

Case Report

Treatment Protocol for Retrieval of Tooth/Root Fragment Displaced in Maxillary Sinus: Report of Two Cases

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ABSTRACT

Maxillary sinus is the largest of the paranasal sinuses and occupies the body of maxilla. The inadvertent displacement of a tooth or tooth fragment, foreign bodies like root filling materials, piece of amalgam during extraction, dental implants, needles etc. may occur in the paranasal sinuses through a variety of traumatic and iatrogenic events. Although it is questionable whether such a mishap should be regarded as a dental emergency; it is none the less a complication which should be treated without undue delay. This paper presents a report of two cases in which conservative treatment modalities have been performed and a step wise treatment protocol for the same has been discussed.

Keywords: Tooth/Root fragment, Maxillary Sinus, Treatment Protocol.

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INTRODUCTION

One of the clinical complications encountered by Oral & Maxillofacial surgeon is the accidental production of oroantral communication (OAC) along with displacement of tooth or roots into sinus [1]. Although the incidence of this complication may range from 0.31% to 3.8% after simple extraction of maxillary posterior teeth due to the close anatomical relationship between the root apices of the premolar, molar teeth with the sinus floor [2]. The thinness of the antral floor in that region ranges from 1 to 7 mm [2,3]. Displacement of tooth and root into the antrum occur during their removal when the force is substituted for skill and where patience has been lost.

Several methods for the retrieval of the root or tooth have been described over the years. The aim of this report was to give systematic approach for the retrieval of tooth/root.

CASE REPORT

Case 1

A 52 year old male patient in good general health reported to the Department of Oral and Maxillofacial surgery with the

chief complaint of inability to chew food due to pain in upper right back region of the jaw for last 10 days. Clinical and Radiographic examination revealed carious right first maxillary molar and patient was advised extraction of the same (**Figure 1**). While extracting the tooth palatal root was accidentally displaced in the maxillary antrum.

An OPG was taken, which revealed vertically lying radiopaque fragment in the maxillary antrum suggestive of displaced palatal root of right maxillary first molar (**Figure 2**).

Confirmation of OAC was done using nose blowing and mirror fog test. Once the communication was confirmed, buccal mucoperiosteal flap was raised. The widening of the orifice was accomplished with bone ronguer to facilitate root removal followed by copious irrigation of antrum through the socket orifice with 9% normal saline solution which washed the root out through the socket (**Figure 3**) and root was grasped with the narrow suction tip (**Figure 4**). Thorough examination of the socket for any sharp bony spicule/fragment was done, followed by closure of oro-antral communication with buccal sliding flap using 3-0 silk suture (**Figure 5**).



Figure 1: Carious right maxillary first molar.



Figure 5: Closure of the surgical site.

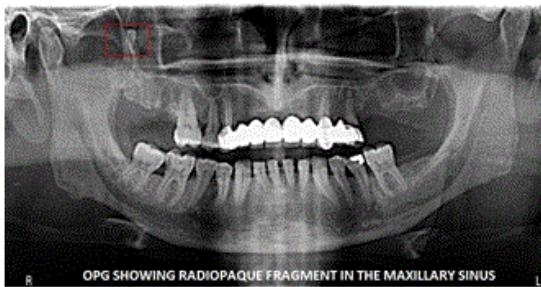


Figure 2: OPG showing radiopaque fragment in the maxillary sinus.

Case 2

Another patient, aged 45 years male reported to the department with chief complaint of pain in the right back region of the upper jaw for last two days. Patient had undergone extraction of right maxillary first molar two days back.

An IOPA was taken, which revealed horizontally lying radiopaque fragment in the maxillary antrum suggestive of displaced root of right maxillary first molar (Figure 6).

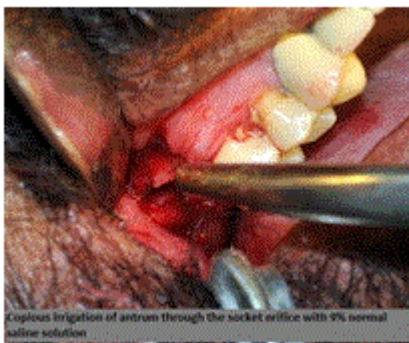


Figure 3: Copious irrigation of antrum through the socket orifice with 9% normal saline solution.

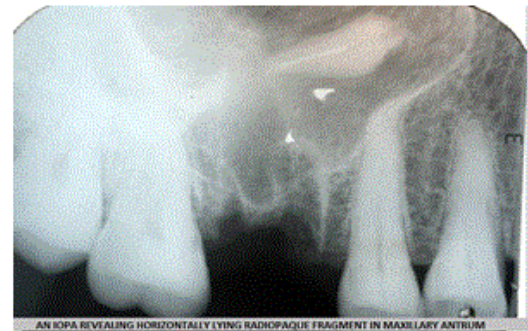


Figure 6: Iopa revealing horizontally lying radiopaque fragment in maxillary antrum.



Figure 4: Retrieval of the displaced root.

After confirming the oral antral communication by nose blowing and mirror fog tests, An outpatient surgical procedure was performed with 2% lignocaine with 1:200,000 adrenaline, buccal mucoperiosteal flap was raised (Figure 7). The widening of the orifice was accomplished with bone ronguer to facilitate root removal followed by copious irrigation of antrum through the socket orifice with 9% normal saline solution and careful suctioning with narrow tip suction (Figure 8) but the root couldn't be retrieved so the socket was packed with ½ inch wide sterile dry gauze (Figure 9). The packed sterile gauze was pulled out in one stroke (Figure 10) and this removed the root (Figure 11). Thorough examination of the socket for any sharp bony spicule/fragment was done. Closure of oro-antral communication with buccal sliding flap was done using 3-0 silk suture (Figure 12).



Figure 7: Buccal mucoperiosteal flap was raised.

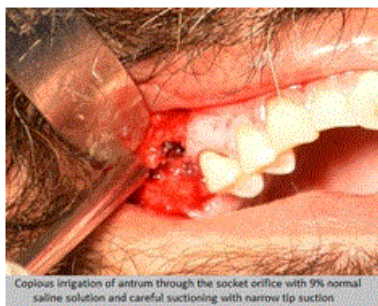


Figure 8: Copious irrigation of the antrum through socket orifice with 9% normal saline solution and careful suctioning with narrow tip suction.



Figure 9: Packing of the socket with 1/2 inch wide sterile dry gauze.



Figure 10: Retrieval of the root by pulling of the packed gauze out in one stroke.

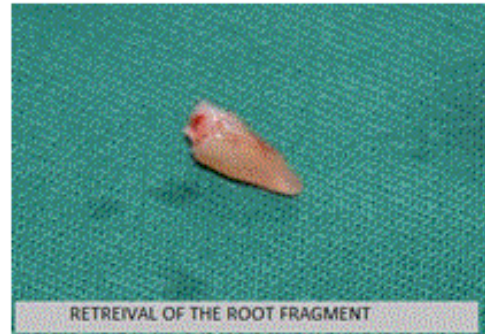


Figure 11: Retrieval of the root fragment.

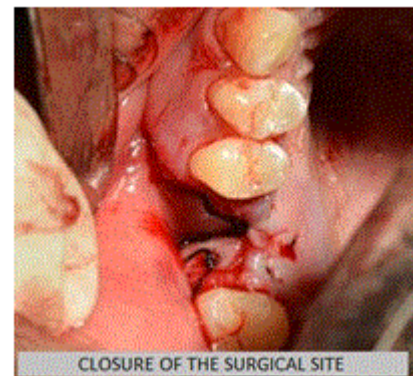


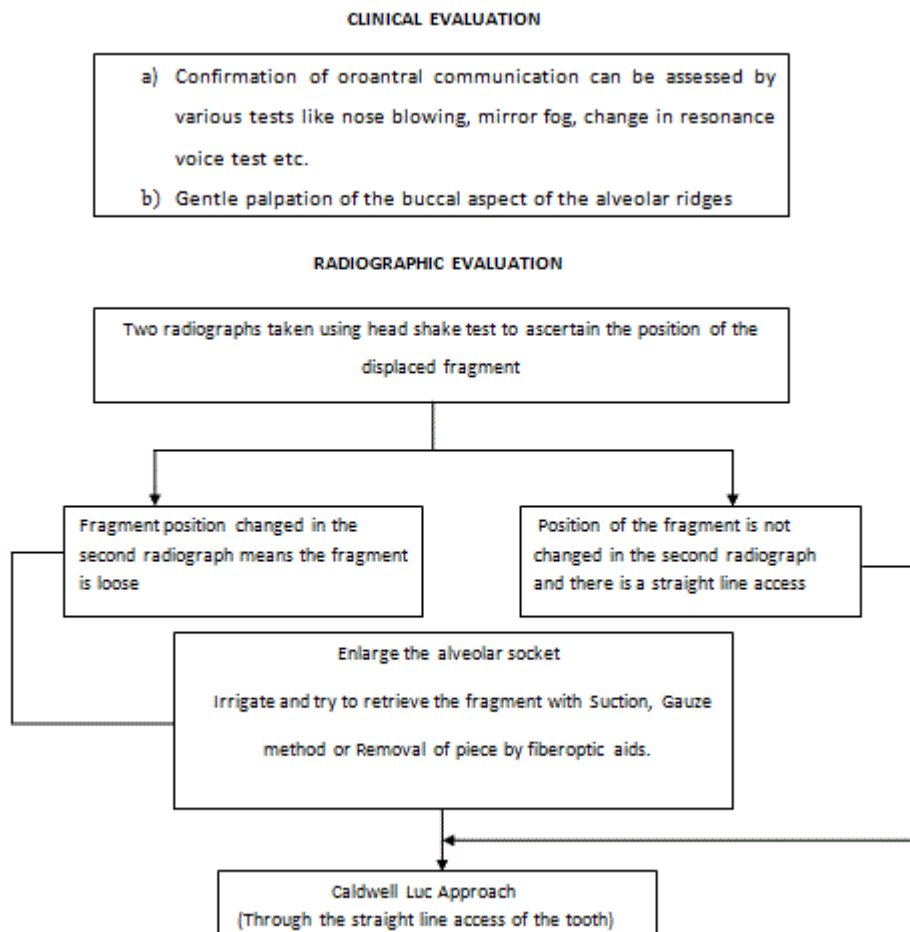
Figure 12: Closure of the surgical site.

DISCUSSION

Displacement of the tooth or the root in the maxillary sinus is most likely to occur when the root apices of premolars and molars are in close proximity to the floor of sinus, when the floor has been eroded by: a periapical lesion during an extraction of an isolated molar, or it may also occur during their elective removal, when force is substituted for skill and, where patience has been lost. This may lead to creation of oral antral communication (OAC). If a root has been forced into the antrum, its removal is indicated because the longer the management is deferred; the greater is the risk of inflammatory changes in lining membrane [4].

In order to retrieve the tooth/root fragment we should proceed with clinical examination and appropriate radiographic confirmation in the form of Peri-apical Xray, Orthopantomogram (OPG), Paranasal Sinus (PNS) views and CT scans if needed [4,5]. Availability of long gauzes, roll gauze packing and other desired diagnostic aids are necessary [6]. Fiberoptic equipment has further made the life easier. Though, there are numerous methods given in the literature for the retrieval of the tooth or tooth root from the antrum. We are proposing a systematic protocol for the same [7,8].

The following stepwise management plan can be instituted for the retrieval of tooth/ root displaced in the maxillary sinus.



CONCLUSION

A displaced tooth is a rare but potentially serious complication of tooth extraction. Careful pre-operative planning/evaluation, proper radiographs, adequate access and visibility, proper technique and controlled use of force should be utilized to prevent a tooth from getting displaced. So far by our experience gained it can be concluded that the retrieval of root displaced in the maxillary sinus should start with simple measures thereafter proceeding to the complex surgical procedures.

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