



**The Impact on Nasal Septal Anatomy and Physiology following Le Fort I Osteotomy for
Orthognathic Surgery**

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Objectives:

Orthognathic surgery utilizing a Le Fort I osteotomy is performed by oral surgeons to correct midface and dental occlusal abnormalities, yet the potential sequelae on sinonasal function has had minimal discussion in the otolaryngologic literature. The objective of this study was to assess the impact on nasal septum anatomy and physiology following Le Fort I osteotomy for maxillary repositioning surgery.

Materials and Methods:

Thirty subjects who previously underwent elective orthognathic surgery with Le Fort I osteotomy were enrolled retrospectively to assess the change in their nasal septal anatomy and nasal breathing. Pre and post-operative computed tomography (CT) scans were used to determine an axial displacement of the septum at four different standardized anatomic sites following the surgery. These objective measurements were then compared to the subject's perception of difficulty breathing via a validated Chronis Sinusitis Survey.

Results:

Comparison of the CTs before and after surgery demonstrated a new deviation of the nasal septum in all thirty subjects, with maximal axial displacements up to 7.22 millimeters (mm) and a mean of 2.64 mm. Angular displacement was calculated using geometric relationships and ranged from minimal to 24-degrees. CTs showed persistence of a new septal perforation in 20% (6/30 subjects) following surgery. CSS-D results demonstrated a mean worsening of nasal breathing scores from 1.4 before surgery to 3.0 eight weeks after surgery ($p < 0.001$).

Conclusions:

Orthognathic surgery utilizing Le Fort I osteotomy may result in persistent nasal septal perforations, new displacement of the nasal septum, and increased perception of nasal dyspnea.