IMPORTANCE OF MANDIBULAR THIRD MOLAR IMPACTIONS IN ORTHODONTIC TREATMENT

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ABSTRACT

The aim of the present study was to find out the pattern of impacted mandibular third molars in orthodontic patients. Present retrospective cross-sectional study was carried out at orthodontics department of de'Montmorency College of Dentistry, Lahore and Dental Section, Faisalabad Medical University, Faisalabad, from January 2016 to January 2019. Total 125 orthopantomograms (OPGs) of 20-40 years old patients were evaluated in the present study. The pattern of impacted mandibular third molars was recorded in terms of their angulation to the long axis of second molars. Winters' classification was used to classify the impacted lower third molars into 4 types: Mesioangular, horizontal, distoangular and vertical. Results showed that the most common type of impacted mandibular third molar was mesioangular followed by horizontal, distoangular and vertical. It was concluded that present study will also help in understanding the pattern of impacted third molar globally. There were certain limitations of the present study such as decreased sample size, hospital based sampling, lack of randomization, and retrospective nature. It was concluded that by finding the angulation of third molars, orthodontists can plan extractions, final occlusal relations and retention therapy more efficiently. The early extraction of mesioangular impactions can prevent second molar distal caries, which in turn will benefit the dental health of an orthodontic paitent.

Keywords: Mandibular; third molars; Pattern, effects, Orthodontics.

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INTRODUCTION

Any tooth that fails to erupt in the oral cavity beyond the expected developmental time period because of malposition, limited arch space or other issues is known as impacted tooth.¹⁻² There are various causes of impactions that include hard or soft tissue ob-

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struction, retained primary tooth, limited arch space, ectopic eruption, tooth bud disturbances, craniofacial syndromes, cleft lip palate, trauma and genetics.³⁻⁷The lower mandibular third molar is the most common type of impaction.8

There are many ways to classify impacted lower third molars.^{9,10} The most accepted way as described by Winter is to find out the angulation between the long axis of impacted lower third molars with the adjacent lower second molars.¹¹ This angulation determination leads to determination of pattern of lower third molars which can be of four types: mesioangular, distoangular, horizontal, and vertical.¹¹ This angulation and pattern determination is very important from the management point of view. The more severe angulations usually needs surgical extraction while less severe angulations can be dealt with orthodontic traction by fixed appliance therapy.^{12,13}

In most of the orthodontic cases, third molars are usually not involved in mechanotherapy of fixed appliance therapy. The third molars should also be considered while orthodontic treatment planning because it can influence extraction decision in orthodontic treatment planning and can also influence post-orthodontic lower incisal crowding relapse. Missing lower third molars

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can influence orthodontic management plan especially while molar distalization and there has been a limited association between impacted third molars and late lower incisal crowding or post-orthodontic relapse.^{12,13} Various studies have been conducted so far on determination of pattern of impacted mandibular third molars but very few studies have been conducted so far on orthodontic patients. Pattern of lower third molars impaction may be different or similar in orthodontic patients but needs investigation. By finding the angulation of third molars, orthodontists can plan extractions, final occlusal relations and retention therapy more efficiently. Following this rationale, the objective of present study was to find out the pattern in terms of angulations of impacted mandibular third molars on panoramic radiograph in patients visiting orthodontics departments.

MATERIALS AND METHODS

This retrospective cross-sectional study was conducted after taking informed consent and ethics approval at orthodontics department of de'Montmorency College of Dentistry, Lahore and Dental Section, Faisalabad Medical University, Faisalabad, from January 2016 to January 2019. Total 125 orthopantomograms (OPGs) with impacted lower third molars of 20-40 years patients were evaluated in the present study. Records of 62 patients were from de'Montmorency College of Dentistry, Lahore and record of 63 patients were taken from Dental Section, Faisalabad. The pattern of impacted mandibular third molars was recorded in terms of their angulation to the long axis of second molars.

Inclusion criteria included presence of lower third molars, presence of lower second molars, age range 20 to 40 years of both the genders, no history of orthodontic treatment and good quality OPG. Patients with less than 20 years, missing lower third or second molars, history of significant medical problem, history of orofacial trauma, hemifacial microsomia or any other syndromes, local dentoalveolar pathology, incomplete root formation of lower third molars, and angulated lower second molars were excluded.

OPGs with impacted lower third molars were evaluated in the present study. The third molar was considered as impacted if it was not in normal functional occlusion and at the same time its root formation was completed. The pattern of impacted mandibular third molars was recorded in terms of their angulation to the long axis of second molars. The method of calculating angulation was to draw and calculate the angulation between the long axis of lower impacted thirds molars and erupted lower second molars.¹¹ Winters' classification was used to classify the impacted lower third molars into 4 types: Mesioangular, horizontal, distoangular and vertical (Table 1).¹¹

Data analysis was done and variable of age was presented as means and standard deviation while gender and pattern was presented as frequency and percentages. All angular determination was carried out by a single evaluator to rule out the chances of inter-evaluator errors and 30 OPGs were reassessed, with a gap of 14 days. Data analysis was done using SPSS version 20.0.

RESULTS

The intra-evaluator error results were found out to be 8.1%. Total 125 patients were included in the present study.

The most common type of impacted mandibular third molar was mesioangular followed by horizontal, distoangular and vertical. The pattern distribution is shown in Table 1. The gender distribution is shown in Table 2.

Туре	Angula- tion (De- grees)	Frequen- cy	Percent- age
Vertical	10 to -10	61	48.8
Mesioangu-	11 to 79	24	19.2
lar			
Horizontal	80 to 100	19	15.2
Distoangu-	-11 to -79	21	16.8
lar			
Total	-	125	100.0

TABLE 1: PATTERNS OF IMPACTED MANDIBU-LAR THIRD MOLARS

 TABLE 2: GENDER DISTRIBUTION (N 125)

Gender	Frequency	Percentage
Male	60	48.0
Female	65	52.0
Total	125	100

DISCUSSION

It was conculded that by finding the angulation of third molars, orthodontists can plan extractions, final occlusal relations and retention therapy more efficiently. The early extraction of mesioangular impactions can prevent second molar distal caries,²² which in turn will benefit the dental health of an orthodontic patient. Present study will also help in understanding the pattern of impacted third molar globally. There were certain limitations of the present study such as decreased sample size, hospital based sampling, lack of randomization, and retrospective nature.

CONCLUSION

t was concluded that by finding the angulation of third molars, orthodontists can plan extractions, final occlusal relations and retention therapy more efficiently. The early extration of mesioangular impactions can prevent second molar distal caries, which in turn will benefit the dental health of a orthodontic paitent.

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