

Original Article

Incidence of Angle Fractures associated with Impacted Third Molar: A Clinical Study

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ABSTRACT:

Background: Impacted tooth is a tooth which is completely or partially unerupted and is positioned against another tooth, bone or soft tissue so that its further eruption is unlikely, described according to its anatomic position. Hence; we planned the present study to assess the incidence of angle fractures associated with impacted third molars. **Materials & methods:** We planned the present study to assess the incidence of mandibular angle fractures associated with impacted third molars. A total of 100 patients scheduled to undergo surgical removal of impacted mandibular third molar were included in the present study. Surgical removal of mandibular third molar was carried out under local anaesthesia. Incidence of angle fractures was recorded and was analyzed by SPSS software.

Results: A total of 100 patients were included in the present study, which were scheduled to undergo surgical removal mandibular third molar. Mean age of the patients of the present study was 22.5 years. Incidence of mandibular angle fracture associated with surgical removal of mandibular third molar was 21 percent. **Conclusion:** Surgical removal of impacted mandibular third molar is significantly associated with angle fractures.

Key words: Angle, Fracture, Impacted, Incidence.

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INTRODUCTION

Impacted tooth is a tooth which is completely or partially unerupted and is positioned against another tooth, bone or soft tissue so that its further eruption is unlikely, described according to its anatomic position.^{1,2} The third molar impaction is occurring in about 73% of the young adults in Europe, these teeth generally erupt between the ages of 17 and 21 years. It has also been reported that the third molar eruption varies with races, such as in Nigeria mandibular third molars may erupt as early as 14 years and in Europe it may erupt up to the age of 26 years.^{3,4} Factors such as the nature of the diet that may lead to attrition, reduced mesiodistal crown diameter, degree of use of the masticatory apparatus and genetic inheritance also affect the timing of third molar eruption.^{5,6} Partially erupted third molars represent lines of relative weakness within the angle region. It has been hypothesized that the severity of third molar impaction within the mandible is associated with a variable risk for angle fracture.^{7,8}

Hence; we planned the present study to assess the incidence of angle fractures associated with impacted third molars.

MATERIALS & METHODS

We planned the present study in the department of oral surgery and it included evaluation of incidence of mandibular angle fractures associated with impacted third molars. Ethical approval and written consent was obtained before the starting of the study. A total of 100 patients scheduled to undergo surgical removal of impacted mandibular third molar were included in the present study. Inclusion criteria for the present study included:

- Patients scheduled to undergo surgical removal of impacted mandibular third molar,
- Patients between the age group of 18 to 35 years,
- Patients with negative history of any bone metabolic disorder,
- Patients with negative history of any other systemic illness

All the patients were given antibiotic therapy prophylactically. Surgical removal of mandibular third molar was carried out under local anaesthesia. Incidence of angle fractures was recorded and was analyzed by SPSS software.

RESULTS

A total of 100 patients were included in the present study, which were scheduled to undergo surgical removal mandibular third molar. Among these 100 patients, 60 were males while the remaining 40 were females. Mean age of the patients of the present study was 22.5 years. Incidence of mandibular angle fracture associated with surgical removal of mandibular third molar was 21 percent.

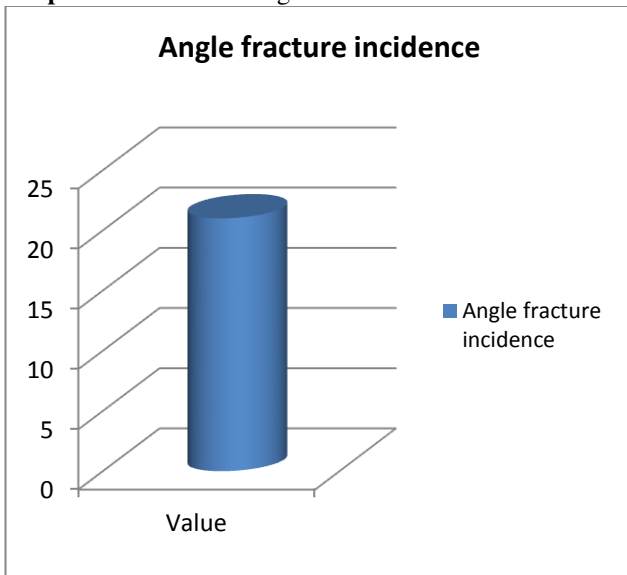
Table 1: Demographic details

Parameter	Value
Mean age (years)	22.5
Males	60
Females	40

Table 2: Incidence of angle fracture

Parameter	Value
Total patients	100
Angle fracture incidence	21

Graph 1: Incidence of angle fractures



DISCUSSION

In the present study, incidence of mandibular angle fracture associated with surgical removal of mandibular third molar was 21 percent. Meisami T et al assessed the influence of the presence, position, and severity of impaction of the mandibular third molars, on the incidence of mandibular angle fractures. A retrospective cohort study was designed for patients presenting to the Division of Oral and Maxillofacial Surgery, Toronto General Hospital (Toronto, Canada), for treatment of mandibular fractures from January 1995 to June 2000. The independent variables in this study were the presence, position and severity of impaction of third molars. The outcome variable was the incidence of mandibular angle fractures. Hospital charts and panoramic radiographs were used to determine and classify these variables. The demographic data included age, sex, mechanism of injury and number of mandibular

fractures. The study sample comprised 413 mandibular fractures in 214 patients. The incidence of angle fractures was found to be significantly higher in the male population and was most commonly seen in the third decade of life. Assault remained the most significant aetiological factor. Patients with third molars had thrice the increased risk of angle fractures when compared to patients without ($P < 0.001$). Impaction of third molars significantly increased the incidence of angle fractures ($P < 0.001$). The severity and angulation of third molar impactions were not significantly associated with angle fractures. This study provides evidence that patients with retained impacted third molars are significantly more susceptible to angle fracture than those without. The risk for angle fracture, however, does not seem to be influenced by the severity of impaction.⁹

Subbaiah MT et al assessed the relationship between mandibular angle fracture and the status of eruption of the mandibular third molars. The sample consisted of 50 mandibular angle fracture cases with or without the presence of mandibular third molars, inclusive of both genders in the age group 18 years and above. The mandibular angle fractures were assessed by taking an orthopantomograph for each case following strict radiation protection protocol after an informed consent was obtained. The captured image was assessed and traced for the presence of mandibular angle fracture, angulation, and status of mandibular third molar by using Windows Trophy DICOM and Master View 3.0 software. Pell and Gregory's and Winter's classifications were followed. They observed the following: Increased incidence of angle fractures in the presence of mandibular third molar, male predominance, the mean average age being 29 years, and the most common cause of angle fractures was road traffic accident; the fractures were observed more on the left side. In the total sample, mandibular third molar was present in 90% of the cases with angle fracture; of this, 73% of the teeth were impacted. Increased incidence of mandibular angle fracture was observed in position A, class II, and mesioangular impaction of third molar, which were statistically significant. The presence of mandibular third molar was in strong association with mandibular angle fracture and there was an increased incidence of position A, class II, and mesioangular impaction, when compared with other positions. This study concludes that there is a direct relationship between the presence and status of impacted third molars with increased risk of mandibular angle fracture.¹⁰ Thangavelu A et al attempted to verify relationships between impacted molars and risk of angle fractures and identify the underlying mechanism of injury. A retrospective cohort was designed for patients attending the Division of Oral and Maxillofacial Surgery from January 2001 till October 2008. The primary predictor variable was M3. The secondary predictor variables were: M3 position, classified using the Pell and Gregory system; angulation, classified using Shiller's method; and the number of visible dental roots. The outcome variables were angle and condyle fractures. Hospital charts and radiographs were used to determine

and classify these variables. The study sample comprised 1102 mandibular fractures in 600 patients. For patients injured by moderate traumatic force resulting in two fractures of the mandible, the presence/absence of impacted M3s played an important role in angle/condylar fractures. Patients with impacted M3s were three times more likely to develop angle fractures and less likely to develop condylar fractures than those without impacted M3s. This study provided clinical evidence to suggest that the removal of unerupted mandibular third molars predisposes the mandible to condyle fractures.¹¹

CONCLUSION

Surgical removal of impacted mandibular third molar is significantly associated with angle fractures. Therefore, surgeons should be very careful while performing disimpaction surgeries.

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