Assessment of Prevalence and Pattern of Impacted Third Molar among Kathmandu Population: A Retrospective Analysis

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ABSTRACT

Introduction: Impaction refers to failure of eruption of teeth into their proper functional position. Mandibular third molars are the most common tooth to get impacted. One of the commonest reasons for occurrence of third molar impaction is insufficient space which might further lead to various pathologic lesions like pericoronitis. Major theories explaining reasons for occurrence of the tooth impaction also stresses on the concept of discrepancy between the tooth and jaw size. Hence we evaluated the prevalence of impacted third molars and variation occurring in the type of impaction among Kathmandu population.

Material and methods: A total of 893 panoramic radiographs were evaluated retrospectively from March 2010 to June 2015. Complete oro-dental history and demographic details of the patients were obtained and analyzed. For assessing the position of impacted tooth, Winter's classification was used. All the data was analyzed using SPSS software. Pearson Chi-square test was used to measure the level of significance.

Results: We found a total of 893 impacted third molars out of all patient's data examined (p-value<0.05).80% of the total patients with impacted third molars were males with most of them having mesio-angular type of impacted third molars. Impacted teeth were more common in mandibular arch as compared to maxillary arch (p-value<0.05).

Conclusion: Higher incidence of impacted third molars has been observed in mandibular region as compared to maxillary region. This incidence is higher in males with mesioangular impaction being the most common form of impaction.

Keywords: Impacted, Molar, Prevalence

INTRODUCTION

Failure of eruption of teeth into their proper functional location leads to impaction. The most common tooth to get impacted is mandibular third molar.[1] Insufficient space is the commonest reason for the occurrence of third molar impaction which may further lead to various pathologic conditions like pericoronitis, dental caries or may lead to development of any cystic lesion.[2,3] Winter's classification system is usually considered for assessing the angle of impacted teeth which evaluates the angle formed between the intersected longitudinal axes of the second and third molars.[4] For explaining the prevalence and incidence of dental impaction, various theories have been put forward from time to time. Mendelian theory, phylogenic theory and orthodontic theory are among the most dominant and widely accepted theories among all. The concept of discrepancy between the size of the tooth and space available in the jaws due to size variation occurring in the jaws is the most stressed one in all the major theories.[5] Hence, In this study we evaluated the prevalence of impacted third molars and variation occurring in the type of impaction among Kathmandu population, , which itself is first of its kind in Kathmandu Population.

MATERIAL AND METHODS

This retrospective analysis was planned done by collecting the data from the Kantipur dental college and hospital in Kathmandu from March 2010 to June 2015. All the patients reporting in the dental OPD for removal of impacted third molars whose OPG was done in the college itself were included in the study. Analysis of 1250 panoramic radiographs of the dental patients was done and out of them panoramic radiographs of 893 atients with impacted third molar was selected for the study (Figure-1). The age of the selected subjects varied from 17 years to 48 years. Ethical approval was taken from the ethical committee of the institution before starting the retrospective analysis. Tooth which was not aligned or was not in physiologic occlusal place with other teeth was considered to be impacted. Complete detailed medical, dental, oral and demographic history of the subjects, who were included in the study, was obtained. Complete assessment of the patient's detail was done by two independent observers to avoid any variability in results. Winter's classification was used to divide the impacted teeth on the basis of angulations. Quek et al's[6] methodology was followed for the measurement of the angulations of impacted teeth. Quek's method classified the impacted teeth into four main types described as follows:

Horizontal impaction: 80° to 100°
Mesioangular impaction: 11° to 79°
Vertical Impaction: 10° to -10°
Distoangular impaction: -11° to -79°.

STATISTICAL ANALYSIS

All the data was analyzed using SPSS software. Pearson Chi-square test was used to measure the level of significance.

RESULTS

Table-1 shows the occurrence of impacted teeth in relation to different age-groups. Out of 893, 505 impacted third molars were observed in the age group of 17-25 years. A decrease in number of impacted tooth was seen with increasing age-groups (Graph-1). A statistically significant results was obtained while comparing the prevalence of impacted teeth with increasing age

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How to cite this article: Prenit Kumar Pokharel. Assessment of prevalence and pattern of impacted third molar among kathmandu population: a retrospective analysis. International Journal of Contemporary Medical Research 2016;3(6):1658-1660.

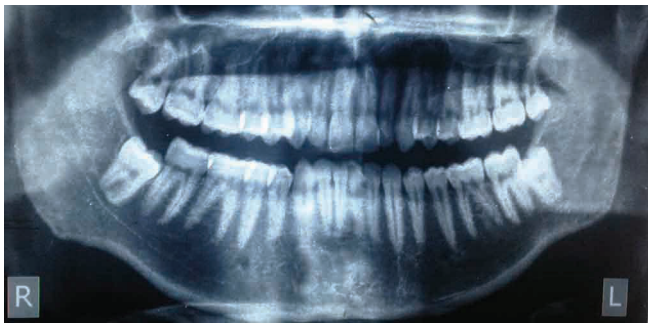
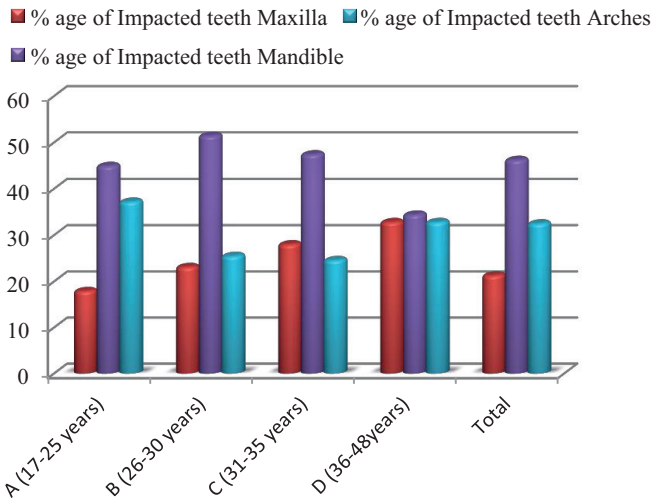
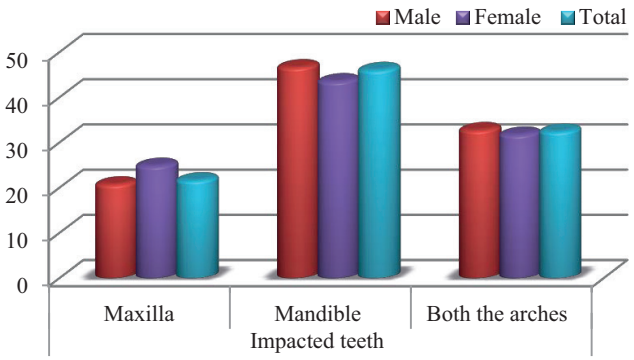


Figure-1: Panoramic radiograph of the patient



Graph-1: Distribution of impacted teeth in relation to different age-groups



Graph-2: Distribution of impacted teeth in relation to gender

(p-value<0.05) (Table-2). Table-3 highlights the occurrence of impacted teeth in relation to gender. More number of impacted teeth (n=732) were observed in males. In males, impacted teeth were more common in mandibular arch as compared to maxillary arch (Graph-2). However, the results were statistically non-significant (Table-4).

DISCUSSION

A tooth which is unable to erupt physiologically into its functional anatomic position with time is said to be impacted. Normal age of occurrence of third molars is 18-25 years.[7] More than one-third of third molars get impacted due to insufficient space. Adverse relation is established between the impacted tooth and the adjacent normally erupted teeth which increase the risk of development of potential complications.[8] Treatment involving the pathologic and prophylactic extraction of impacted

Age group	Impacted teeth			Total
	Maxilla	Mandible	Both arches	
A (17-25 years)	90	227	188	505
	17.9%	44.9%	37.2%	100%
B (26-30 years)	49	109	54	212
	23.1%	51.4%	25.5%	100%
C (31-35 years)	33	56	29	118
	28.0%	47.4%	24.6%	100%
D (36-48years)	19	20	19	58
	32.8%	34.4%	32.8%	100%
Total	191	412	290	893
	21.3%	46.2%	32.5%	100%

Table-1: Occurrence of impacted teeth in relation to different age-groups

Test of Significance	Value	df	p-value
Pearson Chi-square	20.845 (a)	5	0.002 (s)
s: Significant			

Table-2: P-value for occurrence of impacted teeth in various age-groups

Gender	Impacted teeth			Total
	Maxilla	Mandible	Both the arches	
Male	152	341	239	732
	20.7%	46.6%	32.7%	100%
Female	40	70	51	161
	24.8%	43.5%	31.7%	100%
Total	192	411	290	893
	21.6%	46.0%	32.4%	100%

Table-3: Occurrence of impacted teeth in relation to gender

Test of Significance	Value	df	p-value
Pearson Chi-square	.748 (a)	3	0.812 (ns)
ns: Non Significant			

Table-4: P-value for occurrence of impacted teeth divided on the basis of gender

third molar is the matter of current research.[7-9] Impacted teeth can lead to impaction of food, pericoronitis, pain, tenderness etc. Therefore, impacted third molar prophylactic removal is becoming a common practice thesedays.[10] Hence, we assessed the prevalence of impacted third molars and variation occurring in the type of impaction among Kathmandu population.

893 patients out of total initially assessed had impacted third molars as shown in Table-1 and Graph-1. as far as total impacted percentage was concerned, statistically significant results were obtained as shown in Table-2. Similar results were obtained by Haider et al who observed a prevalence of impacted third molar more than 30% in both males and females.[11] Approximately 81% of the total patients in the present study were males (Table-3, Graph-2).however, the results were statistically non-significant (Table-4). Our results were in correlation with the results obtained by Ioannis G et al who also found non-significant gender association with the prevalence of impacted third molar.[12] Prevalence of impacted third molar in our study was found to decrease with the advancing age with highest number of impacted third molar observed in first group. Similar results were obtained by Ioannis et al and Shetty et al who

noticed similar pattern of distribution of impacted third molar with increasing age.[12,13] Manibular arch had more number of impacted third molar as compared to maxillary arch (Table-1). Also in both males and females, higher number of impacted teeth was observed in mandibular arch. Mesio-angular and vertical type of impaction was found to be most common type of impaction in mandibular and maxillary arch respectively. Syed et al retrospectively analyzed the prevalence of impacted third molar in Saudi population and from the results observed a higher Incidence of tooth impaction is higher in the mandibular arch as compared to maxilla. They also found a higher incidence of third molar impaction in males with predominant type being the mesio-angular one.[6] Khawaja et al tried to assess the pathologies associated with impacted third molars. They evaluated panoramic radiographs of 570 patients retrospectively and concluded that removal of impacted third molar should be done prophylactically to avoid future risk of associated pathologies.[14] Schneider et al evaluated the anatomical variations in the position of the impacted mandibular third molar and concluded that the use of 3D imaging is recommended before surgical removal of impacted tooth due to the anatomical variations occurring in them.[15] Bereket et al also retrospectively analyzed the impacted first and second permanent molars in the Turkish population. They evaluated the records of 104.408 patients and choose 170 patients who presented with impacted first and second permanent molar. They found that 91 were male and 79 were females with mean ages 22.69±8.99 years. A total of 200 retained impacted molars were found in their study with 125 molars being vertically impacted and 17 being horizontally impacted, which has similar findings like in our study, They concluded that although impactions are rare in case of first and second permanent molars, early diagnosis is important to start the treatment protocol at optimal time.

CONCLUSION

From the above results, we conclude that higher incidence of impacted third molars occurs in mandibular region as compared to maxillary region. Also, a higher is seen in males with mesioangular impaction being the most common form of impaction. Future research with higher study group, prevalence of impacted third molar among different ethnic communities, variety of parameters are required to further do comprehensive study this field.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 26-04-2016; **Published online**: 23-05-2016