

CHAPTER 4

Results

The intra-examiner reliability test for palatal bone and cortical bone thickness measurement showed high intra-class correlation ($r = 0.985$ for palatal bone thickness measurement, $r = 0.994$ for palatal cortical bone thickness measurement) and suggested high reliability in measurement. The inter-examiner reliability test for palatal bone and cortical bone thickness measurement showed high intra-class correlation ($r = 0.884$ for palatal bone thickness measurement, $r = 0.802$ for palatal cortical bone thickness measurement) and suggested high reliability in measurement. The palatal bone and cortical bone thicknesses in both groups were normally distributed, and had no statistical difference between the left and right sides. Therefore, the measurements from counterpart sites on both sides were pooled for statistical analysis.

4.1 Palatal bone thickness

The means, standard deviations and comparisons of the palatal bone thickness of the Class I normal bite and open bite groups are shown in Tables 4.1-4.5. Combined plots of the palatal bone thickness in both groups are shown in Figures 4.1 and 4.2.

The palatal bone thicknesses along the ML0 section in the Class I normal bite group ranged from 5.29 ± 3.01 (at the AP3/ML0 site) to 9.01 ± 1.53 mm (at the AP24/ML0 site), and those in the Class I open bite group ranged from 5.58 ± 3.27 (at the AP3/ML0 site) to 8.25 ± 2.06 mm (at the AP24/ML0 site). The palatal bone thicknesses in both groups increased toward the posterior region and were greater than 5.0 mm at all AP sites along the ML0 section. The palatal bone thicknesses in the Class I open bite group were less than those in the Class I normal bite group, except for the AP3/ML0 site. The palatal bone thicknesses in the Class I open bite group were significantly less than those in the Class I normal bite group at the AP12/ML0 site (Table 4.1).

Table 4.1 Palatal bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 0 (ML0) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML0	AP3	5.29	3.01	5.58	3.27	- 0.29	0.809
	AP6	6.90	3.01	6.08	2.60	0.82	0.437
	AP9	7.32	2.17	6.16	1.47	1.16	0.104
	AP12	7.21	1.15	5.91	1.98	1.30	0.041*
	AP15	7.70	1.29	6.97	1.16	0.73	0.119
	AP18	8.22	1.41	6.98	1.98	1.25	0.062
	AP21	8.66	1.50	8.02	1.70	0.64	0.292
	AP24	9.01	1.53	8.25	2.06	- 0.76	0.272

^aAP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^bDifference between groups was derived from the palatal bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal bone thicknesses along the ML3 section in the Class I normal bite group ranged from 5.04±1.33 (at the AP12/ML3 site) to 9.41±3.26 mm (at the AP3/ML3 site), and those in the Class I open bite group ranged from 3.81±1.53 (at the AP12/ML3 site) to 9.01±2.68 mm (at the AP3/ML3 site). The palatal bone thickness was greatest in the anterior region, decreased in the middle region, and increased toward the posterior region. The palatal bone thicknesses at all AP sites along the ML3 section in the Class I open bite group were less than those in the Class I normal bite group. There were significant differences between both groups at the AP9 to AP21 sites along

the ML3 section. Along the ML3 section, the palatal bone thicknesses at all AP sites in the Class I normal bite group, and those at the AP3, AP6, and AP24 sites in the Class I open bite group were greater than 5.0 mm (Table 4.2).

Table 4.2 Palatal bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 3 (ML3) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML3	AP3	9.41	3.26	9.01	2.68	0.40	0.606
	AP6	7.59	2.80	6.51	2.24	1.08	0.105
	AP9	5.67	1.98	4.65	1.67	1.03	0.034*
	AP12	5.04	1.33	3.81	1.53	1.23	0.002**
	AP15	5.11	1.22	4.22	1.35	0.89	0.010*
	AP18	5.38	1.27	4.41	1.62	0.97	0.013*
	AP21	5.72	1.53	4.74	1.56	0.99	0.016*
	AP24	5.71	1.65	5.02	1.57	0.69	0.104

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^c Significance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal bone thicknesses along the ML6 section in the Class I normal bite group ranged from 2.83 ± 1.72 (at the AP24/ML6 site) to 9.08 ± 2.57 mm (at the AP3/ML6 site), and those in the Class I open bite group ranged from 2.21 ± 1.27 (at the AP18/ML6 site) to 8.77 ± 1.99 mm (at the AP3/ML6 site). The palatal bone thickness was greatest in the anterior region, and decreased toward the posterior region. The palatal

bone thicknesses at all AP sites along the ML6 section in the Class I open bite group were less than those in the Class I normal bite group. There were significant differences between both groups at the AP6 to AP21 sites along the ML6 section. Along the ML6 section, the palatal bone thicknesses at the AP3 to AP9 sites in the Class I normal bite group, and those at the AP3 to AP6 sites in the Class I open bite group were greater than 5.0 mm (Table 4.3).

Table 4.3 Palatal bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 6 (ML6) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML6	AP3	9.08	2.57	8.77	1.99	0.31	0.606
	AP6	7.17	2.26	5.99	2.12	1.18	0.042*
	AP9	5.14	1.83	3.93	1.84	1.21	0.013*
	AP12	3.83	1.30	2.89	1.52	0.95	0.012*
	AP15	3.43	1.10	2.49	1.49	0.94	0.007**
	AP18	3.30	1.07	2.21	1.27	1.10	0.001**
	AP21	3.17	1.27	2.34	1.15	0.82	0.011*
	AP24	2.83	1.72	2.39	0.97	0.44	0.226

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^c Significance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal bone thicknesses along the ML9 section in the Class I normal bite group ranged from 2.16 ± 1.03 (at the AP24/ML9 site) to 10.06 ± 2.07 mm (at the

AP3/ML9 site), and those in the Class I open bite group ranged from 1.87±1.11 (at the AP24/ML9 site) to 10.43±1.95 mm (at the AP3/ML9 site). The palatal bone thickness was greatest in the anterior region, and decreased toward the posterior region. The palatal bone thicknesses at almost all AP sites along the ML9 section in the Class I open bite group were less than those in the Class I normal bite group, except for the AP3/ML9 site. There were significant differences between both groups at the AP9 to AP21 sites along the ML9 section. Along the ML9 section, the palatal bone thicknesses at the AP3 to AP9 sites in the Class I normal bite group, and those at the AP3 to AP6 sites in the Class I open bite group were greater than 5.0 mm (Table 4.4).

Table 4.4 Palatal bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 9 (ML9) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML9	AP3	10.06	2.70	10.43	1.95	-0.37	0.546
	AP6	8.20	2.46	7.31	2.21	0.89	0.147
	AP9	5.87	2.14	4.51	2.02	1.36	0.014*
	AP12	4.34	1.64	3.18	1.57	1.15	0.007**
	AP15	3.30	1.24	2.53	1.25	0.76	0.021*
	AP18	2.88	1.29	1.96	1.07	0.92	0.004**
	AP21	2.43	0.95	1.92	0.98	0.51	0.049*
	AP24	2.16	1.03	1.87	1.11	2.29	0.303

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal bone thicknesses along the ML12 section in the Class I normal bite group ranged from 2.92 ± 1.84 (at the AP24/ML12 site) to 12.56 ± 4.11 mm (at the AP3/ML12 site), and those in the Class I open bite group ranged from 2.49 ± 1.43 (at the AP24/ML12 site) to 13.16 ± 2.31 mm (at the AP3/ML12 site). The palatal bone thickness was greatest in the anterior region, and decreased toward the posterior region. The palatal bone thicknesses at almost all AP sites along the ML12 section in the Class I open bite group were less than those in the Class I normal bite group, except for the AP3/ML12 site. There were significant differences between both groups at the AP15 to AP18 sites along the ML12 section. Along the ML12 section, the palatal bone thicknesses at the AP3 to AP15 sites in the Class I normal bite group, and those at the AP3 to AP12 sites in the Class I open bite group were greater than 5.0 mm (Table 4.5).

Table 4.5 Palatal bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 12 (ML12) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML12	AP3	12.56	4.11	13.16	2.31	-0.60	0.545
	AP6	11.28	3.20	11.12	2.44	0.16	0.852
	AP9	8.01	2.71	7.21	2.90	0.80	0.305
	AP12	6.91	2.96	5.84	2.42	1.07	0.136
	AP15	5.69	2.04	4.53	2.11	1.16	0.037*
	AP18	4.78	1.65	3.51	1.92	1.27	0.008**

Table 4.5 (Continued)

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
	AP21	3.88	1.73	3.58	1.64	0.30	<i>0.491</i>
	AP24	2.92	1.84	2.49	1.43	0.43	<i>0.316</i>

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^c Significance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal bone thicknesses in the Class I normal bite group ranged from 2.16 ± 1.03 (at the AP24/ML9 site) to 12.56 ± 4.11 mm (at the AP3/ML12 site). The palatal bone thicknesses were equal to or greater than 5.0 mm at all AP sites along both the ML0 and ML3 sections, but only at the AP3 to AP9 sites along the ML6 and ML9 sections, and at the AP3 to AP15 sites along the ML12 section (Figure 4.1).

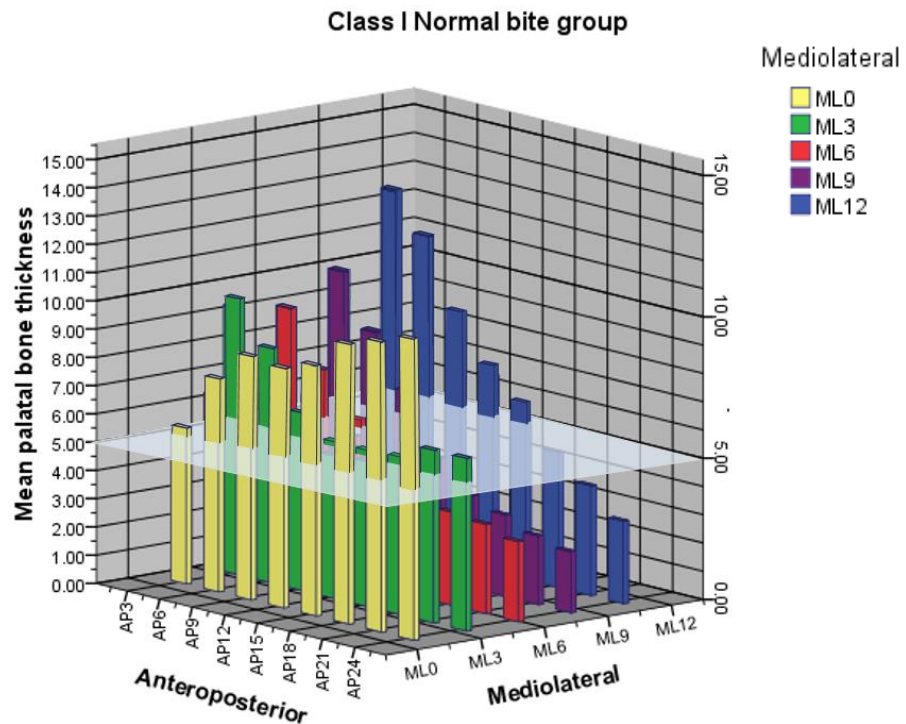


Figure 4.1 Combined plots of average palatal bone thickness at various sites in the Class I normal bite group. The white, translucent plane is inserted at the 5.0 mm level of palatal bone thickness, revealing the sites where the average palatal bone thickness was equal to or greater than 5.0 mm.

The palatal bone thicknesses in the Class I open bite group ranged from 1.87 ± 1.11 (at the AP24/ML9 site) to 13.16 ± 2.31 mm (at the AP3/ML12 site). The palatal bone thicknesses were equal to or greater than 5.0 mm at all AP sites along the ML0 section, but only at the AP3 to AP6 sites along the ML3, ML6, and ML9 sections, and at the AP3 to AP12 sites along the ML12 section (Figure 4.2).

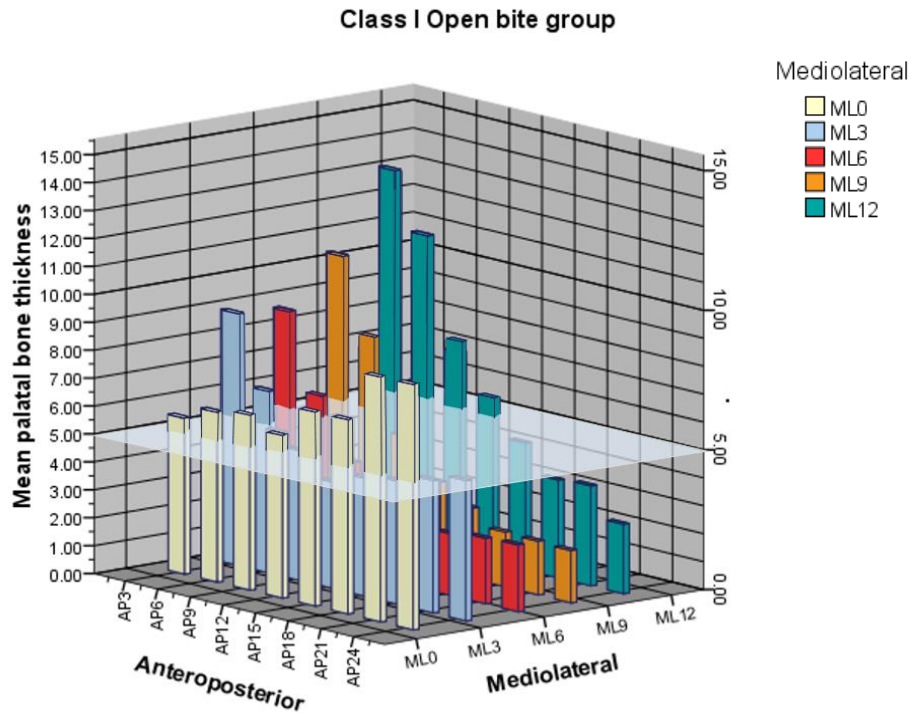


Figure 4.2 Combined plots of average palatal bone thickness at various sites in the Class I open bite group. The white, translucent plane is inserted at the 5.0 mm level of palatal bone thickness, revealing the sites where the average palatal bone thickness was equal to or greater than 5.0 mm.

4.2 Palatal cortical bone thickness

The means, standard deviations and comparisons of the palatal cortical bone thickness of the Class I normal bite and open bite groups are shown in Tables 4.6-4.10. Combined plots of the palatal cortical bone thickness of both groups are shown in Figures 4.3 and 4.4.

The palatal cortical bone thicknesses along the ML0 section in the Class I normal bite group ranged from 2.20 ± 1.59 (at the AP3/ML0 site) to 2.88 ± 0.95 mm (at the AP24/ML0 site), and those in the Class I open bite group ranged from 1.79 ± 0.64 (at the AP6/ML0 site) to 2.56 ± 1.41 mm (at the AP24/ML0 site). The palatal cortical bone thicknesses increased toward the posterior region. The palatal cortical bone thicknesses at all AP sites along the ML0 section in both groups were greater than 1.0 mm. The

palatal cortical bone thicknesses at all AP sites along the ML0 section in the Class I open bite group were less than those in the Class I normal bite group (Table 4.6).

Table 4.6 Palatal cortic albone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 0 (ML0) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML0	AP3	2.20	1.59	2.08	0.78	0.47	0.795
	AP6	2.34	0.22	1.79	0.64	0.36	0.136
	AP9	2.24	0.85	2.05	0.81	0.31	0.550
	AP12	2.33	1.32	2.26	0.84	0.41	0.874
	AP15	2.50	1.17	2.02	0.72	0.36	0.197
	AP18	2.67	1.46	2.19	0.94	0.46	0.305
	AP21	2.48	1.14	2.20	1.10	0.42	0.517
	AP24	2.88	0.95	2.56	1.41	0.45	0.477

^aAP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal cortical bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal cortical bone thicknesses along the ML3 section in the Class I normal bite group ranged from 1.81 ± 0.70 (at the AP9/ML3 site) to 2.62 ± 1.10 mm (at the AP24/ML3 site), and those in the Class I open bite group ranged from 1.61 ± 0.60 (at the AP12/ML3 site) to 2.28 ± 1.10 mm (at the AP24/ML3 site). The palatal cortical bone thickness was great in the anterior region, decreased in the middle region and then

increased toward the posterior region. The palatal cortical bone thicknesses at all AP sites along the ML3 section in both groups were greater than 1.0 mm. The palatal cortical bone thicknesses at almost all AP sites along the ML3 section in the Class I open bite group were less than those in the Class I normal bite group, except for the AP3/ML3 site. However, there was no statistical difference between the two groups (Table 4.7).

Table 4.7 Palatal cortical bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 3 (ML3) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML3	AP3	2.08	0.71	2.09	0.54	-0.01	0.963
	AP6	1.86	0.71	1.80	0.51	0.07	0.674
	AP9	1.81	0.70	1.67	0.50	0.15	0.370
	AP12	1.89	0.76	1.61	0.60	0.28	0.125
	AP15	2.23	1.07	1.88	0.88	0.34	0.183
	AP18	2.27	1.06	2.01	0.90	0.26	0.315
	AP21	2.56	1.13	2.12	0.92	0.44	0.102
AP24	2.62	1.10	2.28	1.10	0.35	0.226	

^aAP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^bDifference between groups was derived from the palatal cortical bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal cortical bone thicknesses along the ML6 section in the Class I normal bite group ranged from 1.55 ± 0.86 (at the AP24/ML6 site) to 2.28 ± 1.50 mm (at the AP12/ML6 site), and those in the Class I open bite group ranged from 1.27 ± 0.40 (at the AP21/ML6 site) to 2.06 ± 1.49 mm (at the AP12/ML6 site). The palatal cortical bone thicknesses at all AP sites along the ML6 section in both groups were greater than 1.0 mm. The palatal cortical bone thicknesses at almost all AP sites along the ML6 section in the Class I open bite group were less than those in the Class I normal bite group, except for AP24/ML6 site. There were significant differences between the two groups at the AP6, AP18 and AP21 sites along the ML6 section (Table 4.8).

Table 4.8 Palatal cortical bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 6 (ML6) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML6	AP3	1.96	0.57	1.88	0.52	0.08	0.570
	AP6	2.06	0.60	1.65	0.54	0.41	0.007**
	AP9	1.72	0.53	1.48	0.52	0.24	0.085
	AP12	2.28	1.50	2.06	1.49	0.22	0.567
	AP15	1.78	0.65	1.76	0.91	0.02	0.904
	AP18	1.88	0.69	1.32	0.61	0.56	0.001**
	AP21	1.67	0.95	1.27	0.40	0.39	0.041*

Table 4.8 (Continued)

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
	AP24	1.55	0.86	1.66	0.59	-0.10	0.595

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal cortical bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^c Significance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal cortical bone thicknesses along the ML9 section in the Class I normal bite group ranged from 1.24 ± 0.42 (at the AP24/ML9 site) to 1.94 ± 0.57 mm (at the AP6/ML9 site), and those in the Class I open bite group ranged from 1.40 ± 0.52 (at the AP24/ML9 site) to 1.85 ± 0.34 mm (at the AP3/ML9 site). The palatal cortical bone thickness decreased toward the posterior region. The palatal cortical bone thicknesses at all AP sites along the ML9 section in both groups were greater than 1.0 mm. The palatal cortical bone thicknesses at almost all AP sites along the ML9 section in the Class I open bite group were less than those in the Class I normal bite group, except for the AP15, AP21, and AP24 sites. There were significant differences between the two groups at the AP6 site along the ML9 section (Table 4.9).

Table 4.9 Palatal cortical bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 9 (ML9) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML9	AP3	1.92	0.58	1.85	0.34	0.07	0.591
	AP6	1.94	0.57	1.55	0.32	0.39	0.002**
	AP9	1.54	0.38	1.49	0.44	0.04	0.685
	AP12	1.68	0.67	1.62	0.72	0.06	0.759
	AP15	1.58	0.62	1.70	0.78	-0.13	0.491
	AP18	1.64	0.62	1.52	0.65	0.12	0.482
	AP21	1.33	0.57	1.44	0.43	-0.11	0.415
	AP24	1.24	0.42	1.40	0.52	-0.16	0.206

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittalplane.

^b Difference between groups was derived from the palatal cortical bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal cortical bone thicknesses along the ML12 section in the Class I normal bite group ranged from 1.32 ± 0.63 (at the AP24/ML12 site) to 2.77 ± 0.80 mm (at the AP3/ML12 site), and those in the Class I open bite group ranged from 1.50 ± 0.44 (at the AP21/ML12 site) to 2.90 ± 0.63 mm (at the AP3/ML12 site). The palatal cortical bone thicknesses decreased toward the posterior region. The palatal cortical bone thicknesses at all AP sites along the ML12 section in both groups were greater than 1.0 mm. The palatal cortical bone thicknesses at AP sites along the ML12 section in the Class I open bite group were less than those in the Class I normal bite group, except for

the AP3, and at the AP15 to AP24 sites. There were significant differences between the two groups at AP6/ML12 site (Table 4.10).

Table 4.10 Palatal cortical bone thicknesses (mm) at each anteroposterior (AP) site along the mediolateral 12 (ML12) section in the Class I normal bite and Class I open bite groups^a

ML section	AP sites	Class I normal bite		Class I open bite		Difference between groups ^b	
		Mean	SD	Mean	SD	Mean	<i>P</i> value ^c
ML12	AP3	2.77	0.80	2.90	0.63	-0.13	0.503
	AP6	2.76	0.88	2.15	0.73	0.61	0.005**
	AP9	2.08	0.70	1.89	0.63	0.19	0.276
	AP12	1.91	0.66	1.71	0.63	0.20	0.233
	AP15	1.64	0.61	1.65	0.63	-0.01	0.950
	AP18	1.41	0.55	1.55	0.62	-0.14	0.365
	AP21	1.41	0.63	1.50	0.44	-0.10	0.475
	AP24	1.32	0.63	1.62	0.66	-0.29	0.086

^a AP (Anteroposterior) sites represent posterior distances of 3, 6, 9, 12, 15, 18, 21, and 24 mm from the distal bony margin of the incisive foramen along the incisive foramen-PNS reference line. ML (Mediolateral) sections represent lateral distances from the midsagittal plane.

^b Difference between groups was derived from the palatal cortical bone thickness of the Class I normal bite group minus that of the Class I open bite group.

^cSignificance levels: * $P < 0.05$; ** $P < 0.01$.

The palatal cortical bone thicknesses in the Class I normal bite group ranged from 1.24 ± 0.42 (at the AP24/ML9 site) to 2.88 ± 0.95 mm (at the AP24/ML0 site). The palatal cortical bone thicknesses at all AP/ML sites in the Class I normal bite group were equal to or greater than 1.0 mm (Figure 4.3).

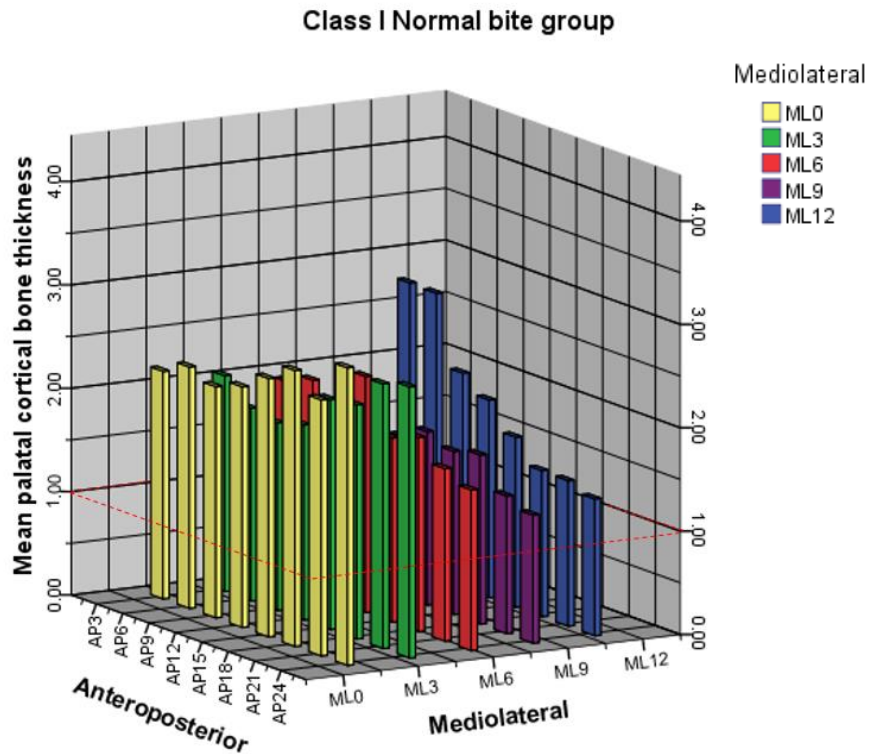


Figure 4.3 Combined plots of average palatal cortical bone thickness at various sites in the Class I normal bite group. The red dash lines are inserted at the 1.0 mm level of palatal cortical bone thickness, revealing the sites where the average palatal cortical bone thickness was equal to or greater than 1.0 mm.

The palatal cortical bone thicknesses in the Class I open bite group ranged from 1.27 ± 0.40 (at the AP21/ML6 site) to 2.90 ± 0.63 mm (at the AP3/ML12 site). The palatal cortical bone thicknesses at all AP/ML sites in the Class I open bite group were equal to or greater than 1.0 mm (Figure 4.4).

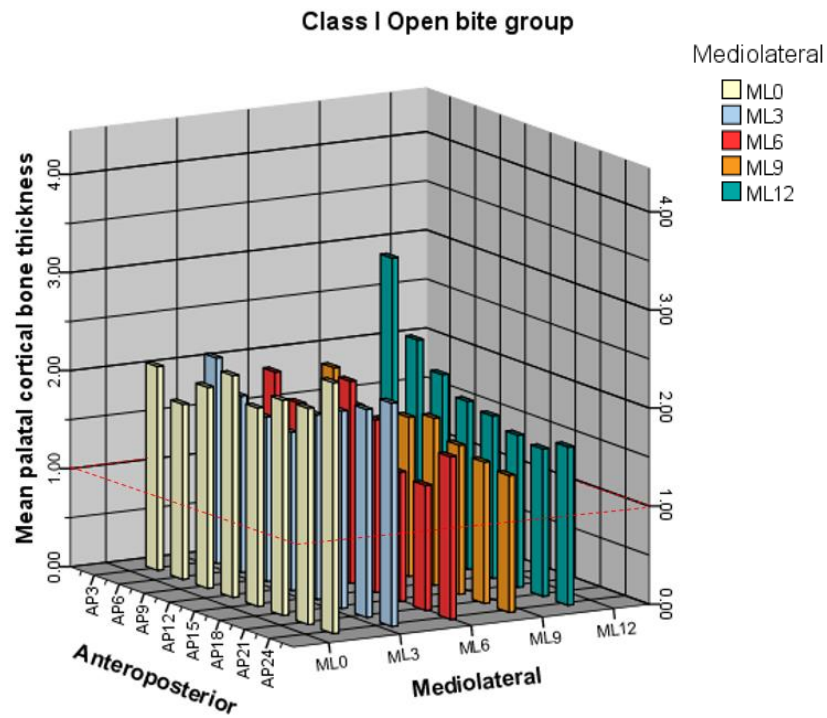


Figure 4.4 Combined plots of average palatal cortical bone thickness at various sites in the Class I open bite group. The red dash lines are inserted at the 1.0 mm level of palatal cortical bone thickness, revealing the sites where the average palatal cortical bone thickness was equal to or greater than 1.0 mm.