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Extraction of upper first molar resulting in fracture of maxillary tuberosity

CASE REPORT

Hasan Ayberk Altuğ[1], Sermet Sahin[2], Metin Sencimen[3], Necdet Dogan[3]

[1]Dental Service, Military Hospital, Diyarbakır; Departments of [2]Periodontology; and [3]Oral and Maxillofacial Surgery, Gülhane Mil. Medical Academy, Ankara, Turkey

Correspondence to: Hasan Ayberk Altuğ, Asker Hastanesi Diş, Servisi Dağkapı, Diyarbakir, Turkey
Tel.: +90 412 228 82 25
Fax: +90 412 223 62 37
e-mail: aybork@yahoo.com

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Abstract – Fracture of the maxillary tuberosity sometimes can happen when pneumatization of the maxillary sinus extends between the roots of upper molars. Some factors may lead to this complication including prominent or curved roots, chronic periapical infection, hypercementosis, root ankylosis and tooth fusion. This paper reports a case with fracture of the maxillary tuberosity following extraction of an upper first molar in general dental practice. Prevention from any complication during extractions of maxillary molars with large antral enlargement is possible with careful preoperative examination and accurate surgical planning. The general dentist should be prepared to refer such cases to an oral surgeon when facing difficulties like the presented case.

Fracture of the alveolar process can be seen during tooth extractions. These fractures occur most often in the anterior or premolar regions of jaws in young and adults (1). When maxillary sinus is enlarged between the roots of upper molars and the maxillary tuberosity, these types of fractures can be seen during extraction of upper molars. Some factors may predispose for this complication such as prominent or curved roots, chronic periapical infection, radicular cyst, hypercementosis, ankylosis and tooth fusion (2, 3).

Such a complication may lead to occurrence of oro-antral fistula or serious infection, which may terminate with maxillary necrosis or deafness (4). The purpose of this case report is to present a case with fracture of a maxillary tuberosity and emphasize the importance of a preoperative periapical radiograph.

Case report

A 22-year-old male patient was referred to our clinic after extraction of his upper right first molar because of chronic periapical infection by his dentist. While the dentist was extracting tooth, maxillary tuberosity fracture occurred. Although there were brisk haemorrhage and tenacious soft tissue tethering, maxillary tuberosity segment including all upper molars was removed from this region by his dentist. On the examination of the removed specimen, the fractured segment included all three upper molars and there was periapical lesion, which had weakened the maxillary tuberosity against extraction force (Fig. 1a,b). The patient requested surgical intervention to solve this problem. The segment was not repositioned because primary stabilization could not be achieved. An oro-antral communication was observed during intraoral examination (Fig. 2a). The soft tissues were secured back with 3/0 black silk sutures. Sutures were removed after ten days. Clindamycine, naproxen sodium and chlorhexidine mouthwash were prescribed postoperatively for a course of 5 days. The patient was advised to avoid blowing his nose to avoid development of an oro-antral fistula. The patient had an uneventful recovery (Fig. 2b).

Discussion

When sensing any movement of maxillary during extraction of the upper molars, the procedure should be terminated immediately. If only a small bony fragment is involved, the tooth and bone can be removed after dissection of the soft tissues. When a large bony fragment is present, it is recommended that the extraction should be abandoned and surgical removal of the tooth performed by using root sectioning (5). The successful treatment of alveolar fractures is based on proper reduction, repositioning the fractured segment and its satisfactory stabilization. Closed or open reduction techniques can be used. The segments should be stabilized in place for 4 weeks. During this period, occlusal grinding should be done to prevent premature contacts (6–8). In our case, teeth and the attached bony fragment were completely separated without any notable attachment. The segment also included an infected lesion, which also had the possibility to complicate the bony fixation. Therefore, we would not want to reposition the bone fragment and the soft tissue was sutured.

Prevention of this complication is the best option and should include a proper preoperative examination and

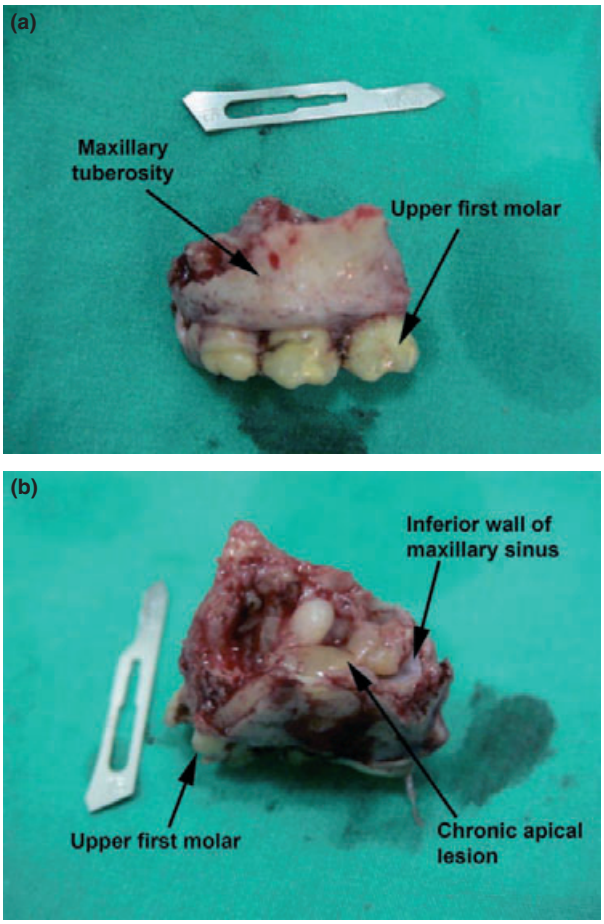

Fig. 1. (a): Lateral view of fractured maxillary tuberosity. (b): Superior view of fractured maxillary tuberosity.

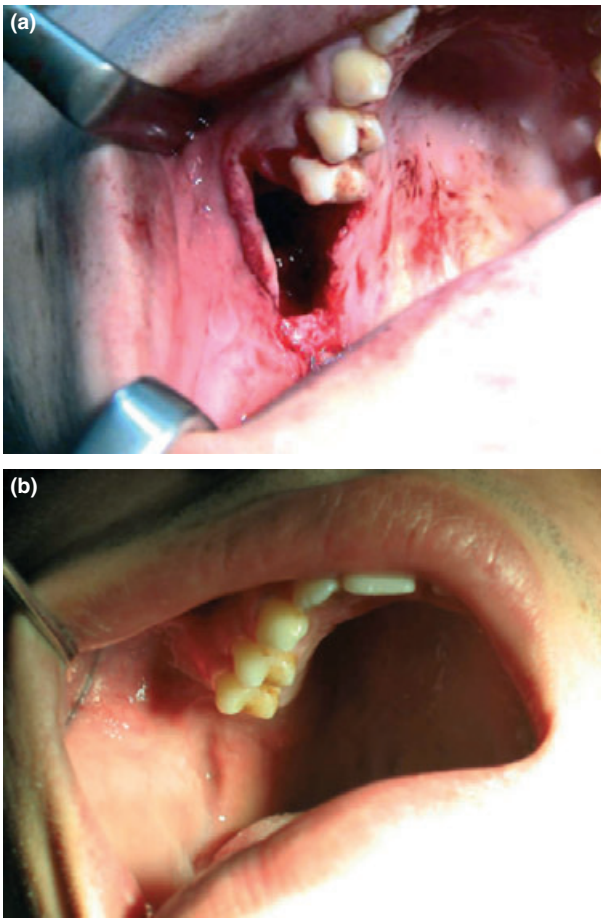

Fig. 2. (a): Intraoperative view. (b): Postoperative view at the twenty-first day.

right surgical plan. Especially, it has been known from the preoperative radiography that there was a close relationship between maxillary sinuses to the roots of the posterior teeth. In conclusion, adequate bone and ridge contour should ideally be preserved for later prosthetic rehabilitation (3). If not, it may present difficulties for the prosthetic treatment as in our case.

Shah and Bridgman (2) reported a case in which the extraction of an upper second molar had been complicated by a maxillary tuberosity fracture. They concluded that when a tethering of the lateral and medial pterygoid muscles to the fragment is recognized by a general dentist, the maxillary tuberosity should not be removed and referred to a specialist unit. When our patient was taken to operating room, the fractured segment had been already removed.

Deafness which is the most frightening complication may occur because of tuber fracture. Cattlin (4) reported that it had occurred from disruption the pterygoid hamulus and tensor veli palatini collapsing the opening of the eustachian tube, after maxillary tuberosity fracture.

In conclusion, prevention against any complication is the best option including a careful preoperative examination and right surgery plan for extraction. The general dentists must refer to an oral surgeon, as soon as they encounter difficulties like the one we have described.

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