

Technical note

Modified technique of U-shaped segmental osteotomy of the palate in the correction of vertical and transverse maxillary deformities

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Since the work by Bell, various modifications of the segmental Le Fort I osteotomy have been developed^{1,2} and, to the best of our knowledge, the bony cuts of the segmental maxillary osteotomy for the correction of vertical and transverse maxillary deformities are usually made in two different ways: a Y-shape or a U-shape, respectively. In the Y-shaped osteotomy, a sagittal bony cut is made in the midline of the hard palate, where the palatal mucosa is thinnest and the bone thickest. U-shaped cuts, however, are made further from the midline, where the palatal mucosa is thicker and the bone thinner, which can reduce the incidence of oronasal communication or fistula. A U-shaped osteotomy also considerably reduces the tension on the palatal mucosa, and allows for transverse expansion or constriction of the maxilla on a much larger scale than the Y-shaped osteotomy.

Based on the principles of the U-shaped osteotomy, we made a slight modification (Fig. 1). After downfracture of the maxilla by the Le Fort I osteotomy, we make two parallel paramedian cuts on the horizontal plate of the palate bone with a round burr, avoiding injury to the descending palatine artery and palatal mucosa. We then raise the attached gingiva at the site of the interdental cuts along the subperiosteal plane, and cut the vertical bone with a reciprocating saw,



Fig. 1. The modified U-shaped segmental osteotomy of the palate.

taking care to protect the adjacent dental roots. Finally, we extend the superior end of interdental cuts to meet the sagittal palatal cuts at each side. When all osteotomies are completed, we divide the maxilla into three segments (Fig. 2), with the descending palatine artery included in the side component. To allow movement to the planned position, we carefully reduce any bony protrusions on the edges of each segment with a round burr.

Our new method not only has all the advantages of the traditional U-shaped osteotomy, but also divides the maxilla into fewer segments, which improves the blood supply to the cut segment.³ More importantly, there are no cuts across the midline of the hard palate, which may further reduce the

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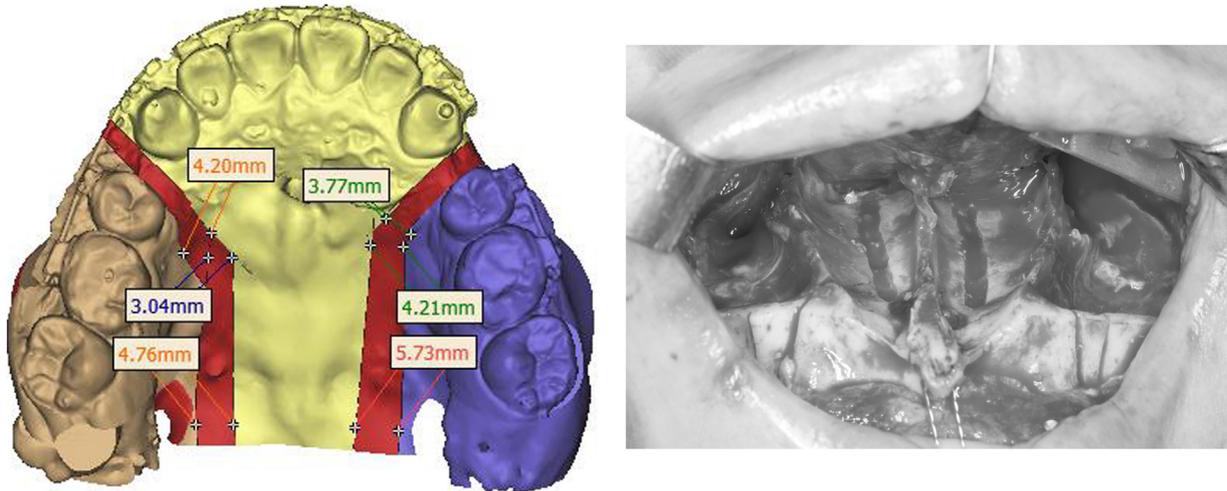


Fig. 2. The Le Fort I osteotomy combined with modified U-shaped osteotomy to treat patients with vertical and transverse maxillary deformities.

risk of oronasal communication or fistula during maxillary segmentation.

In conclusion, we think that when both vertical and transverse maxillary osteotomies are indicated, simultaneous Le Fort I osteotomy and our modified U-shaped palatal segmental osteotomy is feasible for the treatment of these patients.

Ethics statement/confirmation of patients' permission

Ethics approval is not required in our study. The patients' permission was not required.

Conflict of interest

We have no conflicts of interest.

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