

Incidence of Impacted Mandibular and Maxillary Third Molars: A Radiographic Study in a Group of Kashmiri Population

Muneet Kapoor¹, Jahangir¹, Ajaz Ahmad Shah¹, Najma Banoo¹, Shiekh Tafazul Habib¹

¹Department of Oral and Maxillofacial Surgery, Government Dental College, Srinagar, J&K, India

Received: October 2020

Accepted: October 2020

ABSTRACT

Background: The aim of this study is to evaluate the position of impacted third molars based on the classifications of Pell & Gregory and winter in a sample of kashmiri patients. Study design: In this retrospective study, up to 1030 orthopantomograms (OPG) from October 2018 to January 2020 were evaluated. Data including the age, gender, the angulation type, width and depth of impaction were evaluated by statistical tests. **Methods:** This study was undertaken on 1030 patients, at oral and maxillofacial surgery department GDC srinagar from October 2018 to January 2020. **Results:** Among 1030 patients, 580 were male and 450 were females. Of the 1030 OPGs, 580 cases showed at least one impacted third molar. Data analysis showed that impacted third molars were 2 times more likely to occur in the mandible than in the maxilla ($P = 0.000$). The most common angulation of impaction in the mandible was mesioangular impaction (55%) and the most common angulation of impaction in the maxilla was the vertical (45%). Impaction in the level IIA was the most common in both maxilla and mandible. There was no significant difference between the right and left sides in both the maxilla and the mandible. **Conclusion:** The pattern of third molar impaction in this group of population is characterized by a high prevalence of impaction, especially in the mandible. The most common angulation was the mesioangular in the mandible, and the vertical angulation in the maxilla. The most common level of impaction was the A and there was no any significant difference between the right and left sides in both jaws.

Keywords: Third molar, impaction, incidence.

INTRODUCTION

Tooth impaction is a pathological situation in which a tooth cannot or will not erupt into its normal functioning position. This problem can be solved by dental treatment.^[1] The mandibular third molars are the most frequently impacted teeth that can be found in human.^[2] The prevalence of third molar impaction ranges from 16.7% to 68.6%.^[3-10] Most studies have reported no sexual predilection in third molar impaction.^[3,4,6,8] Impacted teeth are often associated with pericoronitis, periodontitis, cystic lesions, neoplasm, root resorption and can cause detrimental effects on adjacent tooth.^[11] Also, many research works have shown that impacted third molar weakens the angle of mandible and makes it susceptible to fracture and is implicated in the etiology of lower arch crowding.^[12,13] Several methods have been used to classify the impaction. This classification is based on many factors which are the level of impaction,^[14] the angulations of the third molars and the relationship to the anterior border of the ramus of the mandible. Depth or level of maxillary and mandibular third molars can be classified using the Pell and Gregory classification system, where

the impacted teeth are assessed according to their relationship to the occlusal surface (OS) of the adjacent second molar. The objective of this study is to evaluate the pattern of third molar impaction using panoramic radiograph in a sample of patients living in the Kashmiri region.

MATERIALS AND METHODS

This study was undertaken on 1030 patients, at oral and maxillofacial surgery department GDC srinagar from October 2018 to January 2020. With the consent of the patients, all necessary information about the variables of the study written in a Performa was obtained through historical, clinical examination and radiographic study. The age, sex, number of impacted third molar was recorded. The position of the impacted third molar was determined by OPG. Records of patients aged younger than 19 years, with any pathological dento-alveolar condition, any craniofacial anomaly or syndrome such as Down syndrome, cleidocranial dysostosis, or with the presence of incomplete records or poor quality OPG, incomplete root formation of third molar, or absence of adjacent second molar, were excluded. OPGs were reviewed by a single examiner in a dark room using an appropriate X-ray viewer to determine the prevalence of impacted third molars in the sample, their levels of eruption; and their angulations. Third molar status was determined based on the patient's

Name & Address of Corresponding Author

Dr Muneet Kapoor,
Department of Oral and Maxillofacial Surgery,
Government Dental College,
Srinagar, J&K
India

chart and OPG. Third molar was considered impacted if it did not have functional occlusion and at the same time, its roots were fully formed. The depth of impacted third molar in relation to occlusal plane [Class A: not buried in bone, or the occlusal plane of the impacted tooth is at the same level as the adjacent tooth, B: partially buried in bone, or the occlusal plane of the impacted tooth is between the occlusal plane and the cervical line of the adjacent tooth (if any part of the cemento-enamel junction was lower than the bone level), C: completely buried in bone, or the occlusal plane of the impacted tooth is apical to the cervical line of the adjacent tooth] was recorded along with the distance or width between the vertical ascending mandibular ramus and the distal surface of the second molar (Class I: situated anterior to the anterior border of the ramus; II: crown half covered by the anterior border of the ramus; III: crown fully covered by the anterior border of the ramus) according to the classification of Pell and Gregory [Figure 1].^[2,15] The angulation of impacted third molar was documented based on Winter's classification with reference to the angle formed between the intersected longitudinal axes of the second and third molars [The vertical impaction].

RESULTS

Among 1030 patients, 580 (56.3%) were male and 450 (43.7%) were female. The age range was from 19 to 55 years. From the 1030 OPGs, 580 showed at least one impacted third molar, The proportion of impacted mandibular third molars was significantly more than that of impacted maxillary third molars, and more than that of impacted upper and lower third molars together. Impacted third molars were 2 times more likely to occur in the mandible than in the maxilla. The most common angulation of impaction in the mandible was mesioangular impaction (55%) followed by horizontal (20%), vertical (15%) and distoangular impaction (10%). The most common angulation of impaction in the maxilla was the vertical (45.3%), followed by the distal (22.2%). Majority of the patients presented with Class IIA (85%) and IIIC was the least common (2.5%). There was no significant.

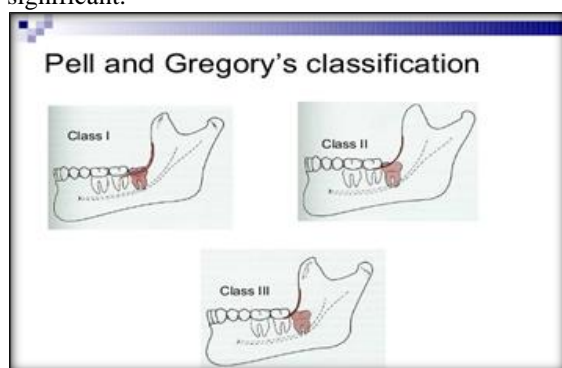


Figure 1:

DISCUSSION

This study showed that Mesioangular and horizontal type of impaction were the most common. Impaction depth classification of IIA and IA are the teeth most inclined to develop complications. Third molar impaction is a common problem affecting a large proportion of population through the world. In this study, more than half of the patients were in the third decade of their lives, which correlates with the previous studies.^[12,17] In the present work, the common type in the mandibular mesioangular impaction was followed by horizontal. It appears that mesioangular impactions are probably the commonest type and this may be due to their late development and maturation, path of eruption and lack of space in mandible at later age. Our findings conformed to the previous reports from Pakistan, USA, Nigeria, China, Thailand, Spain and Malaysia, where the most common type was mesioangular impactions.^[1,10,14,23-25] However, some studies show that vertical impaction is the most common.^[26,27] This could be due to the fact that a different method of classification of angulation was used in these studies. Level of impaction was assessed according to the level of cemento-enamel junction of the third molar relative to the alveolar bone height and not according to the relationship to the occlusal surface of the adjacent second molar. This is more objective since it excludes any normally erupting third molars. The common type of impaction regarding the Pell and Gregory classification was IIA followed by IA. These findings are in accordance with the results of previous studies.^[1,15] Obiechina et al.^[29] reported the common Class as IIA (31%), while Monaco et al.^[30] identified the most common position as Class A (56.2%) and Class II (63%) in Italian population.. Consequently, the findings of the present study are in agreement with a large number of reports that show most impacted third molars were at Class II position, where half of the crown was in the ramus and the position of the highest portion of third molar was at occlusal level, which is Class A. The etiology of the third molar impaction has been investigated in many international studies. Several factors were reported as possible causes for third molar impaction, including lack of space distal to the permanent second molar, delayed third molar mineralization and early physical maturation.^[1] The present study, like most of the similar previous works about third molar impaction, used a hospital based sample, which lacks randomization. More precise studies are necessary to evaluate the impaction of third molars in a randomized sample representative of population. The present study has several limitations such as difficulty in tracing all the dental records notes and OPG. There were also incomplete data in some dental records. Also, more

studies are required to evaluate the pattern of third molars in other regions of Jammu and Kashmir.

CONCLUSION

The pattern of third molar impaction in this group of population is characterized by a high prevalence of impaction, especially in the mandible. The most common angulation was the mesioangular in the mandible, and the vertical angulation in the maxilla. The most common level of impaction was the A and there was no any significant difference between the right and left sides in both jaws.

REFERENCES

1. Bishara SE. Impacted maxillary canines: a review. *Am J Orthod Dentofacial Orthop.* 1992;101:159-71.
2. Lima CJ, Silva LC, Melo MR, Santos JA, Santos TS. Evaluation of the agreement by examiners according to classifications of third molars. *Med Oral Patol Oral Cir Bucal.* 2012;17:e281-e216.
3. Kaya GS, Aslan M, Ömezli MM, Dayi E. Some morphological features related to mandibular third molar impaction. *J Clin Exp Dent.* 2010;2:e12-e7.
4. Hattab FN, Rawashdeh MA, Fahmy MS. Impaction status of third molars in Jordanian students. *Oral Surg Oral Med Oral Pathol Radiol Endod.* 1995; 79:24-9.
5. Scherstén E, Lysell L, Rohlin M. Prevalence of impacted third molars in dental students. *Swed Dent J.* 1989;13:7-13.
6. Brown LH, Berkman S, Cohen D, Kaplan AL, Rosenberg M. A radiological study of the frequency and distribution of impacted teeth. *J Dent Assoc S Afr.* 1982;37:627-30.
7. Fanning EA, Moorrees CF. A comparison of permanent mandibular molar formation in Australian aborigines and Caucasoids. *Arch Oral Biol.* 1969;14:999-1006.
8. Haidar Z, Shalhoub SY. The incidence of impacted wisdom teeth in a Saudi community. *Int J Oral Maxillofac Surg.* 1986;15:569-71.
9. Kramer RM, Williams AC. The incidence of impacted teeth. A survey at Harlem hospital. *Oral Surg Oral Med Oral Pathol.* 1970;29:237-41.
10. 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.
11. Ma'aia J, Alwrikat A. Is the mandibular third molar a risk factor for mandibular angle fracture? *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2000;89:143-6.
12. Krimmel M, Reinert S. Mandibular fracture after third molar removal. *J Oral Maxillofac Surg.* 2000;58:1110-2.
13. Meisami T, Sojat A, Sàndor GK, Lawrence HP, Clokie CM. Impacted third molars and risk of angle fracture. *Int J Oral Maxillofac Surg.* 2002;31:140-4.
14. Almendros-Marqués N, Alaejos-Algarra E, Quinteros-Borgarello M, Berini-Aytés L, Gay-Escoda C. Factors influencing the prophylactic removal of asymptomatic impacted lower third molars. *Int J Oral Maxillofac Surg.* 2008;37:29-35.
15. Breik O, Grubor D. The incidence of mandibular third molar impactions in different skeletal face types. *Aust Dent J.* 2008;53:320-4.
16. Bui CH, Seldin EB, Dodson TB. Types, frequencies and risk factors for complications after third molar extraction. *J Oral Maxillofac Surg.* 2003;61:1379-89.
17. Unwerawattana W. Common symptoms and type of impacted molar tooth in King Chulalongkorn Memorial Hospital. *J Med Assoc Thai.* 2006; 89: S134-9.

18. 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;10:422-31.
19. Bataineh AB, Albashaireh ZS, Hazza'a AM. The surgical removal of mandibular third molars: a study in decision making. *Quintessence Int.* 2002;33:613-7.
20. 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.
21. Obiechina AE, Arotiba JT, Fasola AO. Third molar impaction: evaluation of the symptoms and pattern of impaction of mandibular third molar teeth in Nigerians. *Odontostomatol Trop.* 2001;24:22-5.
22. Monaco G, Montevicchi M, Bonetti GA, Gatto MR, Checchi L. Reliability of panoramic radiography in evaluating the topographic relationship between the mandibular canal and impacted third molars. *J Am Dent Assoc.* 2004;135:31

Copyright: © the author(s), 2020. It is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits authors to retain ownership of the copyright for their content, and allow anyone to download, reuse, reprint, modify, distribute and/or copy the content as long as the original authors and source are cited.

How to cite this article: Kapoor M, Jahangir, Shah AA, Banoo N, Habib ST. Incidence of Impacted Mandibular and Maxillary Third Molars: A Radiographic Study in a Group of Kashmiri Population. *Ann. Int. Med. Den. Res.* 2020; 6(6):DE42-DE44.

Source of Support: Nil, **Conflict of Interest:** None declared