

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 Kashmiri population. **Materials & methods:** A total of 100 panoramic radiographs were enrolled. Depth of impaction and position of impacted mandibular third molar relative to the mandibular ramus according to Pell and Gregory's classification were determined. Data were analysed using the Chi-square test. The results were 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 (41.6%) and left (40%) 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

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

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. ³The major factors related to tooth impaction are lack of space, limited skeletal growth, increased crown size

and late maturation of the third molars. ⁴ 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. ⁵ 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. ⁶The most commonly used method of radiographic examination in preoperative diagnosis to determine the position of the wisdom teeth is the panoramic radiograph. ^{7,8} 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. ⁹ Classifications of impacted third molars allow us to determine the degree of impaction and determine the best methodology for the surgical procedure. Planning the procedure based on the subject, physical examination, and additional investigations such as radiographs makes it possible to reduce the risk of complications. The authors of this publication use

various classifications. Each of them is characterized by certain limitations. In the literature and clinical practice, authors usually use the following classifications: Winter, Tetsch and Wagner, Pell and Gregory, Asanami and Kasazaki.¹⁰⁻¹³ Hence, this study was conducted to evaluate the pattern of impaction of third molar in Kashmiri population.

MATERIALS & METHODS

A total of 100 panoramic radiographs were enrolled. Depth of impaction and position of impacted mandibular third molar relative to the mandibular ramus according to Pell and Gregory’s classification were determined. Position Relative to the Mandibular Ramus:

Position relative to the mandibular ramus was determined as the position of the distal surface of the third molar crown relative to the anterior border of the ascending ramus using Pell and Gregory’s classification:

- 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 crown coverage by the ramus)

Data were analyzed using the Chi-square test. The results were 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 (41.6%) and left (40%) 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 (63.4%) and left (67.5%) 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	15 (25%)	20 (33.4%)	25 (41.6%)	60	0.5
Left	10 (25%)	14 (35%)	16 (40%)	40	

Table 2: Frequency distribution of position according to the side

Side	Class I	Class II	Class III	Total	P - value
Right	38 (63.4%)	14 (23.4%)	8 (13.2%)	60	0.6
Left	27 (67.5%)	10 (25%)	3 (7.5%)	40	

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.¹⁴ 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.¹⁵ Hence, this study was conducted to evaluate the pattern of impaction of third molar in Kashmiri 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 (41.6%) and left (40%) sides. There was no association between the side and the impaction depth (p=0.5). A study by Rezaei F et al, 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.¹⁶

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 (63.4%) and left (67.5%) sides. No association was observed between side and position (p=0.6). Another study by Al- Dajani M et al, studied 1551

patients (60.8%) with a mean age of 33.5 years-old (95%CI: 32.9 to 34) demonstrated 2650 impacted third molars. Third molars were more likely present in patients aged from 20 to 39 years-old ($p < 0.001$); and in mandible more than maxilla ($p < 0.001$). It showed highest vertical impaction and higher impaction rate in mandible than maxilla. Level A impaction was the most common among other levels by 1365 (53.5%). Vertical impaction was the most common pattern (1354 patients; 53.1%). Mesioangular impaction ranked second in mandible, while distoangular impaction ranked second in maxilla. There was no statistically significant difference between males and females concerning impaction frequency, depth levels and angulations. Impacted third molars is still a public health concern among youth and young adults. Vertically impacted mandibular third molars with their occlusal plane at the same level as the occlusal plane of adjacent tooth is the most prevalent pattern of third molar impaction in the northern region of Saudi Arabia.¹⁷ Yilmaz S et al, studied that the mean age of the subjects was 30.58 ± 11.98 years (range: 19-73); in a review of the 2,133 impacted third molar teeth, the most common angulation of impaction in both maxillaries was vertical (1,177; 55%). Level B impaction was the most common in the maxilla (425/1,037; 39%), while level C impaction was the most common in the mandible (635/1,096; 61%). Pain (272/705; 39%) and pericoronitis (188/705; 27%) were found to be the most common complications of impaction. Among 705 patients (335 males, 370 females), pericoronitis was more prevalent in males (101; 30%) and usually related to lower third molars (236; 22%). The retromolar space was significantly smaller in females ($p < 0.05$). Moreover, there was a significant difference in retromolar space for the area of jaw (maxillary: 11.3 mm; mandibular: 14.2 mm) and impaction level (A: 14.7 mm; B: 11.1 mm; C: 10.3 mm; $p < 0.05$). The pattern of third molar impaction in a Central Anatolian Turkish population was characterized by a high prevalence rate of level C impaction with vertical position. Pain and pericoronitis were the most common symptoms usually associated with level A impaction and vertical position.¹⁸

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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