



Z-Plasty - An Aesthetic Surgery for Aberrant Labial Frenum- A Case Report

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Abstract

An abnormal labial frenum can lead to gingival recession either by hindering plaque control or causing muscle tension. It can also have aesthetic implications and potentially impact the outcome of orthodontic treatment, particularly in cases of midline diastema. The management of such an abnormal frenum typically involves performing a frenectomy. This case report highlights the use of the Z-plasty technique to remove abnormal maxillary labial frenum in a 36-year-old female patient.

Keywords: Z-Plasty; Aesthetic; Surgery; Aberrant; Labial Frenum

Introduction

A frenum refers to a fold of mucous membrane containing muscle and connective tissue fibers that connect the lip and cheek to the gingiva and underlying periosteum [1]. An aberrant frenum can cause functional and aesthetic issues in certain individuals, such as a diastema (gap) between the maxillary central incisors and gingival recession. Visual examination and tension testing can help identify abnormal frenum by observing papillary movement or blanching indicating reduced blood flow [2].

Based on their attachment level, frenum are classified as mucosal, gingival, papillary, or papillary penetrating. Surgical procedures called frenectomy and frenotomy are used to address these issues. Frenectomy involves complete removal of the frenum, including its attachment to the underlying bone, while frenotomy involves incision and relocation of the frenal attachment. Various techniques have been utilized for these procedures, including the Z-plasty technique.

In the reported cases, Z-plasty was employed for frenectomy. Z-plasty is a plastic surgery technique commonly used to improve the appearance of scars by creating triangular flaps through a central incision and then repositioning and suturing them. This technique was chosen to enhance both the functional and cosmetic aspects of the frenum removal procedure [3].

Case Presentation

A 36-year-old female reported to the Department of Periodontics at Bharati Vidyapeeth Dental College and Hospital, Pune with

the chief complaint of gap between the maxillary central incisors causing an aesthetic problem. A labial frenectomy can be carried out at different stages: prior to, during, or after orthodontic closure of a maxillary midline diastema, depending on the individual case. In this particular case, it was planned to perform orthodontic closure after the frenectomy. A comprehensive family and medical history was obtained to ensure there were no contraindications for the surgery. All the blood parameters were within normal physiological limits in the routine blood investigation performed. The surgical procedure was explained to the patient, and their consent was obtained.

Before the surgery, oral prophylaxis was performed, and the procedure took place under sterile conditions. Local anesthesia (2% lignocaine with epinephrine 1:2,00,000) was administered to ensure the patient's comfort. The frenum and the surrounding area were evaluated. A single vertical incision was made over the frenum, and two lateral horizontal incisions were made at a 60° angle, resulting in the creation of two equal-sized and shaped triangular flaps.

Adequate undermining of the surrounding tissues was performed to ensure proper mobilization of the flaps and minimize distortion of the underlying structures. The two flaps were then moved to the opposite side of the apex of each flap. They were carefully sutured to the defect on the opposite side of the other flap base using interrupted braided silk sutures. Following the procedure, a periodontal dressing was applied, and the patient was prescribed antibiotics and analgesics. Routine wound care instructions were provided. The patient was scheduled for a follow-up appointment

after 7 days to remove the sutures. The frenal attachment was reassessed after a month. Postoperative healing was uneventful with no hypertrophic scar formation.



Figure 1: Preoperative view. The frenulum is thick and width, the attachment extends to the palatine papilla.

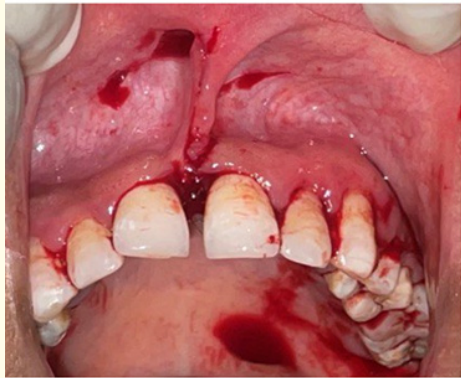


Figure 2: A single vertical incision over the frenum and two lateral horizontal incisions were made.



Figure 3: Flap was transposed to the opposite side.



Figure 4: Flap was stabilized with a simple interrupted suture using a silk suture.



Figure 5: 1-month post-operative.

Discussion

A frenum can pose significant issues if it causes gingival recession or hinders the closure of a diastema during orthodontic treatment [4]. Several frenectomy procedures have been developed, including the classical technique, Millers technique, V-plasty, Y-plasty, Z-plasty, electrocautery, and laser. The classical technique involves a longitudinal incision that can result in scarring, potential periodontal problems, and an unsightly appearance, often necessitating alternative approaches. Electrocautery and laser techniques are particularly useful for patients with bleeding disorders or those who have concerns about bleeding. The Z-plasty technique is effective in promoting tension redistribution and facilitating healing along the mucosal lines. It helps minimize scar formation and has a camouflaging effect on the wound. The basic Z-plasty flaps are created with a 60° angle on each side, which has been found to be optimal for scar lengthening [5]. In this case report, the 60° Z-plasty was performed to achieve better results [6]. The case demonstrated successful healing without complications or scar formation, leading to satisfactory functional and aesthetic outcomes for both the surgeon and the patient.

Conclusion

The Z-plasty frenectomy technique is a reliable and easy method for removing an hypertrophic abnormal frenulum attachment. It offers favorable aesthetic and functional outcomes. By redistributing tissue tension in different directions, this technique can effectively minimize scar formation.

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