

# PATTERN AND FREQUENCY OF IMPACTED MANDIBULAR THIRD MOLARS AMONG PATIENTS REPORTING AT ISLAMABAD DENTAL HOSPITAL

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## ABSTRACT

*The aim of the present study was to determine the pattern and frequency of impacted mandibular third molars in patients reported at Islamabad Dental Hospital (IDH). All the cases of mandibular impacted third molar already registered in IDH with age 21 years or above were included in the study. Orthopantomogram was used to classify impacted mandibular third molars using Pell and Gregory and Winter's Classification. All the data were noted in a specially designed proforma. Collected data was entered in SPSS. When classified according to Winter, vertical impactions were found in highest percentage (65.3 to 66.5) both on left and right side. When analyzed according to Pell & Gregory Classification, class I & type A were highest followed by class-II and type B on both sides. The most common impaction in this study group was vertical impaction and Pell and Gregory class 1 type A.*

**Keywords:** *Impaction, Frequency, Mandibular third molar, Pell and Gregory Classification, Winter's Classification.*

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## INTRODUCTION

The term impaction is used for a tooth that does not erupt in the oral cavity to its normal position within specific time.<sup>1,2</sup> Many factors are responsible which include local factors like arch length discrepancy, abnormality in eruption path, angulation and size of neighboring teeth, overlying bone density and soft tissue thickness. Heredity genetic abnormality, tuberculosis, anemia, rickets, congenital syphilis and malnutrition also play role in the dental impactions. Rare factors may also contribute which include tooth germ position, soft or hard tissue pathologies, supernumerary tooth, tooth size and jaw size discrepancies.<sup>3</sup> The mandibular third

molars' chances of getting impacted are high due to the fact that they erupt in oral cavity after the all other teeth. The frequency of lower third molar impaction ranges from 18 to 32% which is highest for any dental impaction.<sup>3</sup> This impaction can be attributed to lack of space, hereditary factors and mal-positioning of its own or neighboring tooth germ. The pattern and frequency varies from time to time and region to region. It also varies according to cause.<sup>4</sup>

The eruption time range of mandibular third molars (MTM) is from 17 to 21 years.<sup>5</sup> Assessment of mandibular third molar impactions is a challenge for practitioners since long time. Many classifications of impacted MTM were given from time to time. The most common academic classifications are Pell & Gregory and Winter's classifications.<sup>6</sup>

Oral and maxillofacial surgeons are performing surgeries under local or general anesthesia for the removal of impacted teeth usually mandibular third molars in daily routine.<sup>7</sup> These impacted teeth are removed due to multiple reasons ranging from simple prophylactic measures, to complicated osteolytic lesions related to impacted teeth, mainly mandibular third molars. These surgeries for removal of impacted teeth are associated with potential complications like hemorrhage, infections, numbness, trismus and TMJ

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problems which may require sometime more complex treatment.<sup>8</sup>

To decrease the chances of complication, treatment planning is an important step. For accurate and good treatment planning impaction classification is an important step.<sup>9</sup>

To determine the pattern and frequency of mandibular third molars impactions in patients reported at Islamabad Dental Hospital (IDH), a study was planned. By this study baseline data can be added to literature and future studies can be planned accordingly. Additionally, oral surgery departments can be equipped more accurately and effectively.

When analyzed according to Pell & Gregory Classification, class I & type A were highest followed by class-II and type B on both sides. The most common impaction in this study group was vertical impaction and Pell and Gregory class 1 type A.

## METHODOLOGY

After the approval from Institutional Review Board (IRB), this retrospective cross-sectional study was conducted in the Oral and Maxillofacial Department of Islamabad Dental Hospital (IDH). Convenience sampling technique was used. Patient's records were assessed with the permission of respective departments. All the cases of mandibular impacted third molar already registered in IDH with age 21 years or above were included. Patients with craniofacial anomalies were excluded. Cases with incomplete records were also excluded.

Impacted mandibular third molars were classified according to Pell and Gregory as well as Winter's Classification method using orthopantomogram (OPG). All the data were noted in a specially designed proforma. All the collected data was entered in SPSS. Descriptive analysis was done. Qualitative variables were analyzed using frequencies and percentages whereas mean with standard deviation was calculated for quantitative variables. Association with gender was evaluated with Chi square test. Results were presented in frequencies and percentages graphs and tables.

## RESULTS

A total of 203 patients were recruited with age range of 21-65 years with a mean and standard deviation of 27.83 +8.84. Gender distribution is shown in figure 1.

Impactions presented unilaterally or bilaterally were also evaluated. It was found unilateral in 22 patients and bilateral in 181. Patients having unilateral impactions, right side impactions were present in 16 patients and left in 6.

When these impactions were classified according

to Winter, vertical impactions were found in highest percentage i.e. 66.5 % on the right side and 65.3 % on the left side. This was followed by mesioangular impaction again on both side. (Table 1)

When these impactions were analyzed according to Pell & Gregory Classification, class I & type A were highest followed by class-II & type B on both sides. Class III & type A were not found on any side. Class III and type B was found in only one case on right side. (Table 2)

Association of gender and classification methods (Winter's and Pell & Gregory) was calculated using test of significance (Chi square). There was no statistical association among these as p-value found was more than 0.05 ( $p > 0.05$ ).

## DISCUSSION

As third molar impaction is a frequent finding in Pakistani population, it poses a major health risk. In present study 67% patients were females while 33% were males. These results correlate with the study of Khorasani<sup>10</sup> who reported 76% of the patients being females while 24% were males. Another study conducted in India showed female preponderance of impacted third molar to be 53%.<sup>11</sup> However, Tegginamani & Prasad<sup>12</sup>, Yadav<sup>13</sup> reported male predilection while evaluating third molars. The geographical, environmental and social factors might have a role in these gender differences. The predominance of female gender can be explained as an outcome of the growth difference between the genders. The growth of the female gender usually stops when the eruption of third molars begin, while growth still persist in males during the time of eruption of the third molars resulting in more space for third molar eruption.<sup>3</sup>

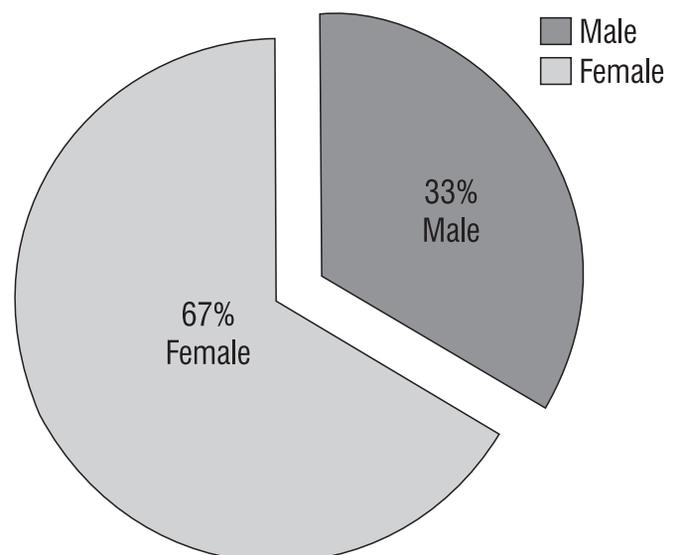


Fig 1: Gender distribution

TABLE 1: RIGHT & LEFT IMPACTION DISTRIBUTION IN GENDER ACCORDING TO WINTER'S CLASSIFICATION

Classification	Right			Left		
	Male	Female	Total Frequency / %	Male	Female	Total Frequency / %
Mesioangular	15	36	51 (25.9%)	18	26	44 (23.5%)
Vertical	45	86	131 (66.5%)	40	82	122 (65.3%)
Horizontal	7	6	13 (6.6%)	7	10	17 (9.0%)
Distoangular	0	2	2 (1.0%)	0	4	4 (2.2%)
TOTAL	67	130	197 (100%)	65	122	187 (100%)

TABLE 2: RIGHT & LEFT IMPACTION DISTRIBUTION ACCORDING TO PELL & GREGORY CLASSIFICATION

Classification	Right		Left	
	Frequency	Percentage %	Frequency	Percentage %
Class I & Type A	104	52.8	117	62.6
Class I & Type B	6	3.0	7	3.7
Class I & Type C	4	2.0	1	0.5
Class II & Type A	23	11.7	25	13.4
Class II & Type B	22	11.2	6	3.2
Class II & Type C	16	8.1	13	7.0
Class III & Type B	1	0.5	-	-
Class III & Type C	21	10.7	18	9.6
TOTAL	197	100	187	100

Bilateral impactions were the commonest finding followed by unilateral right side impaction, these findings were seconded by a study conducted in Karachi which revealed, right side predominance of the impacted third molars 18(40.9%) as compared to the left side 14(31.8%).<sup>14</sup> Another study conducted by Anjum et.al.<sup>15</sup> also acknowledged right side dominance.

Mandibular impactions when assessed according to Winter's Classification 66% were found to be vertically impacted while 25 % were mesioangular impactions. Least common was the distoangular impaction (2%). In a study conducted by Patil<sup>16</sup>, vertical and mesioangular impactions were found to be most common. Findings of present study are also in accordance with the previous reports from Ishfaq,<sup>17</sup> Bui<sup>18</sup> and Bataineh,<sup>19</sup> where the vertical and mesio-angular impactions were most common.

Assessment of impacted teeth according to Pell and Gregory Classification, it was noted that 57.7% impactions fall in classification IA. This finding is in accordance with the study of kumar,<sup>11</sup> who found Pell and Gregory class IA to be most common. However, in similar studies contrasting results were also found because of the ethnic and cultural differences as class

IIB in Spanish population,<sup>20</sup> among Nigerians the most common position was Class A (31.9%) and Class II position (60.8%).<sup>21</sup> Monaco<sup>22</sup> found Class A (56.2%) and Class II (63%) in highest frequency in Italians population.

Hospital based sample and lack of randomization are the limitation of current study. A large scale study with randomized sample (representative of Pakistan) should be conducted to evaluate the pattern of mandibular third molar impactions. In addition, future studies should evaluate the pattern of third molars according to other parameters like proximity to inferior alveolar nerve using cone beam computed tomography (CBCT) in Pakistan.

**CONCLUSION**

From this study it was concluded that, more females presented with mandibular third molar impaction. According to Winter's Classification, vertical impactions were most common followed by mesioangular in our study. Pell and Gregory Classification, Class I type A was the most common. Bilateral involvement of third molars were more commonly seen.

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|------------------------------------|--|
| <b>1 Khalid Mahmood Siddiqi:</b>   | Conception, design, interpretation of data   |
| <b>2 Muhammad Jamal:</b>           | Drafting of the manuscript and proof reading |
| <b>3 Muhammad Mudasser Saleem:</b> | Collected the data and data analysis         |
| <b>4 Sanam Khan:</b>               | Manuscript writing and data collection       |
| <b>5 Sumaira Karamat:</b>          | Manuscript writing and data collection       |