

Influence of Unerupted Third Molars on Angle and Condyle Fracture

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ABSTRACT

Condylar and angle fractures are the most common types of mandibular injuries. There is evidence in the literature suggesting that the presence of unerupted lower third molars increases the risk of angle fracture and reduces the chance of condyle fracture. The present paper reports on a case of a 19-year-old Caucasian man who had bilateral angle fracture associated with the two lower unerupted third molars. No other fracture was detected on the panoramic radiograph. This case suggests that unerupted lower third molars increase the risk of angle fracture whereas preventing condyle fracture. Reduction of the bone mass of the angle in the presence of third molars and disruption of the oblique ridge with partially erupted molars support our findings. As the treatment of condyle fracture is more complex, it might not be appropriate to strengthen the mandibular angle, making the mandible more vulnerable to condylar fractures by means of prophylactic extraction of asymptomatic unerupted third molars.

Keywords: Third molar, unerupted tooth, mandibular fractures, panoramic radiograph.

Influência de Terceiros Molares não Erupcionados em Fratura de Ângulo e Côndilo

RESUMO

Côndilo e ângulo são os locais onde as fraturas mandibulares ocorrem com maior frequência. Há evidências na literatura sobre a propensão para fratura de ângulo mandibular na presença de terceiros molares inferiores não-erupcionados, bem como redução da respectiva probabilidade de fratura em côndilo. O caso relatado envolve um homem branco, de 19 anos de idade, que teve fratura bilateral do ângulo em associação com os dois terceiros molares inferiores não-erupcionados. Nenhuma outra fratura foi detectada na radiografia panorâmica. Os achados deste caso ilustram a evidência de que terceiros molares inferiores não irrompidos aumentam

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o risco de fratura de ângulo, reduzindo, porém, o risco de fratura em côndilo. Algumas teorias sobre essa associação envolvem a redução da massa óssea do ângulo na presença do terceiro molar, além da ruptura da linha oblíqua quando eles estão parcialmente erupcionados. Como a fratura do côndilo tem um tratamento mais complexo, a exodontia profilática de terceiros molares não-erupcionados assintomáticos pode não ser apropriada, por fortalecer o ângulo mandibular e tornar a mandíbula mais vulnerável às fraturas condilares.

Palavras-chave: Dente serotino, dente não-erupcionado, fraturas mandibulares, radiografia panorâmica.

INTRODUCTION

Third molar impaction shows a high frequency mostly because of insufficient space for eruption (1). Gradual evolutionary jaw bone reduction caused by new feeding habits that decrease the need of chewing resulted in a growing incidence of third molar impaction in the last decades (1). Therefore, asymptomatic unerupted wisdom teeth are often prophylactically extracted, even though there is evidence against this procedure (2,3).

The mandible is the facial bone most susceptible to trauma because of its forward projected position in the facial skeleton (4). Mandibular fractures may occur in different sites according to different trauma mechanisms. Condyle and symphysis are the most affected sites. Angle fracture is the third most frequent type of injury (5), affecting mostly young men (6,7), and its bilateral form is rare (8).

There is evidence in the literature that the presence of unerupted lower third molars increases the likelihood of angle fracture, while it decreases the chance of condyle fracture. The aim of this paper is to report on a case of bilateral angle fracture associated with the presence of two lower unerupted third molars, without the occurrence of condyle fracture.

CASE REPORT

A 19-year-old Caucasian man was referred to the Oral Radiology Center of Piracicaba Dental School (University of Campinas – Piracicaba, SP – Brazil) for a panoramic radiograph. The patient reported he was hit on the chin during a fight the day before. He complained of pain in spite of having received analgesics. Upon physical examination, limited mouth opening, slight swelling, and absence of bruises were detected.

A panoramic radiograph was taken using Picasso Trio (E-WOO technology, Giheung-gu, Republic of Korea) with the following exposure factors: 10 mA, 70 kVp, and 14 s. Fracture lines were visible from the 38 and 48 to the mandibular angle of both sides (Figure 1). More than one fracture line was present on the left side. No other fracture was detected on the panoramic radiograph.



FIGURE 1 – Fracture lines were visible on the panoramic radiograph from the 38 and 48 to the mandibular angle of both sides. The patient could not remove his earring.

DISCUSSION

This paper illustrates the association of unerupted lower third molars with angle and condyle fracture. These are the sites where mandibular fractures most often occur. The panoramic radiograph revealed that the angle fractures were in close association with the lower unerupted third molars. Many authors have already suggested that unerupted third molars seem to weaken the mandibular angle, reducing the osseous mass of this area (9). A study in animals showed that the deeper the impaction, the greater the angle susceptibility (10). However, recent clinical studies have suggested that partially erupted third molars increase the risk of angle fracture by disruption of the external oblique ridge (6,11). The relative risk for angle fracture in patients who have lower unerupted third molars is increased from 2.1 to 3.8 times (6,8).

Although the lower third molars of our case were in their root development period, we detected mesial angulation, classified as Class-2-B according to the Pell and Gregory system (when the third molar is located between the cement-enamel junction and the occlusal plane of the second molar, with insufficient space for eruption). Different conclusions have been drawn with regards to the position of the third molars leading to angle fractures. Some authors have suggested that the position of the third molars in the present case have a higher association with angle fractures (7,8), whereas other authors have indicated that third molars classified as Class-1-A and in vertical and distoangular positions are more prone to angle fractures (6,11).

Despite the impact on the chin, no condyle fracture was detected in our patient. This is in agreement with the finding that unerupted third molars reduce the risk of condyle fracture (3,6,8). As the risk of angle fracture is increased, the forces are dispersed in the

condylar area, reducing the chance of condyle fracture. If the angle has no impacted third molars, it is more resistant to fracture and the forces are transferred to the condyle (11). According to the literature, the relative risk of condyle fracture is increased from 2 to 2.5 times in patients who do not have the lower third molars (6,8).

The treatment of condyle fracture is complex, with possible sequelae like facial nerve weakness, malocclusion, and substantial discomfort. Conversely, excellent reduction and stable fixation of angle fractures are easily achieved because of a wide surgical field, with fewer postoperative complications (3,6,11). Therefore, it might not be appropriate to strengthen the mandibular angle, making the mandible more vulnerable to condylar fractures by means of prophylactic extraction of asymptomatic unerupted third molars.

CONCLUSION

The case presented in this paper illustrates the association of unerupted third molars with mandibular angle fractures, since a bilateral angle fracture related to the unerupted 38 and 48 teeth was described. Furthermore, the absence of condyle fractures was regarded as a sign that the angle fractures of this case protected the condyle region from another injury.

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