

## Management of Papilla Penetrating Frenum Using Z-plasty Technique - A Case Report

### Abstract:

Frenectomy is a surgical procedure that is commonly used to address issues related to the frenulum which can affect speech and can cause midline diastema which looks unesthetic. Z-plasty is a modification of the standard frenectomy procedure to reposition the frenulum and improve outcomes. This article provides an overview of frenectomy by using Z-plasty, including the procedure in detail, potential risks and complications, and a discussion of its clinical applications and outcomes.

**Key-words:** Aberrant frenum, Frenectomy, Z-plasty

### Introduction:

A frenum is a small fold of tissue that connects two structures in the oral cavity. In the oral cavity, there are two main types of frenum: the lingual frenum, which connects the tongue to the floor of the mouth, and the labial frenum, which connects the upper or lower lip to the gingiva.

An abnormal frenum can cause functional and aesthetic problems in the oral cavity. To check for an abnormal frenum, a clinician can perform a visual and physical examination of the frenum to assess its size, attachment, and function. Some common signs of an abnormal frenum include difficulty with tongue or lip movement, spacing between teeth, and gingival recession.

Depending on the attachment level, Placek et al in 1974 classified frenum as:

- A. **Mucosal:** when the frenal fibres are attached up to the mucogingival junction.
- B. **Gingival:** when the frenal fibres are inserted within the attached gingiva.
- C. **Papillary:** when the frenal fibres extend into the interdental papilla.

- D. **Papillary penetrating:** when the frenal fibres cross the alveolar process and extend up to the palatine papilla.[1]

Frenectomy is a surgical procedure that involves the removal or modification of the frenulum, a small fold of tissue that attaches two structures in the oral cavity.

### Different frenectomy procedures include:

- I. Conventional (Classical) frenectomy (**Archer** (1961) and **Kruger** (1964))
- II. Miller's technique (**Miller PD** in 1985)
- III. V-Y Plasty

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- IV. Z Plasty (Denonvilliers in 1856 to repair eyelid scars)
- V. Frenectomy which was done by using electrocautery
- VI. Frenectomy which was done by using LASER

The choice of frenectomy procedure will depend on the patient's individual needs and the clinician's preferences and skills. Each procedure has its advantages and disadvantages, and the clinician should discuss these with the patient to determine the best course of action.

In this case, a frenectomy was done using a technique called Z-plasty. Z-plasty is a surgical method that can improve both the function and appearance of scars. The procedure involves making a central incision and creating two triangular flaps of equal size. These flaps are then moved and sutured into new positions.

### Case Presentation:

A 25-year-old male patient came to the Department of Periodontics, Sardar Patel Post Graduate Institute of Dental and Medical Sciences, Lucknow with the chief complaint of spacing in the upper front tooth region and an unpleasant look. On examination, there was a high maxillary frenal attachment, i.e., papilla penetrating labial frenum. The patient was systemically healthy. Diagnosis was papillary penetrating frenum in relation to labial frenum. Treatment plan decided was phase-I therapy followed by Phase-II therapy consisting of frenectomy of labial frenum by Z-plasty technique.

Patient was educated and motivated about the surgical procedure. The patient provided written consent for the procedure. Thorough scaling and root planing was performed using ultrasonic scaler. The patient was given oral hygiene instructions and also instructed to brush with a soft toothbrush. The routine blood test showed that all blood parameters were within normal physiological limits.



Figure-1: Pre-operative frontal view



Figure-2: Pre-operative side view

### Surgical Procedure:

One week after phase I therapy, a frenectomy procedure was performed using the Z-plasty technique (Figure-1,2). Local anesthesia was administered using 2% lignocaine with 1:80000 adrenaline. The labial frenum was incised with a scalpel along the frenum to remove the thick band of frenum (Figure-3), and 2 opposite incisions were made at each end at a 60° angle in equal length to that of the band (Figure-4). The submucosal tissues were dissected beyond the base of each flap using mosquito artery forceps. Double rotation flaps at least 1 cm long were obtained, mobilized, and transposed through 90° angle to close the vertical incisions horizontally (Figure-5). Non-absorbable 5-0 vicryl and 3-0 silk sutures were used to close the wound along the edges of the flaps and attached mucoperiosteum and labial mucosa (Figure-6,7). A periodontal dressing was applied for 5-7 days.

The patient was instructed to rinse twice daily with 0.2% chlorhexidine mouthwash for 2 weeks postoperative month. Antibiotics and antiinflammatory were prescribed for five days after surgery. The patient was recalled after one week postoperatively to remove the periodontal dressing and sutures (Figure-8). The patient was recalled for regular checkups every month. Normal plaque control techniques were resumed.

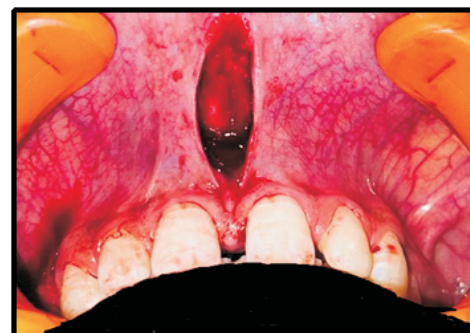


Figure-3: Frenum incised with a scalpel

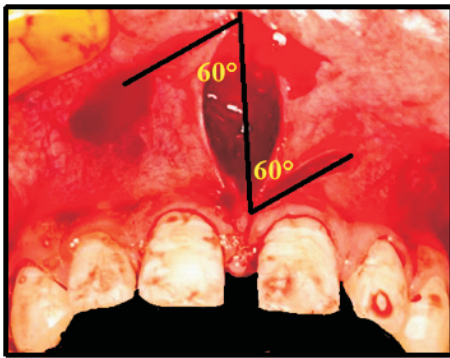
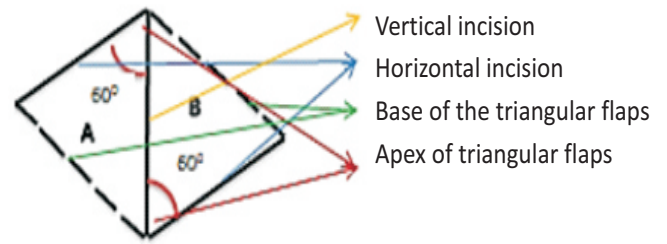


Figure-4: Incisions made at each end at a 60° angle in equal length



Schematic representation of incision lines in Z-plasty procedure

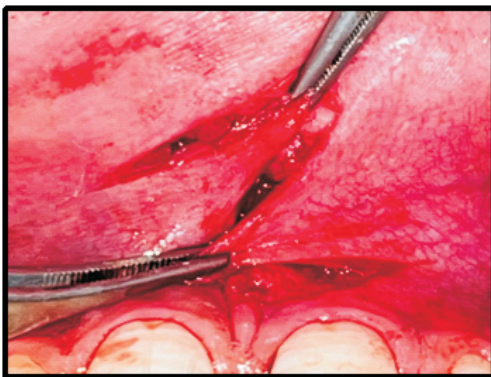
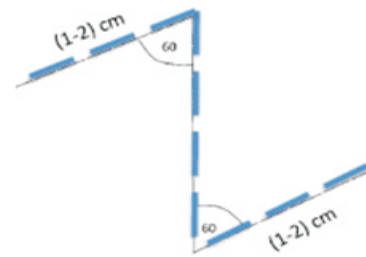
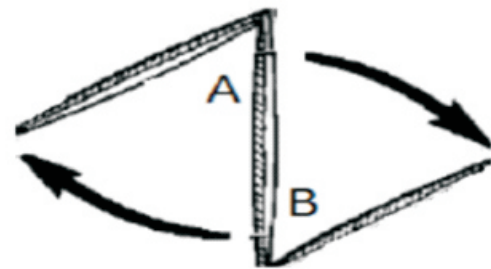


Figure-5: Transposed flaps



Incision lines



Transposition of flaps



Figure-6: Apical end of transposed flaps sutured



Figure-8: Post-operative after 7 days



Figure-7: Suture placement

**Discussion:**

Frenectomy is a surgical procedure that involves the removal or release of a frenum, a piece of tissue that connects two structures in the oral cavity. The aberrant attachment of frenum can be a serious problem if it causes gingival inflammation associated with poor oral hygiene, gingival recession, and tissue that inhibits the closure of central diastema during orthodontic treatment. [2,3] One technique for performing a frenectomy is the Z-plasty technique

Frenectomy by Z-plasty can be a highly effective technique for addressing issues related to the frenulum in periodontology. In this case report Z-plasty technique is particularly useful as the frenulum is broad, thick hypertrophic with a low insertion, which was associated with an inter-incisor diastema. It achieved both the removal of the fibrous band and the vertical lengthening of the vestibule.[4] It can also be used to create a more natural-looking frenulum after the removal of a previous frenulum or in cases where the frenulum has been previously repaired. The procedure can often be performed quickly and with minimal discomfort to the patient, and can have a significant positive impact on oral function and aesthetics.

The Z-shaped pattern is useful because it redistributes tension on the skin and wound, promoting healing along skin lines. It reduces scarring and has a concealing effect. Basic Z-plasty flaps are created using an angle of 60° on each side. Classic 60° Z-plasty lengthens scars by 75%, while 45° and 30° designs lengthen scars by 50% and 25%, respectively[5,6] and angles of 90° increase them by 120%.[7] So, a 60° Z-plasty was done for improved outcomes.

Flap necrosis, hemorrhage, wound infection, and sloughing of the flap due to excessive wound tension are all possible consequences of Z-plasty frenectomy. However, using a precise and careful technique can prevent these complications.[8]

### Conclusion:

Frenectomy by Z-plasty is a valuable technique for addressing issues related to the frenulum in dental periodontology. While there are potential risks and complications associated with the procedure, it can be highly effective in repositioning the frenulum and improving outcomes. Patients who are considering this procedure should discuss their individual needs and risks with a qualified healthcare provider to determine if it is the right choice for them.

### Reference:

1. Sinha J, Saimbi CS, editors. Untangle lip through Z-plasty Jolly Sinha,1 Vivek Kumar,1 Amitandra Kumar Tripathi,1 and Charanjit Singh Saimbi.
2. Huang WJ, Creath CJ. The midline diastema: a review on its etiology and treatment. *Pediatric Dentistry*.1995;17:171-9.

3. Bagchi SS, Sarkar P, Bandyopadhyay P. Case report management of aberrant frenum: Series of cases. *Annals of Applied Biology Sciences*. 2016;3(2): 34-39
4. Shubhashini V. Frenectomy: A Review with the Reports of Surgical Techniques Devishree,1 Sheela Kumar Gujjari,2 and P.
5. Kriti Mehrotra, Satish Saswat Majhi, Triveni M.G, D S Mehta. Z-Plasty: An Esthetic Approach for Maxillary Labial Frenum. *Archives of Dentistry and Oral Health*. 2018; 1(2): 13-17.
6. Pitale U, Sethia B. Labial Frenectomy through Z-plasty- A Case report. *NJDSR*. 2014; 1: 21-23
7. Hudson DA. Some thoughts on choosing a Z-plasty: the Z made simple. *Plast Reconstr Surg*. 2000 Sep;106(3):665-71. doi: 10.1097/00006534-200009030-00024. PMID: 10987477.
8. Barot VJ, Brahmhatt JM. Z-plasty: An esthetic eraser for labial frenum. *Universal Research Journal of Dentistry*. 2016;6: 48-52
9. Eduardo Leal Damasceno, Marla Santana Silva and Karina Sarno Paes Alves Dias. “Z plasty – an esthetic approach to frenectomy: Case report”, *International Journal of Development Research*, 10, (07), 38053-38056.
10. Kaur G, Malik S, Grover D, Sharma A. Surgical Management of Aberrant Labial Frenum Using Modified Z-Frenuloplasty: A Case Report. *IJSS Case Reports & Reviews* 2015;1(10):5-8