

Original Article

Cephalometric Evaluation of Dentofacial Features of Class III Malocclusion in Adult population: An observational study

¹Sakshi Raina, ²Veerendra Kerudi, ³Adarshika, ⁴Sulakshana N Raut, ⁵Yogesh Phalak

¹MDS, Orthodontist, ACPM, Dental College, Dhule, Maharashtra, India

²Professor and Head, department of Orthodontics, ACPM, Dental college, Dhule, Maharashtra, India

³Consultant Orthodontist, Lucknow, UP, India

⁴PG Student, department of Orthodontics, ACPM, Dental College, Dhule, Maharashtra, India

⁵PG Student, department of Orthodontics, ACPM, Dental College, Dhule, Maharashtra, India

ABSTRACT

Background: Skeletal class III malocclusion is one of the most difficult problems for an orthodontist in his practice. Hence, we planned the present study to assess Dentofacial Features of Class III Malocclusion in Adult population. **Materials & methods:** The present study included assessment of Dentofacial Features of Class III Malocclusion in Adult population. A total of 60 subjects were enrolled in the present study were broadly divided into two study groups; study group-comprising of patients with class III malocclusion and control group. Cephalometric analysis was done in all the patients using cephalograms, which were traced on special tracing papers. All the results were compiled in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Mean SNA for the subjects of the study group and the control group were 76.2 and 83.2 respectively. Significant results were obtained while comparing the mean SNA, SNB, SNPog, ANB and maxillary length in between the study group and the control group. **Conclusion:** Class III patients show significant amount of maxillary deficiency and mandibular prognathism. However; further studies are recommended for better exploration of results.

Key words: Class III, Dental, Malocclusion

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Corresponding author: Dr. Sakshi Raina, 149/c Wazir Bagh, Surya-vihar, Patta Bohri, Jammu Tawi, J&K, India

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INTRODUCTION

An anterior crossbite, not only significantly affects facial aesthetics and the function of the

stomatognathic system, but has a tendency to worsen with age. Skeletal class III malocclusion is one of the most difficult problems for an orthodontist in his

practice.¹⁻³ When young patients and adolescents are diagnosed early with developing class III tendency, they can be treated easily with growth modification appliances like functional regulator-III, reverse twin block, chin-cup and reverse pull headgear.^{4,5} Patients whose growth potential is completed must be camouflaged by orthodontic tooth movement with fixed appliances or treated surgically. Class III malocclusions are usually growth-related discrepancies, which often become more severe until growth is complete. The surgery can be part of the treatment plan.⁶⁻⁸

Hence; we planned the present study to assess Dentofacial Features of Class III Malocclusion in Adult population.

MATERIALS & METHODS

The present study was conducted in the department of orthodontics of the dental institute and it included assessment of Dentofacial Features of Class III Malocclusion in Adult population. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 60 subjects were enrolled in the present study and were broadly divided into two study groups; study group-comprising of patients with class III malocclusion and control group. Inclusion criteria for the present study included:

- Subjects with Class III molar and canine relationship on both sides and presence of negative overjet,
- Subjects who gave informed consent for the study.

Cephalometric analysis was done in all the patients using cephalograms, which were traced on special tracing papers. Parameters described previously in the literature were used for the present study.^{4,5}

All the results were compiled in Microsoft excel sheet and were analyzed by SPSS software.

RESULTS

A total of 60 subjects were included in the present study. All the subjects were divided broadly into two study groups with 30 patients in each group. Mean age of the patients of the study group and the control group was 25.3 years and 24.8 years respectively. There were 15 males and 15 females in the study

group and 18 males and 12 females in the control group. Mean SNA for the subjects of the study group and the control group were 76.2 and 83.2 respectively. Significant results were obtained while comparing the mean SNA, SNB, SNPog, ANB and maxillary length in between the study group and the control group.

Table 1: Demographic data

Parameter	Study group	Control group
Number of subjects	30	30
Males	15	18
Females	15	12
Mean age (years)	25.3	24.8

Table 2: Comparison of cephalometric parameters

Mean cephalometric parameters	Study group	Control group	p- value
SNA	76.2	83.2	0.02 (S)
SNB	84.2	78.6	0.01(S)
ANB	-1.2	2.4	0.00(S)
SN-Pog	83.7	80.9	0.00(S)
Mandibular length (mm)	129.5	128.5	0.25
Maxillary length (mm)	86.2	93.6	0.03(S)

DISCUSSION

A total of 60 subjects were included in the present study. All the subjects were divided broadly into two study groups with 30 patients in each group. Mean age of the patients of the study group and the control group was 25.3 years and 24.8 years respectively.

Ramezanzadeh B et al determined the dentofacial characteristics of Class III malocclusion in Mashhadian adults. This cross-sectional descriptive study consisted of 114 cephalograms including 57 individuals with Class III malocclusion (28 males and 29 females with mean age of 19.28 years) as the case group, and 57 adults with uncrowded Class I occlusion (28 males and 29 females with mean age of 17.2 years) as the control group. Cephalometric

evaluation was performed by measuring nine angular and nine linear measurements and the dentofacial characteristics of two groups were compared by Student's t-test. SNA angle, the distance from A point to Nasion perpendicular and the maxillary effective length was significantly lower in Class III group, while SNB and SN-Pog angles were significantly higher compared to control group. Mandibular effective length did not differ in two groups. Maxillary incisor protrusion and mandibular incisor retrusion in Class III subjects was also observed. From the vertical aspect, only mandibular plane angle showed an increase in Class III group ($P < 0.05$). Maxillary deficiency, mandibular prognathism, maxillary incisors protrusion and mandibular incisors retrusion are present in individuals with Class III malocclusion, but mandibular effective length does not differ significantly from Class I patients.⁹

In the present study, there were 15 males and 15 females in the study group and 18 males and 12 females in the control group. Mean SNA for the subjects of the study group and the control group were 76.2 and 83.2 respectively. Significant results were obtained while comparing the mean SNA, SNB, SNPog, ANB and maxillary length in between the study group and the control group. Mouakeh M investigated the morphologic characteristics of the craniofacial complex of Syrian children with Class III malocclusion. Lateral cephalometric radiographs of 69 patients with Class III malocclusion (23 male and 46 female; ages 5 to 12 years) were selected on the basis of molar relationship. Cases were analyzed and compared with a Class I control group that was matched for age, sex, and ethnic origin. The children with Class III malocclusion exhibited a distinct craniofacial morphologic characteristic that was manifest in a combination of alterations in angular and linear measurements on the lateral cephalogram. Both the anterior cranial base (SN) and posterior cranial base (SAr) were significantly shorter than normal in the Class III group, and the cranial base angle (NSAr) was slightly smaller than normal. Maxillary length (Co-A) was significantly smaller, and the maxilla was more posteriorly positioned in the patients with Class III malocclusion. The mandible was within the neutral range of protrusion, and there was a slight increase in total mandibular length (Co-Gn), accompanied by a more forward positioning of the glenoid fossa in patients with Class III malocclusion. Dental aberrations in the patients with Class III malocclusion were manifested essentially by

a significant decrease in the angulation and protrusion of the maxillary incisors relative to the A-Pog line, whereas the mandibular incisors showed only a slight amount of linguoversion. Patients with Class III malocclusion also tended to have a significantly smaller vertical face dimension and shorter lower anterior facial height (ANS-Me). Because of these distinct morphologic features, early orthopedic intervention with protraction face mask therapy may be the method of choice for most of the patients with Class III malocclusion included in this study.¹⁰

CONCLUSION

Under the light of above obtained data, the authors concluded that Class III patients show significant amount of maxillary deficiency and mandibular prognathism. However; further studies are recommended for better exploration of results.

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