

Evaluation and Comparison of Different Skeletal and Dental Parameters in Patients with Class II Malocclusion: A Cephalometric Study

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ABSTRACT

Background: Class II malocclusion is a common malocclusion with a prevalence ranging between 5% and 29. The present study was conducted to assess class II malocclusion in known population.

Materials & Methods: The present study was conducted on 36 patients age ranged 6-14 years of both genders having class II div I malocclusion. All were subjected to lateral cephalogram. Following points such as sella, MP-SN, OP-SN, U1-NA, U1-NA, L1-NB, L1-NB (mm) and U1-L1 were assessed.

Results: The mean value of SNA in males was 84.2 and in females was 82.1, SNB in males was 75.3 and 76.4 in females, ANB was 6.02 in males and 6.01 in females, MP- SN was 35.54 in males and 34.21 in females, OP- SN was 20.14 in males and 18.32 in females, U1-NA was 7.18 in males and 7.05 in females, U1- NA was 26.3 mm in males and 23.6 mm in females, L1- NB was 29.1 in males and 28.5 in females, L1-NB was 6.14mm in males and 6.25 mm in females. Inter-incisal angle was 121.9 in males and 120.6 in females. The difference was non- significant ($P > 0.05$).

Conclusion: Authors found that there was reduced inter- incisal angle in both males and females.

Keywords: Class II malocclusion, Lateral cephalogram, Inter- incisal angle.

INTRODUCTION

Angle defined Class II malocclusion as "A distal relation of the lower to the upper permanent first molar to the extent of more than one-half the width of one cusp and the maxillary incisors being protrusive. Class II malocclusion is a common malocclusion with a prevalence ranging between 5% and 29.¹

Introduction of cephalometric radiography, in 1934, by Hofrath in Germany and by Broadbent, respectively, in the USA, permitted study of

malocclusions by evidencing skeletal discrepancies. The morphology of the dental and skeletal structures of patients exhibiting Class II malocclusion have been studied in several studies.^{2,3}

Steiner CC has given a method to interpreting both the hard and soft tissues using cephalometric radiographs. He has divided this interpretation into various parts, namely the skeletal, dental and soft tissue. The skeletal analysis explains the nominal to examine the maxillary and mandibular relation to the skull and to each other and the dental analysis has features to relate the maxillary and mandibular

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incisor teeth respective jaws and to each other. The soft tissue analysis provides the balance and harmony of the facial profile.⁴ The present study was conducted to assess class II malocclusion in known population age ranged 6-14 years of age.

MATERIALS & METHODS

The present study was conducted in the department of Orthodontics. It comprised of 36 patients age ranged 6-14 years of both genders having class II div I malocclusion. The study protocol was approved from institutional ethical committee. All participants were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was recorded. All were subjected to lateral

RESULTS

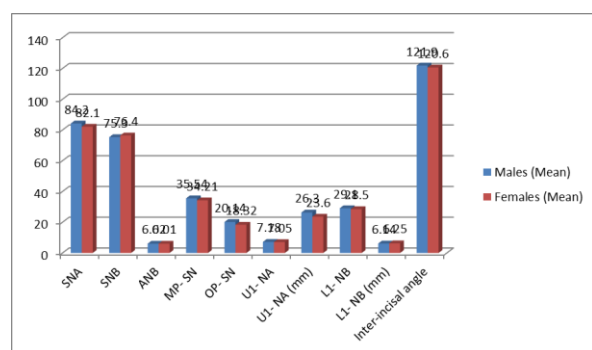
Table I: Distribution of patients.

Total- 36		
Gender	Males	Females
Number	15	21

Table II: Cephalometric analysis.

Landmark	Males (Mean)	Females (Mean)	P value
SNA	84.2	82.1	0.5
SNB	75.3	76.4	0.1
ANB	6.02	6.01	0.31
MP- SN	35.54	34.21	0.54
OP- SN	20.14	18.32	0.12
U1- NA	7.18	7.05	0.93
U1- NA (mm)	26.3	23.6	0.67
L1- NB	29.1	28.5	0.42
L1- NB (mm)	6.14	6.25	0.51
Inter-incisal angle	121.9	120.6	0.1

Table I, graph I shows that mean value of SNA in males was 84.2 and in females was 82.1, SNB in males was 75.3 and 76.4 in females, ANB was 6.02 in males and 6.01 in females, MP- SN was 35.54 in males and 34.21 in females, OP- SN was 20.14 in males and 18.32 in females, U1-NA was 7.18 in males and 7.05 in females, U1- NA was 26.3 mm in males and 23.6 mm in females, L1- NB was 29.1 in males and 28.5 in females, L1-NB was 6.14mm in males and 6.25 mm in females. Inter-incisal angle was 121.9 in males and 120.6 in females. The difference was non- significant ($P > 0.05$).



Graph 1: Graph I Cephalometric analysis.

DISCUSSION

A thorough knowledge of the skeletal and dental components that contribute to a malocclusion is essential as these elements may influence the treatment approach. Two thirds of the patients with Class II division 1 malocclusion were reported to have an associated significant skeletal discrepancy.⁵ The dentoskeletal morphology of subjects exhibiting Class II malocclusion has been reported in several studies. Some reports have indicated that the maxilla in Class II division 1 patients was more protrusive and the mandible was normal in size and position.⁶ Other studies found that the maxilla was in a normal position in relation to the cranial base while the mandible was retrusive. Others found that Class II skeletal pattern is due to both maxillary protrusion and mandibular retrusion. It seems that ethnic backgrounds of the sample used in these studies have played a role in determining the craniofacial characteristics of the Class II pattern.⁷ The present study was conducted to assess class II malocclusion in known population age ranged 6-14 years of age.

In present study, there were 15 males and 21 females. We found that that mean value of SNA in males was 84.2 and in females was 82.1, SNB in males was 75.3 and 76.4 in females, ANB was 6.02 in males and 6.01 in females, MP- SN was 35.54 in males and 34.21 in females, OP- SN was 20.14 in males and 18.32 in females, U1-NA was 7.18 in males and 7.05 in females, U1- NA was 26.3 mm in males and 23.6 mm in females, L1- NB was 29.1 in males and 28.5 in females, L1-NB was 6.14mm in males and 6.25 mm in females. Inter-incisal angle was 121.9 in males and 120.6 in females.

Kapoor et al⁸ in their study, 20 lateral cephalograms of children (10 males and 10 females) in the age range of 7-13 years from local schools of Chitwan with Class II, division 1 malocclusion were analyzed. Age range of the representing children was 7 – 13 years. The maxilla was prognathic in relation to anterior cranial base in Class II Division 1 patients. Maxillary and mandibular incisors were proclined. Between the two groups, the cranial base angle was same. There was a significant reduction in inter-incisal angle. In the Chitwan region of Nepal, Class II division 1 malocclusion has specific characteristics. Steiner's norms are not same for all the populations, that is why the subjects are treated taking into account their ethnicity and in relation to their macroesthetic fundamentals. Cephalometric Steiner's norms for skeletal Class II were analyzed that showed the presence of prognathic maxilla, maxillary and mandibular dental proclination and areduced interincisal angle.

Al-Khateeb et al⁹ included 149 lateral head radiographs comprising two series: (1) 85 films of children with Class II, division 1 malocclusion and (2) 62 films of children with "normal" occlusion. Age range of the representing children was 10–13 years. In Class II division 1 subjects, the maxilla was prognathic in relation to anterior cranial base. The mandible was normally positioned in relation to anterior cranial base. Upper incisors were proclined and lower incisors were normally positioned. The cranial base angle was not different between the two groups.

CONCLUSION

Authors found that there was reduced inter- incisal angle in both males and females.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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