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# The Use of a Tessier Bone Spreader and Wire Inserted at the Base of the Anterior Nasal Spine to Aid Maxillary Advancement after Le Fort I Osteotomy

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#### Abstract

**Objective:** The aim of authors is to present a surgical technique that helps mobilize the maxilla in the three planes of space and maxillary advancement.

**Methods:** This result can be obtained through the combined use of Tessier bone spreader and wire inserted at the base of the anterior nasal spine.

**Results:** This approach is useful in the tridimensional mobilization of the jaw; it allows, further more a better control of the detachment of bone segments.

**Conclusions:** The Le Fort I osteotomy is commonly used in orthognathic surgery to correct the dental-facial deformities. Sometimes it can be difficult to mobilize the jaw after performing the osteotomy. Although in the literature several techniques have been advocated to aid in mobilization of the jaw after running the Le Fort I osteotomy, all apply a unidirectional downward vector of force on the maxilla.

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## Introduction

The Le Fort I osteotomy is one of a wide range of osteotomies that can be used in the context of orthognathic surgery. When combined with the maxillary osteotomy trilogy of downfracture, mobilization and repositioning, it can be used for the surgical correction of dentofacial deformities [1].

Maxillary mobilization can be difficult after completion of osteotomies, in both down fracturing and jaw advancement. The authors present a simple technique in which the Tessier bone spreader and wire inserted at the base of the anterior nasal spine are used as an auxiliary tool in maxilla down fracture movement.

## Methods

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A full-thickness flap was outlined from tooth 13 to tooth 23 (Figure 1). The flap was elevated with the tunnel technique that permits access to the pterygomaxillary area without the need for further cutting of the soft tissue. After performing the Le Fort I osteotomy, including osteotomy of the pterygoid maxillary buttress and the nasal septum from the vomer bone below, through a small osteotome, we drilled a hole at the base of the Anterior Nasal Spine (ANS) through which a stainless steel wire of 1 mm was passed and locked by a Klemmer. Subsequently, the vertical disjunction of the down fracture was carried out. The Tessier bone spreader was positioned between the osteotomized bone walls up to the pterygoid buttress and pressed down. Soft tissue stretching was performed by the use of the Tessier bone spreader held between zygomatic buttress and posterior segment of the maxillary bone, the other hand holding the wire pushed forwards at the ANS (Figure 2). Thus, the advancement of the maxilla in the sagittal plane is rapid and can be completed in approximately 5 min. Finally, the wire was cut and removed after the maxilla had been repositioned and stabilized with plates and screws.

#### Result

The use of this technique improves the distribution of the loading forces that facilitate secure mobilization of the involves simplified instrumentation and maxillary mobilization, while minimizing the risks. The technique provides a quick safe method for the maxilla mobilization.



Figure 1: A full-thickness flap was outlined from tooth 13 to tooth 23.



**Figure 2:** The soft tissue stretching by Tessier bone spreader held between zygomatic buttress and posterior segment of the maxillary bone, the other hand holding the wire pushed forwards at the ANS.

## Conclusion

Despite the procedural simplicity of Le Fort I osteotomy, mobilization of the large advancement of the maxilla (>10 mm of advancement in the sagittal plane of the upper jaw). Few studies in literature have addressed this issue and very few techniques have been described to support mobilization of the upper jaw after the completion of Le Fort I osteotomy [2-4]. **The techniques described are:** 1. Digital pressure; 2. Forceps, spreaders or maxillary expanders; 3. Stainless steel traction wire. Each of these techniques has both its advantages and disadvantages. We believe that by combining these techniques we could improve the outcome of mobilization and advancement of the maxilla [2-4].

The Authors believe that the use of metal wire inserted in the anterior nasal spine is not in itself adequate for advancement of the upper jaw after Fort I osteotomy; fracture of the bone structure that composes the bone hole is often observed when the wire is pulled and as a means of avoiding this, the authors suggest the aid of Tessier bone spreader, which acts as a lever, located behind the jaw, in order to facilitate the task and determine the multidirectional downward vector of force on the maxilla. At the same time, it is true that the use of the wire, placed at the NSA level, helps the maxillary forward movement by reducing the force used by Tessier bone spreader, thus avoiding unwanted fracture extensions.

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