Frenectomy with Paralleling Technique: A Case Report

A Case Report

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ABSTRACT

A frenum is a fold of tissue or muscle connecting the lips, cheek or tongue to the jaw bone. Clinically, papillary and papilla penetrating frenum are considered as pathological and have been found to be associated with loss of papilla, recession, diastema, difficulty in brushing, alignment of teeth and psychological disturbances to individual. Frenectomy is the complete removal of the frenum, including its attachment of the underlying bone. There are two techniques for frenectomy. One of these is the conventional technique with scalpels and periodontal knives, and the other is using the soft tissue laser. both the techniques has certain disadvantages, conventional scalpel technique causes large rhomboidal wound area where primary closure is not possible in the lower part and healing takes place by secondary intension. It also causes more pain and discomfort to the patient when compared with the laser technique. On the other hand laser is a costly instrument, and the use require more precision and control, if the beam touches the bone surface it will cause necrosis of the bone.

The aim of this article is to report a case of paralleling technique frenectomy, along with literature review & its advantages over conventional technique frenectomy.

Keywords: Paralleling technique frenectomy, Frenum, Conventional technique Frenectomy

INTRODUCTION:

A frenum is a fold of mucous membrane, usually with enclosed muscle fibers, that attaches the lips and cheeks to the alveolar mucosa and/or gingiva and underlying periosteum. Frenum problem most often occurs on the labial surface between the maxillary and mandibular central incisors and in canine and premolar areas. They occur less often on the lingual surface of the mandible.[1]

Aetiology:

The maxillary labial frenum develops as a post-eruptive remnant of the ectolabial bands which connect the tubercle of the upper lip to the palatine papilla. When the two central incisors erupt widely separated, no bone is deposited inferior to the frenum. A V-shaped bony cleft between the two central incisors and an abnormal frenum attachment results. The mandibular frenum is considered as aberrant when it is associated with a decreased vestibular depth and an inadequate width of the attached gingiva.[2,3]

Depending upon the extension of attachment of fibres, frena have been classified by **Placek et al**: [4]

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
4. **Papilla penetrating:** When the frenal fibers cross the alveolar process and extends up to the palatine papilla.

Clinically, papillary and papilla penetrating frenum are considered as pathological and have been found to be associated with loss of papilla, recession, diastema, difficulty in brushing, alignment of teeth and psychological disturbances to individual.[5,6]

The aberrant frena can be treated by *frenectomy* or by *frenotomy* procedures. *Frenectomy* is the complete removal of the frenum, including its attachment to the underlying bone, while *frenotomy* is the incision and the relocation of the frenal attachment.[7]

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.

The use of electro surgery and lasers has also been proposed for frenectomy.[8-13] Researchers have advocated the use of an electrocautery probe due to its efficacy and due to the safety of the procedure, the mild bleeding and the absence of postoperative complications. However, it is associated with

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certain complications which include burns, the risk of an explosion if combustible gases are used, interference with pacemakers and the production of surgical smoke. These complications have not been reported with the new improvement in the electro surgical techniques, like the Argon Beam Coagulation (ABC).[8,9]

Recently, the use of a CO2 laser in lingual frenectomy has been reported as a safe and effective procedure with the advantages of a shorter duration of the surgery, simplicity of the procedure, the absence of postoperative infections, lesser pain, swelling and the presence of a small or no scar.[8] A delayed healing as compared to that in the conventional scalpel techniques, a reduced surgical precision which results in an inadvertent laser-induced thermal necrosis and/or a photo acoustic injury, are some of the complications which are associated with lasers. The application of diode and Er:YAG lasers[10] in labial frenectomies in infants and Er,Cr:YSGG lasers[11] in labial frenectomies in the adolescent and the pre-pubescent populations have also been reported.

Since the conventional procedure of frenectomy was first proposed, a number of modifications[14-16] of the various surgical techniques like the Miller's technique, V-Y plasty and Z-plasty have been developed to solve the problems which are caused by an abnormal labial frenum, but conventional scalpel technique causes large rhomboidal wound area where primary closure is not possible in the lower part and healing takes place by secondary intension. It also cause more pain and discomfort to the patient. To overcome this, modern technology now offers an alternative mode of treatment, the present article, apart from reporting a case is a succinct review of Paralleling technique frenectomy, which highlights the advantages of this technique over conventional technique frenectomy.

CASE REPORT:

A 19 years aged Female patient reported to the Outpatient Department of Periodontics and Oral Implantology at Ahmedabad Dental College & Hospital, Gandhinagar with the chief complaint of spacing in the upper front tooth region of jaw. A detailed history was taken & revealed no positive features. On clinical examination, the patient had midline diastema in upper arch. This diastema associated with frenal attachment & tension test positive. There was presence of local factors & absence of gingival recession, trauma from occlusion.

Diagnosis: -Looking at the clinical picture and 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 frenumis characterized as pathogenic of papilla penetrating type that made the distema& psychological problems to the patient.

Figure 1: Papilla penetrating labial frenum with midline diastema

Treatment: - She was treated with Phase I therapy scaling followed by decided to perform: Paralleling technique frenectomy for papilla penetrating frenal attachment. (Figure 1) The details of the Paralleling technique frenectomy procedurewere explained verbally to patient. Patient signed an agreement informed consent for surgery. Patient was evaluated by clinical examinations and documented by digital photos and patient was prepared for surgery.

Local anesthesia (lignocaine HCl with 2% epinephrine at 1:80,000) was administered in the maxillary vestibular mucosa surrounding labial frenum. The upper lip was pulled upward by the assistant hands, then frenum was tightened.Two paralleling incisions were placed on the side of ridge of the frenum with a number 11 blade (Figure 2).

Figure:2 Two parallel incisions on either side of frenum

After initial incision, deep dissection of the muscle fiberswas done to eliminate all the attachments (Figure 3).

Figure 3: Deep dissection of the muscle fibers

Incised frenum was removed by giving releasing incision on the top and bottom of the frenum(Figure 4) .

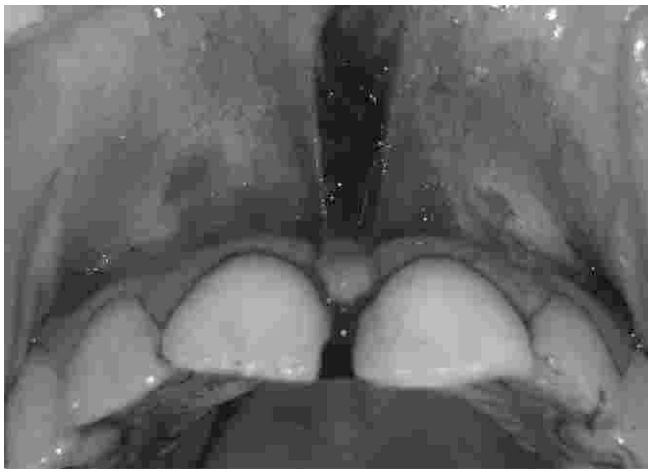

Figure 4: Excision of the frenum showing exposed tissue

After frenumexcision the wound was closed with suture to attain primary closure (Figure 5).

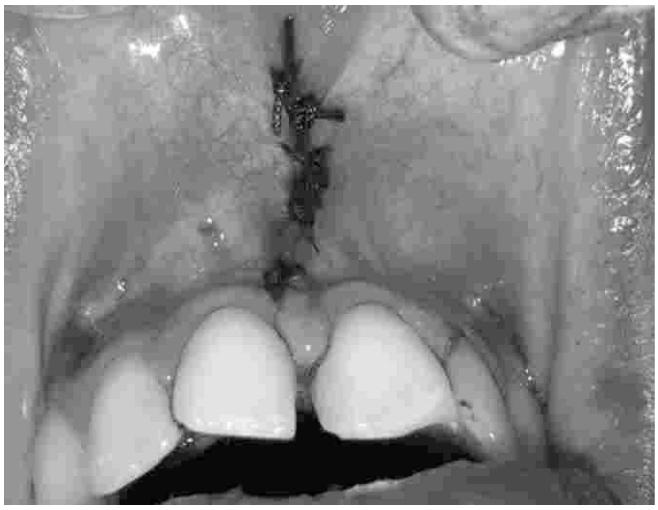

Figure 5:Sutures taken

After surgery, Post-operative instructions the patient was given verbal instructions that including; avoid taking hot, spicy, citrus and hard foods for a few days, soft diet instructions, meticulous oral hygiene and they were told to use an analgesic if needed.

The patients were asked to rate the degree of postoperative pain and speech complication on a 10 cm horizontal visual analogue scale (VAS) by placing a vertical mark to assess position between the two endpoints. The left endpoint of the pain scale was designated as “no pain,” and the right end point was designated as “worst pain imaginable.” The patients were asked to mark the position between the two endpoints that best describe their personal perception of the degree of pain and discomfort during speech on postoperative days 1, 7 and 30.

Figure 6: 15 days Follow Up

Figure 7: 1 Month follow up

On follow up patient showed good oral hygiene & less postoperative pain and discomfort during speech on postoperative days. (Figure 6, 7).

Figure 8: composite buid up to treat midline diastema

Then patient was referred to conservative department for composite build up between maxillary central incisors to close diastema. (Figure 8)

DISCUSSION:

This case report showed postoperative subjective effects of paralleling techniques after frenectomy. In the era of periodontal plastic surgery, more conservative and precise techniques are being adopted to create more functional and aesthetic results.

The management of aberrant frenum has travelled a long journey from Archer's 17 and Kruger's 18 “classical techniques” of total frenectomy to Edward's19 more conservative approach. Recent techniques added frenal relocation by Z-plasty, 20frenectomy with soft-tissue graft 14and laser 10-13 applications to avoid typical diamond-shaped scar and facilitate healing. Each method has its own advantages and disadvantages.

In our case report patient treated by paralleling technique had significantly less postoperative pain and functional complication .Conventionally, a frenectomy procedure involve holding of frenum with the hemostat, incising above and below the hemostat, creating a large diamond shape wound, often with copious bleeding. Patient often experience postsurgical bleeding and pain mainly because of the open area at the base of the frenectomy site, where primary closure is not possible because large part of mucosa has been removed. To overcome these problems a new paralleling technical is used in this study for frenectomy.

In case of paralleling technique two paralleling incisions are made on the side of ridge of the frenum this will reduce the removal of excess mucosal tissue. After that deep dissection for the muscle fibersare done to remove the attachment. This will decrease the chances of recurrence. Then the thin incised tissue is removed by making sharp cut above and below frenum. Primary closure is possible in this case throughout the length of frenum because of close approximation of margin produced by thin paralleling incision (Figure 2). Primary closure and less removal of gingival and mucosal tissues could be the reason for less postoperative pain and speech discomfort (Figure 4).

CONCLUSION:

Paralleling technique provides better patient perception in terms of postoperative pain and speech. High frenum causes hindrance in oral hygiene maintenance and psychological problems and this measures improves after frenectomy. Neverthless, more investigation & comparison studies are needed to establish the exact efficacy of paralleling technique frenectomy used.

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