Relationship between third molar impaction & growth pattern: A radiographic study

Dr. Sujit Panda, Dr Neha Agarwal

Professor HOD, Department of Orthodontics and Dentofacial Orthopedics, Rama Dental College Hospital and Research Centre, Faculty of Dental Sciences, Rama University, Kanpur, U.P
Address- Rama Dental College Hospital and Research Centre, Faculty of Dental sciences, Kanpur, Uttar Pradesh 20824,Telephone- 9956575812
Email- drsujitpanda@yahoo.co.in

Professor, Department of Orthodontics and Dentofacial Orthopedics, Rama Dental College Hospital and Research Centre, Faculty of Dental Sciences, Rama University, Kanpur, U.P.
Address- Rama Dental College Hospital and Research Centre, Faculty of Dental Sciences, Kanpur, Uttar Pradesh 20824,Telephone- 9956178170

ABSTRACT

Objective: To investigate the relationship between mandibular third molar impaction & facial growth pattern.

Material &Methods:Records of two hundres & forty subjects were selected from students of Rama University,Mandhan,Kanpur. Their pretreatment OPG & Lateral cephalograms were analysed. Degree of impaction was assessed using Pell Gregory system. The patients were divided into the three facial growth patterns on the basis of MP-SN angle.

Results: The percentage wise distribution of third molar impaction in horizontal, average & vertical group was found to be 30.07%,33.83%,36.09% respectively. No statistically significant difference was found between the groups.

Conclusion: No significant association could be established between different facial growth pattern &third molar impaction.

Introduction

Third molar impaction is a common finding in dental OPD.It is a pathological condition in which a tooth fails to reach its normal functional position.Various causes have been suggested in literature such as insufficient space,limited skeletal growth,enlaged crown size,delayed maturation of these molars.[1] Genetics & eating habits have also been blamed for third molar impaction.

Some studies have shown that Insufficient retromolar space may be influenced by the direction of the growth of the jaws.[2,3]Three types of gowth of the jaws have been suggested in the literature namely horizontal,vertical & average.

The purpose of the article was to investigate the relationship between mandibular third molar impaction & facial growth pattern.

Material & methods

Data was derived from the Rama University students visiting the department of Orthodontics, Rama Dental College, Lakhanpur, and Kanpur.Subjects in the age range of 20-25 were chosen.

Degree of classification of third molar was assessed using Pell Gregory system [4].This system makes use of two main classes 1,2,3 and A,B,C. Classes 1,2,3

relate the third molar to the anterior border of the ramus of the mandible. Classes A, B, C to the occlusal height with respect to the second molar.In total records of 240 subjects were selected. The subjects were classified into 3 different groups according MP-SN angle: low < 27 degrees (Horizontal growth pattern,), average 27-37 degrees (control group,) and high > 37 degrees (vertical

growth pattern,). These values represent one standard deviation (SD) from the average MP-SN angle represented by Riedel[5]

Results

The results of the study are summarized in table 1,2,3.

Table1:Gender wise distribution of the subjects

Gender	N	percentage
males	69	38.33
females	111	61.66
total	180	100%

Table 2:Growth pattern distribution according to sex

Growth Pattern	male	female	total	
horizontal	24	36	60	

| average | 27 | 38 | 65 | |
| vertical | 18 | 37 | 55 | |

Table 3:Distribution of third molar according to growth pattern

Growth pattern	Third molar impaction
Horizontal	40 (30.07%)
Average	45 (33.83%)
vertical	48 (36.09%)

Discussion

Presence or absence of third molar plays an important role in Orthodontics treatment planning especially in molar distalization cases.similarly facial growth pattern also plays an important in anchorage planning.the present study was undertaken to investigate the relationship between third molar impaction & facial growth pattern.

Schersten et al[6] suggested that 20 to 25 Years is the most appropriate age for studying the frequency of mandibular third molar and its impaction so this age range was chosen for the present study.

Breik & Grober[2] in their study showed that patients with subjects with horizontal growth pattern provided increased space for full eruprtion of third molars.This finding was dissimilar to the finding of our study.

Hasan et al[7] in their study showed that there was a higher incidence of impacted third molar in patients with vertical growth pattern but no significant difference could be established among facial types & impacted third molars.This finding was in accordance with the findings of our study. Results of our study matched with that of Dastanaet al[8] & SograYassae et al[9].

Tassokar et[3] in their study showed that subjects with horizontal growth pattern showed a lower prevalence of third molar impaction.This finding was in contrast to the finding of our study.

Conclusion

No significant association could be established between different facial growth pattern &third molar impaction.

References

1.Yilmaz, S., Adisen, M. Z., Misirlioglu, M. & Yorubulut, S. Assessment of third molar impaction pattern and associated clinical symptoms in a central Anatolian Turkish population. Med. Princ. Pract. Int. J. Kuwait Univ. Health Sci. Cent. 25(2), 169–175 (2016)

2. Capelli J Jr. Mandibular growth and third molar impaction in extraction cases. Angle Orthod. 1991; 61(3): 223–9.

2. Breik O, Grubor D. The incidence of mandibular third molar impactions in different skeletal face types. Aust Dent J. 2008 Dec;53(4):320-4. doi: 10.1111/j.1834-7819.2008.00073.x. PMID: 19133947.

3. Tassoker M, Kok H, Sener S. Is There a Possible Association between Skeletal Face Types and Third Molar Impaction? A Retrospective Radiographic Study. Med Princ Pract. 2019;28(1):70-74. doi: 10.1159/000495005. Epub 2018 Oct 31. PMID: 30380552; PMCID: PMC6558321.

4. Pell GJ, Gregory BT. Impacted mandibular third molars: classification and modified techniques for removal. Dent Digest1933; 39: 330– 338

5. Riedel R A.The relation of maxillary structures to cranium in malocclusion and normal occlusion. Angle Orthodontist.1952; 22:142-145

6.Schersten Elisabeth, Lysell Leif, Rohlin Madeleine.Prevalence of impacted third molar in dental students.Swed Dent J. 1989;13:7–13

7. Hassan AH. Mandibular cephalometric characteristics of a Saudi sample of patients having impacted third molars. Saudi Dent J. 2011 Apr; 23(2): 73–80.

8.Dastana S,Ray S,Jain A,Sharma M, MP PK. Third molar impaction characteristics among three different patterns of growth rotations.International journal of contemporary medicine surgery & radiology.ijcmsr

2018;3(4):C137-C141

9.SograYassaei, Farhad O Wlia, Zahra EbrahimiNik. Pattern of third molar impaction; correlation with malocclusion and facial growth. OHDM 2014; 13(4):1096-1099.