

Case Report



Frenotomy procedure of a cleft lip and palate case

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Abstract

Background: Cleft lip and palate are malformations that occur in 1–2 in every 1000 people and require multidisciplinary treatment. In this case, we aimed to present the repositioning of a band-shaped buccal frenulum, which is thought to have prevented oral hygiene practices in a patient with cleft lip and palate.

Case Report: A 19-year-old non-smoking, systemically healthy male with a cleft lip and palate history was referred to the Periodontology Department of the Gazi University Dentistry Faculty with periodontal problems and was diagnosed with gingivitis. A thick, band-shaped buccal frenulum that directly affected the left maxillary teeth and caused difficulties in plaque elimination was observed. A frenotomy procedure was performed by repositioning the frenulum after non-surgical periodontal treatment to improve the hygiene of the region. Through operation, the buccal frenulum was repositioned, and adequate vestibular depth was achieved. Before and after periodontal treatment, halitosis scores were measured.

Conclusion: An improvement was observed in plaque elimination and intraoral Halimeter scores in the first- and second-month controls of the region after frenotomy and non-surgical periodontal treatment. The improvements show the importance of periodontal treatment for such cases.

Keywords: Cleft lip and palate, Periodontal treatment, Frenotomy, Oral hygiene, Halitosis

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Introduction

Orofacial clefts, which occur in approximately 2 in 1000 live-newborns, include a range of diseases that affect individuals in terms of speech, hearing, appearance, and mental health.^{1,2}

Orofacial clefts could be divided into three groups: cleft lip, cleft palate, and combined cleft lip and palate.²

Cleft lip and palate are thought to be caused by problems that occur during the development of the lip and palate between weeks four and ten of embryological development.³

Individuals with orofacial clefts need multidisciplinary treatment by units such as plastic surgery, nursing, dentistry, oral and maxillofacial surgery, otolaryngology, speech therapy, audiology, and psychology.^{4,5}

Hypertrophic scars are a common complication with the excess accumulation of collagen and extracellular matrix proteins during wound healing following the surgical treatment of the cleft region in individuals with cleft lips and palates.⁶

Halitosis is an unpleasant breath odor that can be associated with intra- or extra-oral causes. Periodontal

diseases are among the most common reasons for halitosis. In literature, many different methods, e.g., organoleptic measurement, gas chromatography, sulfide monitoring, and the BANA method, have been suggested.⁷

The frenulum is a triangular mucosal membrane fold that connects the lip or cheek to the gingiva, alveolar mucosa, and periosteum. In some cases, it may interfere with plaque control by affecting the positioning of the toothbrush. Frenectomy is the complete removal of the frenulum, including the connection to the underlying bone, and frenotomy is the disconnection and repositioning of the frenulum.⁸

In this case, we aimed to describe in detail the repositioning of the thick and band-shaped left maxillary buccal frenulum, which was thought to have resulted from scar formation due to cleft lip and palate operations.

Case Report

A 19-year-old non-smoking male patient with a cleft lip and palate referred to Gazi University Faculty of Dentistry, Department of Periodontology, with the complaint of gingival bleeding while brushing teeth in 2019. It was



learned from the systemic anamnesis that the patient had undergone cleft lip-palate operations that had started 10 months after birth and had repeated ten times in 2-year intervals; there was no other systemic disease. In dental anamnesis, it was revealed that orthodontic treatment had started with a removable appliance in 2014, followed by fixed orthodontic treatment in 2018. It was found that the patient was periodontally treated in 2018, and brushed his teeth three times a day; however, he was not using either interdental brushes or dental floss. In the extraoral examination, it was observed that the patient had an operation scar from previous operations on the upper left lip; In the oral examination, the buccal frenulum was observed as a thick band directly connected to teeth 23, 24, 25, and 26 (Figures 1 and 2). The absence of teeth 12, 22, and 45 was also noted. The patient was informed about all procedures, and the treatment started after he provided informed consent.

First, the intraoral Halimeter score was measured (Halimeter®, Interscan Corp, USA), and the read score was 73 at baseline. Clinical periodontal indices were recorded (mean plaque index: 1.1; mean gingival index: 1.3; mean probing depth: 2.6 mm) and the non-surgical periodontal treatment started.^{9,10} Scaling and root planning were

performed, and the patient was informed about the oral hygiene procedures.

The Halimeter reading and recordings of periodontal indices were repeated at the end of the first month following the non-surgical periodontal treatment. The second intraoral Halimeter score was 55 at the end of the first month. According to the recorded indices, the mean plaque index was 0.6, the mean gingival index was 0.8, and the mean probing depth was 2.4 mm. Surgical repositioning of the left upper buccal frenulum was planned to achieve a sufficient level of plaque elimination.

Local anesthesia was provided by local anesthetics applied from the anterior and posterior parts of the buccal frenulum. A horizontal incision was made with a scalpel (No. 15) from the surface, and the frenulum was continued by the attached gingiva. The incision was then continued horizontally towards the vestibule (Figure 3). No tissue was removed, and the periosteum was not exposed. After adequate vestibule depth was achieved, the site was sutured with 5.0 poly (glycolide-co-lactide) suture material (Pegelak®, Doğsan). The region was covered by a periodontal pack to protect the region (Figure 4). Non-



Figure 1. Full mouth view of the patient.

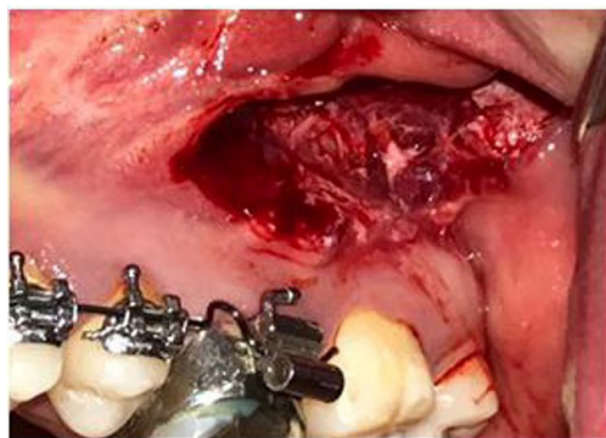


Figure 3. Horizontal frenotomy incision.

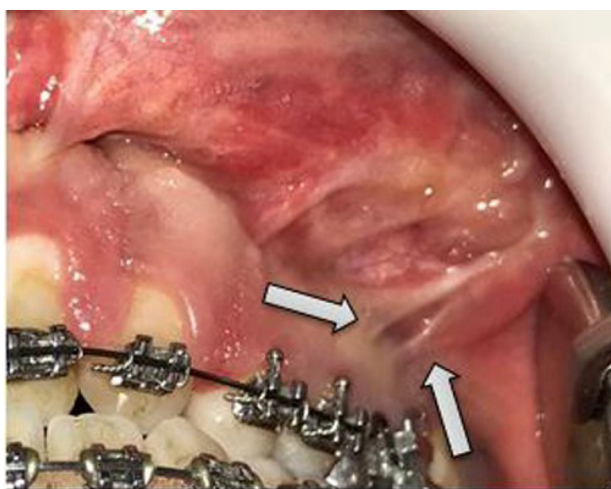


Figure 2. The view of the band-shaped frenulum.

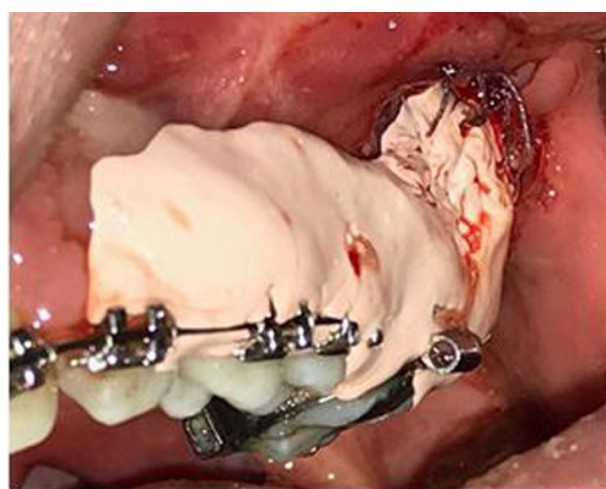


Figure 4. Periodontal patch that covers to the region.

steroidal anti-inflammatory drugs (Majezik 100 mg tablet, Sanovel, 2×1, 5 days) and mouthwash containing 0.12% chlorhexidine (Kloroben mouthwash 200 ml, Drogosan, 2×1, 10 days) were prescribed, and post-operative recommendations were given.

After 10 days, the sutures were removed, and the region was washed with saline.

Results

The Halimeter reading and periodontal indices were repeated for the last time two months following the surgery. The Halimeter score was 32. The recorded indices were 0.3 mm mean plaque index, 0.5 mm mean gingival index, and 2.4 mm mean probing depth. Additionally, visible tissue healing was observed two months following the frenotomy procedure (Figure 5).

Discussion

There is no single treatment modality recommended for the treatment of orofacial clefts. Two consecutive operations are often recommended for the surgical treatment of defects. The cleft region may be closed by one to more than two operations. Frequently, the lip is closed in the first operation and the hard and soft palate in the second operation.² In the presented case, the defects were closed through ten separate operations until the age of 16. Although some studies have demonstrated similar periodontal health criteria in healthy populations and individuals with cleft lip and palates,¹¹ there have been studies showing a statistically significant increase in the frequency of caries in permanent dentition among the latter.¹² However, complications such as hypertrophic scars due to previous operations are frequently encountered in this patient group.⁶ We think that the thick, band-shaped buccal frenulum caused by scar formation had led to difficulties in tooth brushing in this case.

The periodontal health status in individuals with cleft lips and palates has been reported to be similar to that of healthy individuals outside the cleft region.¹³ However,



Figure 5. First month view after frenotomy.

poor oral hygiene in individuals with cleft lip and palate compared to healthy individuals has also been reported in the literature.¹⁴ In the present case, the initial plaque control level was moderate, but after the periodontal treatment, a visible improvement was observed in plaque control. However, mean values of plaque index and gingival index were higher in the region with high frenulum connection. Therefore, we decided to reposition the frenulum.

It has been reported that frenula that are located close to the gingival margin and cause flat, shallow vestibules need to be removed as they cause poor oral hygiene. In this case, we repositioned the buccal frenulum and created an area where the patient could provide oral hygiene more easily and adequately. We suggest that such cases be checked attentively to ensure future dental and periodontal health.

Conflicts of Interest

The authors have declared that no conflict of interest exists.

Consent for Publication

Written informed consent was obtained from the patient for publication of this report.

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