



# Treatment of bilateral cleft lip and palate with maxillary collapse sequelae. Case report

## *Atención de secuelas de labio paladar hendido bilateral con colapso maxilar. Caso clínico*

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### ABSTRACT

Case report of an 11-year-old female patient with bilateral cleft lip and palate sequelae complete on the left side, incomplete on the right side with absence of upper lateral incisors and enamel hypoplasia on tooth #21. Treatment objectives were: to achieve functional occlusion, improve facial and dental esthetics, improve her quality of life by encouraging her self-esteem. An orthodontic treatment was performed with the use of 0.022 Roth brackets and with the extraction of lower first bicuspids as well as the remaining temporary teeth. Vertical elastics were used to settle the bite. At the age of 16 a removable denture was used to rehabilitate the area of the missing upper lateral incisors and to place a restoration on tooth #21. Surgery was performed to place a bone graft on teeth 12 and 22. Once growth has ceased dental implants will be placed. A lower fixed and an upper circumferential retainer was used.

**Key words:** Cleft lip and palate, multidisciplinary attention, autogenous bone graft.

**Palabras clave:** Labio y paladar hendido, atención multidisciplinaria, injerto óseo autólogo.

### RESUMEN

Paciente femenino de 11 años de edad, con secuela de labio y paladar hendido bilateral completo de lado izquierdo e incompleto de lado derecho, ausencia de incisivos laterales superiores e hipoplasia del esmalte en el diente 21. Los objetivos del tratamiento fueron lograr una oclusión funcional, mejorar la estética dental y facial, elevar su calidad de vida; favoreciendo de esta forma su autoestima. Se realizó un tratamiento ortodóncico con aparatología Roth ranura .022, se hicieron extracciones de primeros premolares inferiores así como de los dientes temporales que se encontraban presentes. Se utilizaron elásticos verticales cortos para asentar mordida y a los 16 años de edad se remitió al Departamento de Prótesis donde se le realizó una prótesis transicional removible para rehabilitar el área de incisivos laterales ausentes y se restauró el diente número 21. El Departamento de Cirugía se encargó de colocar un injerto óseo autólogo en la zona de los dientes de 12 y 22 para la posterior colocación de implantes dentales una vez que haya cesado su crecimiento. Se utilizó retención fija inferior y retenedor tipo circumferencial superior estético.

### INTRODUCTION

Lip and palatal fissures constitute one of the congenital malformations that most frequently affect facial structures of the human being. Due to their location, they constitute an important biological and psychological problem that has repercussions on the family and in the social environment.<sup>1</sup>

Naso-labial-alveolar-palatal fissure is the name of the congenital craniofacial malformations produced by embryologic defects during the formation of the face. Its degree of severity focuses on certain areas of the facial complex, especially the upper lip, the premaxilla, hard palate and the floor of the nasal fossa.<sup>2</sup>

These fissures occur when the elements of the upper lip and the left and right palatal segments, do not merge within the first nine weeks of intrauterine life, being the sixth week the one with the higher risk.<sup>1</sup>

Fissures may have a genetic cause or develop through the action of teratogenic agents or illnesses contracted by the mother during pregnancy. Environmental factors also contribute to the development and expression of this malformation.<sup>3</sup>

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One of the most commonly used classifications is that of the WHO which uses a decimal system to describe the categories of the fissures and the classification of Kernahan and Stark in which a diagram is used in form of a «Y» in order to depict the anatomical organs to diagnose.<sup>4</sup>

The incidence of CLP in Mexico, according to Armendares and Lisker, is rated at 1.39 cases per 1,000 births live births.<sup>5</sup> According to the Single Information System for Epidemiological Surveillance (SUIVE), in Baja California there were an average of 18.7 new cases per year during the period from 2003 to 2006.<sup>6</sup>

Due to the complexity of the malformation, a multidisciplinary rehabilitation approach is required which involves several health areas. To mention a few there is Pediatrics, Otorhinolaryngology, Psychology, Phoniatory, and Plastic Surgery as well as those of the dental area such as Maxillofacial Surgery, Periodontics, Prosthodontics, Maxillofacial Prosthetics and Orthodontics which coordinates along with Maxillofacial Surgery the surgical times for graft placement.

In 1961 it was reported for the first time in the English literature the closure of a nasoalveolar fistula described by Boyne and Sands, who showed that the development of the maxilla could be further enhanced if bone grafts were performed in the appropriate stages. They described four ideal stages for graft placement and nasoalveolar fistula closure.<sup>7</sup>

#### 1. Primary bone graft

It is performed during the first months of life, and consists in placing the graft in the cleft site. Nowadays, if used, it should be combined with maxillary orthopedics.

#### 2. Early secondary bone graft

This procedure is performed before the eruption of the permanent teeth between the ages of five to eight years. The main advantage is that it produces a bony guide for the eruption of the lateral incisor and canine if they are present.

#### 3. Secondary bone graft

This bone graft is performed in the mixed dentition, between the age of eight and 12 years in conjunction with orthodontics to bring the maxillary segments closer before surgery. Ideally, grafting should be performed when the canine root is located  $\frac{1}{2}$  to  $\frac{3}{4}$  from its complete development.

#### 4. Late secondary graft

It is performed when the permanent dentition is already present in order to give continuity to the alveolar ridge and favor rehabilitation.

According to their composition grafts are classified into:

**Allograft:** compounds of tissues taken from an individual of the same species but genetically different.

**Xenograft:** compounds of tissue taken from a donor of another species.

**Alloplastic:** synthetic and/or natural, such as hydroxyapatite.

**Autograft:** it is composed of tissue taken from the same individual.

An autograft may be obtained from extraoral areas such as the iliac crest, tibia, rib and calvarium; as well as from intraoral sites such as the maxillary tuberosity, zygomatic bone, mandibular ramus and mandibular symphysis;<sup>8</sup> which is a donor area with easy access.

Chin characteristics make it an ideal material for increasing the transverse dimension of the alveolar crest, especially in the maxilla and posterior areas of the mandible, and even more so if implants are going to be placed.<sup>9</sup>

Within the biological advantages of chin bone grafts, the following may be highlighted:

1. Medullary bone provides osteoinductive properties, while the cortical serves as a biological membrane to provide osteoconductive properties.<sup>9</sup>
2. Cortico-membranous bone is re-vascularizes faster than thicker spongy grafts.<sup>9</sup>
3. They allow greater capacity for bone regeneration.<sup>9</sup>
4. They have a slower resorption capacity, compared to other autogenous bone grafts, thus promoting long-term bone regeneration.<sup>9</sup>

#### CASE PRESENTATION

Female patient, 12 years of age, who attended the Orthodontics Post-graduate Program of the UABC, Mexicali -The reason for consultation was; «I have non-aligned teeth». Routine studies were requested. Upon clinical examination an asymmetric, oval-faced, dolichofacial patient is noted; convex profile, retrusive chin, slightly increased lower third, a sequel scar of a bilateral lip cleft, thick lips and a hypoplastic and flattened alar cartilage and short columella (*Figure 1*).

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