Acta Odontologica Scandinavica. 2014; 72: 1079–1083

informa
healthcare

SHORT COMMUNICATION

Lip buccal mucosa traumatic overgrowth due to sucking habit — A 10-year follow-up of a non-surgical approach: A combination of behavioural and myofunctional therapy

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Abstract

Objective. Traumatic lesion of the lip buccal mucosa may develop due to a repetitive lip sucking habit, secondary to a dental space which opened in the dental in adult patients. The non surgical treatment approach is based on increasing of patient's awareness to the sucking habit along with the creation of a change in the oral and dental surrounding tissues. The following case included a failure to identify a traumatic habit of lower lip sucking, resulting in a buccal mucosa overgrowth. Combined conservative periodontal and orthodontic approach will be presented to address this clinical issue without any need for surgical intervention. ***Material and methods.*** 56 year old female patient presented with a complaint of unaesthetic appearance of the intraoral right buccal mucosa of the lower lip at rest position due to an intensive repetitive sucking habit of the right lower lip segment. We initiated a non surgical treatment approach including increasing the patient's awareness to the sucking habit, controlling the periodontal disease and orthodontic treatment to align and level the dental arch and to close the residual space. ***Result.*** The soft tissue overgrowth on the lip buccal mucosa almost completely subsided spontaneously as a result of conservative dental and behavioral management without the need for any oral surgery intervention. A 10 years follow-up revealed no repetitive oral mucosa overgrowth, no spaces reopening and no sucking habit redevelopment. ***Conclusion.*** Implementation of a morphological correction will assist the patient in breaking the habit and creating an environment that may effectively prevent the reoccurrence of the habit.

Key Words: *buccal mucosa redundancy, dental space, lip sucking habit, lower lip, non-surgical*

Introduction

The position and stability of the dental arch is influenced by the equilibrium between the surrounding muscular forces [1]. Extra-oral forces exerted by the orbicularis oris and buccinator muscles are balanced by the opposing forces of the tongue [2] creating a so-called neutral zone. Traumatic parafunctions, such as lip sucking, lip biting and tongue thrusting, are considered a repetitive continuous extra-oral force and may cause a prolonged change in the balanced muscle function, divert the equilibrium and initiate morphologic change in the normal configuration of the dental arch form architecture and the supporting bone, which may finally result in malocclusion [2].

Non-nutritive sucking, finger/thumb sucking and immature deglutition are among the parafunctions that have received considerable attention in the literature. Less information exists about other habits such as lower lip sucking. Perpetuation of this habit can lead to malpositioning of teeth, aberrant breathing patterns, speech abnormalities, facial musculature and skeletal imbalances. These may result in a poor

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(Received 25 November 2013; accepted 24 March 2014)

ISSN 0001-6357 print/ISSN 1502-3850 online
DOI: 10.3109/00016357.2014.913308

facial profile traumatic lesion of the lip buccal mucosa and even psychological problems [3,4], thus may require surgical intervention.

The purpose of this article is to introduce and present a 10-year follow-up of a non-surgical alternative approach towards a traumatic lesion of the lip buccal mucosa in an adult patient suffering from a lip sucking habit.

Materials and methods

A 56 year-old female patient complained about an unesthetic appearance of the intra-oral right buccal mucosa of the lower lip at rest position. This flabby extra tissue of the buccal mucosa appeared as an asymmetry of the lower lip line during rest position (Figure 1A). During anamnesis, the patient reported an intensive repetitive sucking habit of the right lower lip segment. This parafunctional activity developed secondary to a 2 mm space which reportedly developed in recent years between the right lower canine and the first premolar (Figure 1B). Chronic generalized periodontitis included increased probing depths up to 7 mm, with bleeding on probing, and increased tooth mobility was diagnosed in the lower dental arch. Panoramic and periapical X-rays showed generalized horizontal alveolar bone loss of 4–5 mm (Figure 2).

Figure 1. (A) Extra-oral view of the pre-treatment traumatic redundancy of the right lower lip mucosa lesion due to a periodontal disease as a result of dental spacing and a lip sucking habit. (B) Intra-oral pre-treatment view revealing poor periodontal condition and a 2 mm space between the right mandibular canine and first premolar.

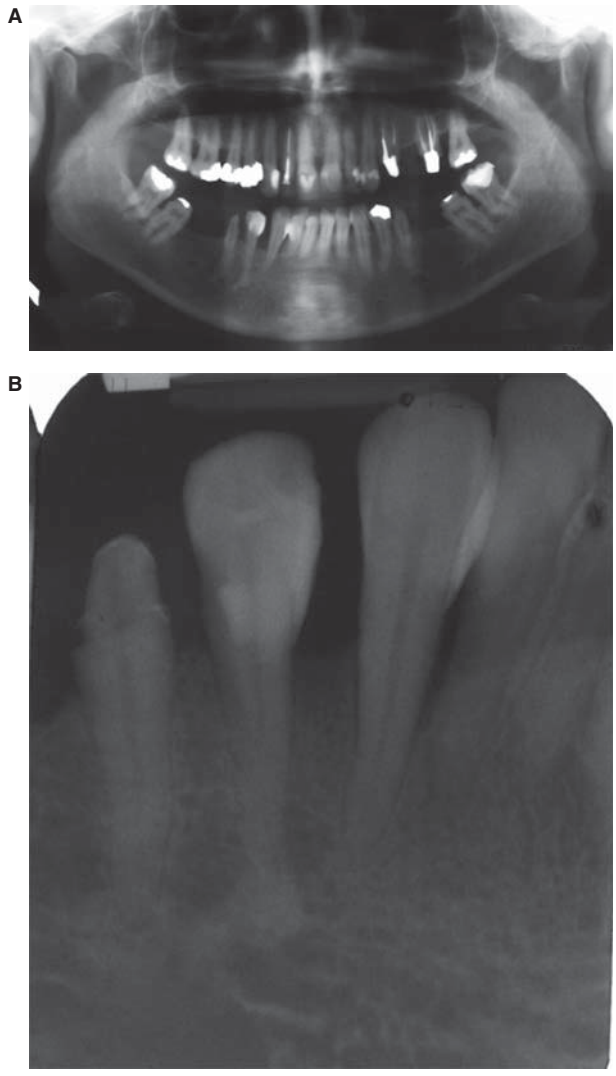

Figure 2. Pre-treatment radiographs showing alveolar bone loss and the space between the lower right canine and the first premolar. (A) Panoramic radiograph. (B) Periapical radiograph.

The lower lip buccal mucosa was spontaneously pushed in towards this space. As a result, the patient developed an unconscious habit of exerting an intensive sucking force against the lower dental arch that pushed the buccal mucosa through the dental space towards its lingual aspect. This resulted in a 4 cm soft tissue overgrowth with thin white stripes widthwise and no signs of ulceration or pain (Figure 1B).

Treatment objectives

Treatment objectives included control of the periodontal disease, elimination of the space created secondary to the periodontal defect and spontaneous ceasing of the lip sucking habit. Finally a surgical procedure was planned to eliminate the mucosal overgrowth on the inner right aspect of the lower lip.

Treatment staging

As part of the initial preparation, increasing the patient's awareness to her lip sucking habit was conducted by consciously practicing the avoidance of the habit.

A customized oral hygiene program in combined with scaling and root planning was performed for all affected teeth within two appointments, using hand and ultrasonic instruments under local anesthesia. Excellent patient motivation and compliance was shown at 3 months re-evaluation, resulting in a favorable periodontal healing process, disappearance of bleeding on probing and pocket depth reduction with no need for further surgical periodontal treatment. Orthodontic treatment was then initiated to align and level the lower anterior dental arch and to close the residual space by orthodontic means using a fixed orthodontic appliance over a 10-month period. A lingual fixed orthodontic retainer was then cemented on the mandibular anterior teeth in combination with a clear vacuum formed removable-retainer. A long-term periodontal and orthodontic maintenance follow-up treatment was initiated with 3–4 month intervals.

Treatment outcome

Fourteen months after treatment commencement, the patient exhibited a healthy gingiva with no bleeding on probing and an acceptable probing depth. The arch integrity and occlusion were improved by orthodontic treatment. Lower dental arch crowding was eliminated and the diastema between the mandibular right canine and the first premolar was closed (Figure 3A). The patient was very satisfied with the spontaneous elimination of the unconscious lip sucking habit, resulting in a significant reduction in the buccal mucosa overgrowth lesion and a symmetrical lower lip line during rest position. There was no need for any of the further pre-planned surgical procedures to eliminate the soft tissue overgrowth lesion as indicated (Figure 3B). During the 10-year post-treatment follow-up the highly motivated patient continued the routine maintenance treatment. The orthodontic and periodontal results in the lower dental arch remained stable. The patient's oral hygiene was excellent and the clinical as well as radiological periodontal status was uneventful. The buccal mucosa overgrowth lesion which constituted the reason this patient sought treatment almost completely subsided (Figure 4).

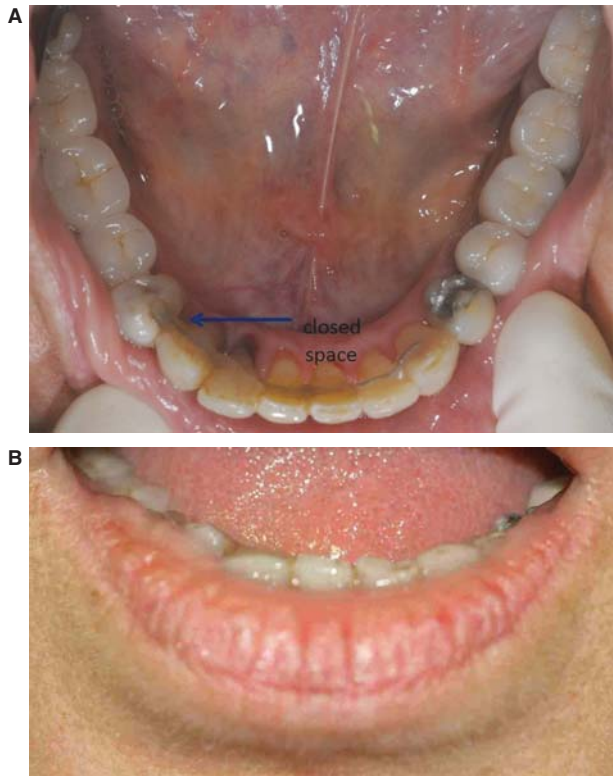

Figure 3. (A) Post-treatment extra-oral view revealing a significant reduction in the buccal mucosa overgrowth lesion which resulted in a symmetrical lower lip line during rest position due to the spontaneous elimination of the unconscious lip sucking habit. (B) Intra-oral view of treatment results including a leveled and aligned lower dental arch with elimination of the dental space distal to the right mandibular canine and the resolution of lower anterior dental arch crowding and periodontal inflammation.

Discussion

Lower lip sucking is a parafunctional habit to which practitioners pay little attention. This habit appears frequently in children, especially in situations that require greater mental concentration [5], although it may be manifested at any age [3,6,7]. In the reported clinical example, the habit appeared to have begun at an older age, secondary to the development of the diastema, probably due to periodontal breakdown. Therefore, this case does not fit into the typical definition of lip sucking, i.e. the habit of sucking the lip between the upper and lower anterior teeth, because of its secondary onset nature and the involvement of the lower lip only.

The diastema was probably the result of pathologic tooth migration due to generalized chronic periodontitis; we can assume that the influence of the lip sucking habit contributed maintaining or even increasing the space width. The lower lip buccal mucosa was placed flaccidly against the lower dental space enabling its penetration from the buccal aspect of the lower dental arch towards the lingual aspect in the rest position. With its penetration the buccal mucosa came into direct contact with the muscular tissue of the tongue. A repetitive intensive neuromuscular sucking behavior of the buccal mucosa lingually by the tongue led to the final result of soft tissue overgrowth lesion and probably gradual widening of the space. Both space enlargement and the buccal

Figure 4. Ten-year post-treatment follow-up extra-oral view in rest position revealing that the lesion is still seen, although much smaller.

mucosa lesion were aggravated by the intensity and the repetition of this unfavorable habitual neuromuscular movement.

Soft tissue overgrowth is most probably a focal fibrous hyperplasia or reactive fibroma—a reactive hyperplasia of fibrous connective tissue in response to local irritation or trauma. Although it can occur anywhere in the mouth, the most common location is the buccal mucosa along the bite line, as presented in this case [8]. The lesion typically appears as a smooth-surfaced pink nodule that is similar in color to the surrounding mucosa, however its surface might be white due to hyperkeratosis from continued irritation [8]. The diameter of the lesion ranges from a few millimeters to several centimeters. Most fibromas are 1.5 cm or less in diameter [8], asymptomatic, unless a secondary trauma occurs. They are most common in the fourth to sixth decades of life, with a 2:1 female-to-male ratio [8].

The management concept of this case is summarized in Table I. A detailed assessment of the habit's localization, severity, longevity, frequency and intensity is performed [2,5]. Thereafter, the degree of the traumatic parafunction damage caused to the oral tissues, i.e. the mucosa, teeth and gums, is evaluated. The longevity of the exerted parafunctional force is the most critical variable. The longer the habit continues, the greater the impact on the dentition [9]. Elimination of the parafunctional habit is fundamental to treatment and future stability. Therefore, the patients' awareness of the habit must be aroused. Some researchers reported using functional appliances such as lip bumpers, oral screens, oral shields and even special bands with a sharp labial spur for the treatment of lip sucking [2,3]. Orofacial myologists utilize lip exercises (lip pulls, cotton rolls, lip massages) with or without the addition of the above-mentioned appliances [3]. This treatment technique is termed elimination of a traumatic habit by correction of the function. Indeed the non-instrumental habit ceasing approach using cognitive–behavioral techniques with or without lip exercises, is favored over the instrumental breaking habit technique.

Table I. The authors suggested guidelines for the combined behavioral and myofunctional management concept.

No	Guidelines
1	Assessment of type of habit, localization, severity, longevity, frequency and intensity.
2	Evaluation of the degree of the traumatic parafunction damage caused to the oral tissues.
3	Arousing the patient's awareness to the parafuntional habit.
4	In case the parafunctional habit is not stopped the use of lip exercise or functional appliances may be applied.
5	Creation of an oral environment that will discourage the patient from practicing the habit such as orthodontic treatment to align the involved teeth to achieve a proper occlusal relationship.
6	Initiation of a follow-up period to evaluate whether any resolution of the injured oral mucosa has occurred when the parafunctional force system ceased.
7	In cases of spontaneous improvement the follow-up is continued. In cases where improvement is not revealed, surgical intervention might be recommended.

Combined with a permanent or temporary wearing device this treatment approach may ensure prolonged irreversible habit elimination, even when a habit breaking appliance is not applied [10]. Surgical treatment only of the lip mucosa lesion or reducing the parafunction only by means of an instrumental breaking technique without arousing the patient's awareness to the parafunctional habit (i.e. etiological origin of the lip mucosa lesion) are prone to recurrence.

An additional fundamental approach is morphological correction. This type of treatment is aimed to create an oral environment that will discourage the patient from practicing the habit. In the case of teeth malposition, such treatment may include orthodontic treatment to align the involved teeth in order to achieve a proper occlusal relationship [3].

After establishing a supportive oral and psychological environment for elimination of the parafunctional habit, a follow-up period is initiated. The aim of this period is to evaluate any resolution of the injured oral mucosa that has occurred after the parafunctional force system has ceased. In cases in which a spontaneous improvement is detected the follow-up is continued, whereas if no improvement is found surgical intervention might be recommended.

Conclusion

Analysis of the neuromuscular function is critical for the diagnosis and treatment of alterations trend in the occlusion. Oral and dental practitioners should be aware of the patient's anamnesis complaints concerning changes in the occlusion that were not apparent in early childhood and adolescence. In these cases, evaluation of the tongue–lip morphology and functional

pattern is essential to determine whether an association exists between occlusal alteration and neuromuscular oral function patterns [5]. The improvement achieved in the buccinator musculature balance and the creation of the occlusal environment conductive to lip habituation facilitated the adaptation of a newly preferred orofacial muscle activity pattern. This resulted in total elimination of the habit and, therefore, a significant reduction in the buccal mucosa overgrowth along the 10-year follow-up period with a symmetrical lower lip line during rest position and no additional surgical intervention required.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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