

ORIGINAL RESEARCH

Assessment Of Third Molar Impaction Status In Different Facial Types And Mandibular Length

Dr. Aditya Shrivastava¹, Dr.Arpit Shrivastava²

¹MDS (Oral & Maxillofacial Surgery), Assistant Professor, Ideas dental College and Research Centre, Gwalior, M.P., India

²MDS (Orthodontics), Assistant professor Ideas Dental College And research centre, Gwalior, M.P., India

Correspondence:

Dr. Aditya Shrivastava

MDS(Oral & Maxillofacial Surgery), Assistant Professor, Ideas dental College and Research Centre, Gwalior, M.P., India

ABSTRACT

Background: Unerupted or partially erupted teeth may be impacted, which means they are prevented from completely erupting into the normal functional position. The present study was conducted to evaluate third molar impaction status in different facial types and mandibular length.

Materials & Methods: 65 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 \times 100/facial width.

Results: Short mandibular length was seen in 45, normal in 12 and long mandibular length in 20 patients. The difference was significant ($P < 0.05$). Impaction was seen among 10 hypereuryprosopic males and 4 females, 22 Euryprosopic males and 16 females and 8 Mesoprosopic males and 5 females. The difference was significant ($P < 0.05$).

Conclusion: A significant association between mandibular length and mandibular third molar impaction was found.

Key words: Euryprosopic, facial index, mandibular third molar

INTRODUCTION

Third molars known as wisdom teeth, typically erupt between the age of 18 and 24 years. 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

The cause of third molar impaction has been suggested to be due to inadequate space in the retromolar area, between the distal of the second molar and the anterior border of the ascending ramus of the mandible. 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 assess third molar impaction status in different facial types and mandibular length.

MATERIALS & METHODS

The present study comprised of 65 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. Orthopantomogram (OPG) and lateral cephalogram were taken. Parameters such as facial height, facial width, mandibular length, facial index was calculated as facial Index= facial height \times 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- 65		
Gender	Male	Female
Number	40	25

Table I shows that out of 65 patients, males were 40 and females were 25.

Table II Mandibular length and impaction

Facial index	Number	P value
Short mandibular length	45	0.01
Normal	12	
Long mandibular length	8	

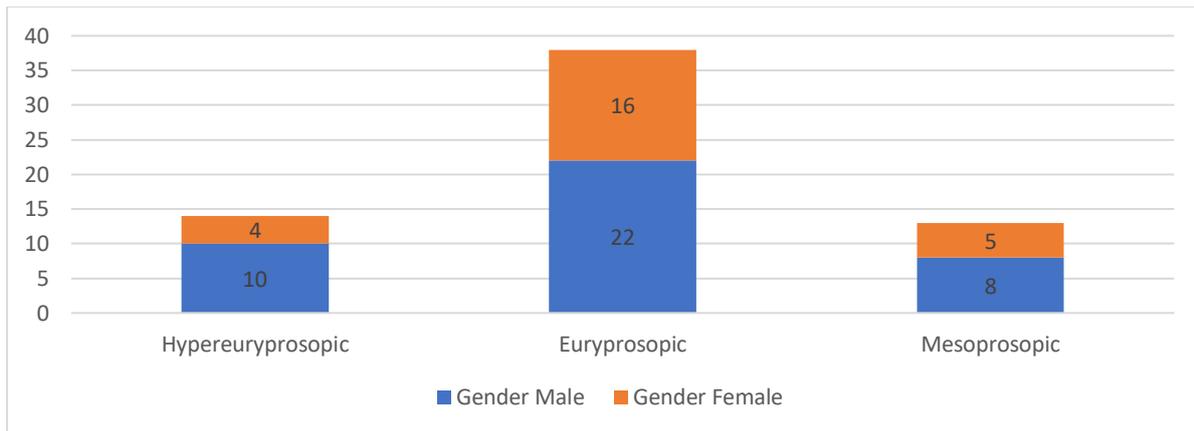
Table II shows that short mandibular length was seen in 45, normal in 12 and long mandibular length in 20 patients. The difference was significant ($P < 0.05$).

Table III Facial index and impaction

Facial index	Gender		P value
	Male	Female	
Hypereuryprosopic	10	4	0.02
Euryprosopic	22	16	
Mesoprosopic	8	5	

Table III, graph I shows that impaction was seen among 10 hypereuryprosopic males and 4 females, 22 Euryprosopic males and 16 females and 8 Mesoprosopic males and 5 females. The difference was significant ($P < 0.05$).

Graph I Facial index and impaction



DISCUSSION

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.^{7,8} It is generally accepted that racial variation in facial growth, jaw size, and tooth size is crucial to the eruption pattern and impaction status.⁹ 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.¹⁰ The present study was conducted to evaluate third molar impaction status in different facial types and mandibular length.

We found that out of 65 patients, males were 40 and females were 25. Breik et al¹¹ assessed whether different patterns of facial growth lead to a different incidence of mandibular third molar impaction. It was hypothesized that those with predominantly horizontal (brachyfacial) would have lower incidence of mandibular third molar impaction compared with those with a predominantly vertical growth pattern (dolichofacial). 98 dental records were sourced from the records of orthodontic patients in the Royal Dental Hospital of Melbourne and all lateral cephalometric radiographs and orthopantomograms were assessed. The overall rate of mandibular third molar impaction was 58.76 per cent. Those with a facial axis angle >93 (brachyfacials) demonstrated an almost two times lower incidence of mandibular third molar impaction as compared to subjects with a facial axis angle <87 (dolichofacials).

We observed that short mandibular length was seen in 45, normal in 12 and long mandibular length in 20 patients. Zaman et al¹² 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.

We found that impaction was seen among 10 hypereuryprosopic males and 4 females, 22 Euryprosopic males and 16 females and 8 Mesoprosopic males and 5 females. Hasan et al¹³ study consisted of 170 patients who were assessed for facial type clinically based on facial index and mandibular length radiographically on lateral cephalogram. The impaction status was determined clinically and radiographically on orthopantomogram. The facial type was categorized as euryprosopic (broad face), mesoprosopic (normal facial type), leptoprosopic (long face), hypereuryprosopic (extra broad face), and hyperleptoprosopic. Of 170 patients, 18.8% of cases were with hypereuryprosopic profile, 33.5% of cases with euryprosopic profile, 24.7% with mesoprosopic profile, 21.8% with leptoprosopic, and 1.2% with

hyperleptoprosopic profile were found. Nearly 42.2% of cases with hypereuryprosopic profile, 52.6% of cases with euryprosopic profile, 53.6% cases of mesoprosopic profile, and 60.3% cases of hyperleptoprosopic and leptoprosopic profile had impacted mandibular third molars. As for mandibular length assessment, 66% cases of short mandibular length, 64.5% cases of normal mandibular length, and 27.9% cases of long mandibular length had impaction.

Sandhu et al¹⁴ found that 31 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 disto-angular teeth (50%), and 3 of 22 mesio-angular impacted teeth (13.6%) erupted to the occlusal plane. In the maxilla, 9 of 36 impacted vertical teeth (25%) and 7 of 27 disto-angular 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%.

CONCLUSION

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

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