

# Dental treatment before surgery in a patient with cleft lip and palate: case report

## Efeito do *Cissus quadrangularis* na cicatrização de fraturas em animais de laboratório

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### Abstract

**Introduction:** orofacial clefts are common congenital malformations with an important social, psychological, and economic impact. The treatment of this condition may include different surgical procedures that previously require an adequate oral condition. **Case report:** we report a case of dental treatment before palatoplasty in a male patient of 17 years-old with bilateral cleft lip and palate and lesion in the jugal mucosa. **Final considerations:** the adequacy of the oral environment is a fundamental step in the treatment of patients with orofacial clefts and aims to restore oral health regardless of the degree of complexity of the dental treatment through the reduction of the pathogenic microbiota, elimination of retentive niches, instructions on diet and adequate oral hygiene and constant patient motivation.

**Keywords:** Cleft Palate; Mouth Rehabilitation; Dental Caries.

### Resumo

**Objetivos:** as fissuras orofaciais são malformações congênicas comuns, com importante impacto social, psicológico e econômico. O tratamento dessa condição pode incluir vários procedimentos cirúrgicos que requerem previamente uma adequada condição bucal. **Relato de caso:** Relatamos o caso de tratamento odontológico prévio a palatoplastia em um paciente do gênero masculino de 17 anos de idade, com fissura transforame incisivo bilateral e lesão em mucosa jugal. **Considerações finais:** A adequação do meio bucal é uma etapa fundamental no tratamento de pacientes com fissuras orofaciais e visa restabelecer a saúde bucal independente do grau de complexidade do tratamento odontológico por meio da redução da microbiota patogênica, eliminação de nichos retentivos, orientações sobre dieta e higiene bucal adequada e motivação constante do paciente.

**Palavras-chave:** Fenda Palatina; Reabilitação Bucal; Cárie Dentária.

### INTRODUCTION

Among the congenital anomalies, orofacial clefts (OC) stand out, which are responsible for approximately 1,151 diagnoses per year recorded only in Brazil from 1994 to 2019, according to data from the Information System on Live Births - SINASC<sup>1</sup>. In addition to their high prevalence, these conditions have relevant impacts on social, psychological, and economic aspects, and may substantially compromise the quality of life of individuals with OC<sup>2</sup>.

Orofacial Clefts have a multifactorial etiology and are characterized in most cases by the discontinuity of the tissues of the upper lip, upper alveolar ridge, and/or palate. Furthermore, according to the classification most commonly used in Brazil, proposed by Spina et al (1972), the clefts can be divided according to their extension and based on the anatomical reference of the incisive foramen into three main types: cleft lip, cleft palate, and cleft lip and palate<sup>4</sup>.

The rehabilitation process of OC is quite complex and long in most cases, as well as dependent on a multidisciplinary and interdisciplinary team, always requiring an appropriate oral health status of patients to obtain good results. In this sense, Dentistry plays a highly relevant role in the success of rehabilitation treatment, with the performance of different specialties, such as dentistry (operative dentistry), pediatric dentistry, periodontics, orthodontics, prosthesis, and surgery<sup>5</sup>.

Thus, this article aimed to report a case of dental treatment before palatoplasty surgery in a young patient with bilateral cleft lip and palate.

### CASE REPORT

Patient F.A.S.O., male, 17 years-old, from the city of Fortaleza, was referred to the Integrated Dental Clinic of the Federal

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**Conflict of interest:** The authors declare that there is no conflict of interest.

Received: 2021 Jan 31; Revised: 2022 Apr 20; 2022 May 23; Accepted: 2022 May 27

## 2 Dental treatment prior to palatoplasty

University of Ceará, Campus Fortaleza, for dental treatment before palatoplasty surgery.

During the anamnesis and intraoral physical examination, it was found that the patient had bilateral cleft lip and palate, supragingival calculus, multiple carious lesions, and the absence of some dental elements (Figure 1). Additionally, the presence of a pedunculated lesion was found, located in the buccal mucosa (right side), painless, with a color similar to that of the oral mucosa, and an evolution time of approximately 10 years, according to the patient's report (Figure 2).

**Figure 1.** Initial intraoral images. A – Right side view. B – Left side view. C – Upper arch occlusal view. D – Lower arch occlusal view



**Figure 2.** Right side buccal mucosa lesion.



Initially, complementary exams (panoramic radiography, periapical radiographs, and complete blood count) were performed. After diagnosis, a treatment plan consisting of three phases was drawn up:

Phase I – Prophylaxis, topical application of fluoride gel, and oral hygiene instruction. Basic periodontal therapy was performed in all hemiarchs;

Phase II – Excisional biopsy of the lesion and extraction of the residual root of tooth 21. Histopathological examination confirmed the diagnosis of traumatic fibroma;

Phase III – Endodontic treatment on tooth 11 and restorative procedures with composite resin on the occlusal surface of teeth 14, 15, 17, 24, 25, 26, 27, 35, and 37; buccal, incisal, palatal, and mesial surfaces of tooth 11; buccal surface of tooth 16; mesial surface of tooth 34; occlusal and distal surfaces of tooth 45; mesial, occlusal and buccal surfaces of tooth 46; and, occlusal and buccal surfaces of tooth 47 (Figure 3).

**Figure 3.** Final intraoral images. A – Front view. B – Right side view. C – Left side view. D – Upper arch occlusal view. E – Lower arch occlusal view.



The use of images and registration data in the present work was authorized by the patient by signing the Free and Informed Consent Term (F.I.C.T.).

## DISCUSSION

From a thorough clinical examination, we sought to identify and later treat all pathological or traumatic changes presented by the patient to reestablish their oral health condition for palate reconstruction surgery.

The fibroma diagnosed in the patient of the present report is a benign soft tissue tumor that originates from fibroblasts and develops more frequently in the buccal mucosa in response to

trauma or local irritation<sup>6</sup>. Clinically, it presents as a smooth and well-delimited nodule, similar in color to the adjacent mucosa, sessile, or pedunculated base, and usually does not exceed 1.5 cm. In some cases, this lesion may have a more whitish color, resulting from chronic trauma to its surface, and black patients may have fibromas with a pigmented surface due to melanosis<sup>6</sup>. Traumatic fibroids are usually removed by excisional biopsy in addition to removing sources of local irritation when present<sup>6</sup>. Finally, it represents the most common lesion among benign tumors found in the oral cavity, however, there are no studies in the literature that evaluated the prevalence of this pathology in patients with OC.

The presence of multiple dental caries was also found in this patient, following the systematic review with the meta-analysis by Worth et al (2017), in which the authors concluded that patients with OC have a high prevalence of dental caries compared to the general population<sup>7</sup>. A possible reason for this is the misalignment of teeth due to the cleft, which leads to poor self-cleaning function of the oral cavity and difficulty in maintaining adequate oral hygiene by the patient<sup>8</sup>. Currently, dental caries is understood as a polymicrobial disease driven by dental biofilm dysbiosis, due to a complex interaction between acid-producing bacteria and fermentable carbohydrates over time. Dental caries is, therefore, an essentially biofilm-dependent and non-infectious disease, whose prevention is closely linked to the control of these polymicrobial communities<sup>9</sup>.

As described by Chen et al (2020), dental biofilm formation begins when a film of salivary glycoprotein (dental film) coats the tooth surface. Subsequently, gram-positive bacteria, including *Streptococcus mitis* e *Streptococcus mutans*, early colonizers of the dental biofilm, form extracellular polymers, which increase the adherence of other organisms, such as acid-producing bacterial species of the genus *Veillonella*, *Scardovia*, *Lactobacillus* e *Propionibacterium*. It is verified that congenital orofacial malformation affects the structure and functions of the oral cavity, significantly modifying its characteristics. As a result, such malformations can influence the environment's microbiota<sup>9</sup>. According to Ahluwalia et al (2004), *Streptococcus mutans* and *Lactobacillus* exist in great abundance in patients with cleft lip and palate<sup>10</sup>.

It is important to state that the concern with minimal weight gain in pediatric patients with OC to perform surgical rehabilitation procedures is often accompanied by the consumption of high-calorie nutritional preparations. Such substitutes/supplements, being rich in sugars and introduced early in the diet of babies and/or children with OC, can induce changes in the oral microbiota and, when associated with inadequate oral hygiene habits, predispose to the early occurrence of dental caries disease<sup>11</sup>.

In the present case reported, it was necessary to perform endodontic treatment and restorative procedures to repair, change and protect the remaining teeth and supporting tissues and prevent possible trans and postoperative complications

resulting from infectious or inflammatory processes. It appears that different oral health problems can act as a focus for the dissemination of pathogenic microorganisms with a systemic metastatic effect, especially in individuals whose health is compromised<sup>12</sup>.

The risk of infection is a concern during the orthodontic-surgical treatment of patients with OC, as the anatomical and occlusal conditions contribute to microbial proliferation. In individuals with cleft palate, oropharyngeal microbiota microorganisms can be an important source of infection. In these patients, the balance existing in the normal oral microbiota can be affected and pathological migration occurs between the bacteria in the oral and nasal cavities<sup>13</sup>. Another important association is respiratory difficulty in cases of Pierre Robin sequence with cleft palate, which may require nasopharyngeal intubation or tracheostomy and/or nasogastric tube. Although such procedures improve the respiratory and nutritional management of these patients, they provide additional access for microorganisms to enter<sup>11</sup>.

Liu et al (2016) published the results of their investigation on the oral microbiota of children with cleft lip and palate submitted to alveolar bone graft surgery, evaluated in the pre and postoperative periods<sup>14</sup>. In this study, a comparison was made between children with and without gingival inflammation in the surgical region to know the influence of the oral microbiota on the prognosis of this surgery. The results showed that the composition of the oral microbiota before surgery may be related to the risk of postoperative inflammation at the graft sites since important differences were observed in its composition and its variation between the groups with and without inflammation in the two evaluated periods. Thus, individuals with cleft lip and palate may present a more complex and diversified oral microbiota when compared to the general population, presenting a greater risk for the development of oral infectious diseases<sup>14</sup>. Therefore, this may imply in some situations the need for a combination of antibiotics, whose action spectra are capable of including all possible agents causing local infections<sup>12</sup>.

Currently, at the Hospital for Rehabilitation of Craniofacial Anomalies of the University of São Paulo, the surgical antibiotic prophylaxis protocol for patients not allergic to penicillin indicates the combination of Cefazolin (action against aerobic bacteria, gram-positive bacteria, and *Streptococcus aureus*) associated with Metronidazole (action against anaerobic bacteria). Cases of patients allergic to penicillin, clindamycin (which acts against *Streptococcus aureus* and anaerobes) combined with Gentamicin (which acts against aerobes and *Pseudomonas*) is indicated<sup>12</sup>.

Preoperative dental treatment to reduce the risk of infection at surgical sites is essential. The absence of foci of infection of oral origin is mandatory for the performance of surgical procedures for lip and palate reconstruction in individuals with OC. In this way, the adequacy of the oral environment is a fundamental step in the treatment of patients with OC and aims to restore

oral health regardless of the degree of complexity of the dental treatment through the reduction of the pathogenic microbiota,

elimination of retentive niches, instructions on diet and adequate oral hygiene and constant patient motivation<sup>15</sup>.

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### How to cite this article/Como citar este artigo :

Ribeiro TR, Silva SM, Ribeiro EM, Fonteles CSR. Dental treatment before surgery in a patient with cleft lip and palate: case report. *J Health Biol Sci*. 2022; 10(1):1-4.