Soft Tissue Response to Wunderer and Le Fort I Osteotomies in non-cleft patients

Maxillary deformities can be surgically corrected by either Le Fort I or Wunderer osteotomies.

**Objective:** To compare the lip-nose profile and lip thickness changes following Wunderer and Le Fort I osteotomies in non-cleft patients

**Method:** A total of 173 patients (81 Wunderer and 92 Le Fort I) were studied retrospectively. The hard tissue movements and soft tissue profile changes were analyzed cephalometrically based on 19 linear and angular measurements.

**Results:** When comparing the soft tissue response to hard tissue movements between the Wunderer and Le Fort I osteotomies, A-point forms a more consistent landmark than the upper incisor tip. The anterior maxillary dentoalveolus tends to rotate in a clockwise direction resulting in uprighting and setback of the U1 but advancement of the maxilla at A-point in Wunderer osteotomies, whereas the dentoalveolus at U1 and A-point moves coherently in Le Fort I osteotomies. The lower portion of the upper incisor tip has been found to be the strongest determinant of upper lip changes. Correlation studies and linear regression confirmed that the labrale superius and stomiom superius are the two soft tissue parameters most affected by movement of the upper incisor tip, with these two parameters more strongly correlated with the Wunderer than the Le Fort I osteotomy. The Wunderer osteotomy resulted in less post-operative decrease in lip thickness from maxillary advancement when compared to a Le Fort I osteotomy. However, maxillary setback, impaction and downgrafting can increase the lip thickness in Wunderer osteotomies, whereas the lip thickness decreases in the Le Fort I osteotomies with these movements.

**Conclusion:** The differences in soft tissue to hard tissue ratios and changes in lip thickness between the Wunderer and Le Fort I osteotomies should be taken into account during treatment planning.
Soft Tissue Response to Wunderer and Le Fort I Osteotomies in Cleft Lip and Palate Patients

Objective: To compare the labial and nasal response to the hard tissue movement and lip thickness changes of Wunderer and Le Fort I osteotomies in cleft lip and palate patients (CLP).

Method: A total of 55 patients (13 Wunderer and 42 Le Fort I) were investigated retrospectively. The hard tissue movements and soft tissue profile changes were analyzed cephalometrically based on 19 linear and angular measurements.

Results: Wunderer and Le Fort I osteotomies produces similar soft tissue response to hard tissue movements in different maxillary movements. The most important determinant of the upper labial changes for both osteotomies is the movement of the upper incisor tip. There are no long term differences in the lip thickness changes between Wunderer and Le Fort I osteotomy. However, the nasolabial angle reduction is expected to be less with advancement of the Wunderer than Le Fort I osteotomies. The ratios of lip nose response to hard tissue movement in CLP patients tend to increase with time up to 2 post-operative years and the movement of A-point to subnasale yields the highest ratios.

Conclusions: The soft tissue to hard tissue movements are much more significantly correlated in the Le Fort I group than the Wunderer group, resulting in more reliability in predicting the soft tissue outcomes from the Le Fort I osteotomy than Wunderer osteotomy.