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(CASE REPORT)

Management of frenectomy anterior upper arch before orthodontic treatment

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Abstract

Abnormal labial frenum may affect gingival health and cause periodontal disease. Abnormalities of the frenum also cause diastema of central incisors and irritation of the periodontal tissues, interfering with the teeth cleaning process, movement of orthodontic tools, and the proper fit of the denture and affecting the aesthetics. This case report shows that frenectomy is an alternative treatment due to abnormal labial frenum, in this case, caused by central diastema on maxillary incisors teeth. A-19 years old female patient came with chief complaints of midline diastema that affect her smile. She wants to get orthodontic treatment after the frenectomy management. The frenum was clinically high and elongated to the palatal side. Scaling and root planing were done at the first appointment, continued with frenectomy using a conventional technique (classical frenectomy) a week after the control. The treatment result showed that the frenectomy attachment was repaired and can continue the orthodontic treatment.

Keywords: Abnormal labial frenum; Central diastema; Frenectomy; Conventional technique; Orthodontic treatment

1. Introduction

Frenectomy involves the complete removal of the frenum, including its attachments to the underlying alveolar bone process, while frenotomy is the incision and the relocation of the frenum attachment. The classical technique approach was advocated in the midline diastema cases with an aberrant frenum to ensure the removal of the muscle fibres that supposedly connecting the orbicularis oris with the palatine papilla. Any abnormalities in the size and location of the frenulum can cause functional and esthetic problems which requires surgical excision [1,2].

The continuing presence of a diastema between the maxillary central incisors in adults has often been considered as an aesthetic problem. The presence of an abnormal labial frenum being one of the aetiological factors for the persistence of a midline diastema, the focus on the frenum has become essential [2,3]. The abnormal labial frenum can be treated by *frenectomy* or by *frenotomy* procedures. This technique is an excision type frenectomy which includes the interdental tissues and the palatine papilla along with the frenulum [1,4,5].

The abnormal frenum are detected visually by applying tension over the frenum to see the movement of the papillary tip or the blanch which is produced due to ischaemia in the region. The frenum is characterized as pathogenic when it is unusually wide or when there is no apparent zone of the attached gingiva along the midline or the interdental papilla shifts when the frenum is extended [1,2,3,4].

The labial frenal attachments have been classified as mucosal, gingival, papillary and papilla penetrating, by Placek et al (1974) [3].

- Mucosal – when the frenal fibres are attached up to the mucogingival junction.
- Gingival – when the fibres are inserted within the attached gingiva.
- Papillary – when the fibres are extending into the interdental papilla.
- Papilla penetrating – when the frenal fibres cross the alveolar process and extend up to the palatine papilla

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The frenum is characterized as pathogenic and is indicated for removal when [3]:

- An aberrant frenal attachment is present, which causes a midline diastema.
- A flattened papilla with the frenum closely attached to the gingival margin is present, which causes a gingival recession and a hindrance in maintaining the oral hygiene.
- An aberrant frenum with an inadequately attached gingiva and a shallow vestibule is seen

The aberrant frenum can be treated by frenectomy or by frenotomy procedures. Frenectomy is the complete removal of the frenum, Dentistry Section Devishree, Sheela Kumar Gujjari, Shubhashini P.V. Devishree et al., Frenectomy: A Review with the Reports of Surgical Techniques www.jcdr.net 1588 Journal of Clinical and Diagnostic Research. 2012 November, Vol-6(9): 1587-1592 including its attachment to the underlying bone, while frenotomy is the incision and the relocation of the frenal attachment [3]. Frenectomy can be accomplished either by the routine scalpel technique, electrosurgery or by using lasers. The conventional technique involves excision of the frenum by using a scalpel. However, it carries the routine risks of surgery like bleeding and patient compliance [3].

2. Case Report

A-19 years old female patient came with chief complain of midline diastema that affect her smile. She wants to get orthodontic treatment after the frenectomy management. The frenum was clinically high and elongate to the palatal side. Scaling and root planing was done at the first appointment, continued with frenectomy using conventional technique (classical frenectomy) a week after the control. The patient has no history of systemic disease.

Figure 1 Pre-operative image. Front view, Sagital view, and Oclusal view

Treatment was started after checking vital signs and informed consent patient. It was found that the patient vital signs were within normal limits. The frenectomy procedure began by performing work area asepsis with povidone iodine 10% as antiseptic material. Anesthesia began with topical anesthesia application, then buccal/labial and palatal/lingual infiltration anesthesia at the mucosa border of immobilized teeth 12-22 with citoject. The frenum was engaged with a haemostat, inserted into the depth of the vestibule. Incisions were placed on the upper and the under surface of the haemostat until the haemostat was free using surgical blade no. 15C. A blunt dissection was done on the bone using curettage tools to relieve the fibrous attachment. Application of periodontal dressing (ora aid) to maintain the post gingivectomy wound from irritation. Patient was then medicated with amoxicillin 500 mg every 8 hours for 5 days and mefenamic acid 500 mg if needed when patient feel any pain, as well as chlorexidine gluconate 0.12% mouthwash (Minosep 0,12%) 2 times a day after brushing the teeth in the morning after having a breakfast and at night before going to bed. The 2-weeks and 4-weeks control show the gingiva turned to normal contour and colour.

Figure 2 Ekstra oral asepsis with povidone iodine 10% as antiseptic material. Intra oral asepsis with povidone iodine 10% as antiseptic material. Labial infiltration anesthesia at the mucosa border anterior upper teeth

Figure 3 The frenum was engaged with a haemostat, inserted into the depth of the vestibule

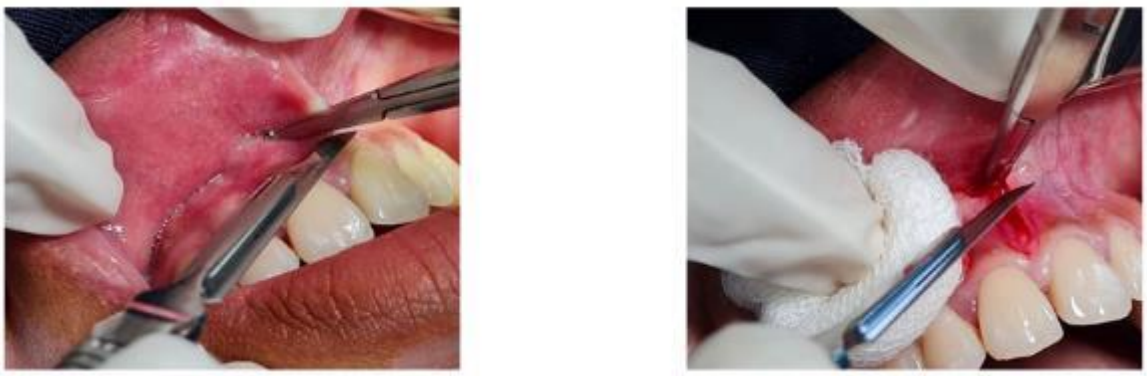

Figure 4 Incisions were placed on the upper and the under surface of the haemostat until the haemostat was free using surgical blade no. 15C

Figure 5 A blunt dissection was done on the bone using curettage tools to relieve the fibrous attachment

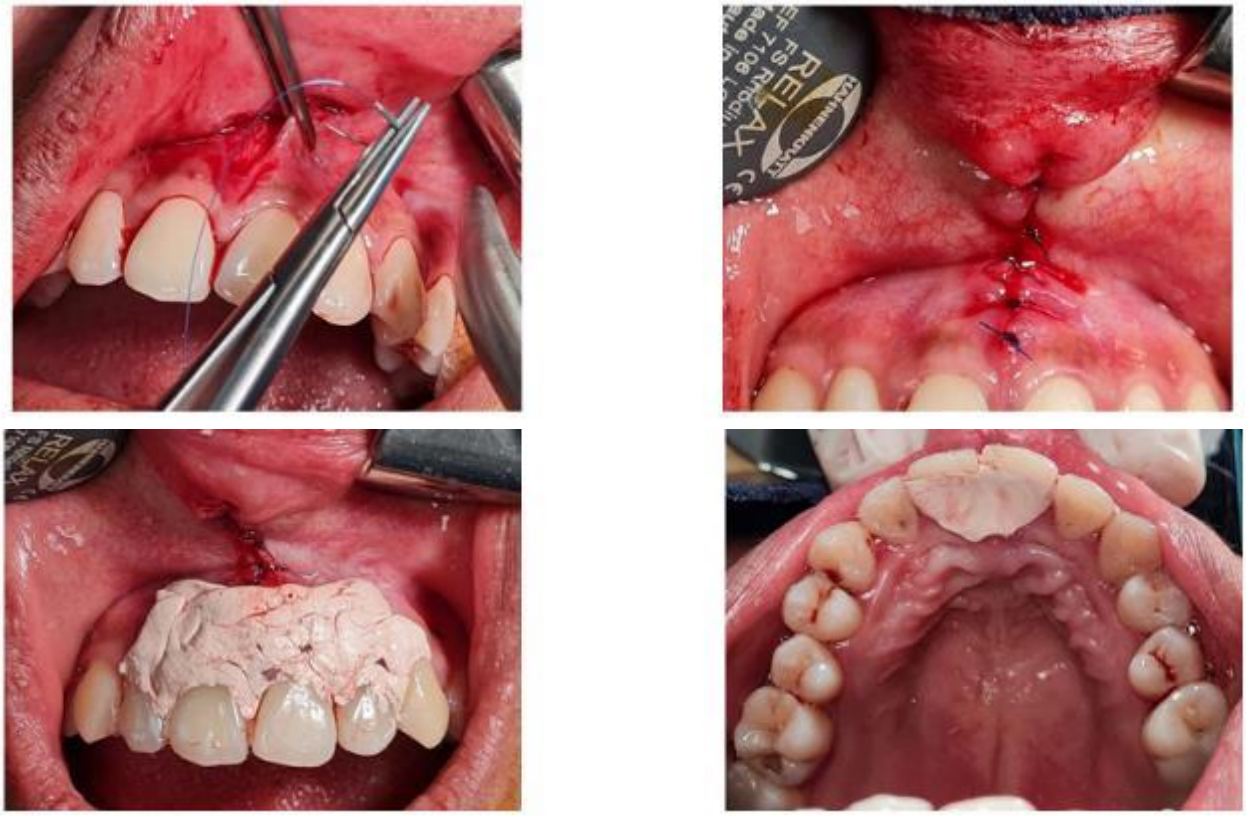

Figure 6 The diamond shape wound were sutured by using 4-0 blue nylon with continues sutures and cover palatal side with periodontal pack as a dressing

Figure 7 Pre-operative image

Figure 8 The post-operative at 2 weeks of follow-up

Figure 9 The post-operative at 4 weeks of follow-up

In oral examination a week after the surgery, the patient had complaint about less pain at the mucosa of the upper lip. The gingiva and the labial mucosa look reddish. The periodontal dressing and the suture removal were done after 7 days post-surgery. In oral examination after 4 weeks post-surgery, the patient had no complaint at all. The gingiva turned to normal contour and colour.

3. Results and Discussion

Aesthetic concerns have led to an increasing importance in seeking dental treatment, to achieve perfect smile. The continuing presence of a diastema between the maxillary central incisors in adults, has often been considered as an aesthetic problem. The presence of an aberrant frenum being one of the aetiological factors for the persistence of a midline diastema, the focus on the frenum has become essential [2,5,6].

Blanch test is the most commonly used method for the diagnosis of high frenum attachment. It involves application of tension over the frenum by pulling it and visually detecting the movement of papillary tip or any blanching produced [2,5,6,7].

Frenectomy involves the complete removal of the frenum, including its attachments to the underlying alveolar bone process. Any abnormalities in the size and location of the frenulum can cause functional and esthetic problems which requires surgical excision. Placek *et al* [2] have classified frenum depending on the extension of attachment of fibers, (1) Mucosal: when the frenal fibers are attached up to mucogingival junction, (2) Gingival: when fibers are inserted within attached gingiva, (3) Papillary: when fibers are extending into interdental papilla, and (4) Papilla penetrating: when the frenal fibers cross the alveolar process and extend up to palatine papilla [2].

According to Miller, the frenum should be characterized as pathogenic when it is unusually wide or there is no apparent zone of attached gingiva along the midline or the interdental papilla shifts when the frenum is extended. These pathogenic frenum can lead to midline diastema, gingival recession, interference with retention of denture, and compromised gingival health because of poor plaque control. The management of such abnormal frenum includes frenectomy or frenotomy [3,7,8,9,10,11,12].

The surgery would not usually leave abnormal scar and the patient is immediately ready to continue other orthodontic treatment. Furthermore, frenectomy is studied to reduce the risk of midline diastema relapse [3].

4. Conclusion

The frenectomy is a simple and routine procedure in periodontal plastic surgery, which should be performed at the right time, according to the indications. An aberrant frenum can be removed by any of the modification techniques that have been proposed, a functional and an aesthetic outcome can be achieved by a proper technique selection, based on the type of the frenal attachment. It can be concluded that frenectomy at regio anterior upper arch during orthodontic treatment can be treated with conventional technique. The treatment result showed that the frenectomy attachment was repaired and can continue the orthodontic treatment. The fibrous attachment should be released to inhibit the recurrent of the aberrant frenum.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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