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FACIAL SOFT TISSUE EFFECTS OF A DISTALIZING APPLIANCE

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Objectives: To quantitatively compare the soft tissue effects observed in patients treated with a molar distalizing appliance that exhibit either brachycephalic, mesocephalic, or dolichocephalic facial patterns.

Subjects and Methods: A retrospective chart review consisting of 80 subjects with Class II malocclusions where subjects were categorized into three growth types based on their pre-treatment cephalometric variables (MPA, Y-axis); 20 brachycephalic, 40 mesocephalic, and 20 dolichocephalic were all treated with a X-bow appliance (manufacturer). Bolton growth predictions of 30% of the sample served as the control group. Data was compiled using digital cephalometric analysis on the pre-treatment (T0) and post-treatment (T1) radiographs. A one way ANOVA test was used to investigate the differences between the three facial groups at T0 and T1 time points.

Results: Soft tissue effects induced by the appliance during Class II correction included; reduction of soft tissue convexity ($2.1-2.6 \pm 0.6$ $p < 0.05$), increase in the mentolabial angle ($8.0-13.9 \pm 0.3$ $p < 0.05$), increased distance of Rickett's E plane to upper ($0.8\text{mm}-1.0\text{mm} \pm 0.13\text{mm}$ $p < 0.05$) and lower lip ($0.3\text{mm}-0.4\text{mm} \pm 0.1\text{mm}$ $p < 0.05$). Mesocephalics were found to have significantly greater reduction in soft tissue convexity, increase in the mentolabial angle, and increase in the distance of Rickett's E plane to upper and lower lip, than dolichocephalics ($p < 0.05$). Mesocephalics were also observed to have significantly increased distance of Rickett's E plane to upper and lower lip than brachycephalics ($p < 0.05$).

Conclusions: Soft tissue effects observed appear mainly due to retroclination of the upper incisor (retrusion of upper lip including subnasale, lower lip, and increased mentolabial angle). Differences between facial patterns, although statistically significant in regards to soft tissue effects observed, may not be clinically significant. Nevertheless, clinicians should be aware of appliance induced effects.