Case Report

Dislocation of an upper third molar into the maxillary sinus after a severe trauma: a case report

Cai H-X, Long X, Cheng Y, Li X-D, Jin H-X. Dislocation of an upper third molar into the maxillary sinus after a severe trauma: a case report.

Abstract – Dental injuries are common following facial trauma. This article presents a rare injury: the dislocation of a third molar into the maxillary sinus after complex mandibular and maxillary tuberosity fractures. The possible mechanism and clinical treatment are discussed.

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Key words: severe dental trauma; complex facial fractures; tooth dislocation; maxillary sinus

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Accepted 28 June, 2005

Dental injuries such as crown/root fracture, subluxation, avulsion and concussion are very common following facial trauma (1, 2). However, dislocation of a tooth into the maxillary sinus after facial fracture is rare. Tsai et al. (3) and Tung et al. (4) reported one such case with intrusion of a molar into the maxillary sinus following facial fractures. Traffic accidents are one of the most common causes of facial fractures. Fractures of the mandible are often classified according to anatomical locations; the coronoid, condyle, subcondylar region, the ramus, angle, body, symphysis, parasymphysis and alveolus are terms commonly used to describe fracture regions (5–7). This article presents a case of the dislocation of a third molar into the maxillary sinus after complex mandible and maxillary tuberosity fractures.

Case report

A 17-year-old boy with a history of facial trauma was referred to the Department of Oral and Maxillofacial Surgery, Hospital of Stomatology, Wuhan University on 30 November 2004 after being treated previously in a general hospital. Four days before, while driving a motorcycle, the boy got involved in an accident and lost consciousness for about 15 min, he was sent to a local hospital in emergency. After his right forearm fractures were reduced and fixed and his general condition became stable, he was sent to our hospital for further treatment.

A depressed, stitched wound was seen in the left side of the chin. Avulsed gingiva was found at the right side of the maxilla and the left side of the mandible. When checking the teeth of the right maxilla, we found that the first molar displayed decayed roots, the second molar had abnormal mobility and the space between the second bicuspid and the second molar was enlarged. Palpation revealed tenderness of the preauricular region of both sides and of the right ramus of the mandible. Mouth opening was limited to 10 mm without deviation. There was neither chin nor lip numbness upon examination. The mandibular left premolars and the first molar and the maxillary right third

molar were found to be missing and there was malocclusion.

A panoramic radiograph showed overlapping segments in the left condyle, a slightly uneven bone density in the right condyle and a discontinuity of cortical bone in the left parasymphysis. Also a vertical fracture line could be seen running down from the right coronoid process nearly to the angle of mandible. The mandibular left premolars and the first molar were absent and the third molar in the right maxilla displaced upward (Fig. 1). Waters' projection revealed a displaced molar in the right maxillary sinus. The density of the right sinus was higher than that of the left side.

Computed tomographs (CT) clearly demonstrated that there might be a tooth in the right maxillary sinus, the posterior wall of which was broken (Fig. 2). CT also showed a bilateral sagittal split fracture of the condyles. Three-dimensional CT reconstruction of the facial bones revealed the fractures at the maxillary tuberosity, the ramus and the parasymphysis (Fig. 3).

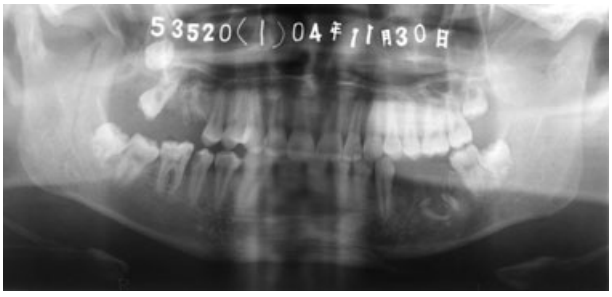

Fig. 1. A panoramic radiograph.

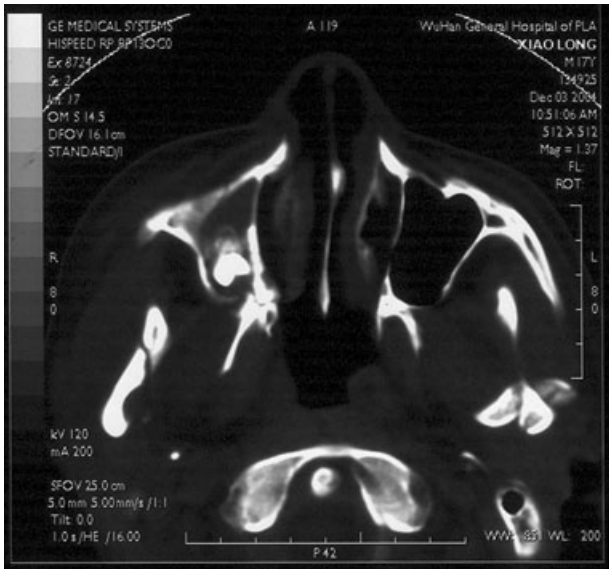

Fig. 2. Computed tomography clearly demonstrated that there might be a tooth in the right maxillary sinus.

Fig. 3. Three dimensional computed tomography reconstruction of the facial bones revealed the fractures at the maxillary tuberosity, the ramus and the parasymphysis.

Under general anesthesia, the patient received open reduction and fixation of the bilateral condyle and parasymphysis fractures, and the bone fragments of the maxillary tuberosity and the displaced tooth were removed simultaneously. The left condylar fracture was fixed with two long screws and the other side with microplates and the parasymphyseal fracture was fixed with two miniplates. Both condylar fractures were confirmed to be split fractures by intraoperative observation. The second maxillary molar was extracted because of its poor bony support and the decayed roots of the maxillary first molar were also extracted. Intraoperative examination after the tooth and adjacent bone fragments were removed through buccal mucosa incision revealed that the mucosa at the bottom of the sinus was broken. Antibiotics were used to prevent infection postoperatively and the recovery process was uneventful.

Discussion

Reports on frequency distribution of mandible fractures showed that the ramus and coronoid process fractures are among the lowest incidence (8–10), though there was a slight difference in the description of anatomic regions among different authors. Only 32 cases of condylar head fracture of both sides were found in 444 condylar fractures (11). In this case, both the ramus and coronoid are involved concurrently in combination with bilateral sagittal split fracture of the condyles.

There are many factors contributing to variations in characterizing mandible fractures. Clinicians may

sometimes find it difficult to describe a mandible fracture accurately, especially complex fractures that involve two or more adjacent anatomical regions (5). In this case, the fracture line ran through the coronoid, the ramus and angle at the same time. Fortunately there was neither displacement nor deviation of the fragments and no need for reduction and fixation.

When tracing the cause of the dislocated molar, we found that the hit-point was on the left side of the chin, and the blow must have been directed not only upward but also medially and posteriorly, resulting in concentration of the stress in the right ramus and in the molars. In relation to the second molar, the maxillary third molar was located in an upper, posterior position. As the maxillary second molar was dislocated due to the trauma it pushed the third molar backward and upward. Thus the third molar was forced into the sinus and the maxillary tuberosity was broken.

The higher density of the right sinus on radiographs was indicative of effusion or inflammation. A radical maxillary sinusotomy was performed to avoid sinusitis during the operation. The patient had no symptoms of sinusitis and the high density of the sinus found on X-rays alleviated 10 days postoperatively.

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