

Incidence and Pattern of Impaction of Mandibular Third Molars : A Single Institutional Experience in Nepal

Upadhyaya C,¹ Chaurasia NK,¹ Neupane I,¹ Srivastava S²

¹Department of Oral and Maxillofacial Surgery

²Department of Community and Public Health Dentistry

Dhulikhel Hospital, Kathmandu University Hospital

Kavre, Nepal.

Corresponding Author

Chandan Upadhyaya

Department of Oral and Maxillofacial Surgery

Dhulikhel Hospital, Kathmandu University Hospital

Kavre, Nepal.

E-mail: updch@gmail.com

Citation

Upadhyaya C, Chaurasia NK, Neupane I, Srivastava S. Incidence and Pattern of Impaction of Mandibular Third Molar: A Single Institutional Experience in Nepal. *Kathmandu Univ Med J* 2017;57(1):66-9.

ABSTRACT

Background

Impacted teeth are those that have erupted or are partially erupted and will not assume a normal arch relationship with opposing and adjacent teeth and tissues.

Objective

To evaluate the incidence and pattern of mandibular impacted third molars in patients of Dhulikhel Hospital.

Method

A retrospective study was conducted from March 2016 to November 2016 and reviewed 581 orthopantomograms and clinical records of patients who presented to the Department of Oral and Maxillofacial Surgery. The angulation of impaction was measured using Winter's classification and the level and position of impacted third molar was recorded using Pell and Gregory classification system. The etiology for extraction was recorded from previous clinical records.

Result

In this study, incidence of impaction was more prevalent in females. The most common pattern of impaction was mesioangular followed by horizontal, vertical, distoangular and others. The most common cause of extraction was caries in the third molar. There was no significant difference between the pattern of impaction in the right and left sides of the mandible.

Conclusion

Classifications of impacted mandibular third molars can be effectively used to predict the surgical difficulty and to evaluate the risk of postoperative complications. Therefore, this study highlights the importance of evaluation of pattern, type and class of impaction in Nepalese population giving a high clinical significance.

KEY WORDS

Impaction, incidence, mandibular, pattern, third molar

INTRODUCTION

Impacted teeth are those that have erupted or are partially erupted but it will not assume a normal arch relationship with opposing teeth and other teeth and tissues. Impaction is more common in third molars, which are the last teeth to erupt into the oral cavity at the age of 17-25 years.¹ Local factors such as malposed tooth germs, arch-length deficiency, cleft lip and palate are known to cause impaction.²⁻⁴ Systemic factors such as Down syndrome, endocrine deficiencies (hypothyroidism and hyperthyroidism), irradiation, cleidocranial dysplasia are among the various factors that may influence impaction of permanent teeth.^{5,6}

The third molar is the most common impacted tooth with a frequency of occurrence generally reported to be from 18% to 32%. Svendsen and Maertens have reviewed in detail the etiology of third molar impactions.⁸ Two of the cited causes are: Lack of space and Late third molar mineralization and early physical maturation. The most commonly used classification methods for third molar impaction is those given by George winter and Pell and Gregory.^{9,10} There are very few studies that have been done in Nepal to study the incidence and pattern of impacted third molars.^{11,12} Therefore, this study was designed to evaluate the incidence and pattern of mandibular impacted third molar in patients of Dhulikhel Hospital, Kavrepalenchowk District, Nepal.

METHODS

This retrospective study was conducted from March 2016 to November 2016 and reviewed 581 orthopantomograms of patients who presented to the Department of Oral and Maxillofacial Surgery of Dhulikhel Hospital. Convenience sampling was done. Ethical approval was obtained from Dhulikhel Hospital Ethics committee. The data were collected from clinical records and orthopantomograms from Department of Oral and Maxillofacial Surgery. All patients who required extraction were included in the study except patients with Maxillofacial Trauma or Systemic diseases and Orthodontic patients.

For this study angulation, level and position of impaction were defined as follows. The angulation of impaction was measured using winter's classification with reference to the angle formed between the intersected longitudinal axes between the second and third molar. The level and position of impacted third molar was recorded using Pell and Gregory classification system.

Also, the aetiology for the removal of third molar was recorded from past clinical records which included caries, pericoronitis, both caries and pericoronitis and prophylactic removal.

All data was analyzed using SPSS version 20.0. The level of significance was set at 0.05.

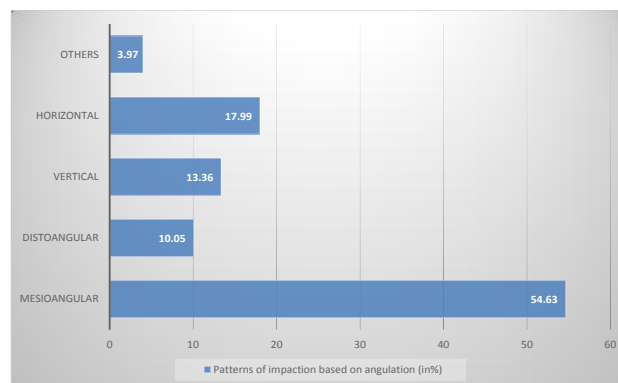


Figure 1. Patterns of impaction based on angulation (in%)

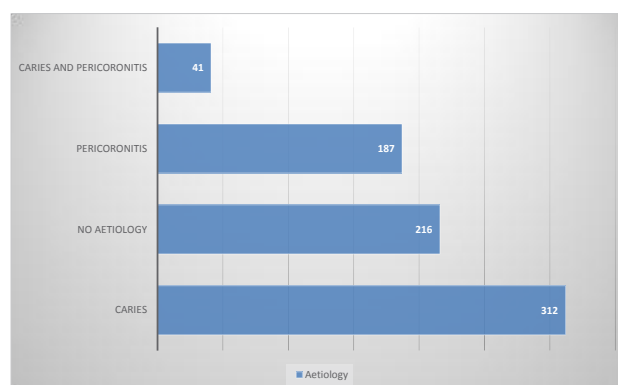


Figure 2. Aetiology for removal of third molar

RESULTS

A total 581 orthopantomograms of patients who presented to the Department of Oral and Maxillofacial Surgery of Dhulikhel Hospital were evaluated for impacted third molars. The results of this study showed that the incidence of impaction was more prevalent in females. The pattern of distribution of impacted mandibular third molar based on angulation was as shown in figure 1. The main etiology for removal of impacted mandibular third molar was dental caries (41.26%). The other etiological factors responsible for removal of impacted mandibular third molar were as shown in figure 2. There was no significant difference between the pattern of impaction in the right and left sides of the mandible (Table 1).

DISCUSSION

The prevalence found from this study of impaction being more in females correlated with other studies as well.^{7,13} This is in contrast to some studies which showed a higher male to female ratio.¹⁴⁻¹⁶

The results of this study are similar to another study conducted in Nepal about the pattern of third molar impaction. A study by Khanal et al. in 2014 revealed that the most common type of impaction according to angulation was mesioangular and the least common was distoangular.¹²

Table 1. Radiographic angulation wise distribution of total right and left side impacted mandibular third molars

Type of mandibular third molar impaction						Total	Df	Value	Sig (2 sided)
Side	Mesio angular	Disto angular	Vertical	Horizontal	Others				
Right	184	33	52	70	18	357			
Left	229	43	49	66	12	399	4	5.309	0.257
Total	413	76	101	136	30	756			

The pattern of impaction in different studies conducted worldwide have a wide variation. One of the study conducted in Jordanian population, revealed that vertical type of angulation was the most common and mesioangular type was the least common.¹⁷ But studies among Chinese and Korean populations have found mesioangular type to be more common.¹⁸ This is in an agreement with many other studies where the commonest type of impaction according to angulation is reported to be mesioangular impaction, and is similar to the results obtained by our study.^{14-16,19}

In this study, the main factor for which patients approached the tertiary healthcare facility was pain due to caries which reported in 41.26% of the cases and the least common factor was pericoronitis with 24.73%. This could be due to less priority given to oral health by patients in developing countries like Nepal. Also, patients only seek the healthcare facilities when they experience symptoms like pain, swelling or food impaction caused by caries or pericoronitis. Similar results have been reported in one study in Kenya where the need for treatment was due to caries in 46.4%.¹⁴ These results are in contrast to a similar retrospective study done in Kenya where most common cause for extraction of third molars was recurrent pericoronitis followed by caries in 3rd molars.²⁰

Cariou involvement occurs most commonly due to the natural entrapment of food between the second and third mandibular molars and inaccessibility to clean by oral hygiene aids.²⁰ The plaque and debris that accumulate in the area between the second and impacted third molars result in caries in the radicular portion of the second molar also, which is challenge to restore. In most cases, the third molar has to be prophylactically removed to salvage the second molar.²⁰

In our study, there was no significant difference between the pattern of impaction in the right and left sides of the mandible which was similar to the findings reported by other studies.^{13,21}

CONCLUSION

The Pell and Gregory and Winter classifications are used to document the position of the impacted mandibular third molars. These classifications can be effectively used to predict the surgical difficulty and to evaluate the risk of postoperative complications. Most of the complications are associated with a greater degree of impaction.²² Therefore, this study highlights the importance of evaluation of pattern, type and class of impaction in Nepalese population giving a high clinical significance and not is just for epidemiological data.

REFERENCES

- American Association of Oral and Maxillofacial Surgeons; 2010.
- G. M. Raghoebar, G. Boering, A. Vissink and B. Stegenga. Eruption disturbances of permanent molars: A Review. *J Oral Pathol Med* 1991;20(4):159-66.
- H. Jacoby. The etiology of maxillary canine impaction. *Am J Orthod* 1983 Aug;84(2):125-32
- RE. Moyres, Handbook Of Orthodontics, 4th ed. Chicago: Year Book Medical Publishers, 1988.
- S. E. Bishara. Impacted Maxillary Canines. *Am J Orthod Dentofacial Orthop* 1992. 101(2):156-73.
- O. Levi and D. Regan. Impaction of maxillary permanent second molars by the third molars. *J Paediatr Dent* 1989. 5:30-5.
- J. O. Andreasen. Epidemiology of third molar impactions. In: Andreasen JO, Peterson JK, Laskin DM, editors. Textbook and Color Atlas of Tooth Impactions, vol. 32, Copenhagen: Munksgaard, 1997. 548-52.
- H. Svendsen and J. K. Maertens. Etiology of third molar impaction. In: Andreasen JO, Petersen JK, Laskin DM, eds: Textbook and Color Atlas of Tooth Impactions. Copenhagen: Munksgaard, 1997.
- G. J. Pell and B. T. Gregory. Impacted mandibular third molars: classification and modified techniques for removal. *Dent Digest*, 1933.
- G. B. Winter. The Principles of Exodontia as Applied to the Impacted Third Molar. St. Louis: American Medical Book co, 1926.
- Biswari G, Gupta P, Das D. Wisdom teeth - A major problem in young generation, study on the basis of types and associated complications. *Journal of College of Medical Sciences-Nepal*, 2010; 6(3): 24-8.
- P. Khanal, S. Dixit, R. Singh and P. Dixit. Difficulty Index in extraction of impacted mandibular third molars and their post operative complication. *Journal of Kathmandu Medical College* 2014;3(7).
- Hashemipour MA, Tahmasbi-Arashlow M, Fahimi-Hanzaee F. Incidence of impacted mandibular and maxillary third molars: a radiographic study in a Southeast Iran population. *Med Oral Patol Oral Cir Bucal*. 2013;18:e140-e145.
- Mwaniki D, Guthua SW. Incidence of impacted mandibular third molars among dental patients in Nairobi, Kenya. *Trop Dent J* 1996;19(74):17-9.
- Hattab FN, Rawashdeh MA, Fahmy MS. Impaction status of third molars in Jordanian students. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1995 Jan;79(1):24-9.
- Harsha and S. Sonti. Incidence of mandibular third molar impaction in patients visiting a private dental college. *IOSR Journal of Dental and Medical Sciences*. 2014;13(1).

17. Bataineh AB, Albashaireh ZS, Hazza AM. The surgical removal of mandibular third molars: a study in decision making. 2002. *Quintessence Int*: 8.
18. 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;32:548–52.
19. Hassan AH. Pattern of third molar impaction in a Saudi population. *Clin Cosmet Investig Dent*. 2010;2:109–13.
20. Krishnan B, Mohammad Hossni E, Sheikh, Rafa El-Gehani, Orafi H. Indications for removal of impacted mandibular third molars: a single institutional experience in Libya; *J Maxillofac Oral Surg* 8(3):246-8.
21. Vusumuzi Ndumiso Tsabedze. Prevalence of impacted mandibular third molar teeth at Medunsa Oral health centre (master's thesis). University of Limpopo, 2012.
22. Almendros-Marqués N, Berini-Aytés L, Gay-Escoda C. Influence of lower third molar position on the incidence of preoperative complications. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2006;102:725–32.