CHAPTER IV

RESULTS

The results of this study are presented as follows.

Part 1 Means, standard deviations and estimation of means of cephalometric measurements of the Class I deepbite, the Class II div. 1 deepbite and normal groups (Table 2)

Part 2 Two-way analysis of variance of each cephalometric measurement for the Class I deepbite, the Class II div. 1 deepbite and the normal groups by gender (Table 3)

The correlation analysis between the cephalometric measurements of the Class I deepbite and the Class II div. 1 deepbite groups were shown in Appendix C.

The stepwise multiple regression analysis of the Class I deepbite and the Class II div. 1 groups were shown in Appendix D.

Part 3 Comparisons of the cephalometric measurements between male and female of the Class I deepbite, the Class II div. 1 deepbite and the normal groups (Table 5)

Part 1 Means, standard deviations and estimation of means of cephalometric measurements for the Class I deepbite, Class II div. 1 deepbite and normal groups (Table 2)

The means, standard deviations and estimation of means of cephalometric measurements of the Class I deepbite, the Class II div. 1 deepbite and the normal groups are shown in Table 2.

For the skeletal measurement, the deepbite groups had the larger ANB and smaller SNB angle than the normal. The articulare angle (SArGo) was smaller in the normal group than the other groups. The Class II div. 1 deepbite had the most obtuse mandibular plane and palatomandibular angles. The total and lower posterior facial heights as well as the ramus height were shorter in the deep bite groups than the normal.

The upper anterior teeth were more protuded in the deepbite groups than the normal. The lower anterior teeth were the most protruded in the Class II div. 1. The deepbite groups had more degree of overbite than the normal.

The upper incisor crown exposure (Stm_s-UI) was the least in the normal group.

Table 2 Means (x), standard deviations (SD) and estimation of means (μ) of the cephalometric measurements in the Class I deepbite (i), Class II div. 1 deepbite (ii) and normal groups (iii)

Variables		Class I deepbite (n=70)			Cl. II div.1 deepbite (n=70)			Normal (n=70)		
		XI	SD	95%μ	XII	SD	95%μ	XIII	SD	95%μ
SKELETAL										
SNA	(deg)	83.943	3.237	83.943±0.774	83.771	3.824	83.771±0.914	83.193	3.255	83.193±0.778
SNB	(deg)	79.793	3.487	79.793±0.834	78.350	3.271	78.350±0.782	81.350	3.221	81.350±0.77
ANB	(deg)	4.157	2.221	4.157±0.53	5.421	2.445	5.421±0.584	1.950	1.728	1.950±0.414
NSBa	(deg)	129.471	5.156	129.471±1.232	130.586	4.728	130.586±1.13	130.957	4.7562	130.957±1.134
SArGo	(deg)	147.179	6.467	147.179±1.546	147.136	6.718	147.136±1.606	143.700	5.390	143.700±1.288
ArGoGn	(deg)	121.686	5.127	121.686±1.226	118.386	6.534	118.386±1.562	119.407	5.005	119.407±1.196
NSGn	(deg)	68.571	3.580	68.571±0.856	68.857	3.723	68.857±0.89	67.221	2.969	67.221±0.71
SNGoGn	(deg)	31.271	5.849	31.271±1.398	29.379	5.972	29.379±1.428	27.721	4.967	27.721±1.188
SNPP	(deg)	8.407	3.656	8.407±0.874	7.871	3.382	7.871±0.808	9.114	3.451	9.114±0.826
PPGoGn	(deg)	22.864	4.812	2.864±1.15	21.507	5.842	21.507±1.396	18.607	4.741	18.607±1.134
TAFH	(mm)	127.250	6.679	127.250±1.596	125.350	8.043	125.350±1.922	128.679	6.140	128.679±1.468
UAFH	(mm)	57.457	3.200	57.457±0.764	56.964	3.946	56.964±0.944	57.864	3.370	57.864±0.806
LAFH	(mm)	69.786	5.297	69.786±1.266	68.721	5.934	68.721±1.418	70.957	4.792	70.957±1.146
UAFH/LAFH		0.828	0.074	0.828±0.018	0.833	0.068	0.833±0.016	0.9186	0.813	0.9186±0.194
TPFH	(mm)	83.821	7.537	83.821±1.802	84.250	7.469	84.250±1.786	87.464	6.453	87.464±1.542
UPFH	(mm)	47.457	3.152	47.457±0.754	47.150	3.724	47.150±0.89	46.886	2.988	46.886±0.714
LPFH	(mm)	36.421	5.256	36.421±1.256	37.100	5.715	37.100±1.366	40.564	5.253	40.564±1.256
RH	(mm)	48.936	5.050	48.936±1.208	49.364	5.292	49.364±1.266	52.414	4.551	52.414±1.088
UPFH/LPFH		1.325	0.174	1.325±0.042	1.298	0.213	1.298±0.052	1.175	0.167	1.175±0.04
TPFH/TAFH		0.659	0.047	0.659±0.012	0.673	0.048	0.673±0.012	0.680	0.040	0.680±0.01
DENTAL										
UINA	(deg)	29.364	8.436	29.364±2.016	29.829	7.517	29.829±1.798	26.057	5.464	26.057±1.306
UISN	(deg)	113.450	7.685	113.450±1.838	113.707	7.471	113.707±1.786	108.829	5.692	108.829±1.36
LINB	(deg)	30.493	6.178	30.493±1.476	31.729	4.734	31.729±1.132	30.121	3.894	30.121±0.93
LIGoGn	(deg)	99.464	6.172	99.464±1.476	104.236	6.606	104.236±1.58	100.914	5.529	100.914±1.322
UILI	(deg)	116.000	11.160	116.000±2.668	112.829	8.334	112.829±1.992	121.900	6.367	121.900±1.522
Overbite	(mm)	4.586	1.039	4.586±0.248	5.814	1.954	5.814±0.468	2.193	1.008	2.193±0.242
UADH	(mm)	31.521	2.598	31.521±0.622	31.543	3.162	31.543±0.756	30.371	2.522	30.371±0.602
UPDH	(mm)	25.700	1.992	25.700±0.476	26.143	2.448	26.143±0.586	26.657	2.143	26.657±0.512
LADH	(mm)	46.707	3.943	46.707±0.942	46.314	4.058	46.314±0.97	44.986	3.157	44.986±0.754
LPDH	(mm)	35.950	3.236	35.950±0.774	34.907	3.328	34.907±0.796	37.029	2.912	37.029±0.696
UPDH/UADH		0.816	0.054	0.816±0.012	0.828	0.067	0.828±0.016	0.887	0.086	0.887±0.02
LPDH/LADH		0.770	0.040	0.770±0.01	0.797	0.265	0.797±0.064	0.811	0.103	0.811±0.024
SOFT TISSUE										
Sn-Stms	(mm)	24.814	2.091	24.814±0.5	25.164	2.630	25.164±0.628	25.293	2.287	25.293±0.546
Stms-Ut	(mm)	3.271	1.683	3.271±0.402	2.943	2.097	2.943±0.502	1.943	1.153	1.943±0.276

Part 2 Two-way analysis of variance of each cephalometric measurement for the Class I deepbite, the Class II div. 1 deepbite and the normal groups by gender (Table 3).

The two-way analysis of variance (two-way ANOVA) was performed to compare those means of cephalometric measurements for types of occlusion and genders as shown in Table 3. Because there were more than two types of occlusion in this study, the Scheffe test was used to identify which of several possible differences between means of cephalometric measurements was significant if the F-value of occlusion was significant (Table 3).

2.1 Skeletal Pattern

2.1.1 Sagittal Relationship

There were significant differences in the cranial base angle (NSBa) by gender ($p < .05$) but no apparent differences by type of occlusion. In addition, there were no significant interaction effects, which implied that the difference in the NSBa angle by gender was the same for three groups of occlusion.

For the prognathism of the maxilla (SNA), there were no significant differences by gender and type of occlusion. Furthermore, there were no significant interactions effect either.

There was significant effect of type of occlusion on the anteroposterior position of mandible (SNB) after controlling the effect of gender ($p < .001$). The smallest SNB angle was found in the Class II div. 1 deepbite group whereas this angle was significant lesser in the Class I deepbite group than in the normal (figure 7). However there was no significant effect of gender after controlling the effect of type of occlusion on the SNB angle. Furthermore, there were no significant interactions effect, which meant that the difference in the SNB angle by type of occlusion was the same for both sexes.

The anteroposterior relationship of maxilla and mandible was described by the ANB angle. There were significant differences in the ANB angle by type of occlusion ($p < .001$), but no apparent difference by sex. The ANB angle was found to be the

Table 3 Two-way analysis of variance for the main effects of gender, type of occlusion (Class I deepbite, Class II div. 1 deepbite and normal) and the interaction effect, and Scheffe test of three types of occlusion

Variables		F-value			Scheffe test of occlusion		
		Gender	Occlusion	Gender by occlusion	Xi-Xii	Xi-Xiii	Xii-Xiii
SKELETAL							
SNA	(deg)	0.136	0.899	0.363			
SNB	(deg)	0.967	14.181***	0.677	*	*	***
ANB	(deg)	0.406	46.086***	0.032	**	***	***
NSBa	(deg)	4.421*	1.774	0.440			
SArGo	(deg)	0.457	7.187**	0.889		**	**
ArGoGn	(deg)	10.562**	6.683**	1.219	**		
NSGn	(deg)	0.476	4.491*	0.679			*
SNGoGn	(deg)	14.463***	7.404**	0.121		**	
SNPP	(deg)	7.877**	2.279	0.210			
PPGoGn	(deg)	4.654*	12.560***	0.082		***	**
TAFH	(mm)	121.144***	6.262**	0.130			**
UAFH	(mm)	49.690***	1.413	0.588			
LAFH	(mm)	75.766***	4.119*	0.113			*
UAFH/LAFH		0.394	0.815	0.905			
TPFH	(mm)	183.050***	10.104***	0.206		***	**
UPFH	(mm)	105.143***	0.788	0.782			
LPFH	(mm)	91.546***	16.848***	0.003		***	***
RH	(mm)	92.326***	14.666***	0.962		***	***
UPFH/LPFH		15.920***	13.911***	0.315		***	***
TPFH/TAFH		30.363***	4.479*	0.111		*	
DENTAL							
UINA	(deg)	0.000	5.589**	0.594			**
UISN	(deg)	0.028	10.732***	1.332		**	***
LINB	(deg)	0.412	1.941	0.143			
LIGoGn	(deg)	12.916***	11.822***	0.901	***		**
UILI	(deg)	0.010	18.725***	0.127		**	***
Overbite	(mm)	8.720**	127.044***	2.861	***	***	***
UADH	(mm)	25.222***	4.542*	0.533		*	*
UPDH	(mm)	43.318***	3.964*	0.222		*	
LADH	(mm)	65.561***	5.305**	0.081		**	
LPDH	(mm)	119.080***	12.310***	0.353		*	***
UPDH/UADH		0.087	20.232***	1.015		***	***
LPDH/LADH		6.559*	1.145	1.675			
SOFT TISSUE							
Sn-Stms	(mm)	31.691***	0.892	0.514			
Stms-UI	(mm)	0.138	12.034***	3.913*		***	**

* p < .05, ** p < .01, *** p < 0.001, Xi =mean of Class I deepbite, Xii=mean of Class II div. 1 deepbite, Xiii=mean of normal groups

greatest in the Class II div. 1 deepbite subjects and then in the Class I deepbite and the normal groups respectively (figure 8). The ANB angle indicated that the mandible was in a more posterior position to the maxilla in Class II div. 1 deepbite than that in Class I deepbite and normal groups. The mandible was also in more posterior position to the maxilla in Class I deepbite group than in the normal group. However, there were no significant interactions effect between gender and type of occlusion, which implied that the difference in the ANB angle by type of occlusion was the same for both genders.

2.1.2 Vertical Relationship

There was significant effect of type of occlusion on the anteroposterior position of mandible (SArGo) after controlling the effect of gender ($p<.01$). The SArGo angle was significantly greater in Class II div. 1 deepbite and Class I deepbite groups than in normal group. However there was no obvious difference between those two groups of deepbite (Figure 9). There was no significant effect of gender after controlling the effect of type of occlusion on the SArGo angle. Furthermore, there no significantly interaction effect, which meant that the difference in the SArGo angle by type of occlusion was the same for both genders.

There were significant effects of gender ($p<0.01$) and type of occlusion on the gonial angle (ArGoGn)($p<0.01$). However, there was no significant interaction effect between gender and type of occlusion. The gonial angle was significant lesser in the Class II div. 1 deepbite group than in the Class I deepbite group. Nevertheless, there was no significant difference in this angle neither between the Class I deepbite and the normal groups nor between the Class II div. 1 deepbite and the normal groups (Figure 10).

For the prognathism of mandible, the difference in the mean of NSGn angle was evident in three types of occlusion ($p<0.05$) but there were not different by gender. The NSGn angle was larger in Class II div. 1 deepbite group than in normal group. However there was no significant difference between the Class I deepbite and the normal groups nor between the Class I deepbite and the Class II div. 1 deepbite groups (Figure 11).

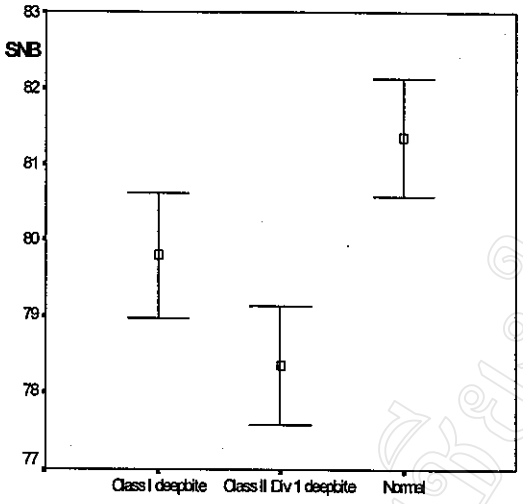

Figure 7 95% Confidence Interval of means of the SNB in Class I deepbite,Class II div.1 deepbite and normal groups

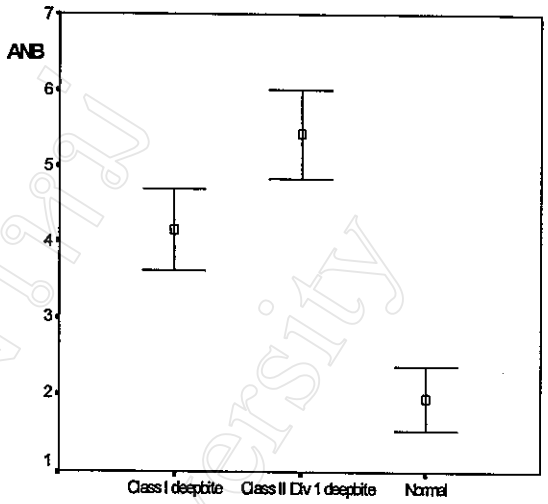

Figure 8 95% Confidence Interval of mean of the ANB in Class I deepbite,Class II div.1 deepbite and normal groups

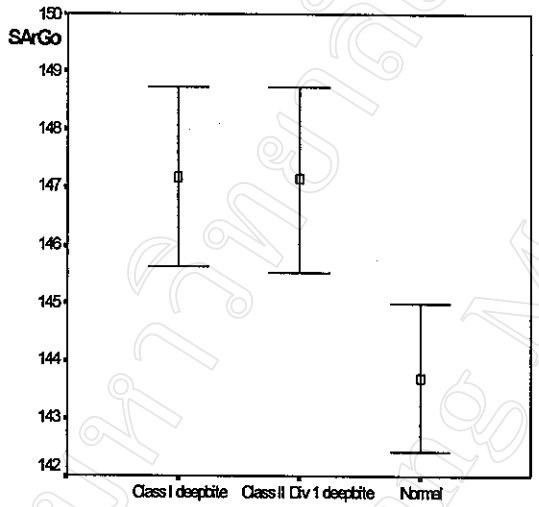

Figure 9 95% Confidence Interval of mean of the SArGo in Class I deepbite,Class II div.1 deepbite and normal groups

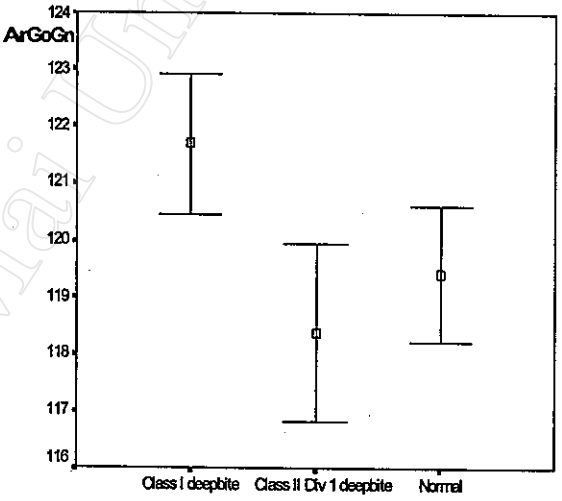

Figure 10 95% Confidence Interval of mean of the ArGoGn in Class I deepbite,Class II div.1 deepbite and normal groups

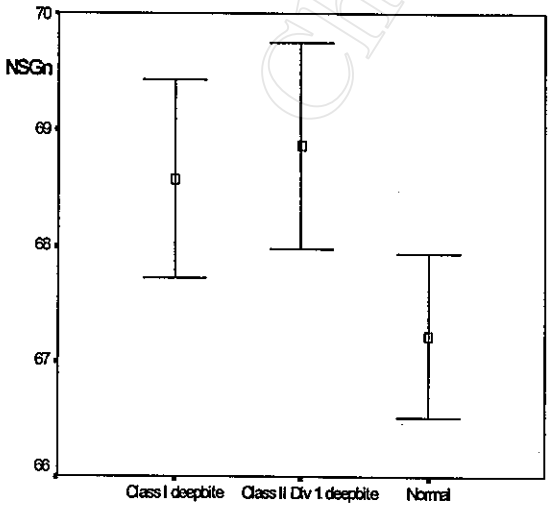

Figure 11 95% Confidence Interval of mean of the NSGn in Class I deepbite,Class II div.1 deepbite and normal groups

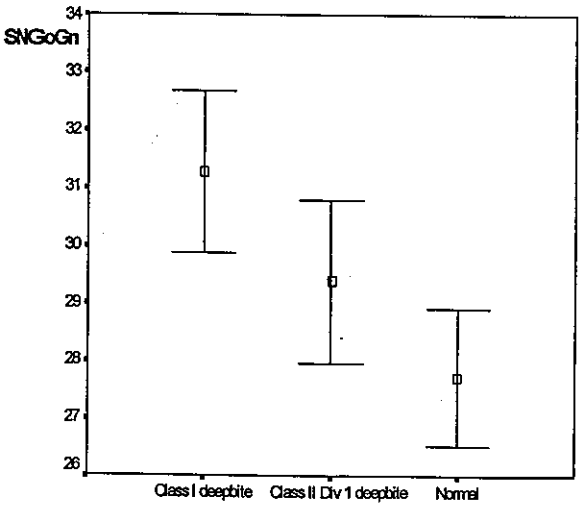

Figure 12 95% Confidence Interval of mean of the SNGoGn in Class I deepbite,Class II div.1 deepbite and normal groups

There were no significant interaction effects either which meant that the difference in NSGn angle was the same for both gender.

There were significant effects of gender ($p<.001$) and type of occlusion ($p<0.01$) on the mandibular plane angle (SNGoGn). The significant difference was only found between the Class I deepbite and the normal groups. This angle was greater in the Class I deepbite group than in the normal group (Figure 12). However there were no significant interaction effects.

There was significant difference in palatal plane angle (SNPP) by sex ($p<0.01$), but no obvious difference by type of occlusion. In addition, there were no significant interaction effects, which implied that the difference in the SNPP angle was the same for three groups of occlusion.

For the vertical relationship between maxilla and mandible, the difference in the mean of palatomandibular angle (PPGoGn) was evident by gender ($p<.05$) and type of occlusion ($p<0.001$). The PPGoGn angle was significantly greater in the Class I deepbite and Class II div. 1 deepbite groups than in the normal group but without any difference between two groups of deepbite (Figure 13). However, there were no significant interaction effects.

2.1.3 Facial Height and Vertical Facial Proportion

There were significant differences in the total anterior facial height (TAFH) and the lower anterior facial height (LAFH) by type of occlusion ($p<0.01$ and $p<0.05$, respectively) and gender ($p<.001$), but no significant interaction effects in those facial heights. Therefore, the effects of type of occlusion on those facial heights were similar in males and females. The significant differences in those facial heights were only found between the Class II div. 1 deepbite and the normal groups. Those facial heights were lesser in the Class II div. 1 deepbite than the normal groups (Figure 14 and 15).

There were significant differences in the upper anterior facial height (UAFH) and the upper posterior facial height (UPFH) by gender ($P<.001$), but no obvious differences by type of occlusion. Furthermore, there were no significant interaction effects, which

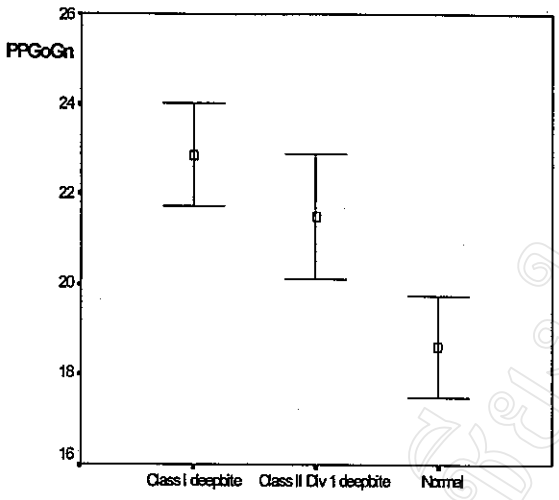

Figure 13 95% Confidence Interval of mean of the PPGoGn in Class I deepbite,Class II div.1 deepbite and normal groups

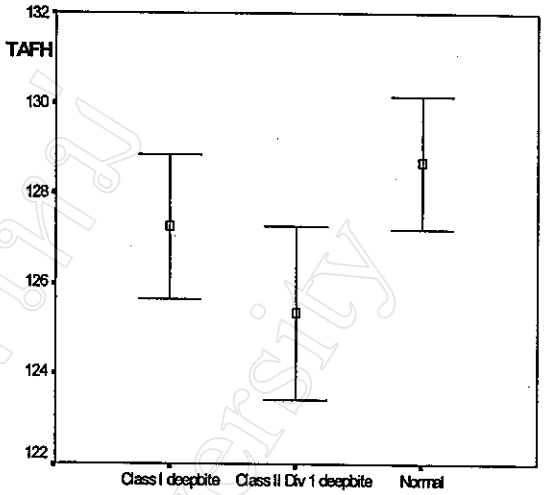

Figure 14 95% Confidence Interval of mean of theTAFH in Class I deepbite,Class II div.1 deepbite and normal groups

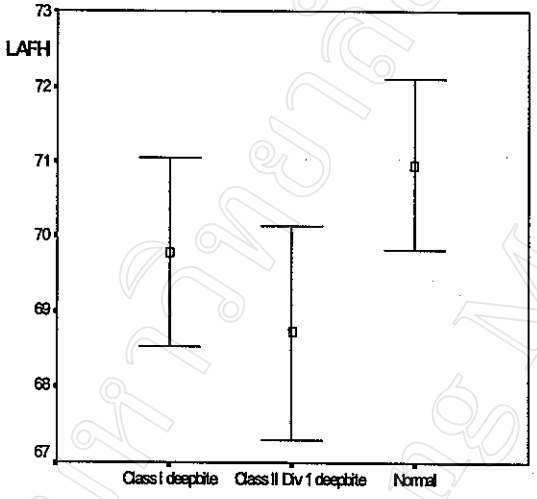

Figure 15 95% Confidence Interval of mean of the LAFH in Class I deepbite,Class II div.1 deepbite and normal groups

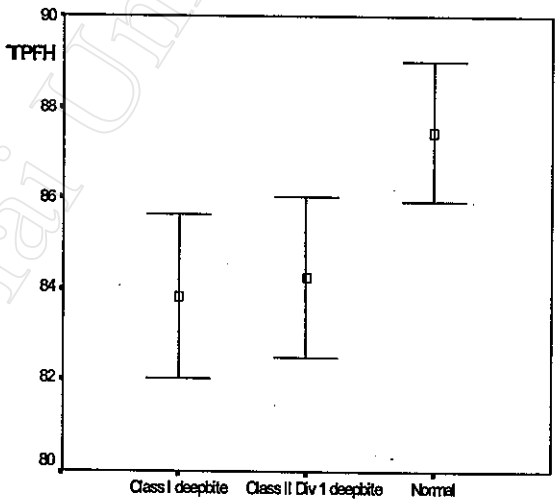

Figure 16 95% Confidence Interval of mean of the TPFH in Class I deepbite,Class II div.1 deepbite and normal groups

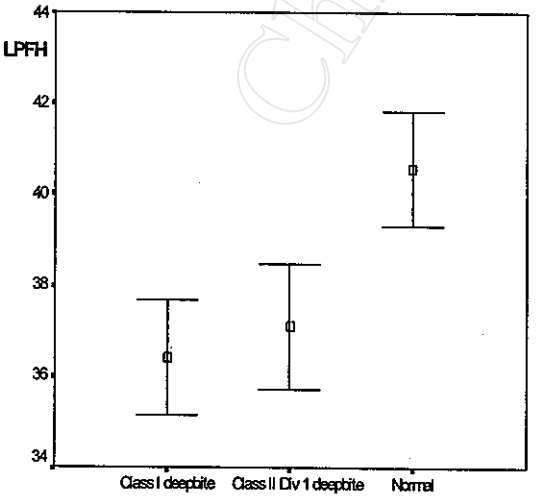

Figure 17 95% Confidence Interval of mean of the LPFH in Class I deepbite,Class II div.1 deepbite and normal groups

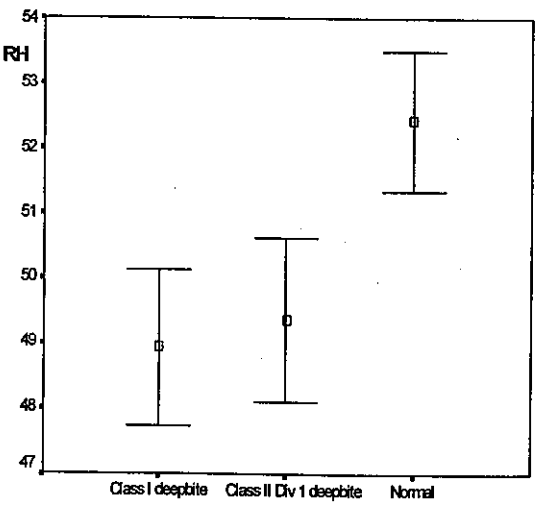

Figure 18 95% Confidence Interval of mean of the RH in Class I deepbite,Class II div.1 deepbite and normal groups

implied that the differences in the UAFH and UPFH by gender were the same for the three groups of occlusion.

There were significant differences in the total posterior facial height (TPFH), the lower posterior facial height (LPFH) and the ramus height (RH) by sex ($p<.001$) and type of occlusion ($p<0.001$), but no significant interaction effects. All of those variables were significantly lesser in the Class I deepbite and Class II division groups than in the normal one but no difference in those variables between both groups of deepbite (Figure 16,17,18).

For the UAFH/LAFH ratio , there was no significant difference by gender and type of occlusion. There was no significant interaction effect either. Whereas the UPFH/LPFH and the TPFH/TAFH ratios were clearly effected by both type of occlusion ($p<.001$ and $p<0.05$, respectivly) and gender ($p<.001$), but no significant interaction effects. The UPFH/LPFH ratio was significant larger in the Class I deepbite and Class II div. 1 deepbite groups than in the normal group but no difference between both groups of deepbite (Figure 19). The TPFH/TAFH ratio was significantly lesser in the Class I deepbite than in the normal which was the only significant difference that found in this ratio (Figure 20).

2.2 Dentofacial Pattern

2.2.1 Dentofacial Relationship

There were significant differences in the inclination of maxillary incisor in relation to NA line (UINA) and that in relation to SN line (UISN) and the interincisal angle (UILI) by type of occlusion ($p<.01$, $p<.01$ and $p<.001$, respectively), but no obvious difference by gender. In addition, there were no interaction effects, which implied that the differences of those variables by type of occlusion were the same in both sexes. The UINA angle was greater in the Class II div. 1 deepbite group than in the normal group, but no significant difference between the Class I deepbite and the Class II div. 1 deepbite groups or between the Class I deepbite and the normal groups (Figure 21).

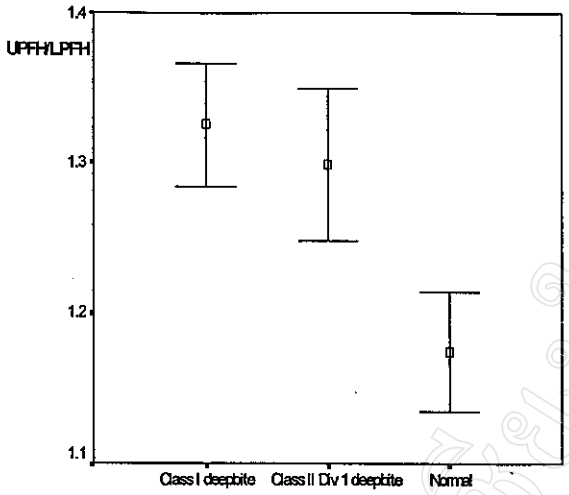

Figure 19 95% Confidence Interval of mean of the UPFH/LPFH in Class I deepbite,Class II div.1 deepbite and normal groups

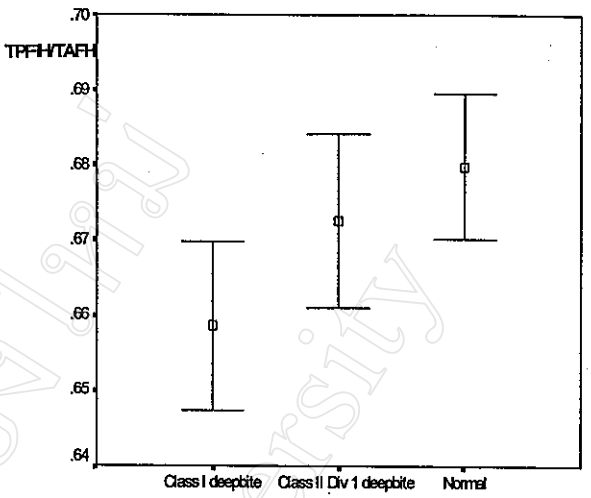

Figure 20 95% Confidence Interval of mean of the TPFH/TAFH in Class I deepbite,Class II div.1 deepbite and normal groups

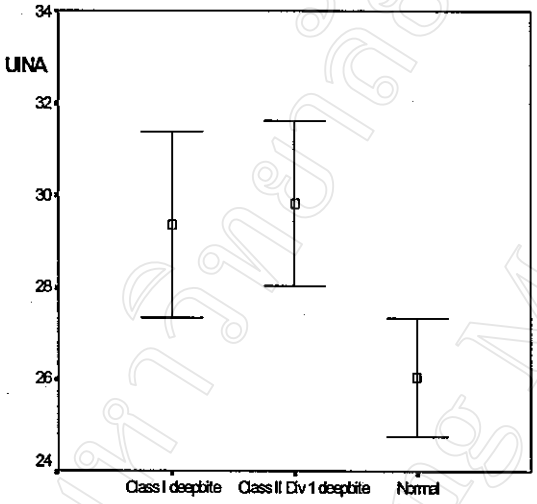

Figure 21 95% Confidence Interval of mean of the UINA in Class I deepbite,Class II div.1 deepbite and normal groups

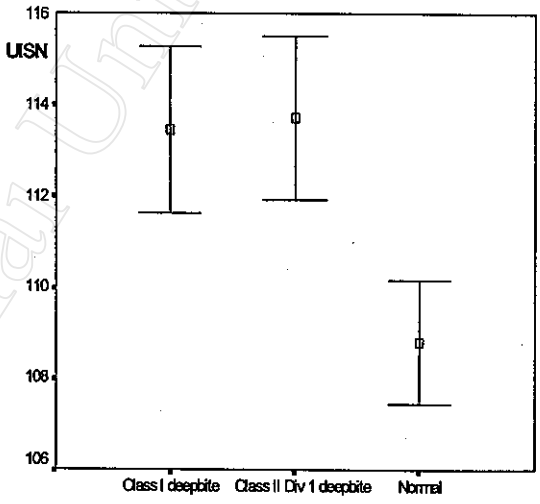

Figure 22 95% Confidence Interval of mean of the UISN in Class I deepbite,Class II div.1 deepbite and normal groups

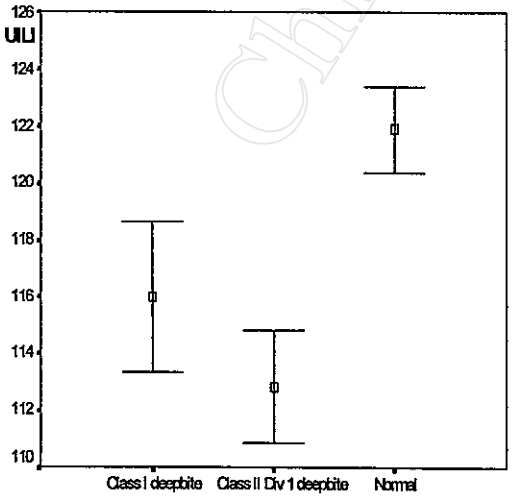

Figure 23 95% Confidence Interval of mean of the UILI in Class I deepbite,Class II div.1 deepbite and normal groups

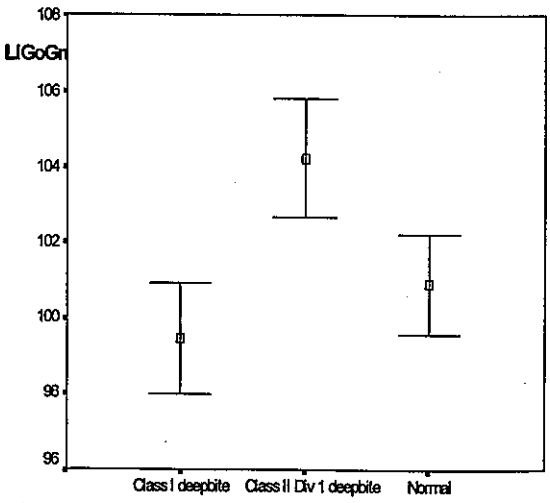

Figure 24 95% Confidence Interval of mean of the LIGoGn in Class I deepbite,Class II div.1 deepbite and normal groups

While the UISN angle was greater in the Class I deepbite and Class II div. 1 deepbite groups than in the normal group, but no difference between both those deepbite groups (Figure 22). On the contrary, the UILI angle was lesser in the Class I deepbite and Class II div. 1 deepbite groups than in the normal group, but no difference between both groups of deepbite (Figure 23).

For the inclination of mandibular incisor, there was no obvious significant difference in relation to NB line (LINB) by gender and type of occlusion. There was no interaction effect either. Whereas the difference in mean of inclination of mandibular incisor in relation to mandibular plane (LIGoGn) was clearly evident by gender ($p<.001$) and type of occlusion ($p<.001$), but no significant interaction effects. The LIGoGn angle was greater in the Class II div. 1 deepbite group than in the Class I deepbite and normal groups but no significant difference between the Class I deepbite and normal groups (Figure 24). The present data showed that the means of overbite were 4.59 millimeters, 5.81 millimeters and 2.19 millimeters for the Class I deepbite, the Class II div. 1 deepbite and the normal groups respectively.

2.2.2 Dentoalveolar Height

There were significant differences in the upper anterior dentoalveolar height (UADH) and upper posterior dentoalveolar height (UPDH) by gender ($p<.001$) and type of occlusion ($p<.05$), but no interaction effects. The UADH was greater in the Class I deepbite and Class II div. 1 deepbite groups than in the normal group, but no difference between both groups of deepbite groups (Figure 25). The UPDH was lesser in Class I deepbite group than in normal group which was the only significant difference that found in this dentoalveolar height (Figure 26).

For lower dentoalveolar heights, There were significant differences in both lower anterior dentoalveolar height (LADH) and lower posterior dentoalveolar height (LPDH) by type of occlusion ($p<.01$ and $p<.001$, respectively) and gender ($p<.001$), but no interaction effects between gender and type of occlusion. The LADH was greater in the Class I deepbite group than in the normal group group which was the only significant difference that found in this dentoalveolar height (Figure 27). The LPDH was lesser in

the Class I deepbite and Class II div. 1 deepbite groups than in normal group, but no difference between both groups of deepbites (Figure 28).

The significant difference in UPDH/UADH ratio was observed by type of occlusion ($p<.001$), but no obvious difference by gender. Furthermore, there was no significant interaction effect, which implied that the difference in UPDH/UADH ratio by type of occlusion was the same for both sex. The UPDH/UADH ratio was lesser in the Class I deepbite and Class II div. 1 deepbite than in the normal group, but no difference between both groups of deepbite (Figure 29).

There was significant difference in the LPDH/LADH ratio by gender, no clearly effect by type of occlusion and no interaction effect as well.

2.3 Soft Tissue Pattern

There was significant difference in the upper lip length ($Sn\text{-}Stm_s$) by gender ($p<.001$) but no obvious difference by type of occlusion. Furthermore there was on interaction effect, which implied that the difference in $Sn\text{-}Stm_s$ by gender was the same in three groups of occlusion. For the maxillary incisor exposure ($Stm_s\text{-}UI$), there was significant effect by type of occlusion ($p<.001$) but no obvious differences by gender. However, there was significant interaction effect between gender and type of occlusion ($p<.05$). The $Stm_s\text{-}UI$ was greater in the Class I deepbite and Class II div. 1 deepbite than in the normal group, but no difference between both groups of deepbite (Figure 30).

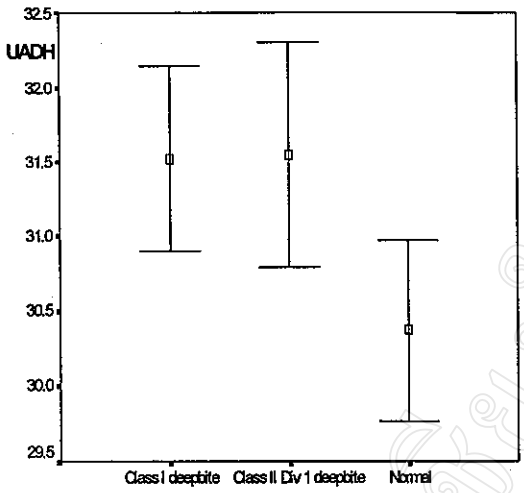

Figure 25 95% Confidence Interval of mean of the UADH in Class I deepbite,Class II div.1 deepbite and normal groups

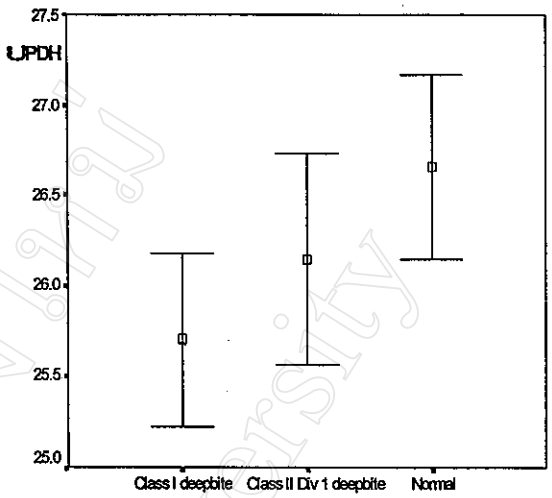

Figure 26 95% Confidence Interval of mean of the UPDH in Class I deepbite,Class II div.1 deepbite and normal groups

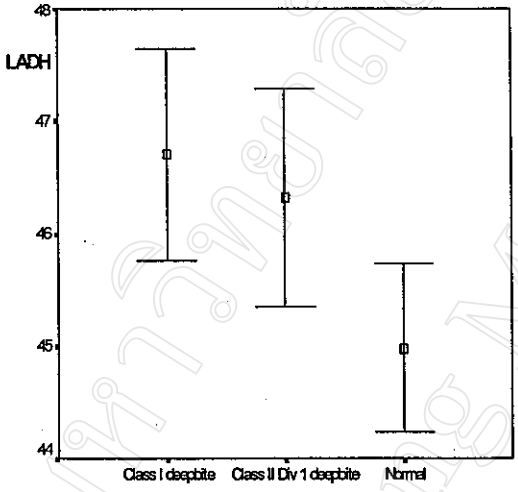

Figure 27 95% Confidence Interval of mean of the LADH in Class I deepbite,Class II div.1 deepbite and normal groups

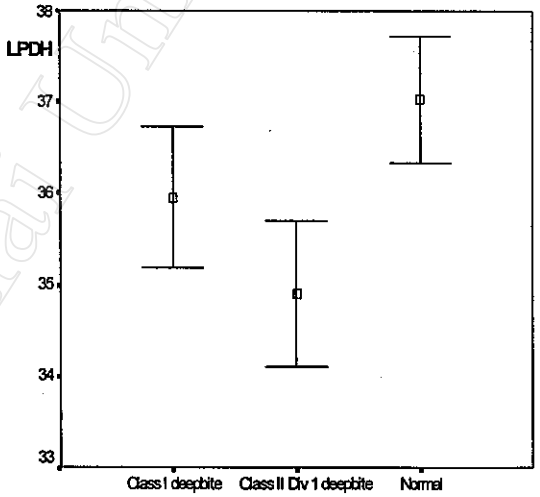

Figure 28 95% Confidence Interval of mean of the LPDH in Class I deepbite,Class II div.1 deepbite and normal groups

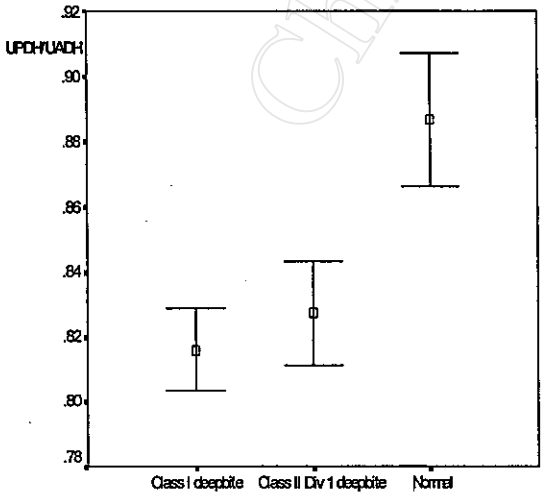

Figure 29 95% Confidence Interval of mean of the UPDH/UADH in Class I deepbite,Class II div.1 deepbite and normal groups

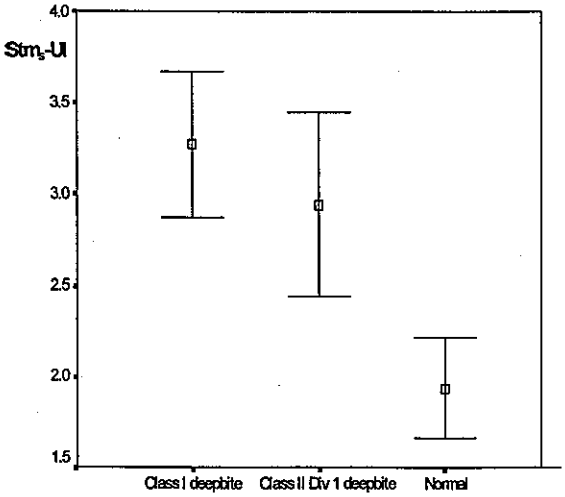

Figure 30 95% Confidence Interval of mean of the Stm-UI in Class I deepbite,Class II div.1 deepbite and normal groups

In summary, the cephalometric measurements which showed the differences between the males and females were the NSBa angle, ArGoGn angle, SNGoGn angle, SNPP angle, PPGoGn angle, TAFH, UAFH, LAFH, TPFH, UPFH, LPFH, RH, UPFH/LPFH ratio, TPFH/TAFH ratio, LIGoGn angle, overbite, UADH, UPDH, LADH, LPDH, LPDH/LADH ratio and Sn-Stm_s, while the cephalometric measurements which showed the differences by type of occlusion were the SNB angle, ANB angle, SArGo angle, ArGoGn angle, NSGn angle, SNGoGn angle, PPGoGn angle, TAFH, LAFH, TPFH, LPFH, RH, UPFH/LPFH ratio, TPFH/TAFH ratio, UINA angle, UISN angle, LIGoGn angle, UILI angle, overbite, UADH, UPDH, LADH, LPDH, UPDH/UADH ratio and Stm_s-UI. The results indicated that both gender and type of occlusion had the effects to the skeletal cephalometric mesurements

From the two way analysis (Table 3), there were significant interaction effects between gender and type of occlusion on the Stm_s-UI ($p<.05$). The result of Scheffe test of the Stm_s-UI with a significant level of .05, which compared the mean differences in six group : Class I deepbite males (CIM), Class I deepbite female (CIF), Class II div. 1 deepbite male(CIIM), Class II div. 1 deepbite female (CIIF), normal males (NM), normal female (NF) was shown on Table 4.

There were significant differences of the Stm_s-UI between Class I deepbite males and Class II div. 1 males ($p<.05$), Class I deepbite males and Normal males ($p<.001$), Class I deepbite males and Normal females ($p<.001$), Class I deepbite females and Normal males ($p<.05$), Class I deepbite females and Normal females ($p<.001$). There were significant differences of the Stm_s-UI between Class II div. 1 deepbite females and Normal males($p<.01$) and between Class II div. 1 females and normal females ($p<.001$).

Table 4 Multiple comparisons for means of the Stm_s-UI (mm) in three types of occlusion of both sexes by Scheffe test (CIM = Class I deepbite males, CIF = Class I deepbite female, CIIM = Class II div. 1 deepbite male, CIIF = Class II div. 1 deepbite female, NM = Normal male, NF = Normal female)

Group	CIM	CIF	CIIM	CIIF	NM	NF
$\bar{X}$	3.543	3.000	2.457	3.429	2.029	1.857
CIM 3.543						
CIF 3.000	0.543					
CIIM 2.457	1.086*	0.543				
CIIF 3.429	0.114	0.429	0.972			
NM 2.029	1.514***	0.971 *	0.428	1.400**		
NF 1.857	1.686***	1.143**	0.600	2.575***.	0.172	

* $p < .05$, ** $p < .01$, *** $p < 0.001$

Part 3. Comparisons of the cephalometric measurements in males and females of Class I deepbite, Class II div. 1 deepbite and normal groups (Table 5).

3.1 Skeletal pattern

3.1.1 Sagittal Relationship

The anteroposterior position the maxilla and the mandible in relation to anterior cranial base (SNA and SNB respectively) were not clearly different by gender in the Class I deepbite , Class II div. 1 deepbite and normal groups. Furthermore, the anteroposterior relationships of the maxilla and the mandible (ANB) in any group of occlusion was not significantly different by gender.

The NSBa and SArGo angles were not significantly different by gender in the Class I deepbite, Class II div. 1 deepbite and normal groups.

3.1.2 Vertical Relationship

The vertical relationship of the maxilla and mandible (PPGoGn), There was not obvious significant difference by gender of the Class I deepbite, Class II div. 1 deepbite and normal groups.

The SNGoGn angle were significantly smaller in male than female of Class II div. 1 deepbite group ($p<.05$) and the normal group ($p< .01$), but was not clearly different by gender in the Class I group. The ArGoGn were significantly smaller in male than female of Class II div. 1 deepbite group and the normal group ($p<.05$) , but was not clearly different by gender in the Class I group. For the another vertical relations of the mandible, NSGn, PPGoGn angles were not clearly different by gender in the Class I deepbite group and the Class II div. 1 deepbite group.

3.1.3 Facial Height and Vertical Facial Proportion

The TAFH, UAFH, LAFH, TPFH, UPFH, LPFH and RH were significant greater in male than female of all groups of occlusion($p<.001$).

The UAFH/LAFH ratio was not significant different by gender in any groups of occlusion. The UPFH/LPFH ratio was significantly lesser in male than female of the

Table 5 The Comparisons of the cephalometric measurements between male and female of Class I deepbite, Class II div. 1 deepbite and normal groups

Variables	Class I deepbite		t-values	Class II div. 1 deepbite		t-values	Normal		t-values
	X+SD(male)	X+SD(female)		X+SD(male)	X+SD(female)		X+SD(male)	X+SD(female)	
SKELETAL									
SNA (deg)	84.171 ± 3.670	83.714 ± 2.771	0.59	83.571 ± 4.368	83.971 ± 3.243	-0.44	83.429 ± 3.005	82.957 ± 0.594	0.60
SNB (deg)	80.171 ± 3.632	79.414 ± 3.344	0.91	78.200 ± 3.590	78.600 ± 2.963	-0.38	81.800 ± 3.132	80.900 ± 0.556	1.17
ANB (deg)	4.014 ± 1.961	4.300 ± 2.474	-0.54	5.371 ± 2.296	5.471 ± 2.618	-0.17	1.857 ± 1.630	2.043 ± 0.311	-0.45
NSBa (deg)	128.686 ± 4.889	130.257 ± 5.365	-1.28	130.300 ± 4.801	130.871 ± 4.707	-0.50	129.914 ± 3.923	132.000 ± 0.899	-1.87
SArGo (deg)	147.029 ± 5.377	147.329 ± 7.477	-0.19	147.057 ± 6.301	147.214 ± 7.202	-0.10	144.800 ± 5.271	142.600 ± 0.905	1.73
ArGoGn (deg)	121.186 ± 5.519	122.186 ± 4.730	-0.81	116.443 ± 6.862	120.329 ± 5.637	-2.59*	118.171 ± 4.941	120.643 ± 0.815	-2.12*
NSGn (deg)	68.386 ± 3.825	68.757 ± 3.362	-0.43	69.043 ± 3.876	68.671 ± 3.612	0.415	66.729 ± 2.814	67.714 ± 0.520	-1.40
SNGoGn (deg)	30.100 ± 5.920	32.443 ± 5.617	-1.70	27.829 ± 6.028	30.929 ± 5.577	-2.23*	26.143 ± 5.080	29.300 ± 0.739	-2.79**
SNPP (deg)	7.871 ± 4.238	8.943 ± 2.928	-1.23	7.286 ± 3.333	8.457 ± 3.377	-1.46	8.229 ± 2.721	10.000 ± 0.658	-2.21*
PPGoGn (deg)	22.229 ± 5.192	23.500 ± 4.383	-1.11	20.543 ± 6.109	22.471 ± 5.480	-1.39	17.914 ± 4.440	19.300 ± 0.844	-1.23
TAFH (mm)	131.600 ± 5.449	122.900 ± 4.679	7.17***	129.757 ± 6.638	120.943 ± 6.872	5.46***	132.643 ± 4.829	124.714 ± 0.772	7.06***
UAFH (mm)	58.829 ± 3.258	56.086 ± 2.507	3.95***	58.843 ± 3.256	55.086 ± 3.705	4.51***	59.243 ± 3.126	56.486 ± 0.517	3.73***
LAFH (mm)	72.757 ± 4.376	66.814 ± 4.429	5.65***	71.329 ± 5.123	66.114 ± 5.588	4.07***	73.686 ± 3.509	68.229 ± 0.736	5.77***
UAFH/LAFH	0.811 ± 0.067	0.844 ± 0.077	-1.87	0.828 ± 0.062	0.837 ± 0.074	-0.57	1.001 ± 1.149	0.836 ± 0.015	0.85
TPFH (mm)	88.543 ± 6.184	79.100 ± 5.581	6.71***	89.471 ± 5.872	79.029 ± 4.753	8.18***	92.200 ± 4.376	82.729 ± 0.740	9.05***
UPFH (mm)	49.186 ± 2.941	45.729 ± 2.315	5.47***	49.386 ± 2.564	44.914 ± 3.357	6.26***	48.643 ± 2.274	45.129 ± 0.433	6.07***
LPFH (mm)	39.443 ± 4.396	33.400 ± 4.235	6.86***	40.086 ± 5.317	34.114 ± 4.433	5.10***	43.529 ± 4.554	37.600 ± 0.701	5.70***
RH (mm)	51.614 ± 4.403	46.257 ± 4.196	5.21***	52.629 ± 4.758	46.100 ± 3.502	6.54***	54.714 ± 3.883	50.114 ± 0.677	4.88***
UPFH/LPFH	1.261 ± 0.155	1.389 ± 0.170	-3.27**	1.255 ± 0.198	1.341 ± 0.223	-1.71	1.132 ± 0.154	1.217 ± 0.029	-2.17*
TPFH/TAFH	0.673 ± 0.045	0.644 ± 0.045	2.72**	0.691 ± 0.048	0.655 ± 0.041	3.35**	0.696 ± 0.038	0.664 ± 0.006	3.58**
DENTAL									
UINA (deg)	29.743 ± 8.641	28.986 ± 8.335	0.37	29.057 ± 8.258	30.600 ± 6.730	-0.86	26.457 ± 4.502	25.657 ± 0.926	0.610
UISN (deg)	114.100 ± 8.121	112.800 ± 7.281	0.71	112.671 ± 7.838	114.743 ± 7.045	-1.16	109.457 ± 5.898	108.200 ± 0.928	0.92
LINB (deg)	30.671 ± 6.128	30.314 ± 6.313	0.24	32.200 ± 4.586	31.257 ± 4.898	0.83	30.143 ± 3.305	30.100 ± 0.753	0.05
LIGoGn (deg)	100.471 ± 6.043	98.457 ± 6.221	1.37	106.486 ± 6.510	101.986 ± 5.981	3.01**	102.086 ± 3.874	99.743 ± 1.124	1.80
UILI (deg)	115.557 ± 9.913	116.443 ± 12.414	-0.33	113.143 ± 8.827	112.514 ± 7.926	0.31	121.843 ± 5.958	121.957 ± 1.156	-0.08
Overbite (mm)	4.786 ±1.052	4.386 ± 1.001	1.63	6.400 ± 2.079	5.229 ± 1.651	2.61*	2.243 ± 0.950	2.143 ± 0.182	0.41
UADH (mm)	32.457 ± 2.556	30.586 ± 2.315	3.21**	32.671 ± 3.267	30.414 ± 2.644	3.18**	31.043 ± 2.214	29.700 ± 0.450	2.30*
UPDH (mm)	26.657 ± 1.846	24.743 ± 1.660	4.56***	26.929 ± 2.527	25.357 ± 2.123	2.82**	27.657 ± 1.765	25.657 ± 0.344	4.39***
LADH (mm)	48.657 ± 3.773	44.757 ± 3.081	4.74***	48.129 ± 3.719	44.500 ± 3.579	4.16***	46.714 ± 2.441	43.257 ± 0.481	5.45***
LPDH (mm)	37.929 ± 2.462	33.971 ± 2.671	6.45***	36.943 ± 2.531	32.871 ± 2.745	6.45***	38.729 ± 2.231	35.329 ± 0.424	6.00***
UPDH/UADH	0.822 ± 0.061	0.811 ± 0.046	0.86	0.819 ± 0.070	0.836 ± 0.064	-1.04	0.894 ± 0.065	0.880 ± 0.017	0.69
LPDH/LADH	0.781 ± 0.033	0.760 ± 0.044	2.26*	0.855 ± 0.365	0.740 ± 0.043	1.85	0.830 ± 0.034	0.793 ± 0.024	1.50
SOFT TISSUE									
Sn-Stms (mm)	25.700 ± 1.864	25.700 ± 1.864	3.89***	26.186 ± 2.538	24.143 ± 2.334	3.51**	25.943 ± 1.905	24.643 ± 0.418	2.46*
Stms-UI (mm)	3.543 ± 1.695	3.543 ± 1.695	1.38	2.457 ± 1.780	3.429 ± 2.295	-1.98	2.029 ± 1.277	1.857 ± 0.173	0.62

* $p < .05$, ** $p < .01$, *** $p < 0.001$

Class I deepbite group ($p<.01$) and the normal group ($p<.05$) but in case of Class II div. 1 deepbite group, there was not different by gender.

The TPFH/TAFH ratio was significant higher in male than female of all groups of occlusion ($p<.01$).

3.2 Dentofacial Pattern

3.2.1 Dentofacial Relationship

The UISN, UINA, LINB, LISN and UILI angles for all groups of occlusion were not significant difference by gender; with the exception of that in Class II div. 1 group, the LIGoGn angle was greater in males than in females ($p<.01$).

3.2.2 Dentoalveolar Height

The UADH was significant greater in male than female of the Class I deepbite , the Class II div. 1 deepbite groups ($p<.01$) and the normal group ($p<.05$). The UPDH was significant greater in male than female of the Class I deepbite, normal groups ($p<.001$) and the Class II div. 1 deepbite group ($p<.01$). The LADH and LPDH were significant greater in male than female of all groups of occlusion ($p<.001$).

The UPDH/UADH ratio was not clearly different by gender in any groups of occlusion. Whereas the LPDH/LADH ratio was greater in the males than in the females of Class I deepbite group ($p<0.05$), but no obvious difference by gender in Class II div. 1 deepbite and the normal groups.

3.3 Soft Tissue Pattern

The upper lip length ($Sn\text{-}Stm_s$) was significanly greater in the male than in the females for Class I deepbite group ($p<.001$), the Class II div. 1 deepbite group ($p<.01$) and the normal group ($p<.05$). The maxillary incisor exposure (Stm_s -UI) was not clearly different in both sexes of the Class I deepbite group and Class II div. 1 deepbite group.