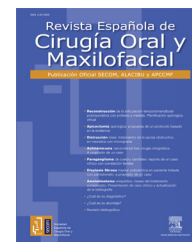




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Original article

**Maxillary advancement in cleft palate patients
 with intraoral distraction** ☆



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ABSTRACT

Introduction: Patients with cleft lip and palate usually present with maxillary hypoplasia. Upper jaw intraoral distraction osteogenesis (DO) is an alternative technique for patients with severe maxillary hypoplasia. An evaluation was made of the changes produced in hard and soft tissues and their stability over time.

Material and methods: Six patients (5 female and 1 male) between 16 and 25 years old with cleft lip and palate underwent maxillary DO with an internal distractor. An evaluation was made of the skeletal and soft tissues changes using cephalometric studies with radiographs and photographs. Follow-up time was between 2 and 8 years.

Results: There was Point A advancement between 3 and 10 mm in 5 patients, significantly improving maxillomandibular relationships. Intraoral DO failed in one patient, and the case was finished using rigid external distraction (RED). In another patient hardly any advancement and maxillary rotation was observed. The relapse observed between 6 and 9 months post DO was between 10 and 15% in both skeletal and soft tissues.

Conclusions: Intraoral DO is a successful alternative technique in maxillary advancement in patients with cleft lip and palate who need an advancement less than 10 mm. It produces improvements in the skeletal and soft profile. Internal devices do not have any psychological impact and have longer consolidation phases. Relapse is difficult to determine and calculate.

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Avance maxilar en pacientes fisurados labio palatinos con distractor intraoral

R E S U M E N

Palabras clave:

Fisura labio palatina
Distractor intraoral
Avance maxilar
Seguimiento a largo plazo

Introducción: Los pacientes fisurados labio palatinos presentan con frecuencia hipoplasia maxilar. La osteogénesis por distracción (DO) de maxilar superior es una técnica alternativa para pacientes con hipoplasia maxilar severa. Se han evaluado los cambios producidos en tejidos duros y blandos y su estabilidad en el tiempo.

Material y métodos: Se ha realizado DO de maxilar a 6 pacientes (5 mujeres y un hombre) fisurados labio palatinos, entre 16-25 años, con un distractor interno. Hemos evaluado mediante trazados cefalométricos en radiografías y fotografías los cambios esqueléticos y en tejidos blandos. El tiempo de seguimiento fue entre 2-8 años.

Resultados: En 5 pacientes el punto A avanza entre 3-10 mm mejorando significativamente las relaciones maxilo-mandibulares. En un paciente fracasa la DO intraoral y se termina el caso con RED; en un paciente se evidencia poco avance y rotación maxilar. La recidiva observada entre 6-9 meses post DO es entre el 10 y el 15% tanto esquelética como en tejidos blandos.

Conclusiones: La DO intraoral es una técnica alternativa exitosa para avance del maxilar en pacientes fisurados labio palatinos que necesiten un avance inferior a 10 mm. Produce mejoras en el perfil esquelético y blando. Los dispositivos internos no producen impacto psicológico. La contención más larga en el tiempo. La recidiva es difícil de definir y calcular.

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Introduction

In cleft palate patients, the development of dentofacial deformities is more frequent than in the general population, as a result of the malformation itself and of the iatrogenic effects of prior interventions. The most frequent alteration consists of maxillary hypoplasia, appearing after closure of the cleft palate. Most series point to 15–25%, although some even reach 50%. Ultimately, they present a class III, with a concave facial morphology due to multidimensional maxillary hypoplasia, with deficiencies frequently in the sagittal, vertical and cross-sectional planes.¹

Over the years, different treatments have been carried out with the objective of achieving a harmonious profile in the face of the cleft palate patient. Thus, for patients still growing, extra-oral forces have been used to correct maxillary retrusion. Once the growth of the facial skeleton was complete, the malocclusion has been treated with osteotomies type Le Fort I, attempting to reposition the maxillary in the sagittal plane and stabilising it with a rigid fixation with or without bone grafts due to its tendency to recurrence. In addition, when the maxillary advancement was over 6 mm, treatments with orthognathic bimaxillary surgery have been carried out.²

Currently, distraction osteogenesis (DO) of upper maxillary is an alternative technique for treatment of cleft palate patients with severe maxillary hypoplasia.

Since 1992, when McCarthy published the first work on distraction of craniofacial deformities, numerous articles of middle facial distraction with different types of devices have been published.

In 1997, Polley and Figueroa³ described a new DO technique for patients with severe maxillary hypoplasia using a midfacial, external, adjustable and rigid distractor. In 1998, Molina and Ortiz Monasterio⁴ published the positive results obtained in cleft palate patients with severe maxillary hypoplasia in mixed dentition phase, using a facial mask with intraoral arch after an incomplete Le Fort I-type osteotomy.

There are several publications describing postoperative changes to hard tissues in patients who have been treated with maxillary DO. However, there are not that many on changes caused to the soft profile of these patients subjected to the same treatment.

The purpose of this study is to assess the skeletal changes and the soft profile after maxillary distraction in adult, cleft palate patients and their stability over time.

Material and methods

Between the years 2005 and 2009, bone distraction was performed on 6 adult patients (5 women and one man) with an age-range between 16 and 25 years. Four patients presented complete unilateral cleft lip and palate, one presented only cleft palate, and the other presented a complete bilateral cleft lip and palate. All of them had undergone secondary alveoloplasty between the ages of 10 and 15 with the aim of closing the oronasal fistula, stabilising the bone segments, favouring tooth eruption, and, above all, having a continuous maxillary arch in order to carry out maxillary distraction (Table 1). All patients had severe maxillary hypoplasia, with Angle class III malocclusion (Fig. 1). In some cases, they also presented cross-sectional collapse of the alveolar arch, dental anomalies, scars

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