

PATTERN OF THIRD MOLAR IMPACTION: FREQUENCY AND TYPES AMONG PATIENTS ATTENDING URBAN TEACHING HOSPITAL OF KARACHI

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ABSTRACT

The aims of this study was to determine the frequency and type of third molar impaction between 15 years and above age group of patients attending the outpatient's department of Bahria University Dental Hospital. This is a cross sectional study conducted from January 2012 to November 2013. The subjects were investigated and examined for third molar position, angle and impaction were recorded. Chi Square test was used to analyze the association of impaction of third molar with respect to gender. A total 169 patients participated in the study; out of which majority were male that is 130 (76.9%) and 39 (23.1%) were females. The overall prevalence of impacted third molar was 169 (26%) with mean age of 29.17± years and (STD) ±10.7. Study results showed that majority of the impacted teeth were present in mandible 32 (72.7%) than in the maxilla 12 (27.27%). Majority of the impacted third molars were present in both maxillary and mandibular arch in the age group of 15-25 years. Furthermore, mesioangular impaction was the most common of all impacted third molars. It is concluded that impacted third molar is predominantly seen in mandibular arch than maxillary. The mesioangular impaction was the most common.

Key Words: *Impaction, frequency, Karachi sample.*

INTRODUCTION

Third molar is the most common impacted tooth in the jaws. The term impaction means a tooth which is partially erupted or unerupted when its path of eruption into occlusal plane is obstructed by other tooth, bone or soft tissue.¹ Eruption of third molar tooth is an usual event which occurs in almost every human life. Third molars are the last teeth to erupt in the oral cavity. These patients often visit the dental clinic with the complaint of pain, swelling, dental caries on distal surface of 2nd molar or 3rd molar itself or pericoronitis. Occasionally such cases are revealed with cysts or odontogenic tumours.²

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Removal of impacted tooth is not without complications. The most common complaints are dry socket, infection, swelling, trismus, paresthesia of inferior alveolar nerve,³ hemorrhage during and after surgery and rarely paresthesia of lingual nerve. In majority of cases, these problems are transient in nature but in some cases may lead to permanent sensory and functional disturbances.^{4,5} Despite the above mentioned complications, investigators have shown several other evidences which increases the chances of complication rate, which are; patient general health, age group, type of impaction, operator experience, technique used in removal, smoking and use of oral contraceptive. Furthermore careful history, clinical and radiographic examination are mandatory prior to surgical removed of third molar teeth.^{3,4} Literature has shown that various factors may contribute to the impaction process, which are ectopic position of tooth germ, soft tissue or bony pathologies, supernumerary teeth, tooth size and jaw size discrepancy.¹

Use of prophylactic antibiotics is highly debatable. Considerable volume of evidences favors antibiotics

usage for the prevention of infection following surgery. Peterson introduced prophylactic antibiotic guideline which is beneficial for the patients to avoid undesirable consequences.⁶ However, it should be advised by the dentist where necessary, keeping in mind that anti-bacterial has risk of side effects. The purpose of this prospective study was to determine the frequency and type of impacted wisdom teeth according to gender and age.

METHODOLOGY

This was a cross sectional study conducted at Bahria University Dental Hospital, Karachi from January 2012 to November 2013. A total of 169 patients of wisdom teeth were recruited and the non-probability sampling technique was used. The inclusion criteria of the study population were new patients of both sexes who presented with complaint of pain in lower last teeth and seeking dental treatment of 15 years and above. For all cases informed consent was obtained from patients before clinical examination by using appropriate light with sterilized instruments. It was supplemented with an orthopantomogram (OPG). A proforma was designed to record information about patient’s demographic details, medical and dental history, type and position of impacted wisdom teeth was recorded. Later patients

were referred to respective department for treatment. The data were recorded on the history sheet by the investigators and analyzed using SPSS version 15. Descriptive statistics, frequency distribution, standard deviation and mean were calculated while Chi-square was used to establish associations.

RESULTS

A total of 169 walk-in patients of impacted wisdom teeth were selected for data analysis. The overall prevalence of impacted upper and lower third molar was 44 (26%). There were 130 (76.9%) males and 39 (23.1%) females with a mean age of 29.17± years and standard deviation (STD) ±10.7. The arch wise distribution of third molar impaction in this study showed greater predilection towards mandible 32 (72.7%) and maxilla with the rate of 12 (27.27%). The distribution of impacted third molars according to quadrant is shown in (Table 1). Our findings revealed that impaction of third molar were predominantly seen on the right side of mandible 18 (40.9%) as compared to the left side 14 (31.8%). In maxilla, the frequency was higher on the right side than on the left with figures of 07 (15.9%) and 05 (11.3%) respectively.

Furthermore, majority of the impacted third mo-

TABLE 1: DISTRIBUTION OF ERUPTED AND IMPACTED THIRD MOLARS n= 169

	18		28		38		48	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Erupted	127	75.1	126	74.6	110	65.1	105	62.1
Impacted	7	4.1	5	3	14	8.3	18	10.7
Absent	35	20.7	38	22.5	45	26.6	46	27.2
Total	169	100	169	100	169	100	169	100

Key:

- n= total number of subjects
- 18: maxillary right third molar
- 28: maxillary left third molar
- 38: mandibular left third molar
- 48: mandibular right third molar

TABLE 2: DISTRIBUTION OF IMPACTED THIRD MOLAR ACCORDING TO AGE GROUPS

Age Group	Maxilla		Mandible		Total
	18	28	38	48	
15-25	6	4	12	15	37 (84.09%)
26-35	0	1	1	2	4 (9.09%)
36-45	0	0	1	1	2 (4.54%)
46-55	1	0	0	0	1(2.27%)
56-65	0	0	0	0	0 (0%)
Total	07	05	14	18	44 (100%)

TABLE 3: DISTRIBUTION OF ANGULATION OF IMPACTED TEETH

Types of Angulation	Frequency (%)
Mesioangular	23 (52.2%)
Vertical	12 (27.2%)
Horizontal	06 (13.6%)
Distoangular	03 (6.8%)
Total	44(26%)

TABLE 4: COMPARISON OF IMPACTION OF THIRDS MOLAR WITH RESPECT TO GENDER

Gender	Impacted	Total	Quad-rant No.	P-value
Male	4	7	18	.38
Female	3			
Male	2	5	28	.07
Female	3			
Male	4	14	38	.000*
Female	10			
Male	12	20	48	.04*
Female	8			

Results of impacted third molar (FDI system) compared with respect to gender by Chi-square *Significant with p-value < 0.01

lars were present both in maxillary 10 (22.72%) and in mandibular arch 27 (61.36%) were in the age group of 15-25 years. The cumulative result in this age group was found to be 37 with a percentage of 84.09 (Table 2). The magnitude of various type of impaction is shown in Table 3. Present study findings showed the higher mesioangular impaction 23(52.2%) rate while distoangular was least 03(6.8%).

Chi-Square test was used to compare the impaction of third molars with respect to gender. The lower left and right mandibular impacted third molar was found to be with p-value < 0.0 and 0.04 respectively. (Table 4)

DISCUSSION

Extraction of third molar is the most common surgical procedure performed in oral and maxillofacial surgery. Removal of pathology associated with third molar will reduce the dental pain and improves the quality of life of the affected person.⁷ The prevalence of impacted third molar ranges from 16.7% to 68.6% and studies have shown no gender predisposition associated with third molar. Research has shown higher frequency in females than males.⁸ In this study impacted third molar were most commonly observed in females than males. This may be due to small sample therefore; it does not

represent the large population. Literature has shown no gender predisposition in Caucasian, Chinese, Negro and Arabian community. Previous studies reported the occurrence of third molar impaction in Caucasian females.⁹ On the contrary; study conducted in Saudi region showed disparity in gender which revealed that 3rd molar impaction is more prevalent in males. Present study showed arch wise distribution of impacted third molar with greater disposition in mandible than in the maxilla which is also in accordance with other studies^{1,9,10} Venu Gopal conducted a comparative study on impacted third molar in South India which showed greater predilection towards the mandible, which also supports our findings.¹¹ Hashemipour study on Iranian population analysis showed 1.9 times more likely to occur in the mandibular than maxillary arch.⁸ This is may be due to lack of space, insufficient antero-posterior dimension and delayed mineralization and early physical maturation of third molar.⁹ Furthermore, the higher number of mandibular impacted third molars was present in females than in males with statistically significant values. The above mentioned reasons for female predilection also stand true for these results as well.

The angulation of third molar impaction is devised by George winter’s classification.^{9,11,12} The pattern of different angulation has been shown in Table 2. In the present study, mesioangular impaction is the most common and the least was distoangular cases. Study conducted in Singapore Chinese population showed similar findings of mesioangular impaction followed by horizontal.⁹ Hashemipour study showed the most leading angulation of impaction in the mandible was mesioangular followed by horizontal, vertical and distoangular impaction. These findings are in consonance with the results of this study. Such findings were also reported in countries like China, Spain, Thailand, Nigeria, United States of America.^{13,9,14,2,3} The reason for the mesioangular impaction may be due to their late development and maturation, path of eruption and lack of space in mandible at later age.⁸ Present study results did not show any significant findings related to horizontal impaction. It may due to small sample size and large sample size is needed to authenticate the present findings. Literature search does not show any wide variation in the angulation of impaction of third molar in relation to race. In this context Kanneppady conducted comparative study on Malaysian different ethnic groups, which showed mesioangular impaction was more frequent (49.8%) followed by distoangular (22.9%).¹⁰

In the current study, the frequency of third molar impaction was quite high, 84% in the age group of 15-25 years. This study findings are also supported

by Bokhari and colleagues who conducted a study in Saudi population. The main reason for this may be due to coincidence of this age with third molar eruption and initial complaints are usually encountered during eruption phases. After 26 to onward age either third molar is already extracted, fully erupted in mouth or complaints have subsided. Therefore, cases of impactions may have been missed.

Several complications are associated with extraction of mandibular third molar including alveolitis, infection and paresthesia of inferior alveolar nerve. Muhonen and colleagues reported higher complication ratio in females than males.¹⁵ François and Nach study showed higher complication rate in mesioangular and distoangular impaction than the rest of the other positions.⁴ Lopes and colleagues in their study revealed that over half of patients did not have clear-cut indications for third molar removal.¹⁶ Therefore, in England and Wales dentists are recommended to follow the NICE (National Institute of Clinical Excellence) guidelines to avoid unnecessary extraction and post operative complication. NICE in the year 2000 has established a bench marks for the removal of third molars. Surgery is only indicated when pathology is evident, which includes unrestorable caries, recurrent pericoronitis, pulpal/Periapical pathologies, cellulitis, osteomyelitis, internal and external root resorption, cysts and reconstructive surgery, when a tooth is involved in or within the range of tumour resection.¹⁷ Pakistan is a developing country where wisdom teeth removal is the most common practice followed without its true indications. Furthermore there is no definite recommendation for its surgical removal. Therefore dental practitioner should review their current practice and may consider NICE guidelines.

In our opinion, we should establish our guidelines in the light of previous studies and prophylactic extraction of third molars should be discouraged as a routine therapeutic practice without vigilantly assessing its true indications and cost benefit ratio.

CONCLUSION

Within the limitation of the study, it can be concluded that impacted third molars were more commonly seen in mandible with mesioangular impaction. It was predominant in females.

REFERENCES

1 Syed KB, Zaheer KB, Ibrahim M, Bagi MA, Assiri MA. Prevalence of Impacted Molar Teeth among Saudi Population in Asir

Region, Saudi Arabia - A Retrospective Study of 3 Years. *J Int Oral Health*. 2013 Feb; 5(1): 43-7.

2 Chaparro-Avendaño AV, Pérez-García S, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Morbidity of third molar extraction in patients between 12 and 18 years of age. *Med Oral Patol Oral Cir Bucal*. 2005 Nov-Dec; 10(5): 422-31.

3 Bui CH, Seldin EB, Dodson TB. Types, frequencies, and risk factors for complications after third molar extraction. *J Oral Maxillofac Surg* 2003; 61(12): 1379-89.

4 Blondeau F, Daniel NG. Extraction of impacted mandibular third molars: postoperative complications and their risk factors. *J Can Dent Assoc*. 2007 May; 73(4): 325a-e.

5 Martin MV, Kanatas AN, Hardy P. Antibiotic prophylaxis and third molar surgery. *Br Dent J*. 2005 Mar 26; 198(6): 327-30.

6 Peterson L J: Antibiotic prophylaxis against wound infections in oral and maxillofacial surgery. *J Oral Maxillofac Surg* 1990; 48: 617.

7 Jung YH, Cho BH. Prevalence of missing and impacted third molars in adults aged 25 years and above. *Imaging Sci Dent*. 2013 Dec; 43(4): 219-25.

8 Hashemipour MA, Tahmasbi-Arashlow M, Fahimi-Hanzaei F. Incidence of impacted mandibular and maxillary third molars: a radiographic study in a Southeast Iran population. *Med Oral Patol Oral Cir Bucal*. 2013 Jan 1; 18(1): e140-5.

9 Quek SL, Tay CK, Tay KH, Toh SL, Lim KC. Pattern of third molar impaction in a Singapore Chinese population: a retrospective radiographic survey. *Int J Oral Maxillofac Surg*. 2003 Oct; 32(5): 548-52.

10 Kanneppady SK, Balamanikandasrinivasan, Kumaresan R, Sakri SB. A comparative study on radiographic analysis of impacted third molars among three ethnic groups of patients attending AIMST Dental Institute, Malaysia *Dent Res J (Isfahan)*. 2013 May; 10(3): 353-8.

11 Venu Gopal Reddy K. Distribution of Third Molar Impactions among Rural and Urban Dwellers in the Age Group of 22-30 years in South India: A Comparative Study. *J Maxillofac Oral Surg*. 2012 Sep; 11(3): 271-5.

12 Laskin DM (1984) Excision of unerupted and impacted teeth-odontectomy. In: *Textbook of oral and maxillofacial surgery*, vol 2, 6th edn. St. Louis, The C. V. Mosby Company, pp 49.

13 Bishara SE. Impacted maxillary canines: a review. *Am J Orthod Dentofacial Orthop*. 1992; 101: 159-71.

14 Meisami T, Sojat A, Sándor GK, Lawrence HP, Clokie CM. Impacted third molars and risk of angle fracture. *Int J Oral Maxillofac Surg*. 2002; 31: 140-4.

15 Muhonen A, Venta I, Ylipaavalniemi P. Factors predisposing to postoperative complications related to wisdom tooth surgery among university students. *J Am Coll Health* 1997; 46(1): 39-42.

16 Lopes V, Mumenya R, Feinmann C, Harris M. Third molar surgery: an audit of the indication of surgery, post operative complaints and patient satisfaction. *Br J Oral Maxillofac Surg*. 1995; 33: 33-35.

17 Kiyani A, Sheikh MA, Ashfaq A. Removal of third molars – should we have guidelines for surgery? *Pak Oral Dent J*. 2011; 31: (2): 273-274.