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**Dr. Bharati R Doni**  
MDS Oral Medicine and  
Radiologist, Professor, Koppal  
Institute of Medical Sciences,  
Karnataka, India

**Dr. Shushma G**  
MDS, Oral and Maxillofacial  
Surgeon, Resident, Koppal  
Institute of Medical Sciences,  
Karnataka, India

## Assessment of prevalence and pattern of impacted third molar among known population: A retrospective analysis

**Dr. Bharati R Doni and Dr. Shushma G**

### Abstract

**Background:** The most commonly impacted tooth in the oral cavity is the mandibular third molar. The present study was conducted to assess pattern and prevalence of third molar impaction in known population.

**Materials & Methods:** The present study was conducted on 248 patients of both genders. Patients were subjected to intraoral radiographs and OPG. The angulation was assessed using Quek's adaptation of the Winter's classification. The position and level of the impacted teeth were assessed using the Pell and Gregory classification.

**Results:** Out of 248 patients, males were 130 and females were 118. Out of 130 males, 112 (86.1%) had impaction and out of 118 females, 85 (72%) had impaction. The difference was found to be significant ( $P < 0.05$ ). Mesio- angular impaction was seen in 58%, disto- angular in 6%, vertical in 24% and horizontal in 12%. The difference was significant ( $P < 0.05$ ). Level A was seen in 20%, B in 65% and C in 15%, class I was seen in 35%, II in 50% and III in 15%. The difference was significant ( $P < 0.05$ ).

**Conclusion:** Authors found that most common impaction was mesio- angular followed by vertical. Most common depth of impaction was type B.

**Keywords:** Mesio-angular, third molar, winter's

### Introduction

The most commonly impacted tooth in the oral cavity is the mandibular third molar. 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].

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. 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 [2].

Many theories have been proposed owing to the causes of teeth impaction. One of them is the inadequate space in the dental arch for eruption as stated by the Phylogenic theory: due to evolution, the human jaw size is becoming smaller and since the third molar tooth is last to erupt, there may not be room for it to emerge in the oral cavity then impacted teeth can be seen, because of lack of space [3]. Also, one of the most popular theory in high incidence of mandibular third molar impaction is insufficient development of the retromolar space. Mandibular ramus growth is related to resorption at its anterior surface and deposition at its posterior surface, but in case of imbalance of this process, the mandibular third molars do not get enough space to erupt [4]. The present study was conducted to assess pattern and prevalence of third molar impaction in known population.

### Materials & Methods

The present study comprised of 248 patients of both genders. The study was approved from institutional ethical committee. All were informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. A careful clinical examination was performed.

**Corresponding Author:**  
**Dr Shushma G**  
MDS, Oral and Maxillofacial  
Surgeon, Resident, Koppal  
Institute of Medical Sciences,  
Karnataka, India

Patients were subjected to intraoral radiographs and OPG. The angulation was assessed using Quek's adaptation of the winter's classification. The position and level of the impacted teeth were assessed using the Pell and Gregory classification. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**Results**

**Table 1:** Distribution of patients

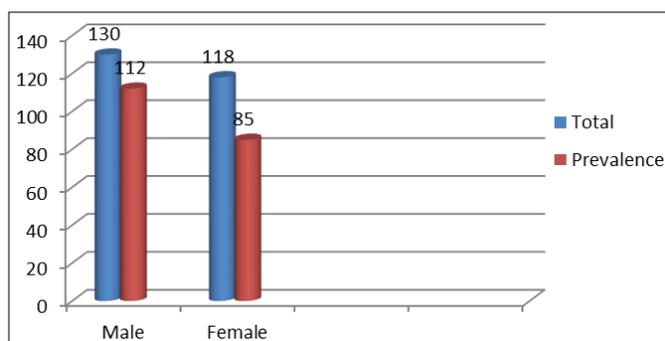
| Total- 248 |       |         |
|------------|-------|---------|
| Gender     | Males | Females |
| Number     | 130   | 118     |

Table I shows that out of 248 patients, males were 130 and females were 118.

**Table 2:** Prevalence of third molar impaction among patients

| Gender | Total | Prevalence  | P value |
|--------|-------|-------------|---------|
| Male   | 130   | 112 (86.1%) | 0.05    |
| Female | 118   | 85 (72%)    |         |

Table II, graph I shows that out of 130 males, 112 (86.1%) had impaction and out of 118 females, 85 (72%) had impaction. The difference was found to be significant (P< 0.05).



**Graph 1:** Prevalence of third molar impaction among patients

**Table 3:** Type of impaction

| Type          | Percentage | P value |
|---------------|------------|---------|
| Mesio-angular | 58%        | 0.01    |
| Disto-angular | 6%         |         |
| Vertical      | 24%        |         |
| Horizontal    | 12%        |         |

Table III shows that mesio- angular impaction was seen in 58%, disto- angular in 6%, vertical in 24% and horizontal in 12%. The difference was significant (P< 0.05).

**Table 4:** Distributions of the different level and class of impacted teeth

| Level                                       | Number | P value |
|---|--------|---------|
| Level/depth of impaction (Pell and Gregory) |        |         |
| Level A                                     | 20%    | 0.01    |
| B   | 65%    |         |
| C   | 15%    |         |
| Ramus relationship (Pell and Gregory)       |        |         |
| Class I                                     | 35%    | 0.04    |
| Class II                                    | 50%    |         |
| Class III                                   | 15%    |         |

Table IV shows that level A was seen in 20%, B in 65% and

C in 15%, class I was seen in 35%, II in 50% and III in 15%. The difference was significant (P< 0.05).

**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. 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 [5]. 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 [6]. 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. 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 [7]. The present study was conducted to assess pattern and prevalence of third molar impaction in known population.

In present study, out of 248 patients, males were 130 and females were 118. Out of 130 males, 112 (86.1%) had impaction and out of 118 females, 85 (72%) had impaction. Byahatti *et al.* [8] found that 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. 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%.

Obiechina *et al.* [9] found that the average age of these patients in the study was found to be 30 years, with the 20 to 30 years age group being the most affected (67.4%). Females (53.3%) were affected more than the males (46.7%). People from the Asmara region showed significantly more prevalence (79.7%) than the adjoining areas (20.3%). Mesioangular impaction was the most common angulation with a definite relationship to the age groups (p = 0.032). The level of impaction had no significant relationship to the age groups, gender, or region, although class I position A was found to be the most common type. Mesioangular class I position A impaction showed an apparent relationship with underlying systemic conditions, but it was statistically insignificant. Mesioangular impaction was found to be associated with the most number of pathologies.

We found that mesio- angular impaction was seen in 58%, disto- angular in 6%, vertical in 24% and horizontal in 12%. Level A was seen in 20%, B in 65% and C in 15%, class I was seen in 35%, II in 50% and III in 15%. Jaffar *et al.* [10] found that 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.

### Conclusion

Authors found that most common impaction was mesio-angular followed by vertical. Most common depth of impaction was type B.

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