

PREVALENCE AND PATTERN OF IMPACTED MANDIBULAR THIRD MOLAR

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Article Received on 26/04/2018

Article Revised on 16/05/2018

Article Accepted on 06/06/2018

ABSTRACT

Introduction: The most common impaction found in the oral cavity is of third molar. The current study was done to find out the prevalence and pattern of mandibular third molar impaction. **Material and methods:** A study was carried out in the outpatient department of dentistry (MM College of Dental Science and Research) of the patients visiting the department between the age group 17-45 years. The angulation and pattern of third molar impaction was diagnosed with the help of IOPA (Intra Oral Periapical Radiograph) and OPG (Orthopantomograph) records of each patient based on Winter's Classification. Chi square test was used to find the association and $p \leq 0.05$ was considered as statistically significant. **Result:** A total of 400 patients were included in the study with males (n=246) and females (n=154). Mesioangular impaction (n=210; 52.5%) was seen as the most common of all mandibular impactions. Vertical impaction (n=46; 11.5%) was observed the least. When the pattern of mandibular impaction was compared according to age group, it was found to be statistically significant as $p < 0.05$. **Conclusion:** The results of the present study can be used for further future voluminous studies involving impacted third molars.

KEYWORDS: Impaction, mandibular, prevalence.

INTRODUCTION

Farman^[1] stated that impacted teeth are those teeth that prevented from eruption due to a physical barrier within the path of eruption. Third molars erupt between the ages of 17 and 21 years.^[2] Furthermore, third molar eruption time have been reported to vary with races.^[3] For example, mandibular third molars may erupt as early as 14 years of age in Nigerians, and up to the age of 26 years in Europeans.^[4]

Third molar impaction of mandible is a common condition related with difficulty of extraction and risk of complications, including iatrogenic trigeminal nerve injury. Many theories have been proposed, one of the most commonly stated is insufficient development of the retromolar space.^[5] Mandibular third molars eruption at occlusal level in continuity with adjacent tooth also depends on the favorable path of eruption. For example, if the tooth bud is medially angulated during the initial stages of calcification and root development the path of eruption will be unfavourable. Some authors indicates other important third molar impaction causes like the

malposition of the tooth germ^[6], hereditary factors^[7], lack of sufficient eruption force for third molars, and the theory of phylogenetic regression of the jaw size which lead to insufficient mesial movement of the dentition.^[8]

Therefore, the present study was undertaken to determine the prevalence of mandibular impaction in this part of the state. Hence the present study was undertaken.

MATERIAL AND METHODS

The study was carried out in the outpatient department of dentistry (MM College of Dental Science and Research) of the patients visiting the department between the age group 17-45 years. The ethical clearance was obtained from the ethical committee in MM College of Dental Science. An informed consent was obtained from the patient.

Prior to the start of the study a pilot study was conducted On 30 patients to determine the prevalence of mandibular impaction and sample size was determined. Sample size was based on the below formulae:

$$n = z^2 pq / d^2$$

Where n= sample size

p= prevalence of impaction 60%

q= free of impaction [100%-p% (60%)= 40%

d= allowable error (0.05)

z= point on normal deviation (1.96) with confidence interval taken as 95%

On calculation “n” was equal to 368.79, which was rounded off to 369. As there was 86% response rate in the pilot study and to compensate for attrition, the sample size was increased to 400.

A total of 400 patients were included in the study. All the patients between age group 17- 45 years attending the outpatient department of dentistry, RIMS were included in the study. Patients with any systemic infections and age below 17 years or above age group 45 years were excluded from the study. Also the patients refusing for the consent were excluded. The angulation and pattern of third molar impaction was diagnosed with the help of IOPA (Intra Oral Periapical Radiograph) and OPG (Orthopantomograph) records of each patient based on Winter’s Classification (1926)^[1] as Mesioangular, Horizontal angulation, Distal angulation and Vertical angulation.

Statistical Analysis

Data so collected was tabulated in an excel sheet, under the guidance of statistician. Data was analyzed using

IBM SPSS. Statistics Windows, Version 20.0. (Armonk, NY: IBM Corp) for the generation of descriptive and inferential statistics. Chi square test was used for statistical analysis with level of significance (p value) set at <0.05.

RESULT

A total of 400 patients were included in the study. Majority of patients were males (61.5%) and females were only 38.5%. Impaction was seen mostly in the age group of 21-25 years followed by 26-30 years of age group. Impaction was found least in the age group of >45 years followed by 36-40 years of age group. When the impaction was compared statistically between male and female according to age group, it was found to be statistically insignificant (table 1).

Mesioangular impaction was seen as the most common of all mandibular impactions with mostly of age group 26-30 years. Distoangular and horizontal impactions were also seen next to mesioangular impaction. Vertical impaction was observed the least. When the pattern of mandibular impaction was compared according to age group, it was found to be statistically significant as $p < 0.05$ (table 2).

Table 1: Distribution of mandibular impactions according to age and gender.

Age group (years)	Gender				Total		
	Male		Female				
	N	%	N	%	N	%	
17-20	22	5.5	16	4	38	9.5	
21-25	82	20.5	48	12	130	32.5	
26-30	54	13.5	48	12	102	25.5	
31-35	60	15	30	7.5	90	22.5	
36-40	12	3	4	1	16	4	
41-45	10	2.5	4	1	14	3.5	
>45	6	1.5	4	1	10	2.5	
Total	246	61.5	154	38.5	400	100	
Chi square						5.71	
p value						0.22	

Table 2: Pattern of mandibular impaction according to age group.

Age group (years)	Mandibular impaction								
	Mesioangular		Distoangular		Horizontal		Vertical		
	N	%	N	%	N	%	N	%	
17-20	38	9.5	14	3.5	10	2.5	8	2	
21-25	46	11.5	26	6.5	32	8	18	4.5	
26-30	56	14	18	4.5	14	3.5	10	2.5	
31-35	50	12.5	10	2.5	12	3	6	1.5	
36-40	14	3.5	4	1	2	0.5	4	1	
41-45	4	1	2	0.5	0	0	0	0	
>45	2	0.5	0	0	0	0	0	0	
Total	210	52.5	74	18.5	70	17.5	46	11.5	
Chi square								19.96	
p value								0.04*	

*: statistically significant.

DISCUSSION

Today, the modern man is working on vaccine for dental caries and stem cells in dentinogenesis. But, he could not prevent impaction which is a complication of normal eruption that is created by the host due to the commonest etiologies, like facial growth, jaw size, tooth size and dietary habits, lack of space followed by cysts or tumors overlying, trauma, reconstructive surgery, thickened overlying bone or soft tissue and the host with systemic disorders and syndromes.^[9]

The female to male ratio of the study group was 1:1.59. This distribution is similar to that reported Ruchi Mitra *et al*^[10] where the female to male ratio was 1:1.6. Contrary to findings of the present research, Venta *et al*^[11] reported that there were more females than males who presented with impacted mandibular third molars. Some studies^[12] have reported no sex predilection about third molar impaction.

In the present study, impaction was seen mostly in the age group of 21-25 years followed by 26-30 years of age group whereas impaction was found least in the age group of >45 years followed by 36-40 years of age group. These results were in agreement with the study done by Mitra R *et al.*^[10]

Mesioangular impaction was the most common impaction followed by distoangular, horizontal and vertical impaction. These results were in agreement with the study done by Mitra R *et al.*^[10]

There are many contributing factors to impaction of teeth like delayed eruption of third molars and lack of space on distal side on second molar. However several other factors need to be studied. The present study was based on OPGs and IOPA from hospital record and includes patients visiting the hospital over a period of time. Further longitudinal studies with more emphasis on clinical features and implications together with treatment outcomes need to be carried out.

CONCLUSION

The results of the present study can be used for further future voluminous studies involving impacted third molars to get a gold standard for earlier prediction, evaluation and therefore treatment (impaction surgery) of third molar to avoid all the predictable problems.

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