

CAUSES AND PATTERN OF IMPACTED MANDIBULAR THIRD MOLARS

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ABSTRACT

Mandibular third molar are the most commonly occurring impacted teeth. The reason for impaction can be lack of space, decreased skeletal growth and disproportionate crown size. Various symptoms can be associated with impacted third molars such as, pain, caries, pericoronitis, periodontal problems and root resorption. A descriptive cross sectional study was carried out on a total of 89 patients and on 100 mandibular impacted teeth over a period of 12 months. The age range was from 15 to 44 years mean age 25.7 years SD + 5.79 impacted teeth were more common in males than females. Mesioangular impaction was the most common angulation of impacted mandibular third molar and class II A was most common pattern according to Winter's and Pell and Gregory classification. The most common presenting complaint was pain and caries of second and third molars followed by periodontal disease and pericoronitis.

KEYWORDS: Impacted 3rd molar, Pell and Gregory classification, Winter's angulation, pattern, Pericoronitis.

INTRODUCTION

Mandibular third molar is the most common tooth to become impacted. An impacted tooth is defined as a tooth which fails to erupt or develop into the proper functional location. Impacted teeth can erupt into an abnormal location; it can be non-functional or associated with pathology.^[1] The impacted third molars are found to have a higher incidence in the mandible than the maxilla, accounting for 98% of all impacted teeth. The incidence of impaction of mandibular third molar varies from 9.5%-68% in different populations.^[2,3] Mandibular third molars tend to erupt into the oral cavity by the age of 21 years, and there is higher frequency in females than males.^[4] Factors causing tooth impaction are lack of space, limited skeletal growth, increased crown size and late maturation of the third molars. Impacted third molars can be symptom free, or can give rise to various symptoms or pathologies, such as pericoronitis, pain, swelling, distal caries, bone loss, root resorption of adjacent teeth, odontogenic cysts and tumors.^[5] Mandibular impacted teeth can be classified on several methods. The classification of impacted teeth is based on factors like the depth of impaction, the angulations of the third molars and the relationship to the anterior border of the ramus of the mandible. Level of mandibular third molars can be classified using the Pell and Gregory classification system, according to their relationship to the occlusal surface (OS) of the adjacent second molar and relation to anterior border of the ramus.^[6] The angulation can be classified by winter's classification,

with reference to the angle formed between the intersected longitudinal axes of the second and third molars.^[7] The aim of this study was to assess the third molar impaction pattern comprehensively by examining the status of eruption and angulation on panoramic radiographs and relating them to the associated clinical symptoms in patients reporting at Oral and Maxillofacial Department at Nishtar Institute of Dentistry.

METHODOLOGY

A descriptive, cross sectional study was conducted in Department of Oral and Maxillofacial Surgery, at Nishtar Institute of Dentistry. This study was carried out over a period of one year from October 2018 to October 2019, after taking approval from hospitals ethical and research committee. A total of eighty seven patients were examined with at least one impacted mandibular 3rd molar were included in the study. A total of 100 impacted mandibular teeth were extracted. The data was collected regarding the variables of the study i.e., age, gender, chief complaint of the patient for which the patients reported to the outpatient department of oral and maxillofacial surgery RCD. Patients with impacted third molar with any pathological dento-alveolar conditions and patients with medical co-morbidities were excluded from the study. The position of impacted third molar was determined by orthopantomograms (OPG), interpreting the presence, location, depth and angle of the impacted mandibular third molars. The depth of the impacted lower third molars in relation to the occlusal plane and

the distance between the vertical ascending mandibular ramus and the distal surface of the second molar was recorded according to the Pell and Gregory classification⁸ (Fig 1). The angulation of impacted third molar was determined on Winter's classification,^[8] (Fig 1), which is based on the inclination of the impacted 3rd molar to the long axis of the **2nd molar**.

RESULTS

A total of 89 patients were seen with at least one impacted mandibular. The age range was from 15 to 44 years with the mean age of 25.7 years SD ± 5.79 most patients with impacted third mandibular teeth presented in the second decade followed by the third decade (Table 1). Male patients dominated the study with regards to gender distribution i.e. 48 were males and 41 females with male to female ratio 1.17:1. (Fig 2). Most of the

patients presented with more than one complaint. With regard to angulation of impacted mandibular third molars 38 teeth were mesioangular, 33 verticle, 18 horizontal, and 11 distoangular (Table 2). AS far as the depth of mandibular third molar is concerned 39 level A, 35 level B, 26 level C (Table 3). The distance between the ascending border of the ramus and distal surface of second molar as in the order of: as 42 Class 1, 45 class 2, 13 were class 3 mandibular impacted third molars (Table 4). Fifty-five patients presented with pain. Twenty six patients with caries of impacted third molar and distal of second molar. Twenty one patients presented with periodontal disease and eighteen patients presented with pericoronitis, seven patients required extraction of impacted 3rd molars for orthodontic treatment. Six patients had accidental radiographic finding. Five patients with pain of unknown origin (Table 5).

Table 1: Age distribution of the patients impacted mandibular 3rd molar teeth.

S. No.	Age in years	No. of patients (n)	Percentage (%)
1	10-20	11	12.3
2	21-30	60	55.5
3	31-40	14	15.7
4	41-50	4	4.4

Table 2: Angulation of impacted mandibular 3rd molars according to winter's classification.

S. No.	Angulation	No. of Impaction	Percentage (%)
1	Mesioangular	38	38
2	Verticle	33	33
3	Horizontal	18	18
4	Distoangular	11	11
4	Distoangular	11	11

Table 3: Position of impacted mandibular 3rd molar to the anterior border of the ramus according to pell and gregory classification.

S. No.	Relation to anterior border of ramus	No. of Impaction	Percentage (%)
1	Level A	39	39
2	Level B	35	35
3	Level C	26	26

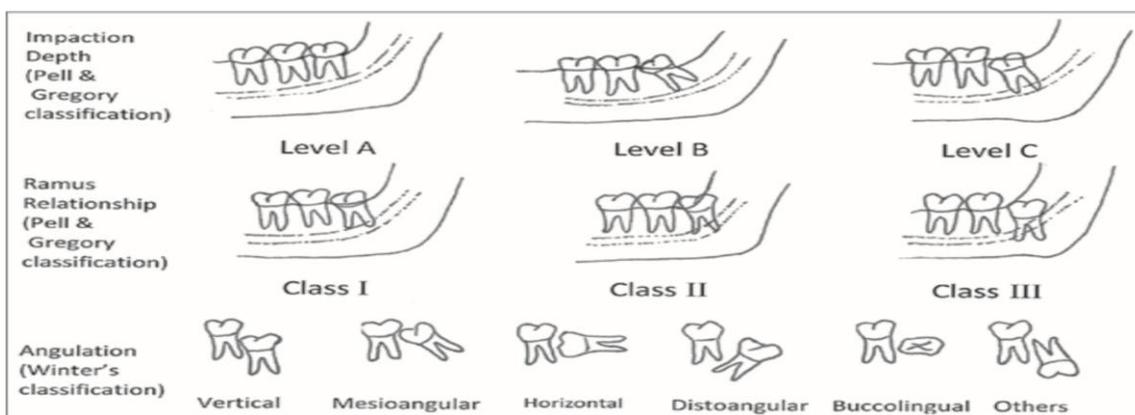


Fig. 1: Winters classification and Pell and Gregory classification.

Table 4: Relation of occlusal level of impacted mandibular teeth to the level of second mandibular molar according to pell and gregory classification.

S. No.	Level of occlusal plane in relation to second molar	No. of Impaction	Percentage (%)
1	Class 1	42	42
2	Class 2	45	45
3	Class 3	13	13

Table 5: Chief complaint of patients presenting with impacted mandibular 3rd molar.

S. No.	Presenting complaints	No. of patients	Percentage (%)
1	Pain	55	39.8
2	Caries of mand 2nd and 3rd molar	26	18.8
3	Periodontal disease	21	15.2
4	Pericoronitis	18	13
5	Orthodontic purpose	07	5.07
6	Pain of unknown origin	06	4.34
7	Accidental radiographic finding	05	3.6

DISCUSSION

Impaction is the failure of tooth eruption into its anatomical position due to hindrance in the eruption path, improper positioning of a tooth, absence of space, or other impediments. Impacted teeth are those which are unable to erupt in dental arch within the expected time.^[9] In the present study 53.9% were male and 46.06% females and most patients with impacted mandibular third molar presented in the second decade of life, i.e. 67.4% followed by the third decade of life. A study done by Srivastava *et al.*,^[10] supports the findings of our study, with 55% being male and 45% female patients and most patients were in the second decade of life. Also a local study done at Khyber College of Dentistry also supports the findings of our study with a male predominance (61.3%).^[11] Whereas, various studies in past suggests a female predominance.^[5,6] In a study done on Caucasian, third molar impaction was more common in females.^[12] In contrast, study conducted in Saudi region showed similar results to our study, which revealed that 3rd molar impaction is more prevalent in males.^[13,14] The reason for male predominance in our study could be, due to cultural difference in this part of the world and our male dominant society, more male patients than females report to dentists / maxillofacial surgeons for their dental complaints.

In this study, mesioangular impaction was the most common type of impaction 42.69%, followed by vertical impaction 37%, horizontal impaction 20.2% with least common being distoangular impaction 12.3%. On the basis of Pell and Gregory classification class II and A was found to be the most common and least common was III and C. The findings of our study correlates with study done in a Urban Teaching Hospital of Karachi, showing most common impaction as mesioangular and least common as distoangular.^[15] A study done on Saudi population also suggests the mesioangular impaction, is

the most common pattern of impaction, whereas according to Pell and Gregory level II B is the most common level.^[16] Nazir *et al.*^[7], in their study also showed that the highest number of patients were with mesioangular impactions (37.6 %), followed by vertical, distoangular and horizontal. 53.2% of patients with ramus relationship of class II according to Pell and Gregory classification followed by class I and class III. 62.8% of the patients had impacted mandibular third molar at position A depth, followed by position B and C. These findings correlate with our results. In the present study the most common presenting chief complaint of the patient with impacted mandibular third molar was pain 39.8% followed by caries of distal surface of second and mesial surface of third molar 18.8% followed by pericoronitis (15.2%) and periodontal disease (13%). The findings of our studies correlates with the study done in Turkish population, with pain being the most common symptom (39%) followed by pericoronitis(27%).^[5] In a study done in the year 2017, caries of distal surface of second molar was found as the most common complaint followed by pain and pericoronitis and periodontal disease.^[18] Partially erupted mesioangular impacted mandibular third molars which are in proximity and contact with the cement-enamel junction of the second molar have a higher risk of developing caries at this site.^[19] The eruption level and path of eruption has an effect on the development of symptoms.

CONCLUSION AND RECOMMENDATIONS

Impacted mandibular third molars are found more commonly in males than females with the second and third decade the most common age group. Mesioangular and level 2A impaction is the most common pattern of impacted mandibular third molar with pain and caries being the most common presenting chief complaint of the patient. Early prophylactic removal of impacted mandibular third molar can be a better option to avoid

the developing of symptoms and to lessen the postoperative complications and morbidity.

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