Cephalometric Characteristics of Class II in Yemeni Population.

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ABSTRACT

Background: Class II division 1 characterized by class II angle classification with retroclination of upper central incisors and lateral incisors. According to some studies this type of malocclusion represents 5-10% of malocclusion. **Methods**: The sample included 40 cephalometric radiographs of Yemeni subjects (20 males and 20 females) with age range between12-18 years old collected randomly and traced by hand in the dark room on the acetate papers with 0.5 pencil. **Results**: The statistical analysis showed a highly significant difference between males and females (P<0.01) in A-B Plane and Z Angles. **Conclusion**: More retrusive mandible in females than males, and presence of differences in the size of chin and soft tissue thickness between Yemeni males and females.

Keywords: Class II Division 1, Cephalometric Characteristics.

INTRODUCTION

There were many attempts to find standard values of hard and soft tissue for Arabic population,. Bishara,[1] has conducted a comparison study between Egyptian (39 males and 51 females), and lowa (33 females and 22 males) and found that the maxilla and mandible were more forward less overbite. Nasser Mohammed Aljasser (2000,2005) in both study found that there was significant difference when compared with down and stiener norms applied with white Caucasian population,[2,3] Ali H. Hassan (2006),[4] conducted his study on the Saudi people (38 males, 32females between 18-28 years old) living on the western region of Saudi Arabia, comparing his results with European and American norms, he reported that Saudi seek an increased in ANB angle due to retrognathic mandibles and bimaxillary protrusion ,micheal S.cooke and H.Y.WEI,[5] studied the southern Chinese children in hongkong and found that male have bimaxillary dental and alveolar protrusive, and greater overbite , studying 35 Chinese ,35 Indian ,35 malay females using steiner analysis, lew kk (1994) found a difference between Chinese and Indians also malays and Indians.[6]

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P.yeong andj.huggare(2004) have conducted their study on 81 Singaporean 31 and 50 Chinese boys and girls respectively they stated that difference between male and female in maxilla and mandibular protrusion .lip prominence,[7] lower incisor inclination, and anterior and posterior facial height.

MATERIALS AND METHODS

The studied sample included 40 Yemeni (20 males and 20 females) with age range between12-18 years old. The subjects were randomly selected and collected from Almassah center for radiography in Sanaa city. The cephalomtric radiographs were traced by hand in the dark room on the acetate papers with 0.5 pencil. After collecting the required data, the statistical analysis was then performed using IBM SPSS Statistics 24 computer package
The following criteria were used to select the subject
-ANB angle ≥4°
-Age range 12-18
-No history of orthodontic, trauma, or maxillofacial surgery
-The citizen must be Yemeni

Landmark Used In This Study
Sella: the point representing the midpoint of the pituitary fossa or sella turcica. It is a constructed point.
Nasion: most anterior point in the mid way between the frontal and nasal bones on the frontonasal suture.

Orbitale: lowest point on inferior bony margin of the orbit.

Point A: deepest point in the midline between anterior nasal spine and the crest of the maxillary alveolar process.

Point B: deepest point in the midline between the alveolar crest of the mandible and the mental process.

Pogonion: most anterior point of the bony chin in the median plane.

Gonion: constructed point at the junction of ramal plane and the mandibular plane.

Menton: most inferior midline point on the mandibular symphysis.

Gnathion: most antero – inferior point on the symphysis of the chin.

Planes Used In This Study

1. Harmony (H) line: drawn tangent to the chin and upper lip.
2. Sella-nasion (SN) line.
3. Soft tissue facial (STF) line: drawn from the point where the extension of the SN line crosses the soft tissues to a point on the soft tissue chin overlying suprapogonion (SPG).
4. Hard tissue facial plane (HTF): drawn from nasion to pogonion.
5. occlusal plane is the line bisecting the overlapping cusps of the first molar s and the incisal overbite, if the incisals are malpositioned , the occlusal plane is drawing through the region of the overlapping cusps of the molars and premolars
6. Frankfort horizontal (FH) plane. is the line drawn from point orbital to porion
7. Sella-Gnathion line
8. Frankfort perpendicular (FP) line: a line perpendicular to FH and tangent to the vermillion border of the upper lip

9. inferius (the most prominent point on the prolabium of the lower lip)
10. Labrale superius (the most prominent point on the prolabium of the upper lip)

The measurements used in this study
SNA ,SNB , ANB , GoGn – SN ,Upper incisor to NA (angle) ,Upper incisor to NA (linear) ,Lower incisor to NB (angle) ,Linear incisor to NB (linear) , Interincisal angle ,Facial angle ,Convexity angle ,A-B plane angle, Y axis angle Frankfort mandibular angle(Gn-Me),Cant of occlusal plane, Lower incisor occlusal plane angle,Lower incisor mandibular plane(Gn-Me) angle, Frankfort mandibular plane angle ,Frankfort mandibular incisor angle,Mandibular plane lower incisor angle Z angle Wit's (mm), Soft tissue facial angle, H angle,Nose prominence,Superior sulcus depth, Soft tissue subnasale to H line, Skeletal profile convexity, Basic upper lip thickness,Upper lip thickness, Lower lip to H line (A positive sign (+) was registered if the lower lip was in front of the H line and a negative sign (-) if behind it),Inferior sulcus to H line, Soft tissue chin thickness

RESULTS

Comparing between gender types in Yemeni population, the statistical analysis showed a highly significant difference between males and females (P<0.01) producing more retrusive mandible in females with average value (-9.4250) versus male (-8.6250) when assessed by A-B Plane and Z Angles which was obviously higher in males than females [Table 1].

Table 1: statistical analysis comparison of hard and soft tissue mean values between Yemeni male and female subject with class II division 1 malocclusion.

Variable	Male (N=20)		Female (N=20)		T value	P value
	Mean	SD	Mean	SD		
Angles degree						
SNA	78.9000	3.83406	79.0000	3.17059	.090	.282
SNB	73.4750	3.56694	72.8750	3.19076	-.591	.591
ANB	5.4250	1.29040	6.1500	1.92696	1.398	.082
Facial angle	86.5500	3.48266	86.0000	5.21637	-.392	.459
Angle of convexity	11.0750	3.39223	14.3750	8.21243	1.661	.060
SN-Mp(Go-Gn)	39.2000	6.34201	37.9750	7.29721	-.567	.566
SN-UI	101.7000	8.62737	103.6750	9.36156	.694	.630
NA-UI	21.4000	6.04936	25.5750	8.22748	1.828	.512
NB-LI	29.9250	6.89637	30.9500	6.97156	.467	.949
UI-LI	123.6000	11.35735	120.4000	12.23520	-.857	719
YAXIS	60.7500	3.32653	60.9000	4.87637	.114	.072
LI-OCP	22.2250	6.30679	25.3500	6.52344	1.540	.969
LI-MP(GO-ME)	1.3750	6.96774	6.3500	6.67891	2.305	.771
A-B Plane Angle	-8.6250	1.32660	-9.4250	3.09616	-1.062	.005
FMA	33.1250	8.89393	30.9500	6.51698	-.882	.475
FMIA	56.6000	7.79102	55.9750	8.68676	-.240	.814
IMPA	91.9000	6.78737	95.1000	8.83414	1.285	.511
Z Angle	66.5000	5.04454	64.1250	10.05364	-.944	.005
H Angle	19.6500	3.08690	19.7750	4.06032	.110	.302
Cant of Occlusal plane	10.9000	3.32692	9.8250	3.86371	-.943	.538
FH-MP(Go-Me)	30.3500	5.91630	28.9750	7.01779	-.670	.394

Soft tissue facial angle	10.7500	3.01967	10.2750	3.11395	.970	.132
Linear (mm)						.
Wits	4.0750	1.99522	4.7500	1.65831	1.164	.724
Maxillary incisor protrusion	8.4000	2.84513	9.8500	3.71731	1.385	.353
NA-UI	4.4250	3.54770	4.6750	2.77809	.248	.541
NB-LI	7.3500	2.61121	7.3750	3.35165	.026	.221
Nose prominence	10.7500	3.01967	10.2750	3.11395	-.490	.665
Skeletal profile convexity	5.2500	1.97684	5.7750	3.11395	.637	.131
Basic upper lip thickness	14.9000	1.64317	13.1750	1.32064	-3.659	.194
Upper lip sulcus depth	3.5250	1.18627	2.7500	2.02939	-1.474	.172
Upper lip thickness	12.0000	2.34521	8.7500	1.40955	-5.312	.055
Soft tissue subnasal to H line	7.5000	2.60061	6.8000	3.00613	-.788	.530
Lower lip to H line	2.5250	1.51723	1.8500	2.43926	-1.051	.165
Inferior sulcus to H line	4.7750	3.33038	3.2250	2.19134	-1.739	.573
Soft tissue chin thickness	11.7500	3.80961	10.3250	2.82039	-1.344	.278

DISCUSSION

This study focused on the skeletal characteristics of class II division1 in Yemeni populations. Only two values in Yemeni sample showed statistically significant difference between gender in Yemeni population. A-B plane angle was more negative in males than in females, this suggests that manidible is more retrusive in females than males or may be short mandible in female, which is important in orthodontics in extraction decision or mandible advancing, also it is useful to estimate the difficulty in obtaining the axial inclination of incisors during orthodontic treatment. A-B plane angle was negative in class II because the point B is behind point A. Z angle. The Yemeni males showed higher z angle than females which suggests the presence of differences in the size of chin and soft tissue thickness between Yemeni males and females. Both A-B plane angle and Z angle value were smaller in class II division 1 than in class I norms, this was in agreement with previous study.[8]

CONCLUSION

A-B plane angle was more negative in males than in females,and due to the differences in the size of chin and soft tissue thickness between males and females, the z angle was higher in male than female.

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