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DENTAL MANAGEMENT OF PATIENTS WITH CLEFT LIP/PALATE: ABOUT TWO CASES

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Abstract

Introduction

Orofacial Cleft Lip/Palate (CL/P) is the most common of craniofacial congenital deformities with a global prevalence of 1.5 in 1000 births and a multifactorial etiology. These congenital defects are usually associated with oro-dental abnormalities and oro-facial function disorders, which makes them a complex problem to manage.

Observation

Two clinical cases presented in this article illustrate some aspects of the dental care of children with CL/P. The first case involved an 8-day-old infant with Cleft Lip and Palate, presented to the Department of Pediatric Dentistry and Prevention at the University Hospital of RABTA in Tunis. An obturator plate was designed for this newborn to overcome the feeding problem. The second case describes the use of a Quad helix appliance in a seven-year-old boy with Cleft Lip and Palate sequela, presented to the Department of Pediatric dentistry and Prevention at the dental clinic of Monastir, for a transversal expansion.

Discussion

The Management of CL/P follows a multidisciplinary approach. The pediatric dentist plays a crucial role in creating an appropriate treatment plan for oral health and general nutrition. This latter contributes to maintaining the gums and dentition in good health, and monitoring craniofacial growth and development as well as correcting dental occlusion for an optimal and proper function and appearance.

Keywords:
Clefts, newborns, dental anomalies, feeding obturator, transversal expansion.

Introduction

Cleft lip/Palate (CL/P) present the second most common congenital craniofacial malformation (1, 2). These deformities are the result of a failure of migration or fusion involving craniofacial skeletal structures, hard and soft tissues of the oral cavity (1). These events occur during the embryogenic period of intrauterine development at the fourth developmental stage (3). The etiology of clefts is widely recognized as multifactorial (1), with both genetic and environmental factors playing roles in its onset (3). Globally, the incidence of orofacial clefts is approximately 1.5 per 1000 live births, though this rate varies depending on geographic region, ethnicity, and the specific type of cleft (3). No studies have assessed the incidence of this malformation in Tunisia. However, a study conducted in Egypt in 2011 reported a prevalence rate of 0.3% (4). CL/P tends to affect females more frequently than males (3). These deformities may occur as isolated defects or in combination with other anomalies. In many cases, these clefts are associated with syndromic conditions (3). Managing the oral health of children with CL/P presents unique challenges due to the complexity of these anomalies and their associated dental issues. The aim of this paper is to underscore the role of the pediatric dentist in the comprehensive dental care of children with CL/P, illustrated through two clinical case presentations.

Observation

Case 1:

An 8-day-old newborn girl (A.H.) was referred to the Department of Pedodontics and Preventive Dentistry at University Hospital RABTA, Tunis, with a chief complaint of feeding difficulties and nasal regurgitation during breastfeeding. The medical history of both the infant and her parents was noncontributory.

Extraoral examination revealed a defect involving the lip and alveolus. Intraoral examination showed a cleft affecting both the soft and hard palates, as well as the alveolar process, classified as Class IV according to the Veau classification system (Fig. 1a and 1b). The patient exhibited significant feeding challenges, including nasal regurgitation during both breastfeeding and bottle-feeding.

A cheiloplasty is planned at 6 months of age. In the interim, the therapeutic approach involves the fabrication of a palatal obturator.

The first step consisted of taking a primary impression using a custom impression tray, which was fabricated from a dental stone model of a previous patient. The tray material used was either modeling wax or self-curing acrylic resin (Fig. 1c and 1d).

The next step involved taking a secondary impression using alginate. A final stone model was then fabricated, serving as the basis for constructing the palatal obturator, also referred to as a feeding plate, using auto-polymerizing acrylic resin (Fig. 1e and 1f). The appliance was placed in the infant's oral cavity with the aid of an adhesive cream (Fig. 1g and 1h), allowing successful feeding to take place (Fig. 1i).

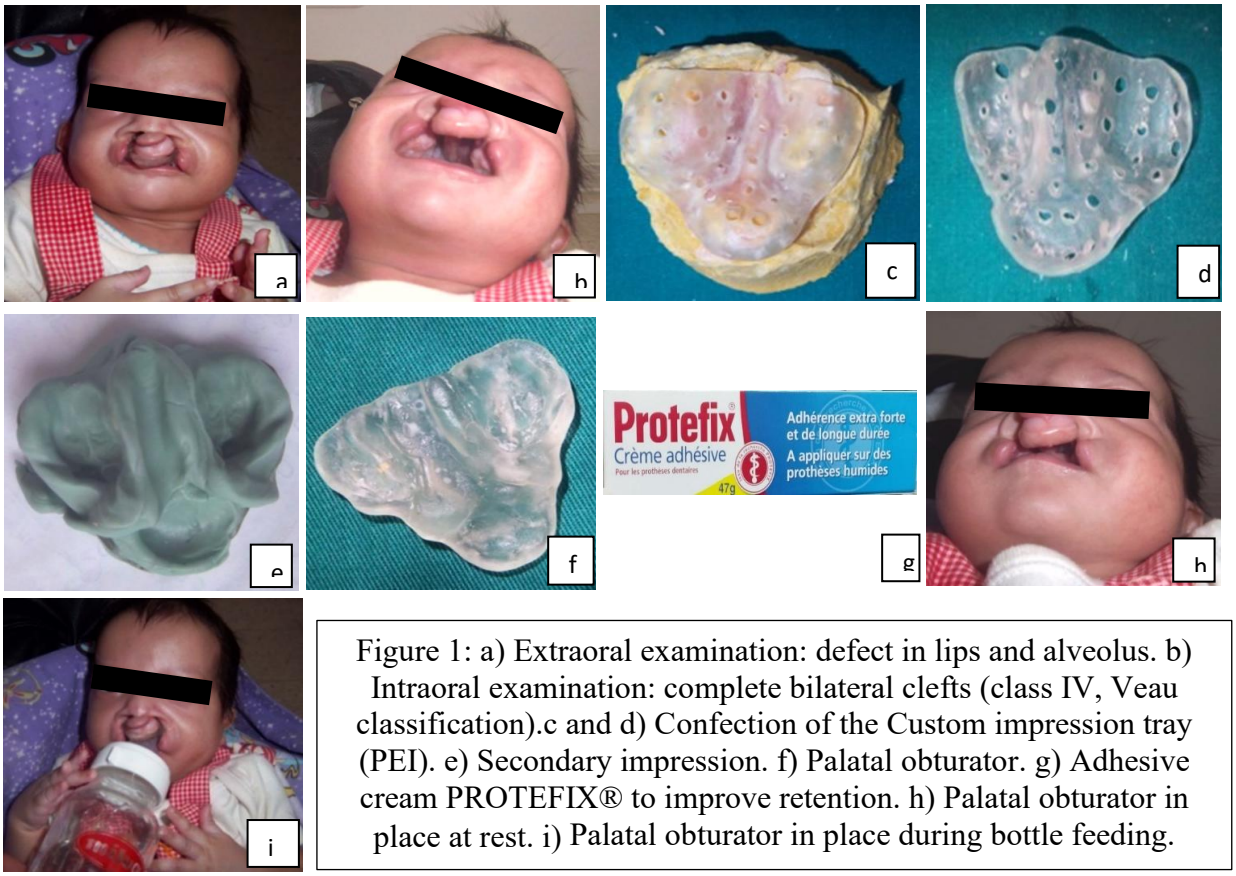

Figure 1: a) Extraoral examination: defect in lips and alveolus. b) Intraoral examination: complete bilateral clefts (class IV, Veau classification).c and d) Confection of the Custom impression tray (PEI). e) Secondary impression. f) Palatal obturator. g) Adhesive cream PROTEFIX® to improve retention. h) Palatal obturator in place at rest. i) Palatal obturator in place during bottle feeding.

Case 2:

A 7-year-old boy (M.C.) was referred by his maxillofacial surgeon to the Department of Pediatric Odontology and Prevention at the Dental Clinic of Monastir for maxillary expansion prior to alveolar bone grafting.

Intraoral examination revealed sequelae of a left unilateral cleft lip and palate (Fig. 2a) following cheiloplasty performed at 6 months of age and palatoplasty at 18 months. Clinical findings included agenesis of the primary maxillary left lateral incisor (tooth #62), along with a bilateral anterior crossbite (Fig. 2b and c) as well as a maxillary and mandibular endoalveoly (Fig. 2d and e). The treatment plan involved maxillary expansion using a quad helix appliance and the placement of posterior bite blocks (Fig. 2f and g). After six months of therapy, intraoral evaluation demonstrated successful transverse expansion and correction of the anterior crossbite (Fig. 2h and i).

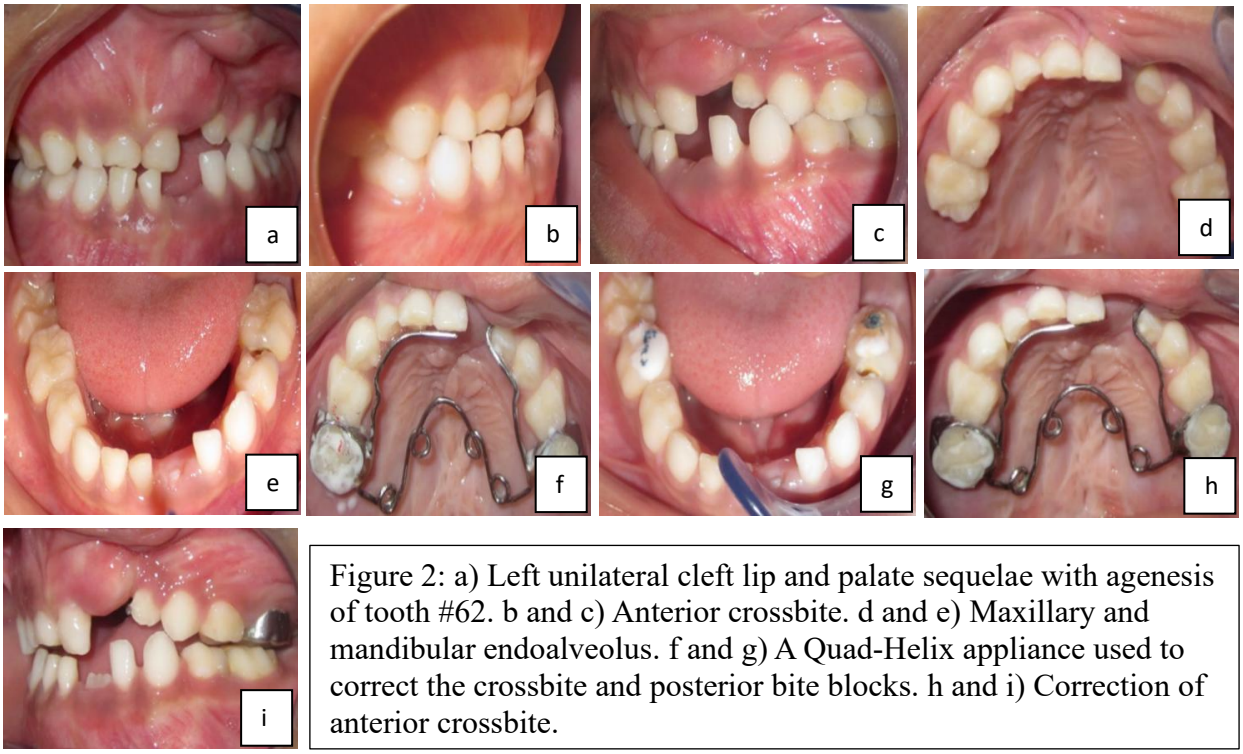

Figure 2: a) Left unilateral cleft lip and palate sequelae with agenesis of tooth #62. b and c) Anterior crossbite. d and e) Maxillary and mandibular endoalveolus. f and g) A Quad-Helix appliance used to correct the crossbite and posterior bite blocks. h and i) Correction of anterior crossbite.

Discussion

Cleft lip and/or palate (CL/P) presents a complex clinical challenge due to its association with a wide range of orodental complications. These include early nutritional and feeding difficulties, middle ear disease, hearing impairments, speech and resonance disorders, dentofacial and orthodontic anomalies (5), such as variations in tooth number, shape, and structure, maxillary growth deficiencies (1), and malocclusions like crossbites (2). Given the unique dental needs of children with CL/P, pediatric dentists play a vital role within an interdisciplinary craniofacial team.

This team typically includes orthodontists, oral and maxillofacial surgeons, and prosthodontists, working collaboratively to provide comprehensive primary and specialty care. Regular follow-up is essential for monitoring growth and development, as well as promoting optimal oral health (5). During the first months of life, the highest priority for newborns with clefts is ensuring adequate nutrition. These infants often experience feeding challenges characterized by nasal regurgitation, poor suction, and extended feeding times (6). In most hospital-based programs, feeding appliances are provided by pediatric dentists to help manage these issues (1). As illustrated in the case of the 8-day-old infant, pre-surgical management with a passive palatal plate was used to temporarily obturate the congenital defect, facilitating feeding until surgical repair could be performed.

Numerous studies have demonstrated the effectiveness of palatal obturator plates in facilitating feeding by closing the cleft and reestablishing separation between the oral and nasal cavities. This intervention significantly reduces nasal regurgitation and shortens feeding duration. Additionally, it helps normalize lingual function by preventing the tongue from entering the defect, which could otherwise disrupt the spontaneous growth and approximation of the palatal shelves toward the midline (6).

One of the main limitations of feeding plates is the need for frequent replacement due to oral hygiene requirements and the child's growth (6). A literature review conducted by Esenlik et al. highlighted the benefits of nasoalveolar molding (NAM), including a reduction in cleft severity prior to surgery and improved surgical outcomes. These appliances are typically introduced within the first 3 to 5 months of life (3).

Children with CL/P often present with orthodontic challenges during the deciduous and mixed dentition phases. Monodental crossbites and positional anomalies of the teeth are frequently observed (1). Correction of these malocclusions and monitoring of dentoalveolar arch development are commonly achieved using removable orthodontic plates equipped with sagittal and transverse screws (1).

In the second case presented in this article, the use of a quad helix appliance in a 7-year-old boy with cleft lip and palate sequelae resulted in the successful correction of an anterior crossbite and achieved the maxillary expansion necessary prior to alveolar bone grafting. To optimize surgical outcomes and ensure proper masticatory function and esthetics, the pediatric dentist plays a crucial role in stabilizing and improving oral morphology (1).

Pediatric dentistry also provides essential oral health education, promotes good hygiene practices, and emphasizes preventive care, ensuring that the child maintains excellent oral conditions before undergoing any surgical intervention (1). The pediatric dentist is involved with children affected by CL/P from infancy and remains responsible for their oral health throughout each developmental stage (1). As a core member of the multidisciplinary cleft lip and palate team, the pedodontist plays a vital role in coordinating care and communicating effectively with other specialists. This requires a thorough understanding of the various surgical procedures and their timing in order to integrate the dental treatment plan into the broader management strategy (1). A multispecialty approach helps avoid exhaustive and complex care and contributes to achieving reasonable functional and esthetic outcomes (3).

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