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Original Research

Third molar impaction status in different facial types and mandibular length

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ABSTRACT:
Background: Third molar (M3) eruption is an unpredictable event. Although the average age for eruption of the M3 is considered 20 years, the time of eruption of the M3 shows considerable variations among populations ranging from 14 to 24 years. The present study was conducted to evaluate third molar impaction status in different facial types and mandibular length. **Materials & Methods:** 84 patients with third molar impaction of both genders were included. Parameters such as facial height, facial width, mandibular length, facial index was calculated as facial Index= facial height ×100/facial width. Hypereuryprosopic, euryprosopic and leptoprosopic facial types were recorded. **Results:** out of 84 patients, males were 34 and females were 50. Short mandibular length was seen in 10 males and 22 females, normal in 6 males and 8 females and long mandibular length in 4 males and 5 females. Impaction was seen among 6 hypereuryprosopic males and 8 females, Euryprosopic 12 males and 20 females and Mesoprosopic 2 males and 6 females. The difference was significant (P< 0.05). **Conclusion:** There was association between mandibular third molar impaction and mandibular length.
Key words: facial index, mandibular third molar, impaction

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INTRODUCTION

Third molar (M3) eruption is an unpredictable event. Although the average age for eruption of the M3 is considered 20 years, the time of eruption of the M3 shows considerable variations among populations ranging from 14 to 24 years.[1] It is generally accepted that racial variation in facial growth, jaw size, and tooth size is crucial to the eruption pattern and impaction status.[2]

The Royal College of Surgeons of England Faculty of Dental Surgery and British Association of Oral and Maxillofacial Surgeons and suggested definitions of an unerupted tooth which is lying in the jaws, partially or completely covered by the bone or soft tissue interfered with by other teeth.[3] Maxillary and mandibular third molars, maxillary cuspids, and maxillary central incisors are the most frequently impacted teeth.[4] The lack of space between the teeth along with the tendency of third molars to erupt late in the order of tooth eruption explains the fact that the third molars are the most frequently 'impacted teeth.'[5] Third molars are the most often congenitally missing teeth but 90% of the population has impacted teeth among them; 33% have at least one impacted third molar. The facial types may be classified basically into broad facial type (euryprosopic), normal facial type (mesoprosopic), and long facial type (leptoprosopic).[6] The present study was conducted to evaluate third molar impaction status in different facial types and mandibular length.

MATERIALS & METHODS

The present study was conducted among 84 patients with mandibular third molar impaction of both

genders. All were informed regarding the study and their written consent was obtained.
Data such as name, age, gender etc. was recorded. A thorough clinical examination was carried out. All were subjected to Orthopantomogram (OPG) and lateral cephalogram. Parameters such as facial height, facial width, mandibular length, facial index was calculated as facial Index= facial height ×100/facial width. Hypereuryprosopic and euryprosopic facial types were referred to as brachyfacial (broad face) and those with hyperleptoprosopic and leptoprosopic facial types were referred to as dolicofacial (long face). Anatomic landmarks such as soft-tissue nasion, soft-tissue menton, soft-tissue zygion, Gonion (Go), Gnathion (Gn) were measured. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 84		
Gender	**Male**	**Female**
Number	34	50

Table I shows that out of 84 patients, males were 34 and females were 50.

Table II Mandibular length and impaction

Facial index	Gender		P value
	Male	Female	
Short mandibular length	10	22	0.01
Normal	6	8	
Long mandibular length	4	4	

Table II, graph I shows that short mandibular length was seen in 10 males and 22 females, normal in 6 males and 8 females and long mandibular length in 4 males and 5 females. The difference was significant (P< 0.05).

Graph I Mandibular length and impaction

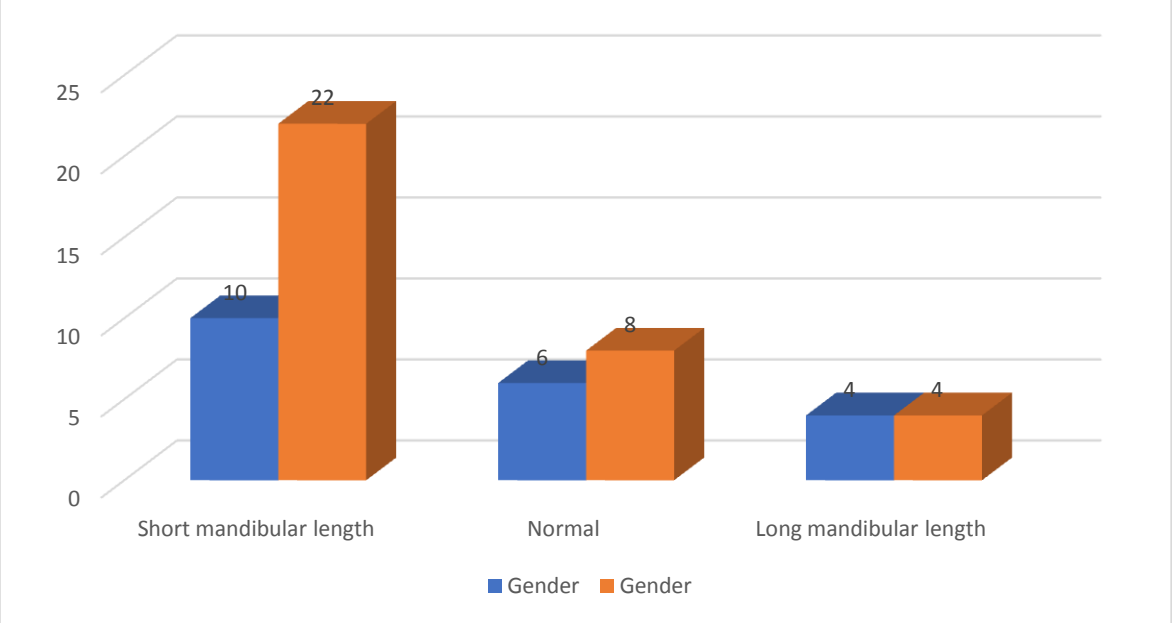
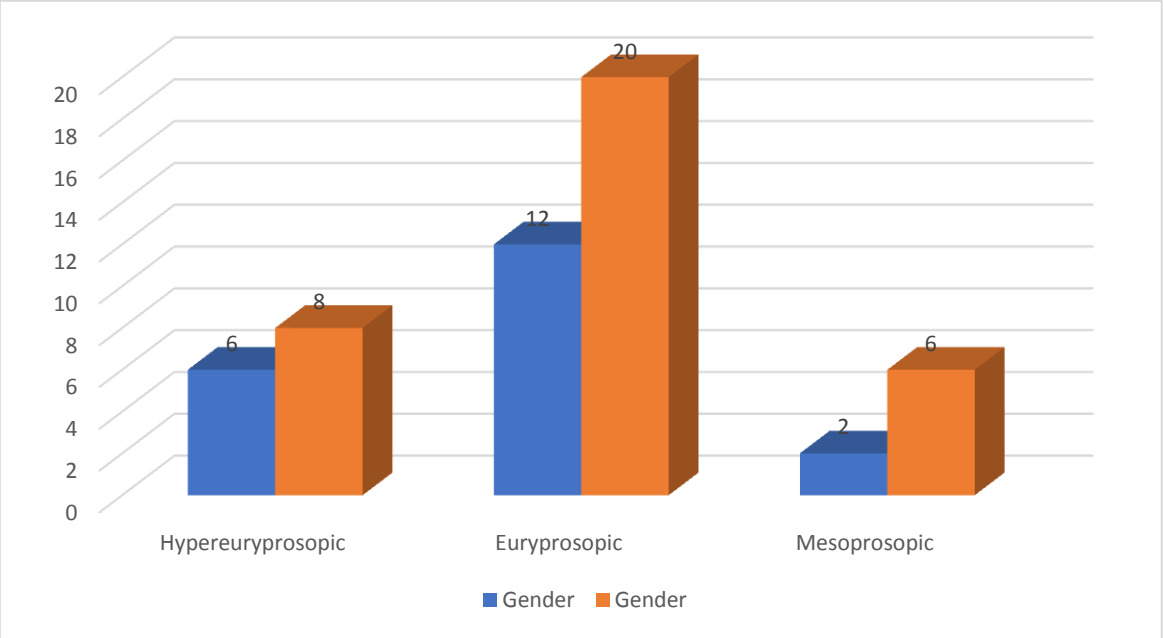


Table III Facial index and impaction

Facial index	Gender		P value
	Male	Female	
Hypereuryprosopic	6	8	0.04
Euryprosopic	12	20	
Mesoprosopic	2	6	

Table III, graph II shows that impaction was seen among 6 hypereuryprosopic males and 8 females, Euryprosopic 12 males and 20 females and Mesoprosopic 2 males and 6 females. The difference was significant (P< 0.05).

Graph II Facial index and impaction



DISCUSSION

Third molars, also called wisdom teeth, typically erupt between the age of 18 and 24 years. It is found, however, wisdom teeth often fail to erupt (unerupted tooth) or erupt only partially (partially erupted tooth).[7] Unerupted or partially erupted teeth may be impacted, which means they are prevented from completely erupting into the normal functional position, due to a lack of space, obstruction by another tooth, or an abnormal path of eruption.[8] Longitudinal studies on positional changes and eruption have been conducted most extensively in the Western population.[9] Studies from other populations indicate that some unerupted M3s do reach the occlusal plane in the third decade of life. No such data are available for Asian Indian subjects.[10] Considering that M3 surgical removal is the most frequent surgical procedure performed by maxillofacial surgeons worldwide, the economic bearing of this would be phenomenal if calculated.[11] A knowledge of the fate of M3s after early adulthood is required so as to make a correct decision about the removal of asymptomatic third molars.[12] The present study was conducted to evaluate third molar impaction status in different facial types and mandibular length.

In present study, out of 84 patients, males were 34 and females were 50. Sandhu et al[13] assessed changes in the angular position and eruption status of third molars. The series consisted of 43 students (11 males, 32 females). Standardized panoramic radiographs were taken at baseline (mean age, 19.1 years) and at the end of study (mean age 23.1 years). Angulation and degree of impaction of third molars were determined by their sagittal relationship to the adjacent second molar and eruption to the occlusal plane. Root formation was also assessed. During the 4-year follow-up period, 11 of 72 of the mandibular teeth (15%) and 17 of 74 of the maxillary teeth (23%) changed their sagittal inclination. Thirty-one of 118 impacted teeth (26%; level B C) achieved level A eruption more so in the mandible, ie, 15 of 52 (29%), than in the maxilla, ie, 16 of 66 (24%). In the mandible, 9 of 24 impacted vertical teeth (37.5%), 3 of 6 distoangular teeth (50%), and 3 of 22 mesioangular impacted teeth (13.6%) erupted to the occlusal plane. In the maxilla, 9 of 36 impacted vertical teeth (25%) and 7 of 27 distoangular teeth (26%) erupted to the occlusal plane during the follow-up. The number of teeth with complete root formation increased in mandible from 61% to 93% and in maxilla from 62% to 94.5%.

We observed that short mandibular length was seen in 10 males and 22 females, normal in 6 males and 8 females and long mandibular length in 4 males and 5 females. We observed that impaction was seen among 6 hypereuryprosopic males and 8 females, Euryprosopic 12 males and 20 females and Mesoprosopic 2 males and 6 females. Zaman et al[14] in their study 17760 patients were examined. 2187 (12.31%) patients presented with at least one impacted third molar. Out of which, 1337 (7.52%) patients had bilateral impaction and 850 (4.78%) patients had unilateral impaction. No gender predominance was noted in the impaction status. In bilateral impaction, 671 were male (50.2%) and 666 were female (49.8%). Among unilateral impaction, 394 (46.4%) were male and 456 (53.6%) were female. Mesio-angular angulation was the most common pattern of impaction (65%) followed by vertical angulation in both bilateral and unilateral impactions. Level A impaction was found to be highest in both bilateral and unilateral impactions which are 48.02% and 54.0%, respectively.

CONCLUSION

Authors found a significant association between mandibular third molar impaction and mandibular length.

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