Fracture of the Maxillary Tuberosity: A Case Report

SUMMARY

In everyday dental practice, during typical tooth extraction or oral surgery, sometimes unexpected complications happen. Concerning extraction of maxillary molars, fracture of the maxillary tuberosity is among the most delicate. This fracture is a serious complication; depending on its dimensions, it can present surgical, as well as prosthetic problem. From the prosthetic point of view, anatomic area of maxillary tuberosity is especially important for providing desired retention and stability of upper denture. The aim of this paper is to show the surgical therapeutic approach to the treatment of the maxillary tuberosity fracture occurred during extraction of the maxillary second molar.

In particular case, after complete intraoral examination and X-ray analysis, possible fracture of tuber maxillae could be predicted. Dentist should mention this to the patient before starting the procedure and try to avoid it with cautious and professional work. Otherwise, this can be a matter of criminal act, with possible legal consequence.

Keywords: Maxillary Tuberosity, fracture; Maxillary Molars, extraction

Introduction

In everyday dental practice, during typical tooth extraction or oral surgery, sometimes unexpected complications happen. Peri-operative complications can happen due to multiple causes, but unfortunately, the main cause is still the iatrogenic factor. Some of these complications happen relatively often, and some extremely rarely.

During extraction of maxillary molars many complications can happen, and fracture of the maxillary tuberosity is among the most delicate. This fracture is a serious complication; depending on its dimensions, it can present surgical, as well as prosthetic problem. From the prosthetic point of view, anatomic area of maxillary tuberosity is especially important for providing desired retention and stability of upper denture.

There are numerous circumstances that could increase the risk of appearance of this peri-operative complication: weakness of the tuber maxillae as a result of the strong maxillary sinus pneumatisation, low resistance of bone in this area as a result of impacted or semi-impacted maxillary third molar, solitary maxillary molar, maxillary molar with extremely divergent or hypercementotic roots or anomaly of the number of roots, and tooth germination - fusion of second and third maxillary molar.

As a result of smaller elasticity of bone tissue, the risk of maxillary tuberosity fracture in older patients increases. In addition, the risk of this complication increases during ankylosis of maxillary molars, which gives resistance to tooth luxation movements during extraction. In some particular cases, genesis of this complication can indicate a therapeutic mistake (vitium artis). Namely, as a result of the uncontrolled force, as well as the use of inappropriate instrument during extraction or inappropriate use of elevator, overly deep or careless application of the forceps are possible factors of additional risk for emergence of this complication.

Diagnosis of the maxillary tuberosity fracture assumes inspection, palpation and analysis of the panoramic X-ray (orthopantomogram). Existence of deformity is appointed with inspection during intraoral examination. Orthopantomogram confirms the diagnosis.
by finding of fracture line, which can be palpated from the buccal or palatal side. Fracture of the maxillary tuberosity can be confirmed since the time of performing the extraction, because together with the forceps and tooth, the whole tuber maxillae displaces. Oroantral communication usually accompanies this complication6.

The aim of this paper is to show the surgical therapeutic approach to the treatment of the maxillary tuberosity fracture occurred during extraction of the maxillary second molar.

Case Report

A 45-year old female patient reported pain in the area of second and third maxillary molar to her private dentist. Beyond the clinical examination, without taking an X-ray, extraction of the third maxillary molar was performed by the dentist. However, after unsuccessful attempt of tooth removal, the patient was sent to the Clinic of oral surgery at the University dental clinical centre “Sts. Pantelejmon” in Skopje. Patient had not been informed about the previous nascent complication. Furthermore, the dentist did not point out nor specify kind of complication.

Patient was accepted the same day at the Clinic for oral surgery. From the dental history, we couldn’t find out that fracture of the maxillary tuberosity happened as the patient was not informed about that. However, during intraoral examination mobility of the bone and soft tissue in the area of the maxillary tuberosity could be noted. Based on affirmative intraoral clinical finding, the panoramic X-ray was made, which disclosed the existence of a fracture line at the area of right maxillary tuberosity, expanding to the space between second and third maxillary molar (Fig. 1).

As the fractured tuberosity could not be repositioned, surgical removal of the fractured tuberosity together with both teeth was performed (Fig. 2). During surgery, the oroantral communication was confirmed due to the fracture of the maxillary sinus walls (Fig. 3). Due to soft tissue injury, the buccal adipose corpus could be seen (Fig 4). In the same act, after levelling bone edges and irrigation of the wound, it was completely sutured.

Figure 1. Orthopantomogram X-ray of the patient showing the fracture line in the area of maxillary tuberosity, performed during the extraction of third molar

Figure 2. The removed fragment of the maxillary tuberosity, together with teeth

Figure 3. The created oroantral communication after the removal of maxillary tuberosity

Figure 4. Intraoral view of the exposed buccal adipose corpus
After surgery, the usual postoperative instructions were suggested, as well as the food regime. In addition, antibiotic therapy (Neloren 600mg, twice a day for 5 days) and corticosteroids (Dexamethason 4mg, once daily for 3 days) were ordered to the patient.

Postoperative period was characterised by intraoral haematoma (Fig. 5) and extraoral presence of oedema (Fig. 6), as a result of the tuberosity fracture and long lasting of surgery.

Discussion

The fracture of the maxillary tuberosity is one of the worst peri-operative complications that may happen during tooth extraction in the maxillary molar region⁵. Several therapeutic procedures can be implemented depending on different factors, such as patient’s general health and age, the reason for tooth extraction, the existence of oroantral communication, condition of the alveolar process, the fracture line, the presence of the antagonistic tooth, etc¹,¹¹.

In certain circumstances, after the detailed intraoral examination and analysis of X-ray, the possibility for the fracture of the maxillary tuberosity during tooth extraction can be foreseen, and duty of the dentist is to inform the patient in advance, but caution and professionalism during the procedure must be maintained¹⁰. If the maxillary tuberosity fracture nevertheless happens, the dentist must diagnose the complication and inform the patient about it. Otherwise, this managing could be considered as a criminal act of the neglectful dentist, with low consequences⁹.

There are several possibilities for treatment of the maxillary tuberosity fracture. If the soft tissue is not harmed, and the fractured tuberosity is still attached to the periosteum, tooth could be carefully detached from the bone and removed, and the bone fragment immobilized. If the tooth was without any pathological changes (extraction from orthodontic reasons), it can be maintained, and the fractured tuberosity repositioned and immobilized. At the same time, extraction should be postponed for 6-8 weeks, and afterward extraction of the tooth should be performed surgically circumstances⁷. If the fractured bone fragment is detached from the soft tissue, it should be separated and removed, the sharp edges smoothed, and soft tissue sutured. Once oroantral communication is present, surgical closure is obliged⁷. Regardless the procedure, antibiotic cover is mandatory in order to prevent secondary infection.

Best therapeutic option is, certainly, prevention of provoking such a complication, applying a detail clinical examination, proper X-ray analysis, and the use of adequate tooth extraction technique. If during the tooth extraction certain degree of mobility of the maxillary tuberosity is established visually and tactually, it is especially important to stop with further extraction and try to separate the roots, which should reduce the possibility of this complication occurrence.

Fracture of the maxillary tuberosity is a serious complication that creates difficulties for the subsequent prosthetic rehabilitation. Moreover, it may provoke serious secondary complications (bleeding, maxillary sinus infection, etc). Dentist must estimate and predict its possible creation and refer the patient for oral-surgery intervention.

References


Correspondence and request for offprints to:
Ass. dr Biljana Evrošimovska mr. sci.
Faculty of dentistry, Department of oral surgery
Str. Vodjanska 17
1000 Skopje, FYR Macedonia
E-mail: tatijana_78@yahoo.com