Mandibular third molar impaction in different facial growth patterns

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Abstract

Introduction: The purpose of this paper was to investigate the relationship between mandibular third molar impaction and different facial growth patterns.

Materials & Methods: Records of one hundred and twenty patients were selected from the Department of Orthodontics, Rama Dental College, and Hospital & Research centre. 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 distribution of third molar impaction in horizontal, average & vertical group was found to be 36.4%, 26.2% &37.2% respectively. No statistically significant difference was found between the groups.

Conclusion: Within the limitations of the present study no relationship was found between different craniofacial growth patterns and third molar impactions.

Introduction

An impacted tooth is one that fails to erupt into dental arch within the specific time.[1,2,3] Third molars are the most common teeth to get impacted.[4]They are more common in mandible than in maxilla and prevalence is higher in females than in males.[5,6]

Padhyeet al [7] in their study on1200 patients(Indian population) have shown that 51.77% were men and 48.33 % were females with third molar impactions. Also they showed that mesioangular impaction was the most common type of impaction.

Impacted third molar is associated with various symptoms & pathologies such as pericoronitis, pain, swelling, distal caries,bone loss, root resorption of adjacent teeth, odontogenic cysts & tumors.[8]

Insufficient retromolar space is one of the important reasons for impaction of third molar which may be influenced by the growth of the mandible. Three types of growth patterns of mandible have been described in the literature namely average, horizontal and vertical. The purpose of this paper was to investigate the relationship between mandibular third molar impaction and different facial growth patterns

Materials & Methods

Data was derived from patients visiting the department of Orthodontics, Rama Dental College, Lakhanpur, and Kanpur.

Inclusion criteria

1. Age range 20-25 years
2. Pre- treatment of OPG with at least two-thirds of root formation of third molars.
3. Pre- treatment lateral cephalogram taken at the time of OPG.
4. No history of maxillofacial trauma, Orthodontic treatment or extraction of teeth.

Degree of classification of third molar was assessed using Pell Gregory system [9].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 120 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. [10]

The results were than recorded and tabulated for analysis.

Results

Table 1: Gender wise Distribution of the Sample

Gender	N	Percentage
Males	45	37.5%
Females	75	62.5%
Total	120	100%

Table 2: Growth Pattern Distribution According To Sex

Growth Pattern	Males	Females	Total
Horizontal	17 (38.6%)	27 (61.4%)	44 (100%)
Average	12 (36.3%)	21 (63.7%)	33 (100%)
Vertical	15 (34.8)	28 (65.2%)	43 (100%)

Table 3: Distribution of Third Molar Impactions According To Growth Pattern

Growth Pattern	Third Molar Impaction
Horizontal	50(36.4%)
Average	36(26.2%)
Vertical	51(37.2%)

Table 1 shows the distribution of males & females in the sample population. In total there were 120 subjects (45 males& 75 females).Table 2 shows distribution of subjects into horizontal, average and vertical craniofacial pattern. The horizontal group comprised of 44 subjects (17 males & 27 females).The average group comprised of 33 subjects (12 males & 21 females).The vertical group comprised of 43 subjects(15 males,28 females).Table 3 shows the percentage distribution of third mandibular molar impaction among the three groups. Statistically no significant difference was found between the groups.

Discussion

Impacted third molars account for 98% of the total impacted teeth.7Various causes of impaction have been described in literature. These include physical disruption of dental lamina, space deficiency, inherent defect of dental lamina, direction of eruption, nutritional habits, genetic impairment, size &positioning of adjacent teeth, lengthy path of eruption.[7,11,12]

Beggs after studying skulls of Australian aborigens suggested that modern civilized man lacked attrition of dentition due to refined food habits leading to impaction of third molars.[13]

Status of third molar eruption plays an important role in planning Orthodontic treatment especially when planning distalization of molars, consequences of extraction of premolars on their eruption and timing of Orthodontic treatment.[14]

In literature craniofacial growth skeleton has been divided into three categories namely, horizontal, average and vertical growth patterns.

Craniofacial characteristics of vertical growth pattern is characterized by high mandibular plane angle, high gonial angle & increased lower anterior facial height. In contrast patients with horizontal growth pattern are characterized by low mandibular plane angle, decreased gonial angle and decreased lower anterior facial height. Average growth pattern show relative harmony between these two patterns.

Schersten et al [15] suggested that 20 to 25Years 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.

Various researchers have tried to correlate craniofacial growth pattern with incidence of third molar impaction. Briek & grouber [16] conducted a study on 98 Orthodontic subjects and found that incidence of third molar impaction was less in brachyfacial patterns. Similarly Tassokaret al [17] their study on 158 Orthodontic patients showed that third molar impaction was less in brachyfacial patterns due to more available space.

However, in our study there was no statistically significant difference in of impaction of third molars between horizontal, average &vertical growth patterns. Results of our study matched with that of Dastanaet al [18] & SograYassae et al [19].

Conclusion

Within the limitations of the present study no relationship was found between different craniofacial growth patterns and third molar impactions. Further studies with larger sample sizes may be undertaken to understand the relationship between third molar impaction and different growth patterns.

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