

Original Research

Evaluation of prevalence of mandibular third molar impaction in adults

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ABSTRACT:

Background: To evaluate the prevalence of impaction of mandibular third molar. **Materials & methods:** A total of 60 subjects were enrolled. A total of 100 impactions were enrolled. Complete history was taken. Data were analyzed using the Chi-square test. The results were analysed using SPSS software. The p- value less than 0.05 was considered significant. **Results:** Overall, mesioangular impaction was the most frequent (n = 38, 38%), followed by vertical (n = 33, 33%), followed by distoangular (n = 25, 25%), and finally both horizontal and other types of impaction (n = 2, 2%). **Conclusion:** The prevalence of 3rd molar impaction was 25%.

Keywords: Prevalence, Third molar, Impaction.

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INTRODUCTION

The word impaction is originated from the Latin word "impact" means organ or structure, which because of an abnormal mechanical condition has been prevented from assuming its normal position. William stated impacted tooth as one which is completely or partially unerupted and is positioned against another tooth, bone, or soft tissue so that its further eruption is unlikely.¹ Impacted teeth are those which fail to erupt or develop into the proper functional location in oral cavity beyond the time usually expected. Etiology may be multifactorial usually due to adjacent teeth, dense overlying bone or soft tissue, size of the mandible or maxilla with the resultant lack of space in the jaw, aberrant path of the eruption, abnormal positioning of tooth bud, differential root growth between the mesial and distal roots, or pathological lesions.²

Impacted teeth are defined as those teeth that remain unerupted in the dental arch due to various systemic and local reasons within the expected time.³ The most frequently impacted teeth are undoubtedly the third molars⁴ and the prevalence ranges from 16.7% to 68.6%.⁵ Furthermore, third molars account for 98% of all impacted teeth.⁶ The major etiologic factors of third molar impaction are the late maturation and lack of space. Additionally, third molars may remain

impacted or semi-impacted due to reasons such as limited skeletal growth, tooth shape or position anomalies, increased regional bone density, infection, cysts, specific systemic diseases, and syndromes.⁷ The cause of third molar impaction is due to inadequate space in the mandible; this may cause pericoronitis, dental caries and the development of cystic lesions.⁸ The angle of impaction can be measured using Winter's classification system, with reference to the angle formed between the intersected longitudinal axes of the second and third molars.⁹ The Pell and Gregory classification system is one of the common methods used to assess the level of third molar impaction where the impacted third molars are assessed in relation to the neighbouring second molars.¹⁰ Hence, this study was conducted to evaluate the prevalence of impaction of mandibular third molar.

Materials & methods

A total of 60 subjects were enrolled. A total of 100 impactions were enrolled. Complete history was taken. The prevalence of mandibular third molar impaction was noted. The angulation of the impacted third molar was recorded using Winter's classification with reference to the angle formed between the intersected longitudinal axes of the second and third

molars. Data were analyzed using the Chi-square test. The results were analysed using SPSS software. The p-value less than 0.05 was considered significant.

Results

A total of 100 subjects were enrolled. Overall, mesioangular impaction was the most frequent (n = 38, 38%), followed by vertical (n = 33, 33%), followed by distoangular (n = 25, 25%), and finally both horizontal and other types of impaction (n = 2, 2%). The distribution of the different angulations of impaction was significant (P < 0.01).

Table 1: Distribution of the angulation of impaction in the mandibular third molars

Angulation	Number	%
Mesioangular	38	38
Vertical	33	33
Distoangular	25	25
Horizontal	2	2
Other	2	2
Total	100	100

Discussion

A tooth which is unable to erupt physiologically into its functional anatomic position with time is said to be impacted. The normal age of occurrence of third molars is 18–25 years.¹¹ More than one-third of third molars get impacted due to insufficient space. Third molar teeth are the last to erupt and have a relatively high chance of becoming impacted. The etiology of third molar impactions has been reviewed by various authors over the years. Lack of space, retardation of facial growth, distal direction of eruption, early physical maturity, late third molar mineralization or lack of sufficient eruption force follicular collision, obstruction by physical/mechanical barriers, such as scar tissue, fibromatosis, compact bone, unattached mucosa, odontogenic cyst, and tumors are the common reasons. Higher rates of impaction in the lower jaw can also be attributed to the imbalance of the bone deposition-resorption process at the mandibular ramus, resulting in either a decrease in the angulation of the mandible or increase in the angulation of the mandibular plane.¹² Pathologies associated with impacted third molar are pericoronitis, caries, food lodgment, pocket formation, periodontal bone loss, root resorption of adjacent teeth, and development of cysts and tumors.¹³ Hence, this study was conducted to evaluate the prevalence of impaction of mandibular third molar.

In the present study, a total of 100 subjects were enrolled. Overall, mesioangular impaction was the most frequent (n = 38, 38%), followed by vertical (n = 33, 33%), followed by distoangular (n = 25, 25%), and finally both horizontal and other types of impaction (n = 2, 2%). A study by Passi D et al, out of 960 patients with the third molar investigated, a total of 250 patients having impacted mandibular third molar (152 [60.8%] males and 98 [39.2%]) females between June 2014 and June 2016 were included in

the study. The age ranged from 20 to 55 years, with a mean age of 27.6 years and the standard deviation was 5.8 years. The prevalence of impacted mandibular third molars for this study was 26.04%. They demonstrated that males (60.8%) were more likely to present with impacted mandibular third molars than females (39.2%). The prevalence of third molar impactions was almost the same on both the left (45.8%) and right (54.2%) sides. This study also noted that mesioangular impactions (49.2%) were the most common type of impaction. The least common form of impactions was the transverse types (2%). The prevalence of impacted mandibular third molars for this study was 26.04%.¹⁴

In the present study, the distribution of the different angulations of impaction was significant (P < 0.01). Another study by Al-Anqudi SM et al, of the study population, 543 (54.3%) OPGs showed at least one impacted third molar. The total number of impacted molars was 1,128. The most common number of impacted third molars was two (41%). The most common angulation of impaction in the mandible was the mesioangular (35%) and the most common level of impaction in the mandible was level A. Of the 388 bilateral occurrences of impacted third molars, 377 were in the mandible. There was no significant difference in the frequency of impaction between the right and left sides of both jaws. Pathological conditions associated with impacted lower third molars were found in 18%, of which 14% were associated with a radiographic radiolucency of more than 2.5 mm, and 4% of impacted lower third molars were associated with dental caries. They found that more than half of Omani adult patients ranging in age from 19–26 years had at least one impacted third molar.¹⁵ The reported prevalence of impacted third molars was 68.6% by Quek et al.,¹⁶ 52.3% by Jain et al.,¹⁷ and 35.9% by Celikoğlu et al.¹⁸ In the present study, the prevalence rate was 23% which is very similar to the rate of 21.9% reported by Ventä et al.¹⁹ These conflicting prevalence rates can be explained primarily by racial differences and sampling techniques. The diagnostic methods and criteria could likely affect the prevalences. The higher prevalence rates were reported, when the study investigated only the mandibular third molars. Besides, higher prevalence rates reported in most studies were related to the sample including the age of 18 or 20.²⁰ However, it has been stated in various studies that the third molar eruption can continue until the age of 25.²¹ The reason for the lower prevalence observed in the present study compared to previous studies was caused by the inclusion of individuals aged 25 and older. Ventä et al. reported a lower rate than the present study by including individuals over 30 years of age.¹⁹

Conclusion

The prevalence of 3rd molar impaction was 25%.

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