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The sagittal soft-tissue changes of the lower lip and chin associated with surgical maxillary impaction and consequent mandibular autorotation

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DECLARATION

I, Beata Katarzyna Ksiezycki-Ostoya, declare that this research report is my own work. It is being submitted for the degree of Master of Dentistry in the branch of Orthodontics of the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

_____

B. K. Ksiezycki-Ostoya

_____ day of _____ , 2004

DEDICATION

This research is dedicated to my family, for their encouragement, unselfish support, patience and love, without which none of this would have been possible.

ABSTRACT

This study assessed the sagittal soft-tissue changes of the lower lip and chin area in 22 patients subsequent to mandibular autorotation following surgical vertical impaction of the maxilla. A subgroup of six patients in addition had undergone advancement genioplasty procedures.

Lateral cephalometric radiographs were taken immediately prior to surgery and on average 15 months following surgery. Sixteen cephalometric landmarks were identified on each radiograph and these were digitized using a Kontron Videoplan Image Analysis System to enable differences reflecting changes to be assessed.

The comparison between those cases that had had maxillary elevation only and the six cases that had received additional advancement genioplasty procedures revealed statistically significant differences in relation to the proportional changes in the chin area. Therefore, when studying the soft-tissue chin changes following mandibular autorotation, these six patients were excluded from the sample. It was found that there was no significant difference in the lower lip response between the two groups and therefore when studying the lower lip changes, the two groups could be pooled.

The soft-tissue changes in the chin area showed statistically and clinically significant correlations. In the horizontal plane, a ratio of 0.9:1 was found for the changes between sulcus inferior and point B, between soft-tissue pogonion and hard-tissue pogonion, and between soft-tissue gnathion and hard-tissue gnathion. In the vertical dimension, soft-tissue gnathion

followed hard-tissue gnathion in a ratio of 0.9:1, whereas soft-tissue menton followed hard-tissue menton in a ratio of 1:1.

In the study of the lower lip response, a significant correlation with a ratio of 1:1 existed for the horizontal change in the lower lip as measured at labrale inferius relative to both lower incisor tip and lower incisor anterius. In the vertical dimension, stomion inferius followed lower incisor anterius in a ratio of 1.3:1, while labrale inferius followed lower incisor anterius in a ratio of 1.5:1.

Multiple regression analyses revealed that presurgical tissue thickness exerted no influence upon the strength of the correlations between changes expressed at corresponding soft- and hard-tissue landmarks located in the lower lip and soft-tissue chin area.

Based on the findings of this study, it is suggested that the soft-tissue to hard-tissue ratios may be applied to prediction tracings with enhanced confidence. As a result, the tracings will reflect a more accurate prediction of the lower lip and soft-tissue chin positions following autorotation of the mandible.

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