Original Article

Pattern of impacted mandibular third molar angulation in patients visiting Tribhuvan University Teaching Hospital

Dahal S, KC K, Agrawal NK

Department of Dentistry, Institute of Medicine, TUTH, Kathmandu, Nepal

Corresponding author: Dr. Samarika Dahal, Department of Dentistry, Institute of Medicine, TUTH, Kathmandu, Nepal,

Email: dr.samarika@hotmail.com

Abstract

Introduction: The most common tooth to get impacted is the third molar. An impacted tooth can cause complications like pericoronitis, resorption of roots of adjacent tooth and temporomandibularjoint problems.

Methods: We examined orthopantomogram radiographs of 360 patients (151 males, 209 females) with bilateral impaction. Impacted mandibular third molars were classified into mesioangular, horizontal, vertical and distoangular based on angulation.

Results: Mesioangular impaction was the commonest form of impaction for sexes combined, males and females except for mandibular right side in females. Distoangular impaction was the least observed. For right side, there was a significant association between sex and the type of impaction of mandibular third molar. However, there was no significant association for the left side.

Conclusion: Mesioangular form of impaction for mandibular third molar was the most common in our study, and distoangular form of impaction was the least observed.

Introduction

Third molars erupt between 17 to 21 years of age[1]. Due to associated pathology or lack of space, it may follow an abnormal path of eruption and get impacted. Moreover, third molar being the last tooth to erupt becomes the most common tooth to be impacted[2]. This may result further in complications like resorption of adjacent tooth, pericoronitis, temporomandibular problems[3]. Third molar impaction prevalence can range from 16.7% to 68.6%[4].

The aim of this study was to assess the pattern of mandibular third molar angulation in patients visiting Tribhuvan University Teaching Hospital.

Materials and Methods

This study was a cross-sectional, observational study. Patients visiting Department of Dentistry, TUTH with bilateral impacted mandibular third molars were considered. The study was conducted after obtaining ethical clearance from Institutional Review Comittee, Institute of Medicine, Kathmandu, Nepal. Non-probability sampling was done to conduct this study. A total of 360 patients were enrolled in the study. Following criteria were set to enroll the patients. The inclusion criteria included non-distorted orthopantomograms (OPG) of patients with bilateral mandibular third molars impaction and patients without history of trauma. The exclusion criteria included patients with history of severe debilitating diseases, syndrome, hypodontia and teeth associated with cyst or tumors. The OPG radiographs were evaluated and the third molar impaction data were entered in Microsoft excel sheet. The angulation of third molars were measured using the criteria given by Quek *et al*[5]. The different types of angulation were categorized into mesioangular, distoangular, vertical and horizontal.

Results

Out of 360 patients, 151 were males and remaining 209 were females. When considered for both sexes, for the right side, the most common form of impaction observed was mesioangular followed by vertical and horizontal. This was similar for males. However, for females vertical impaction was most common, followed by mesioangular. The distoangular impaction was not seen in any of the patients. The proportion of mesioangular impaction in males was 45.69%, and for vertical was 38.41%. Similarly, for females percentage of mesioangular impaction was 44.49% and for vertical impaction was 47.37%.

For left side, the most common form of impaction for males, females and combined for both sexes was mesioangular followed by vertical, horizontal and distoangular. There were three distoangular impactions present in females. The percentage of mesioangular impaction for males and females were 48.34% and 46.89% respectively. Similarly, percentage of vertical impaction for males and females were 37.75% and 43.06% respectively.

Chi-Square test was applied to test the difference between males and females. Since the number of distoangular impactions was 3 for left side for females accounting for value less than 5, distoangular and mesioangular impactions were combined as angular for application of chi-square test for left side only. There was significant association between sex and impaction of mandibular third molar for right side, however, there was no significant association for the left side.

Other anomalies seen in orthopantomograms were microdontia in two cases, one peg shaped lateral incisor, one missing maxillary lateral incisor, two missing mandibular second premolars, dilacerations in five teeth, two mesiodens, one distomolar, two cases of two-rooted mandibular second premolar and one supernumerary premolar.

Discussion

The frequency of mesioangular impaction seen in our study was similar to that of Harsha[6], Khanal *et al*[3]. and, Pillai and Kumar[7]. Our findings were in contrast to the findings in the Jordanian population. Bataineh et al in 2002[8] found that vertical impaction was the most common impaction in Jordanian population. In our study females had more vertical impaction in right side followed by mesianguar. This is similar to the findings of Gupta *et al*.[9] and Hazza'a et al[10]. They also found vertical impactions more common than mesioangular impactions.

Nagaraj *et al*. in 2017[1] conducted a retrospective study using OPG radiographs in a hospital in Bengaluru. A total of 122 radiographs of patients between 18 to 30 years of age were assessed. They observed that most common type of impaction was mesioangular. In males, horizontal impaction pattern was second highest whereas in females it was vertical pattern. These findings are in contrast to our study, where frequency of vertical impaction was second highest for males for both left and right side. Moreover, our study also contrasts the study done by Al-Bahrani *et al*.[11] who found distoangular impactions to be the second highest in males. These differences may be attributed to the differences in the studied population of each study.

There was a significant association between sex and right side mandibular third molar impaction type. This finding was similar to that of Nagaraj *et al*.[1] However, this association was not present in the left side.

The main causes for failure of eruption of teeth are dearth of eruptive force, lack of space or hereditary[12]. Extraction of mesioangular impaction of third molar is considered to be relatively easy when compared to the other forms of impaction. Third molar is the last tooth to erupt, and when mandibular third molar follows its normal path of eruption i.e. mesially angulated initially, it gets impacted in the same angulation due to the lack of space. This lack of space can be attributed to the evolution leading to decrease in the jaw size[2,13].

The limitations in this study were relatively less sample size. This study did not include clinical manifestations and difficulty in extractions of these teeth. This could be an interesting topic of research in future.

Conclusion

The most common form of mandibular third molar impaction seen in our study was mesioangular and distoangular impaction was the least observed.

Conflict of Interest: None declared

Reference

1. Nagaraj T, Balraj L, Irugu K, Rajashekarmurthy S, Sreelakshmi. Radiographic assessment of distribution of mandibular third molar impaction: A retrospective study. Journal of Indian Academy of Oral Medicine and Radiology. 2016; 28(2):145-9.
2. Sivaramakrishnan S, Ramani P. Study on the Prevalence of Eruption Status of Third Molars in South Indian Population. Biology and Medicine. 2015; 07(04):245.
3. Khanal P, Dixit S, Singh R, Dixit P. Difficulty index in extraction of impacted mandibular third molars and their post-operative complications. Journal of Kathmandu Medical College. 2014; 3(1):14-20.
4. Dachi SF, Howell FV. A survey of 3874 routine full mouth radiographs. A study of impacted teeth. Oral Surg. 1961; 14:1165–9.
5. Quek SL, Tay CK, Tay KH, Joh SL, Lim KC. Pattern of third molar impaction in a Singapore Chinese population: a retrospective radiographic survey. Int J Oral Maxillofac Surg. 2003; 32(5):548–52.
6. Harsha S. Incidence of Mandibular Third Molar Impaction in Patients Visiting a Private Dental College. IOSR Journal of Dental and Medical Sciences. 2014; 13(1):1-2.
7. Pillai S, Kumar MPS. Incidence of Agenesis, Impactions, Angular Positions and Pathologies Related to Third Molar Teeth. J Pharm Sci& Res. 2015;7(11):1039-40.
8. Bataineh AB, Albashaireh ZS, Hazza'a AM. The surgical removal of mandibular third molars: a study in decision making. Quintessence Int. 2002; 33(8):613-7.
9. Gupta S, Bhowate RR, Nigam N, Saxena S. Evaluation of impacted mandibular third molars by panoramic radiography. ISRN Dentistry 2011; 2011:406714.
10. Hazza'a AM, Albashaireh ZS, Bataineh A. The relationship of the inferior dental canal to the roots of impacted mandibular third molars in Jordanian population. J Contemp Dent Pract. 2006; 7:71-8.
11. Al-Bahrani ZM, Al-Ghurabi ZH, Hassan SS. Orthopantomographic pre-surgical assessment of mandibular third molar teeth form and structures using surgical findings as a gold standard. IASJ. 2012; 24:118-22.
12. Ramamurthy A, Pradha J, Jeeva S, Jeddy N, Sunitha J, Kumar S. Prevalence of Mandibular Third Molar Impaction and Agenesis: A Radiographic South Indian Study. J Indian Acad Oral Med Radiol. 2012; 24:173-6.
13. Kaur B, Sheik S, Pallagatti S. Radiographic assessment of agenesis of third molars and para-radicular third molar radiolucencies in population of age group 18-25 years old – a radiographic survey. Arch Oral Res. 2012; 8:13-8.