

Piezosurgery-assisted Minimally Invasive Surgical Rapid Palatal Expansion

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The Le Fort I osteotomy is generally performed by means of a full-thickness maxillary vestibular incision. The possibility of performing tunnel osteotomy has been described in the literature to limit tissue swelling and widening of nasolabial complex.

The first description of a tunnel approach to perform a maxillary osteotomy was reported by Hall and West in 1976, who recommended two vertical incisions in the pre-molar area. Later, this technique was modified by Tomlak et al in 1984, who added a small median incision to obtain control of the osteotomy at the paralateronasal level.¹ To practice the osteotomy of Le Fort I for surgically-assisted rapid palatal expansion, our technique involves the use of three incisions, one median and two posterior at the level of the premolars. These incisions were then used to perform the soft tissue tunneling procedure.

With the aid of an Aufricht nasal retractor, a routine Le Fort I osteotomy was done first. In all cases, the subtotal Le Fort I osteotomy was performed with pterygoid plate disjunction and the maxillary disjunction itself. Subsequently, the groove below the anterior nasal spine was exposed for the osteotomy of the midline. The whole osteotomy procedure is performed using piezosurgery.

The osteotomy from the paralateronasal wall to the zygomatic-maxillary buttress is performed using a piezosurgery device with a particular straight tip (Mectron, MT8-20L). With the same insert, the osteotomy is then easily extended behind the zygomatic-maxillary buttress.

After the groove between the central incisors below the nasal spine had been identified, using piezosurgery with an angulated tip (Mectron, MT1-10), the vertical osteotomy was performed. Both tips are very thin and allow

for performing precise osteotomies, limiting possible damage to the dental roots. The nasal septum osteotomy was then performed.

Considering that the static and dynamic changes to the facial contour depend on whether the facial muscles are transected or detached from their origin and considering the potentially damaging effect of normal cutting instruments on osteotomies, we have chosen to use this protocol for surgically assisted rapid expansion.^{2,3}

In conclusion, the three incisions with tunnel approach allow for limiting the effects on soft tissues, and the use of piezosurgery allows for limiting the potential damage and negative effects due to traditional cutting tools. The procedure is explained in Figure 1.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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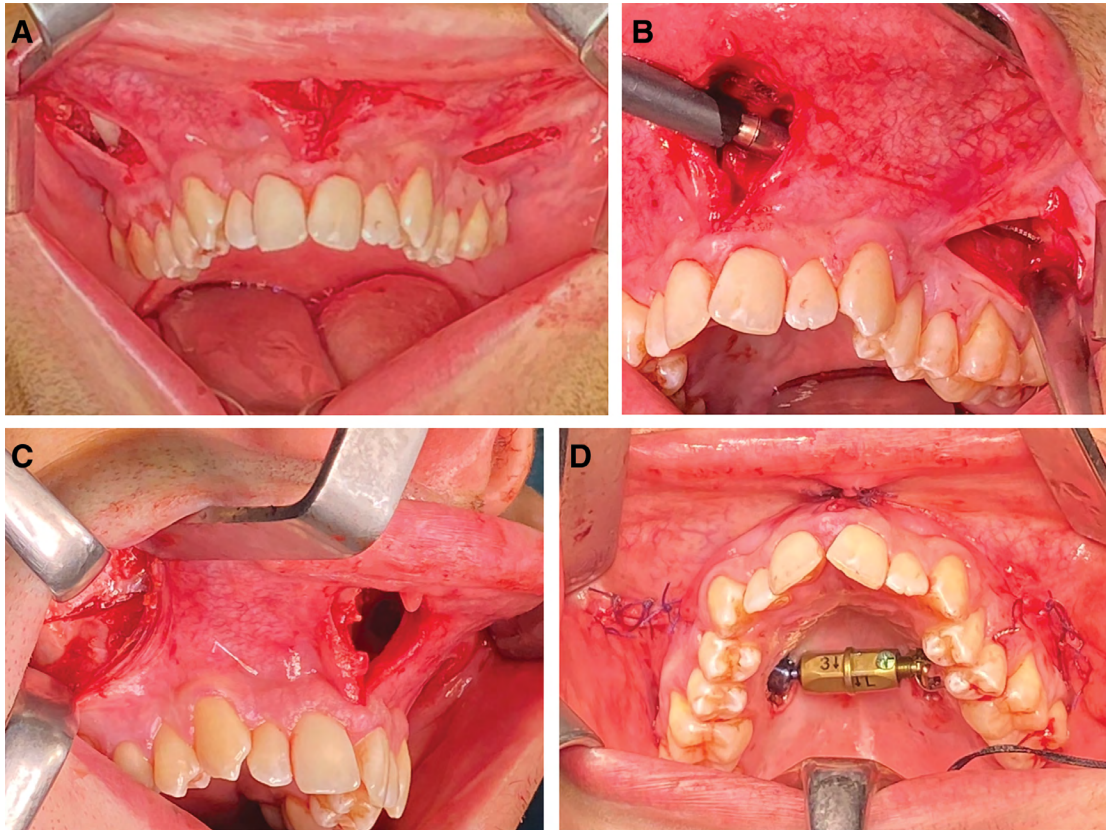


Fig. 1. Tunnel approach using three vertical incisions. A, Use of the MT8-20L piezo tip to perform the maxillary osteotomy. B, A detail of the osteotomy cut through the small posterior incision. C, Positioning of the palatal distractor. D, The suturing of the surgical approaches.