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Incidence of Impacted Mandibular Third Molars with Their Pattern and Associated Complications in Nepalese Population

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INTRODUCTION: Impaction may be defined as the failure of complete eruption into a normal functional position of one tooth within normal time due to lack of space in the dental arch, caused by obstruction by another tooth or development in an abnormal position.

MATERIALS AND METHOD: A cross sectional descriptive study was conducted on 945 patients (males=591, females=354) aged between 18- 50 years of age who had mandibular third molars impacted. The difficulty index for mandibular third molar for angulation and depth was based on Winter's classification (1926).

RESULTS: The most common type of impaction seen was Mesio- angular with (32%) followed by horizontal 264 (27.8%), then followed by other types. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 23.0

CONCLUSION: Impacted third molars are a common observation in routine dental practice. The impaction rate of third molars is higher as compared to other teeth in the dentition. The high prevalence found in the present study, with more than half of these Nepalese adult patients having at least one impacted third molar.

KEYWORDS: Third Molar, Impaction, Mandibular

INTRODUCTION

Third molars (M₃) in the human dentition are commonly known as wisdom teeth, are highly polymorphic within modern humans, with roughly one & quarter of humans across the globe born without one or more of these teeth and one and quarter of humans having one or more of these teeth impacted (present but failing to properly erupt into occlusion).^{1,2}

They may fail to erupt in oral cavity due to short mandible or wrong angulation of eruption.³ Their crown formation starts at the age of 11 years (seen in approximately 90% of people), and follows varying patterns of eruption.² It often erupts between the ages of 18 to 25 years without any gender predilection towards any certain age.³

The M₃s, once were regarded as a necessity for early human ancestors as they used to break their food with jaws and hands. In addition, the nature of their food was coarse and rough which required more chewing/crushing power as compared to modern food, which is cooked to be soft and tender. In modern man, there is little room for the M₃s to be spaced in the jaw as compared to our ancestors and hence, are often impacted or fall out of occlusion.^{4,5} There is substantial research documenting that the reasons of a majority of third molar problems today are not due evolutionary changes but, are due to other reasons, which include a change from a coarse, rough and abrasive diet to a soft, western diet

coupled with a lack of proper dental care and genetic factors (possibly as a result of mutations due to selective evolution).⁶

The M₃ is fast approaching a vestigial condition since they generally do not appear until a later age in one's life, i.e. between twenty and thirty years, and may/ may not erupt at all in few people. In a large percentage of individuals, they are often found to be useless, are commonly found to be impacted and have to be removed surgically by an experienced clinician.^{6,7}

Another fact about the third molars is that these impacted teeth may either stay asymptomatic for a long time without creating any symptoms/disturbance for patient⁸ or they may present with various oral pathological conditions like caries, pericoronitis, cysts, neoplasms and also cause root resorption of adjacent teeth, thus hampering the condition of an otherwise sound tooth.⁹

There are several complications that are associated with the extraction of impacted mandibular third molar(s), the most common being alveolitis, infection and paresthesia of the inferior alveolar nerve. It is also important to note that hemorrhage during or after surgery and paresthesia of the lingual nerve are relatively rare; and nature of the surgical technique employed to extract the tooth

seems to play a major role in the occurrence of this problem. However, most of the complications are temporary in nature, and in some cases, the paresthesia may become permanent and lead to functional problems in an individual.¹⁰

Since the presence of third molars has the capacity to hamper a person's normal life so much as for him to seek immediate dental care, the present study was conducted with the aim to evaluate the incidence and the pattern of impaction of mandibular third molars and the incidence of complications associated with the extraction of third molars in Nepalese population.

MATERIALS AND METHOD

A cross sectional descriptive study was conducted on 945 patients (males: 591, females: 354) aged between 18- 50 years of age who had mandibular third molars impacted. The study was carried out at the Department of Oral and Maxillofacial Surgery of People's Dental College & Hospital, Kathmandu from March 2012 to June 2017 (Duration: 5 years and 4 Months). All the Patients were asked to take orthopantomogram (OPG) after clinical examination and a detailed case history was recorded regarding the socio- demographic along with the detailed medical history, dental history, type and position of impacted wisdom teeth was recorded. The third molars were considered as impacted if they were not functional occlusion and at the same time, it's root were fully erupted. In all the cases informed consent was obtained from the patients. All the standard procedures and protocols were followed to ensure the infection control during the examination procedure.

The inclusion criteria of the study group are as follows:

- Patient with the age group of 18 years, and those who gave consent.
- OPGs and IOPAs of the patients that confirmed the need for surgical removal of the impacted tooth.
- Patients who gave a negative history of trauma.
- Patients with concurrent conditons (i.e: no syndromes and /or no systemic disorders).

The difficulty index for mandibular third molar for angulation and depth was based on Winter's classification (1926)

Exclusion Criteria

- Patients with uncontrolled Diabetes and Hypertension.
- Pregnant patients.
- Patients with any kind of bleeding disorder.

Statistical Analysis: Data was analyzed using Statistical Package for Social Sciences (SPSS) version 23. Chi-square, descriptive and analytical tests were performed.

RESULTS

A total of 945 was the sample size of which 548 males and 397 females. All the patients were evaluated clinically and radiographically. The most common type of impaction seen was Mesio- angular with (32%) followed by horizontal 264 (27.8%), then followed by other types (Table 1). Moreover association was also seen among the type of impactions with postoperative complications which has been explained in table 2

DISCUSSION

Impacted tooth is defined as a tooth which is completely or partially unerupted and is positioned in such a manner that further eruption unlikely due to its anatomical position and/or the presence of another tooth, bone or soft tissue in its eruption path. It has been said that molar impaction varies with races because of different eruption pattern such as European young adults are having 73% of third molar impaction is occurring in about of the young adults. Studies done in Nigerian populations indicate that mandibular third molars may erupt as early as 14 years of age; while on the contrary, in Europe, they may erupt up to 26 years of age. Most of the researchers have suggested that the females have a higher incidence of mandibular third molar impaction as compared to their male counterparts.^{11,12}

In the present study, the most common impaction found was mesio-angular followed by horizontal angulation of the third molars. Other factors, such as the nature of diet may lead to attrition, reduced mesiodistal crown diameter as well as the degree of use of the masticatory apparatus and genetic inheritance also affects the timing of third molar eruption. The results are in agreement with Kruger et al. who found that me-sioangular impaction was

the most frequently observed pattern of impaction in the maxilla.¹¹ However, it disagrees with Hashemipour and Quek et al. where vertical angulation was commonly found.^{8,12}

It has been also said that many of the complications occurs with impacted third molars such as in the present study swelling is commonly occurred with vertical angulation whereas pain is associated with mesio-angular impaction. On the other side trismus is associated with majority of the horizontal impaction cases and alveolar osteitis was occurred with many of the horizontal cases.

Overall pain is the most common complication which was seen among the patients who had undergone impaction surgeries and horizontal type of impaction is the commonly type of impaction who is associated with complications.

The limitation of this study is that though this study had discussed about the type of impactions and the incidence of post-operative complications, but unfortunately, the etiology of third molar impaction was not investigated in the studied population and hence, necessitating the need for future studies to evaluate the etiology behind this relatively high frequency of third molar impaction.

CONCLUSION

Impacted third molars are a common observation in routine dental practice. The impaction rate of third molars is higher as compared to other teeth in the dentition. The high prevalence found in the present study, with more than half of these Nepalese adult patients having at least one impacted third molar, underlines the need to increase awareness among dental professionals to look for this common problem as a differential diagnosis while devising a treatment plan for their patients.

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LEGENDS

S.NO	TYPE OF IMPACTION	NUMBER	PERCENTAGE	P VALUE
1.	Horizontal	264	27.8%	0.00
2.	Vertical	255	27%	
3.	Mesio- Angular	302	32%	
4.	Disto- Angular	63	6.7%	
5.	Bucco- Angular	9	1%	
6.	Lingo- Angular	33	3.5%	
7.	Miscellaneous	19	2%	
	Total	945	100%	

Table 1. Types Of Impaction Found Among The Study Population.

Post-operative complications	Type of impaction					P value
	Mesioangular	Horizontal	Vertical	Distoangular	Total	
Swelling	62	101	140	59	362	0.00
Pain	296	264	169	63	793	
Trisums	100	151	102	61	414	
Alveolar osteitis	0	92	105	57	254	
Total	458	608	516	240	1822	

Table 2. Postoperative Complications of Impaction among the Study Population.