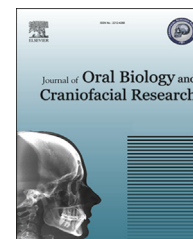


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## Original Article

# Incidence of impacted third molars: A radiographic study in People's Hospital, Bhopal, India



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## ABSTRACT

**Objectives:** The aim of this study is to evaluate the position of impacted third molars based on the classifications of Pell & Gregory and Winter in a sample of Bhopal patients.

**Study design:** In this retrospective study, up to 1100 orthopantomograms (OPG) of the patients who were reported to the Maxillofacial Department of PDA and Chowdhary hospital from January 2011 to December 2012 were evaluated.

**Results:** Among 1100 patients, 730 were male and 370 were female patients. Of the 1100 OPGs studied, 3,910 third molars were noticed either impacted or erupted and 490 third molars were missing. The most common angulation of impaction in the mandible was in vertical position (41.4%) followed by mesioangular impaction (33.3%) and the most common angulation of impaction in the maxilla was the vertical (67.4%) which was followed by 15.2% in distoangular impaction.

The level of eruption of impacted third molar was found to be 43.9% at level A, 34.8% at level B and 21.3% at level C. There was no significant difference between the right and left sides in both the jaws.

**Conclusion:** The pattern of third molar impaction in the region of Bhopal is characterized by a high prevalence of impaction, especially in the mandible. The most common angulation was the vertical in the mandible as well as in the maxilla. The most common level of impaction in mandible was level A and in maxilla is level C and there was no any significant difference between the right and left sides in both jaws.

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## 1. Introduction

Third molars are the most frequently impacted teeth because of their particular topography, phylogeny and ontogeny. They

are directly or indirectly associated with numerous disorders in the mouth, jaw and facial regions. Therefore, the extraction of third molars is one of the most common surgical procedure for Oral and Maxillofacial surgeons.<sup>1</sup>

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Development of mandibular third molars starts in the ramus of the mandible at about the age of seven years.<sup>2</sup> The third molars are the last teeth to erupt in all races despite racial variations in the eruption sequence. Racial variation in facial growth, jaw and teeth size, nature of diet, extent of generalized tooth attrition, degree of use of masticatory apparatus and genetic inheritance are the crucial factors which determines the eruption pattern, impaction status and the incidence of agenesis of third molars.<sup>3</sup>

Impacted teeth were seldom a problem for Neolithic man. Their highly abrasive diet caused attrition of teeth resulting in a reduction of mesiodistal distance of the dentition. This allows the mesial migration of teeth and adequate space was available for the eruption of the third molars. But with the arrival of refined food and consequential reduction in the masticatory functional load, today, the rate of impaction of third molars shows a significant increase (John Hunter theory of nature and nurture). Mead believed that delay in eruption causes impaction of teeth.<sup>4</sup>

Clinically impacted teeth may give various presentation including pain, food impaction, cheek bite etc. In order to examine impacted third molars, radiographs are still the gold standard for investigation. Radiographs like I.O.P.A, and orthopantomograms (OPG) are used to evaluate the type of impaction, any anatomical impediments that are preventing its eruption; whether it is completely or partially embedded in bone, marginal bone height, condition of adjacent second molars and relation of third molars to inferior alveolar canal; so that a proper management can be planned.<sup>5</sup>

This study aimed to determine A) The status of maxillary and mandibular third molars in a sub-population of the district of Bhopal by evaluating the following factors Prevalence, Incidence of agenesis of third molars, Angulation, Level of eruption and Available space of eruption and mesiodistal diameter of impacted third molars. B) Preoperative radiographic assessment of impacted mandibular third molar to inferior alveolar canal by evaluating following factors Darkening of root apex, Deflection of root, Narrowing of root apex, Bifid root apex, Narrowing of canal, Deviation of mandibular canal, Interruption of white line and No relations.

## 2. Material and methods

1100 panoramic radiographs of the patients, who reported to the Peoples Dental Academy, Bhopal, from January 2011 to December 2012. 730 were male and 370 were female. They were aged between 20 and 35 years. Subjects below the age of 20 years were excluded, as the eventual outcome of third molar eruption is still uncertain. Only patients with a full compliment of teeth were included. Those with missing second molars were excluded. Other exclusion criteria were any pathosis or trauma to the jaws that may disrupt its alignment.

Orthopantomograms were taken for all subjects in order to assess the level of eruption, angulation, third molar space, mesiodistal length of the impacted third molar and relation of inferior alveolar nerve to impacted third molar. It was also used for evaluating agenesis of third molars.

### 2.1. Level of eruption

The depth of the third molars in relation to the adjacent second molar was assigned to one of the three groups. In level A, the highest part of the third molars was on the same level or above the occlusal plane of adjacent second molar; in level B, the highest part of the third molars was below the occlusal plane but above the cervical line of second molars; and in the level C, the highest part of the third molars was beneath the cervical line of second molars.

### 2.2. Third molar space

Third molar space was measured as the distance between distal surface of second molar crown and anterior border of the ramus on the occlusal plane.

### 2.3. Angulation

The mesioangular position of the third molars was determined by its sagittal relationship to the adjacent second molar obtained from tracing of the panoramic radiographs. A line was drawn through the midpoint of the occlusal surface and bifurcation of the second molars and third molars. These lines represent the long axis of the teeth. The angle formed between the intersected long axis gave the degree of third molars inclination relative to the second molars. Inclination angle was then read from a compass grid drawn on transparent film with the use of radiographic view box. The inclination angle was read in increments of 5° to a maximum of 65°, above which the third molars was considered to be horizontally impacted.

Preoperative radiographic assessment of impacted mandibular third molar to inferior alveolar canal by evaluating following factors:

- 1) Darkening of root apex: Usually the density of root in radiograph appears to be uniform throughout, but when the inferior alveolar canal impinges on the root, then there is loss of density & is interpreted as darkening.
- 2) Deflection of root: When the root reaches the inferior alveolar canal, sometimes it may get deflected to mesial or distal aspect & is interpreted as deflection.
- 3) Narrowing of root apex: It implies to the grooving/perforation of the canal.
- 4) Bifid root apex: When the inferior alveolar canal crosses the apex of the root, the shadow of periodontal ligament appears as bifid apex.
- 5) Narrowing of canal: While crossing the apex of the root, if the diameter of the inferior alveolar canal narrows, then it is interpreted as narrowing of the canal.
- 6) Deviation of mandibular canal: When the inferior alveolar canal crosses the mandibular third molar, if it changes its direction & get displaced, then it is interpreted as deviation.
- 7) Interruption of white line: White lines which appears on the radiograph are the roof & floor of the inferior alveolar canal. Any interruption of one or both the lines are considered to indicate perforation or deep grooving of the root.

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