

Evaluation of incidence and pattern of third molar impactions in Jammu region: A cross sectional study

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Abstract

Aims and Objectives: The aim and objective is to evaluate the frequency of third molar impactions, their angulations, and percentage of agenesis in mandible within the demographic confines of Jammu region of Jammu. The pattern of third molar impactions shows variation with respect to different population. Besides, impacted third molars engender potential pathologic complications.

Materials and Methods: The sample consists of 310 orthopantomogram from patients who reported to the department of oral and maxillofacial surgery IGGDC Jammu throughout a period of one year. Data regarding age, gender, prevalence and pattern of third molars were collected and analysed.

Results: Among 310 patients, 183 were male and 127 were female. The percentage of impactions was higher in case of females than males. Moreover, females had a marginally higher rate of agenesis than males. Mandibular impactions had a higher percentage than maxillary impactions. Mesioangular was the most prevalent angulation. Percentage of vertical impactions in maxilla exceeded that in mandible.

Keywords: Third molar, Agenesis, Impaction, Orthopantomogram, Mesioangular.

Introduction

The mandibular third molars are the most frequently impacted teeth that can be found in human.¹ Causes of impactions have been broadly classified as local and systematic. Impacted teeth are often associated with pericoronitis, periodontitis, cystic lesions, neoplasm, root resorption and can cause detrimental effects on adjacent tooth.²

Prevalence and pattern of third molar impactions presents a varied picture across the globe. The prevalence of third molar impaction ranges from 16.7% to 68.6%.³⁻¹⁰ Variance among males and females has also been observed. Some studies have reported no sexual predilection in third molar impaction.^{3,4,6,8} Whereas some studies have reported a higher frequency in females than males.^{10,11} Furthermore, the agenesis of third molars can be either genetic or due to lifestyle and dietary habits.¹²

Classification is based on the level of impaction,¹³ the angulations of the third molars and the relationship to the anterior border of the ramus of the mandible. Depth or level of maxillary and mandibular third molars can be classified using the Pell and Gregory classification system, where the impacted teeth are assessed according to their relationship to the occlusal surface (OS) of the adjacent second molar.¹⁴

Hence the current study aims to evaluate the incidence of third molar impactions and agenesis in maxilla and mandible and their incidence in males and females.

Materials and Methods

The study was performed at the department of Oral and maxillofacial surgery for a period of one year. OPG's from 310 patients (183 males + 127 females) were collected after obtaining an informed consent.

The OPGs of patients in the age group of 18-40 were included. The patients below 18 years of age, those having any history of maxillo-facial trauma, craniofacial anomalies, third molars with incomplete root formation and those with missing second molars were excluded from the study.

The OPG's were evaluated using a radiographic viewer and were interpreted for impactions of maxillary and mandibular third molars, agenesis of third molars and angulation of the impacted third molar teeth. The demographic variables recorded were age and gender. A third molar was considered as impacted when it was devoid of functional occlusion while the root formation is completed. An orthodontic protractor was used to measure the angle between the longitudinal axis of second and third molars. Accordingly the angulations were determined as: mesioangular & distoangular (10-70 degrees); vertical (<10 degree); horizontal (>70 degree) {Shiller, 1979}.

Results

A total of 310 patients were included in the study of which 183 were male and 127 female patients (Fig. 1). The mean age of patients was 23 years. A total of 595 impacted teeth were analysed of which 337 were in males and 258 in females. (Fig. 2) Total impacted mandibular and maxillary third molars were 442 and 153 respectively. (Fig. 3) The percentage of impactions in males was 51.7% and in females was 56.33%, agenesis was found to be 8% (59 potential teeth) in males and 11% (56 potential teeth) in females. Number of impacted third molars in maxilla were 153 (25.7%) and 442 (74.3%) in the mandible. (Table 1) The most prevalent angulation was mesioangular. (Table 2)

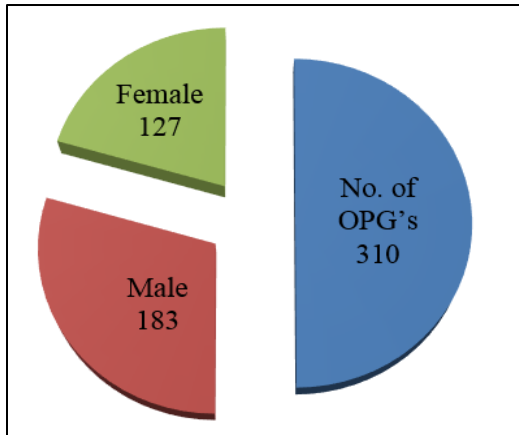


Fig. 1

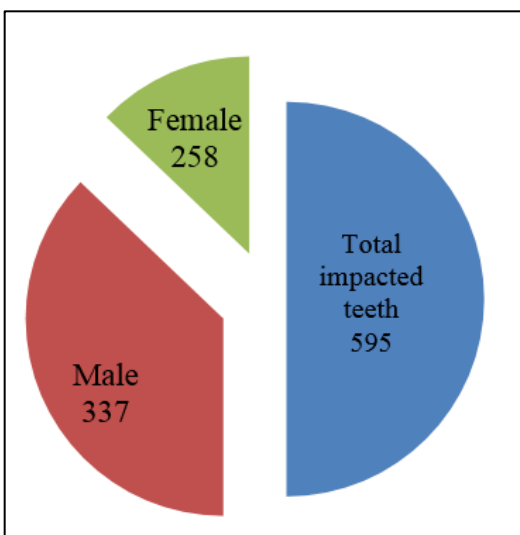


Fig. 2

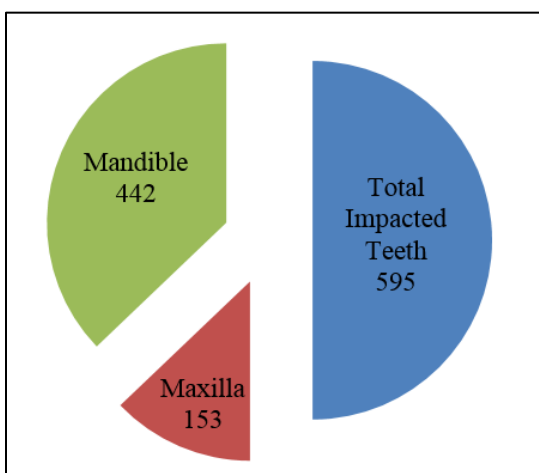


Fig. 3

Discussion

Tooth impaction is a pathologic condition where a tooth does not erupt into its normal functional position. The mandibular third molars are most frequently impacted teeth that is common problem affecting a large population in the

world.¹⁵ The incidence of third molar impaction in this study impacted teeth was seen in 52.1%, 310/595 literature also reported the incidence of impactions higher by Morris & Jerman¹⁶ who reported 65.6% in study of 5000 subjects in united states of America & 68.6% in sample of 1000 subjects in Singapore.¹⁶ However a lower prevalence was reported in some studies reported by Montelius 32% Hattab et al 33% & Hassan 40.8%.^{4,17,18}

Previous studies have reported higher incidence of impactions 19.3% in patients above 40 years of age in contrast to the present study the mean age of patients having high rate of impactions was 23 years in correlation with studies reported by. Ma'aita J, & Breik O, Grubor D.^{2,14} This may be due to awareness amongst young & present generation about oral health & seeking treatment of any oral disease at early detection.

In the present study Impactions were found higher in females as compared to males.

The percentage of impactions in males was 51.7% and in females was 56.33%, agenesis was found to be 8% (59 potential teeth) in males and 11% (56 potential teeth) in females in agreement with studies reported gender predilection for females by Hashemipour et al.^{2,10,11,19} It can be due the fact that physical growth in females usually stops before males leading to small size of the jaws & also the initiation of third molar eruption normally occur after the growth of jaws is stopped, in men jaw growth continues during the third molar eruption providing more space for the tooth.^{10,15,20}

The most prevalent angulation was mesioangular in the present study followed by vertical & horizontal impaction in accordance with findings of Kramer & Williams, Quaker et al, Morris & Jerman, Hassan et al & Hashemipour et al.^{9,16,18,19} the studies reported by these authors show that mesioangular was the most common type of impaction in mandibular molars of African Americans, sinaporeans, Americans, Arabian, Arabians & Iranians respectively.

The aetiology of smaller jaw size is believed to be changes in lifestyle so the space available for third molar is reduced²⁰ in addition delayed third molar mineralization & early physical maturation is possible reason of high impaction rate further racial differences can affect the maturation 7 eruption timings & also the size of jaws.²¹

The limitation of this study was that it was cross sectional study done on OPG radiographs & covered only a limited region of Jammu population. So in order to evaluate aetiology of third molar impaction & also to perform randomized study in population from different regions further study among larger sample is required.

Table 1

Impacted Third Molars	Male	Female	Total	Percentage
Maxilla	83	70	153	25.7%
Mandible	254	188	442	74.3%

Table 5

Site	Sex	Mesioangular		Distoangular		Vertical		Horizontal	
		No.	%	No.	%	No.	%	No.	%
Mandible	Males	178	70	20	7.8	45	17.7	11	4.3
	Females	140	74.4	18	9.5	22	11.7	8	4.2
Maxilla	Males	33	39.7	18	21.6	31	37.3	1	1.2
	Females	28	40	14	20	28	40	0	0

Conclusion

The pattern of third molar impactions presented a higher percentage of impactions in females, with predominance in mandible and mesioangular being the commonest.

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