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Original Research

Evaluation of pattern of impacted third molar in Kashmiri population

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ABSTRACT:
Background: To evaluate the pattern of impaction of third molar in a known population. **Materials & methods:** There were 100 panoramic radiographs included in the study. According to Pell and Gregory's classification, the depth of impaction as well as the location of the impacted third molar on the mandible in relation to the mandibular ramus were found. Chi-square analysis was used to examine the data. SPSS software was used for the analysis of the results. **Results:** The frequency distribution of level of mandibular third molar impaction in the right and left sides. Level C was the most common depth of impaction in both the right (47.14%) and left (56.67%) sides. There was no association between the side and the impaction depth (p=0.5). **Conclusion:** The level C and Class I impaction patterns were the most frequent.
Keywords: third molar, impaction, pattern.

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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] The third molar impaction is occurring in about 73% of the young adults in Europe,[2] these teeth generally erupt between the ages of 17 and 21 years.[3] It has also been reported that the third molar eruption varies with races, such as in Nigeria[4] mandibular third molars may erupt as early as 14 years and in Europe[5,6] it may erupt up to the age of 26 years. 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.[7] Most of the researchers suggest that the females have a higher incidence of mandibular third molar impaction when compared to males.[8,9]

Various causes have been suggested in the literature for the impaction of the third molar. It has been suggested that the gradual evolutionary reduction in the size of the human mandible/maxilla has resulted in too small mandible/maxilla that may accommodate the corresponding molars.[10] It has also been found that the modern diet does not offer a decided effort in mastication, resulting in loss of growth stimulation of jaws, and thus the modern man has impacted and unerupted teeth. It has been suggested that the major basic cause of aberrant/impacted teeth in the adults of Western Europe, Great Britain and Ireland, U.S.A, and Canada is due to artificial feeding of babies, the habits developed during childhood, due to cross breeding, more consumption of sweet food by the children and youth which produces disproportion in the jaws and thus the teeth.[2, 11]

Tooth impaction is a pathological situation in which a tooth cannot or will not erupt into its normal functioning position. In human dentition, the third molars have the highest impaction rate of all teeth. [12] The major factors related to tooth impaction are lack of space, limited skeletal growth, increased crown size and late maturation of the third molars. [13] Although impacted third molars may remain symptom free indefinitely, they could give cause for various symptoms and pathologies, such as pericoronitis, pain, swelling, distal caries, bone loss, root resorption of adjacent teeth, odontogenic cysts and tumors. [14] It

is considered that the occurrence of pathology resulting from impaction has a multifactorial origin. Eruption status, position and angulation have an impact on these symptoms. [15] The most commonly used method of radiographic examination in preoperative diagnosis to determine the position of the wisdom teeth is the panoramic radiograph. [16,17] X-ray diagnostics allows a proper diagnosis to be made, as well as establishing the methodology for clinical management. Due to the limitations of panoramic radiography, cone beam computed tomography is increasingly used. [18]

Hence, this study was conducted to evaluate the pattern of impaction of third molar in Kashmiri population.

Materials & methods

There were 100 panoramic radiographs included in the study. According to Pell and Gregory's classification, the depth of impaction and the position of the impacted third molar on the mandible in relation to the mandibular ramus were found. Position Relative to the Mandibular Ramus: Using Pell and Gregory's classification, position relative to the mandibular ramus was established as the relationship between the distal surface of the third molar crown and the anterior border of the ascending ramus:

Class I: Distal surface of molar tooth in front of the anterior border of ramus (ramus not covering the crown).

Class II: Distal surface of molar tooth posterior to the anterior border of ramus (part of crown covered by the ramus).

Class III: Distal surface of molar tooth posterior to the anterior border of ramus (complete crowncoverage by the ramus). Data had been analyzed using the Chi-square test. The results had been analysed using SPSS software.

Results

The frequency distribution of level of mandibular third molar impaction in the right and left sides. Level C was the most common depth of impaction in both the right (47.14%) and left (56.67%) sides. There was no association between the side and the impaction depth (p=0.5). The frequency distribution of position of impacted mandibular third molars relative to the mandibular ramus in the right and left sides. Class I was the most common position in both the right (84.29%) and left (70%) sides. No association was observed between side and position (p=0.6)

Table 1: Frequency distribution of the level of impaction according to the side.

Side	Level A	Level B	Level C	Total	P - value
Right	18 (25.72%)	19 (27.14 %)	33 (47.14 %)	70	0.5
Left	4(13.33 %)	9 (30%)	17 (56.67 %)	30	

Table 2: Frequency distribution of position according to the side

Side	Class I	Class II	Class III	Total	P - value
Right	59 (84.29%)	7 (10%)	4 (5.71%)	70	0.6
Left	21 (70%)	6(20%)	3 (10%)	30	

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. [19] 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. [20] Hence, this study was conducted to evaluate the pattern of impaction of third molar in a known population.

In the present study, the frequency distribution of level of mandibular third molar impaction in the right and left sides. Level C was the most common depth of impaction in both the right (47.14%) and left (56.67%) sides. There was no association between the side and the impaction depth (p=0.5). In the present study, the frequency distribution of position of impacted mandibular third molars relative to the mandibular ramus in the right and left sides. Class I was the most common position in both the right (84.29%) and left (70%) sides. No association was observed between side and position (p=0.6).

A study by Rezaei F et al[21], retrospective descriptive study of 1000 radiographs, 230 (23%) showed an impaction of at least one mandibular third molar. Mandibular third molar impaction was more common in females (60%). Mesioangular (35.9%) and vertical (34.8%) impactions were the most common angles of impaction in the right and left sides, respectively. Level C (40.3%) and Class I (63.7%) were the most common types of impaction in terms of depth of

impaction and position relative to ramus, respectively. No significant difference was observed between the right and left sides of the mandible in terms of patterns of mandibular third molar impaction ($p>0.05$). Mandibular third molar impaction was relatively common in the studied population. The mesioangular, level C and Class I impaction patterns were the most frequent.

In a study by Passi D et al[22],a total of 250 patients having impacted mandibular third molar (152 [60.8%] males and 98 [39.2%] females) 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%. It was discovered 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%.

Conclusion

Mandibular third molar impaction was relatively common in the population. The level C and Class I impaction patterns were the most frequent.

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