the management of instrument breakage to avoid potential issues such as infection or complications including aspiration or swallowing of the broken fragment.<sup>[3]</sup>

This report presents an interesting and a very rare case of retrieval of the fractured tip of Gracey's curette from maxillary sinus through surgical management.

### Case Report

A patient, 28-year-old male, was referred to the department of oral and maxillofacial surgery as an emergency for the retrieval of fractured Gracey's curette tip from the left maxillary sinus region. The patient had complaint of swelling in the upper left back region of jaw. History revealed that the patient was undergoing abscess drainage and periodontal therapy for the upper left first and second molar. Incidentally, the tip of the Gracey's curette fractured and remained in the maxillary sinus for the management, of which the patient was referred.

A digital orthopantomogram confirmed the presence of a fractured Gracey's curette fragment in the vicinity of the left maxillary sinus region [Figure 1].

After careful clinical and radiological investigations, the surgical retrieval of the fractured curette fragment from the

maxillary sinus was planned, using Caldwell-Luc approach under local anesthesia with 2% lignocaine with 1:200,000 adrenaline. Crevicular incision was placed from distal margin of maxillary left canine posteriorly up to the second molar with anterior vertical releasing incision and the raising of a full-thickness mucoperiosteal flap was done [Figure 2].

Window was created into the anterior wall of maxillary sinus using carbide bur [Figure 3] and extraction of the left maxillary first molar was performed as it had poor prognosis.

The fractured curette fragment was then visualized under direct vision and was retrieved using curved artery forceps [Figure 4].

Through cavity irrigation was performed using 10% povidone-iodine antimicrobial solution and normal saline.

The defect was closed using buccal pad of fat harvested from the left side and closed using 3-0 silk suture [Figure 5].

After the surgery, to avoid swelling, pain, and infection, intravenous antibiotics (inj. ceftriaxone 1 g twice daily for 3 days and inj. metronidazole 500 mg thrice daily for 3 days), corticosteroid (inj. dexamethasone 8 mg, tapering the dose from thrice a day 1<sup>st</sup> day to 4 mg once a day on 4<sup>th</sup> day), analgesic (inj.

diclofenac 3 cc twice daily for 3 days), and antacid (inj. ranitidine 50 mg twice daily for 3 days) were prescribed. The patient was then treated with oral antibiotics and analgesics.

A povidone-iodine 2% mouthwash was given to the patient to rinse the mouth, 4 times a day for 15 days.

The patient reported with no evidence of fresh complaints and a healthy healing of the surgical site 14 days after the surgery. Post-operative orthopantomogram showed clear left maxillary sinus [Figure 6].

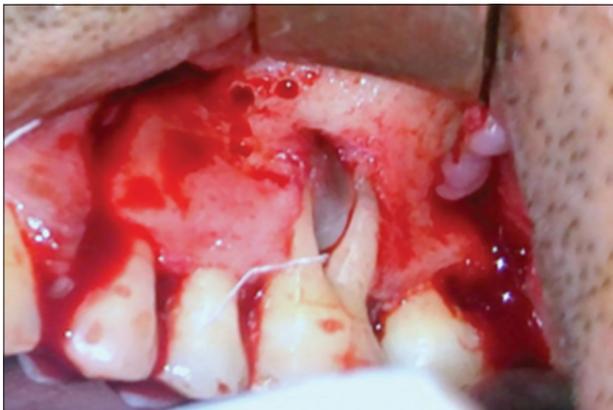
## Discussion

Burs, endodontic instruments, periodontal instruments, and dental surgical instruments have a tendency of breaking during various surgical procedures due to manufacturing defects, rust, improper handling, stress, or fatigue.<sup>[4]</sup> Consequences due to breakage of instrument could be chronic pain, sinusitis, and fistula formation. If there would be metallic foreign body in the sinus, it could lead to malignancy or if there is entrapment of lead, it may cause lead poisoning. To avoid these possible consequences, removal of foreign bodies is indicated.<sup>[5]</sup>

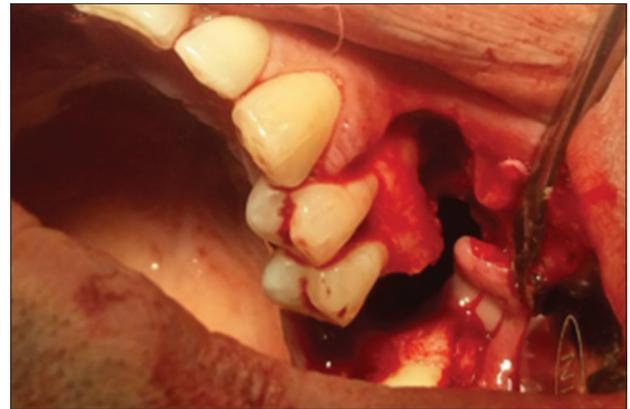
Various radiological assessment techniques can be applied to locate foreign bodies, but cone-beam computed tomography



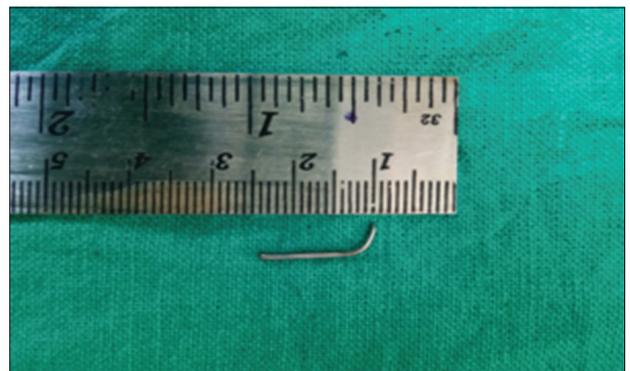
**Figure 1:** Pre-operative radiograph showing fractured fragment of Gracey's curette in the left maxillary sinus



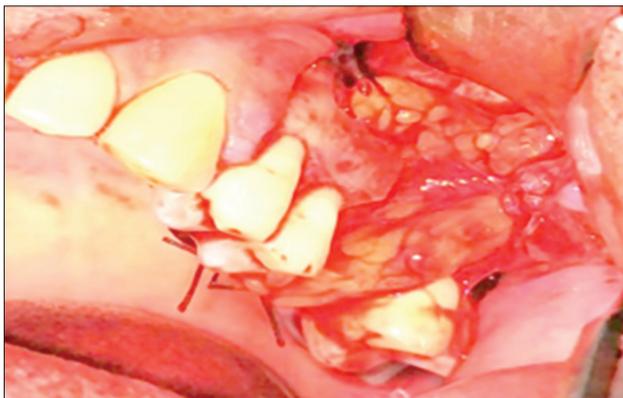
**Figure 2:** Access to maxillary sinus



**Figure 3:** Creation of window in anterior wall of maxillary sinus



**Figure 4:** Retrieved fractured fragment of Gracey's curette



**Figure 5:** Closure of defect with buccal pad fat



**Figure 6:** Post-operative orthopantomogram showing clear left maxillary sinus

could prove to be an excellent technique to identify metallic objects to its versatility (as it can identify the object near the original structure and its orientation).<sup>[6]</sup>

To remove the foreign bodies from a maxillary sinus, Caldwell-Luc procedure is the best technique in spite of technological advances like endoscopic approach.

Despite having advantages of less invasiveness, depleted risk of tooth root injury, decreased associated morbidity, and the full visualization of the sinus, open approach is better suited than endoscopic approach for the larger objects to be removed or for those positioned anteriorly within the sinus.<sup>[7]</sup>

In this case, the size of the fractured instrument fragment dictated the open approach for the retrieval of the instrument. In our case, the possible cause of the breakage of instrument could be the metal fatigue of the instrument or traumatic application.

Excessive apical force during a subapical surgical procedure could be a reason for the breakage of instruments.

It has been reported that stainless steel instruments are resistant to the dry heat range between 65.6°C and 137.8°C (150°F–280°F).<sup>[7]</sup>

Fracture of instruments can be prevented by:

- Making sure not to compromise with quality and reliability of surgical instruments
- Proper maintenance of equipment
- Discarding rusted and worn out equipment
- Using proper technique and force.

## Conclusion

Caldwell-Luc is an invasive, but the most reliable and suitable method for a removal of large-sized foreign bodies and also in situations, wherein the foreign body is lodged posteriorly or inferiorly in the sinus. Direct visual contact with the maxillary sinus is ensured in this surgical method enabling the retrieval of the foreign body.

## Clinical Significance

This case report intends to cover the management of iatrogenic lodgment of the surgical instruments such as dental burs, dental implants, impression material, and any foreign bodies into maxillary sinus.

## Acknowledgments

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