FRENECTOMY WITH Z PLASTY TECHNIQUE FOR HIGH ABERRANT FRENUM

(FRENEKTOMI DENGAN TEKNIK Z-PLASTY PADA ABERANSIA FRENULUM YANG TINGGI

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ABSTRACT

An aberrant frenum can cause gingival recession and plaque accumulation due to a muscle pull. It also presents an aesthetic problem and inhibits the orthodontic result in a case with midline diastema, thus causing a recurrence after the treatment. This case report describes how periodontal surgery can accomplish such an aberrant frenum like a frenectomy procedure. This case report shows the abnormal maxillary labial frenum removal in a 21-year-old through the Z-plasty technique. The Z Plasty was made with an angulation of about 60° on the left and right sides of the vertical incision to obtain a double rotational flap. The two flaps were then transposed to the opposite side of the apex of each flap for relief of soft tissue tension. This pattern has shown uneventful healing and minimized scar formation, which was favorable in aesthetics.

Keywords: aberrant frenum; frenectomy; Z-plasty

ABSTRAK

Aberensia frenulum dapat menyebabkan resesi gingiva dan akumulasi plak karena tarikan otot. Hal ini juga menimbulkan masalah estetika dan menghambat hasil perawatan ortodontik pada kasus dengan diastema yang dapat menyebabkan rekurensi setelah perawatan. Penatalaksanaan aberensia frenulum tersebut dapat dilakukan dengan pembedahan periodontal seperti prosedur frenektomi. Laporan kasus ini menunjukkan pengangkatan frenulum labial rahang atas yang abnormal pada seorang perempuan berusia 21 tahun melalui teknik Z-plasty. Z Plasty dibuat dengan angulasi sekitar 60 derajat di sisi kiri dan kanan insisi vertikal untuk mendapatkan flap rotasi ganda. Kedua flap kemudian dialihkan ke sisi berlawanan dari puncak setiap flap untuk meredakan ketegangan jaringan lunak. Pola Z telah menunjukkan penyembuhan yang sempurna dan meminimalkan pembentukan bekas luka yang merupakan hasil yang baik dalam hal estetika.

Kata kunci: *aberensia frenulum; frenektomi; Z-plast*

INTRODUCTION

A Frenum is a tiny fold consisting of mucosal membranes, muscle, and connective tissue fibers that attach the inner lip and the cheek to the alveolar process, the gingiva, and the underlying periosteum. [1,2] An aberrant frenum creates an aesthetic problem in the patient. The aesthetic problem is that the presence creates aesthetic problems such as a diastema between the maxillary central incisors. When the apical migration of the attachment does not follow the development of the anterior segment of the upper jaw and teeth, no bone is deposited inferior to the frenum. Most researchers report that superior labial frenum causes midline diastema, and removing the high bulbous labial frenum is important for stability after midline diastema closure. [3,4,5]

The superior labial frenulum is the frenulum located anterior to the upper incisor. High frenum attachment or abnormal frenulum in the anterior maxillary incisor area can cause diastema and impede orthodontic appliance movement. The surgical procedure that can be done is frenectomy. Frenectomy is a surgical procedure that removes the frenum, including its attachment to the underlying bone. It can be accomplished either by the conventional scalpel (classical) technique, Millers Technique, V-Y plasty, Z plasty, electrosurgery, or by using lasers.[3,6,7]

Frenectomy is an appropriate treatment to correct esthetic disturbances and improve the prognosis of orthodontic treatment in patients with a high labial frenulum. The technique chosen must be as indicated. In this report, the Z-plasty is usually associated with midline diastema and shallow vestibules. In the present case, frenectomy was performed by Z-plasty technique. Z-plasty technique is a surgery procedure used to improve scars' functional and cosmetic appearance. It involves a central incision and creating two triangular flaps of equal dimension that run in zig-zag fashion then transpose around each other. This pattern has shown uneventful healing and minimized scar formation, which was favorable results in aesthetics [1,7,8]

CASE REPORT

The patient came with a consult from an orthodontist and complained of rare upper front teeth, disturbing aesthetics and feeling dirty. The patient was advised to dissect the part of the gums that caused the front teeth to loosen. The patient came to the Periodontics clinic of the Dental and Oral Hospital, Padjadjaran University, for treatment.

Objective examination showed central incisor diastema in the region of teeth 11 and 21, maxillary labial frenulum aberration, blanch test (+) (Figure 1), plaque score of 18% (O'Leary index). The patient was then treated. Treatments that have been carried out include scaling treatment. The results of blood laboratory examinations were normal, and the patient did not have systemic diseases that could affect the periodontal treatment to be carried out.

Figure 1. Abnormal labial frenum (Blanch Test +).

Based on subjective and objective examinations, it is concluded that the diagnosis of this case is dental biofilm-induced gingivitis accompanied by mucogingival deformity (aberrant frenum labialis superior) at regio 11-21. The treatment plan is giving informed consent to the patient, scaling and root planning, providing Dental Health Education (DHE), and frenectomy surgery with the Z-Plasty technique.

The patient has explained the surgical treatment plan that will be carried out. When the patient arrives at the frenectomy,

informed consent is given. Furthermore, plaque scoring, prophylaxis, and blood pressure measurements were performed. After the operator and patient were ready, the patient was moved to the operating room and performed aseptic extra-oral and intra-oral procedures in the surgical area using povidone-iodine. (Figure 2)

a b

Figure 2. Aseptic a. extra-oral and b. intra-oral procedure.

The frenum was assessed, and one vertical incision and two lateral incisions at an angle of 60° were marked using a marking pencil (Figure 3). Anesthesia performed was supraperiosteal injection at the apical region of teeth 11 and 21 in the labial and palatal regions.

The upper lip is then retracted until the frenum attachment becomes pale. A vertical incision was made using a 15C blade (Swann-Morton, Sheffield, EN) along the frenulum from its attachment to the periosteum to the lip mucosa. Next, a diagonal incision is made with an angulation of about 60° on the left and right sides of the vertical incision.

After the incision was completed, the submucosal tissue was dissected beyond the base of each flap to obtain a double rotational flap. The two flaps were then transposed to the opposite side of the apex of each flap. The flap is then mobilized 90° to close the vertical incision horizontally. Suturing was performed from the end of each rotational flap, then from the superior to the inferior flap using 5-0 nylon thread (Figure 4).

Figure 3. Z-shaped incision line using a marking pencil.

Figure 4. Two triangular (double rotational) flaps after transposition and stabilization by anchoring sutures at flap tips.

The patient was given postoperative instructions. If there were swelling, the patient would be instructed to apply cold compresses. The patient was given the amoxicillin 500 mg antibiotic, Cataflam 50

mg analgesic, and Minosep Gargle 0.2% mouthwash. Patients were instructed to come for one week of control, two weeks of suture removal, and one month of control. Follow-up showed uneventful healing with more esthetic results. (Figure 5-7)

Figure 5. Simple interrupted sutures.

Figure 6. One week postoperative.

Figure 7. One month postoperative.

DISCUSSION

Midline diastema is a gap between the central incisors. Midline diastema that is 2 mm or less apart may close spontaneously. However, if the distance is greater than 2 mm, the possibility of self-closing is getting smaller, so orthodontic treatment is needed. Midline diastema can occur due to the attachment of the frenum to the central incisor, so orthodontic treatment alone can cause a relapse of the frenum, which is classified into four consisting of mucosal, gingival, papillary, and penetrating papillae. [1,7,8]

Mucosal and gingival types are normal, but papillary and papilla penetrating attachments are pathologic. Mucosal type, namely fiber attachment at the mucogingival junction. The frenum fiber inserted up to and including the mucogingival junction with no evidence of crossing into the attached gingiva. Gingival type is the attachment of fibers inserting into the attached gingiva without extending coronal to the line demarcating the base of the midline papilla. Papillary type is the attachment of fibers extending to the interdental papilla. The frenum coronal to the line demarcates the midline papilla base without any visible evidence of frenum extension to the palatal aspect. Penetrating papillae is the attachment of fibers through the alveolar process to the palate.[7,9]

The labial frenum is an anatomic formation in the oral cavity. Histologically

the frenum had elastic fibers and muscle fibers. However, Henry, Levin, and Tsaknis have found considerably elastic fibers and dense collagenous tissue without muscle fibres.[3,10,11]

According to Swerin, there are morphological variations of frenal attachment, including simple frenum with a nodule, simple frenum with an appendix, simple frenum with niche, bifid labial frenum, persistent tecto labial frenum, double frenum, and wider frenum.[11,12]

The abnormal frenum can be detected visually by pulling the upper lip to see the movement of the papillary edge or by performing a blanch test until the area becomes ischemia. In such cases, it is necessary to perform a frenectomy.[2,13]

Frenectomy can be performed using various techniques, either a blade, laser or electrosurgery. The techniques that can be done include the classical technique, illers technique, V-Plasty, Y Plasty, Z Plasty. In this case, a frenectomy was performed with the Z-plasty technique. The Z-shaped pattern will redistribute tissue tension thereby aiding healing along the incision line. The Z-shaped pattern also provides a camouflage effect on the scar, relieves soft tissue tension, lengthening of the lip, minimizes scar tissue formation, and improves lip function. The design of Z-plasty flaps can be made with several angles, namely 30 degrees, 45 degrees and 60 degrees (Figure 8). But Z plasty 60 degrees have better results than 30 degrees and 45 degrees.[1,8,14-16]

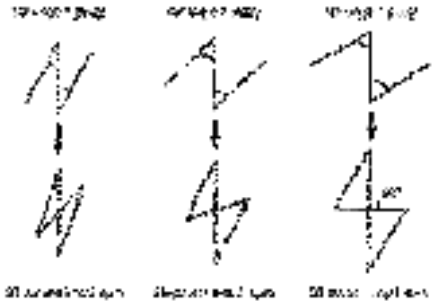

Figure 8. Lengthening of contracted scars.[7]

CONCLUSION

Frenectomy with Z-plasty technique is indicated for cases of aberrant frenum with thick biotype, and shallow vestibule. Frenectomy with this technique has the advantages of minimizing scars and camouflaging the wound area to provide a good esthetic result. The Z Pattern is effective as it promotes redistribution the mucosa's tension in the healing process along the skin line. This case report showed uneventful healing without scar formation, and there was no traction of the frenulum after frenectomy.

CONFLICT OF INTEREST

The authors reported no potential conflict of interest.

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