



Research article

Frenectomy as a Multidisciplinary Prosthodontic-Perio Management Approach for Partial Denture: A Case Report

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Abstract.

Background: The frenulum is defined as a thin membrane attached to the alveolar mucosa and periosteum which limits lip movement. The attachment of frenulum may influence prosthetic construction in denture making.

Objective: To describe frenectomy in prosthodontic-perio cases for the manufacture of partial dentures.

Case Report: A 38-year-old woman presented to the Prosthodontic Department of Hasanuddin University Dental and Oral Hospital for an artificial tooth implant. The patient was referred to the periodontic department by a prosthodontist for frenectomy. Intraoral examination showed a high frenulum from the alveolar crest to the labial mucosa of the upper jaw. The patient had no history of hypersensitivity and was diagnosed with gingival frenal attachment. Surgical excision was performed, and frenulum tissue was excised, which was followed by irrigation and suturing.

Results: The control period of one week post treatment showed good outcomes when the patient was referred to the prosthodontist.

Conclusion: Frenectomy helps in preparing denture placement in high frenulum cases.

Keywords: frenulum, frenectomy, prospective surgery

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1. Introduction

The maxillary labial frenulum is a normal anatomical structure in the oral cavity formed by mucous membranes and fibrous tissue and muscle fibers attached to the lips, cheeks to the alveolar, gingival and periosteal processes. Etiology The maxillary labial frenum develops as remnants of the post-erect ectolabial band connecting the upper lip tubercle to the palatine papilla. This can be detrimental if the fibrous attachment is thick and wide or located near the peak of the residual ridge, thereby disrupting the expansion of accurate denture limits so that stability and retention, and patient satisfaction are low [1].

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Classification of attachment of the superior labial frenulum can be divided into 3 types, namely 1) Low frenulum is the entire frenulum attached to the alveolar mucosa, 2) medium frenulum is the entire frenulum attached to the alveolar mucosa to the fixed gingiva,

3) the high frenulum is the entire frenulum attached to the alveolar mucosa, 2) the medium frenulum is the entire frenulum attached to the alveolar mucosa to the fixed gingiva, 3) the high frenulum is the entire frenulum attached to the alveolar mucosa up to fixed gingiva and gingival edge. High attachment of the frenulum causes problems, for example, maxillary midline diastema due to thickening or hypertrophy or extensive fibrous frenulum tissue that will block orthodontic movement, block plaque release, cause tension and gingival recession. In this case report, the patient had a high maxillary frenulum so that it could interfere with denture resistance and retention [2,3].

Abnormal frenulum is detected visually by applying pressure to the frenulum to see the movement of the papillary tip or blans produced due to ischemia in the region. frenulum is characterized as pathogenic when there is no gingival zone attached along the midline or interdental papillae, shifting when the frenulum is extended [4].

2. Case Report

Female patients aged 37 years came to Hasanuddin University Dental and Oral Hospital with complaints of loss of maxillary and mandibular teeth. Remaining subjective examination of the patient does not suffer from systemic abnormalities and allergies. Dental health history, the patient is a referral from the Prosthodontics Section. On intraoral examination, four mandibular incisor teeth were lost, a high frenulum attached in the interdental area of the central incisors.



Figure 1: Initial intraoral photo. The frenulum looks high.

This case, it begins with an examination of the vein with a blanch test, which is by pulling the labial frenulum upward and looking pale interdental papillae. This shows that the attachment of the frenulum is high and indicated to be carried out with frenectomy, which is the removal of the entire frenulum, including attachment to the bone in order to obtain retention and stability of the dentures. The maxillary frenulum is a complicating factor in the construction of dentures so it is indicated for preprosthetic surgery before starting treatment. If the frenulum extends to the top of the ridge and can interfere with the retention of dentures [5,6].

At the first visit an initial therapy was performed namely dental education, scaling and root planing. At the next visit, continued with a frenectomy. It is performed by excision the frenulum using a hemostat (Figure 3). Before the surgery perform, the patient sign informed consent Excision of the upper and lower frenulum of the hemostat with a scalpel. Blunt dissection is performed to remove the attachment of fibrous tissue from the periosteum. The wound is sutured with interrupted suture using 4-0 nylon thread, then the operation is closed with a non-eugenol periodontal dressing. Amoxicillin 500 mg postoperative antibiotics, 3x1 for 5 days and analgesics such as paracetamol 3x1 for 3 days. Patients are advised to use chlorhexidine mouthwash 12 hours for one week. Control visits were performed two week after surgery for aff hecting and three month after surgery to try-in the prosthesis. Patient felt very satisfaction with the treatment.

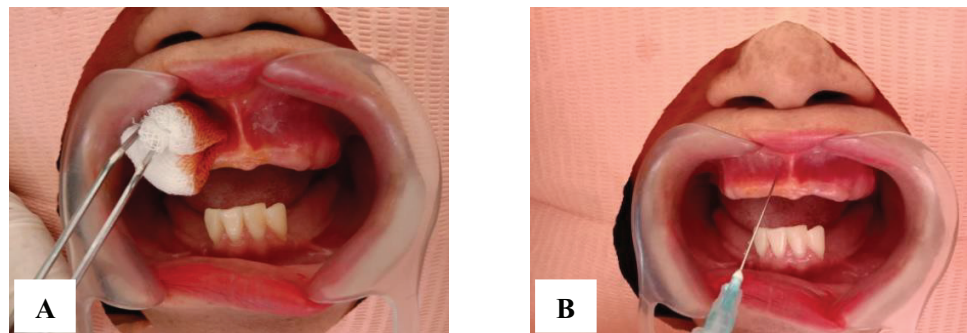


Figure 2: A Disinfection before surgery, **B** Local Anestesi.

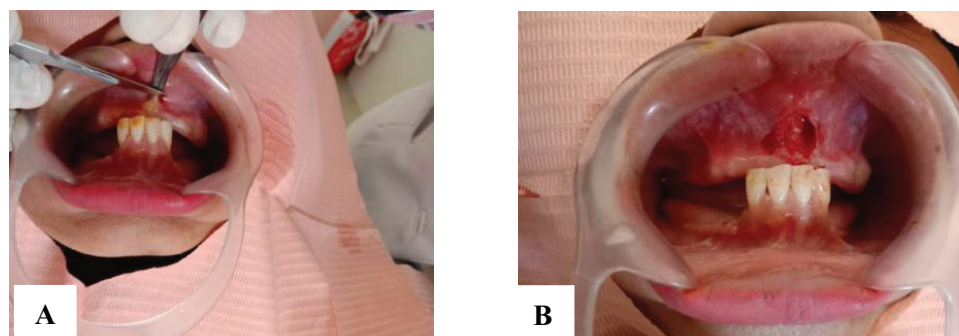


Figure 3: A Labial Frenulum is clamped with two hemostats, **B** Excision frenulum.

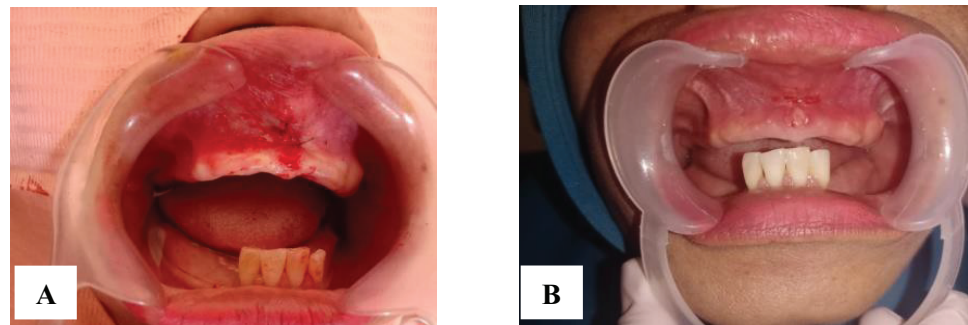


Figure 4: **A** Suturing with nylon 4.0, **A** Two weeks postoperatively, the gingival color of coral pink and the frenulum.

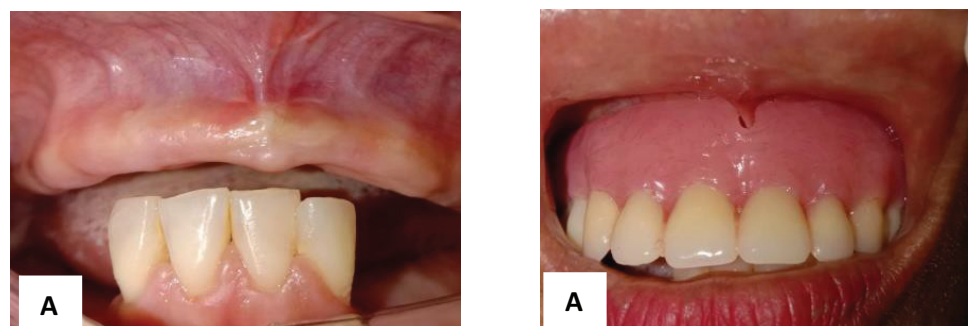


Figure 5: **A** Three month post frenectomy healing, **B** Installation of full maxillary denture by prostodontics.

3. Discussion

The attachment of the labial frenulum is classified 1) mucosal: the frenulum is attached to the mucogingival junction, 2) gingival : the frenulum is attached to the fixed gingiva, 3) papillary : the attachment extends to the interdental papillae, 4) the penetrating papilla : the attachment of the frenulum extending to the palatine papilla. [7,8] Based on the classification, this case included in the gingival classification. In this case the frenectomy modification method used the two-hemostat technique. The hemostat holds the top and bottom of the frenulum and is excised above and below the clamp. Excision does not cause enlarged sores on the lip mucosa, due to the pull of the muscles.

Preprosthetic surgery is intended for surgical modification of the alveolar bone and surrounding tissue to facilitate the creation of accurate, comfortable, and aesthetic dentures. When natural teeth are lost, changes will occur in the alveoli and surrounding soft tissue. Some of these changes will disrupt the convenience of making artificial teeth. Frenectomy is a soft tissue surgical procedure that aims to improve the comfort and stability of dentures.

Deviated vein resection was initially included in the term mucogingival surgery given by Friedman in 1957. Then it was included in the category of periodontal plastic surgery. As previously mentioned the scalpel, electrosurgery, and LASER methods can be used

to remove annoying frena. The classic scalpel technique was introduced by Archer (1961) and Kruger (1964). After the introduction of this technique, various modifications were proposed, such as the Z-plasty, V-Y-plasty, and Miller techniques. Until now the classic technique remains the most widely used method. But classic techniques can leave longitudinal surgical scars that can cause periodontal problems and un-aesthetic appearance [9].

The stability and retention of removable dentures, whether full dentures or partial dentures, are influenced by four strength components described more than 50 years ago by Sir Wilfred Fish: (1) surface tension at the intaglio prosthesis network interface, (2) atmospheric pressure, (3) occlusal force, and (4) peripheral neutral zone force. The neutral zone is the area inside the oral cavity where the strength of the buccinator and orbicularis oris muscles is equal to the strength of the outer muscles produced by the lateral border of the tongue. These four components can be interfering with the prosthesis which can be detached if misplaced, or may be a very strong stabilizing force if positioned correctly. The fifth power can easily be added to the list above: the power of disruptive dynamic networks. This report

illustrates the intruding power in the form of hamular frenulum. When this frenulum becomes dynamic, it has the capacity to destabilize and release denture bases that can be released by destroying intagliotissue surface tension, negating the effect of positive atmospheric pressure on retention surface suction and tension, misdirecting the occlusal force and moving the denture base out of the neutral zone. Disruptive strength can be minimized by reducing frenulum through surgery in a better direction [10].

4. Conclusion

From the management of this case, it was concluded that a careful examination and an appropriate treatment plan provided more satisfactory denture results. The frenectomy procedure is an effective treatment to restore aesthetic function and also the stability of denture.

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