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COMPARISON OF CONVENTIONAL FRENECTOMY AND LASER FRENECTOMY TECHNIQUES : A CASE REPORT OF INTERDISCIPLINARY APPROACH

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Abstract

High frenal attachment jeopardize the gingival health as well as aesthetics. Frenectomy is the line of treatment in management of an aberrant frenum which can be performed by various procedures. Lasers have been acting as an alternative to conventional scalpel techniques. This article discuss about two case reports of maxillary labial frenectomy, one with conventional technique and other using diode laser.

KEYWORDS: Aberrant frenum, high frenal attachment, midline diastema, classical frenectomy, diode laser

Introduction

Concern about aesthetics is one of the prime reason for visiting a dentist to achieve a perfect pleasant smile. One such aesthetic problem was midline diastema in maxilla for which labial frenum of maxilla plays a major contributing role[1]. Frenum is fold of mucous

membrane which is formed by loose connective tissue and epithelium combination, that aids in attachment of lips and cheeks to alveolar mucosa, gingiva and periosteum that is underneath[2]. Frenum should be inserted ideally at mucogingival junction. But there are various levels of frenal attachment; frenum was classified based on site of insertion Placek *et al* [3]. as mucosal, gingival, papillary, or penetrating. Miller stated that frenal attachment is characterized to be pathogenic when there is wide frenum and zone of attached gingiva was inadequate and these type of frenal attachment contributes to midline diastema, gingival recession due to abnormal muscle pull, interference in denture retention and interferes in oral hygiene maintenance leading to compromise in gingival health. Visually abnormality of frenum are detected by blanching or movement of papillary tip which occurs when tension are applied over frenum. Treatment of aberrant frenal attachment includes frenectomy or frenotomy. Frenectomy procedures can be done by either one of the followings such as scalpel technique, electrosurgery or by using lasers.

Purpose of this case report is to compare the outcomes of frenectomy done by conventional classical technique and frenectomy by laser.

Case Report 1

A 22year old female patient reported to the private clinic with the primary complaint of spacing which gradually increasing in upper front tooth between central incisors since 1year. On intraoral examination reveals high frenal attachment with papillary penetrating attachment and positive tension test that confirming high frenal attachment (Figure 1). Using conventional classic technique frenectomy was carried out after explaining the procedure.

Technique

2% lignocaine with 1:80000 adrenaline local infiltration was infiltrated at site and area was anesthetized. After anesthetizing the area lip was extended and using haemostat frenum (Figure

2) was engaged to the depth of the vestibule. After engaging incisions were placed over and under surface of haemostat (Figure 3), so that triangular tissue of frenum can be removed and fibrous attachment was removed to expose bone. Later undermining incision was placed along edges of diamond shaped wound (Figure 4). Using 4-0 black silk simple interrupted sutures were placed (Figure 5). The periodontal pack was placed (Figure 6) and postoperative instructions such as not to pull or stretch lip to avoid meticulous movement of lip. After 7 days and 21 days follow up was done (Figure 7).

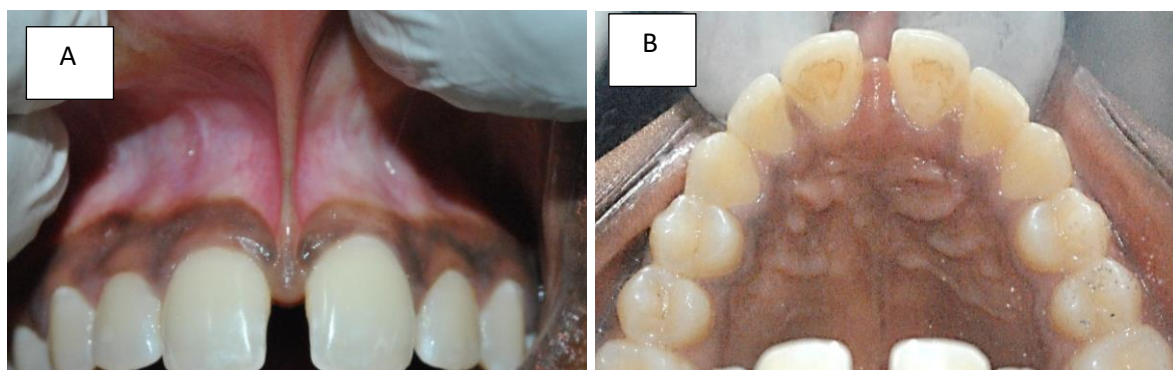


Figure 1 Pre operative papillary penetrating type of frenal attachment – frontal view (A) & occlusal view (B)



Figure 2 Engaging frenum with haemostat to the depth of the vestibule

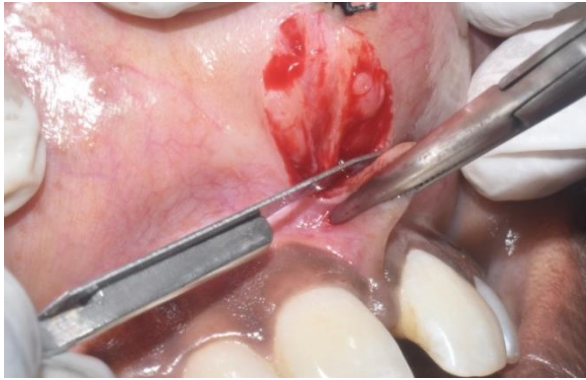


Figure 3 Incision was placed over and below haemostat

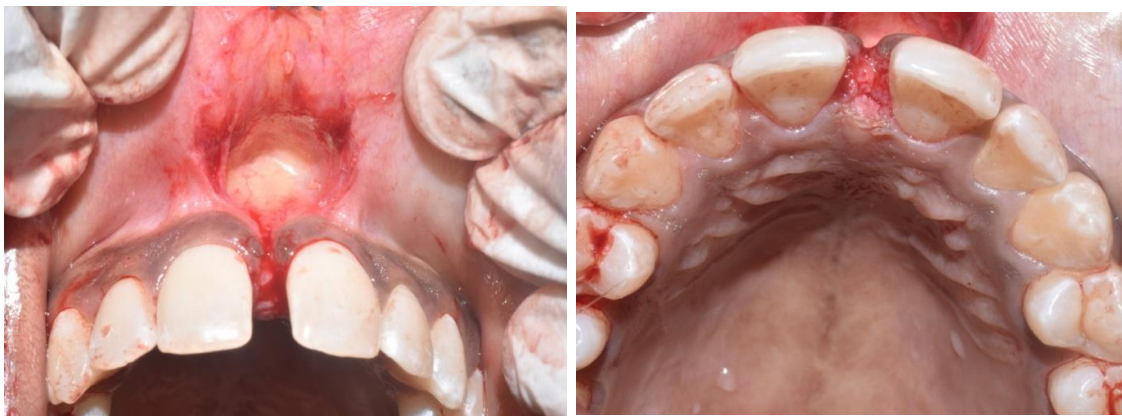


Figure 4 After frenal excision – frontal view (A) & occlusal view (B)



Figure 5 Simple interrupted suture placed



Figure 6 Periodontal pack placed

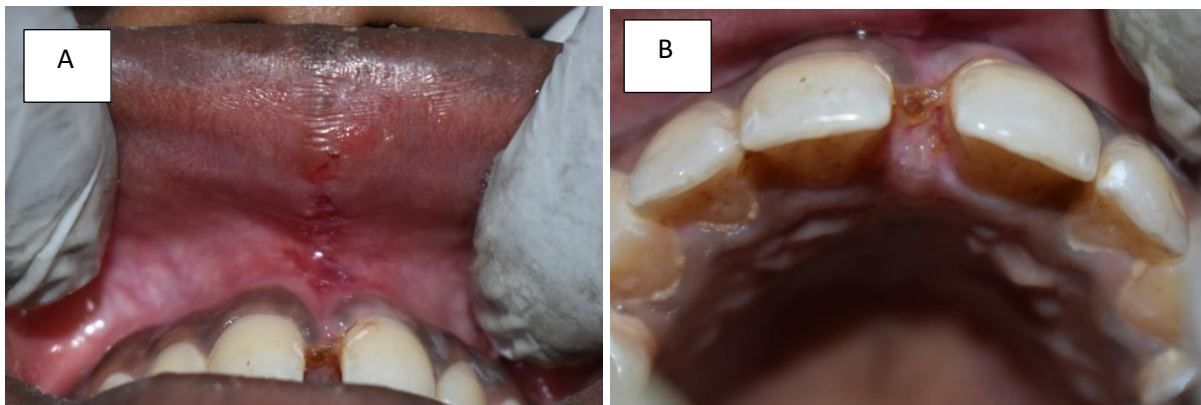


Figure 7 1week post operative view – frontal view (A) & occlusal view (B)

Case Report 2

A 24 year old patient was referred by orthodontist for frenectomy, history reveals that patient reported with the chief complaint of increased space between two upper central incisors for which fixed orthodontic appliance was placed and treated for past 2years, and space was closed. After which patient appliance was removed. Tension test was positive. Frenectomy was planned and carried out using diode laser.

Technique:

Area was anaesthetized with local infiltration using 2% lignocaine with 1:80000 adrenaline,

Using LASER tip, with a contact mode and focused beam was frenum using brushing stroke and frenum was released and excised, between which ablated tissue was mopped continuously using wet gauze piece so that excessive thermal damage to underlying soft tissue can be prevented. The periodontal pack was placed and postoperative instructions such as not to stretch the lip again and again thus, avoiding vigorous lip movements. After 7 days and 21 days follow up was done.

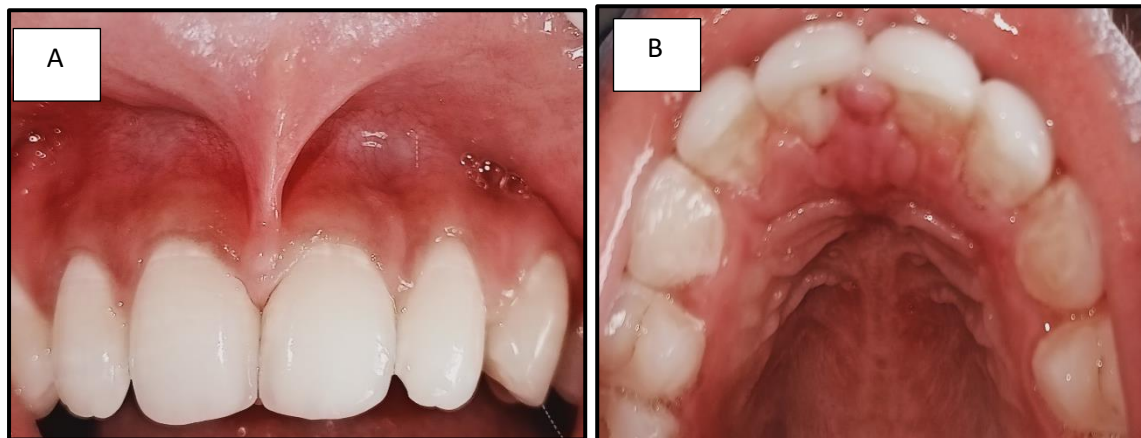


Figure 8 Pre operative papillary penetrating type of frenal attachment – frontal view (A) & occlusal view (B)



Figure 9 Excision of frenum with diode laser



Figure 10 Immediate postoperative view



Figure 11 1week post operative view

Discussion

Laser has becoming an alternative to conventional scalpel procedures. The diode laser with wavelengths range from 810 to 1064 nm were used in soft tissue surgeries. Most widely used technique for frenectomy was conventional technique and with various modifications. In conventional technique healing occurs by primary intention with minimal scar formation as approximation of cut ends of wound occurs due to migration and proliferation of epithelial cell along with various pro-inflammatory cells and mediators interplay, with no formation of granulation tissue. The strength of the wound was mainly contributed by collagen that is laid down by fibroblast cells. The easy performance of this technique was the advantage were as

scar formation, papillary tissue loss with high relapse rate was being a disadvantages. During orthodontic treatment these scar tissue act as barrier for space closure in case of midline diastema[4]. Therefore conventional frenectomy has been contraindicated prior to orthodontic treatment but introduction of laser treatment act as an alternative to various conventional technique. Laser causes photothermal interaction with tissue, leading to conversion of light to heat[5]. This interaction are used to create incision and blood coagulation[6]. In laser frenectomy healing occurs by formation of granulation tissue. The raw wound filled with bloodclot was left open, inflammatory cells infiltrate and mediators are similar to that of healing that occurs by primary intention; with no formation of scar post-operatively, so that frenectomy procedure can be carried out prior to orthodontic treatment, with good haemostasis and reduced or no need for sutures, with minimal damage to the periosteum and underlying bone.

In diode laser heat accumulation occurs at the fiber end leading to heat accumulation causing “hot-tip” effect with relatively thick layer of coagulation on the treated surface[7]. The advantages of the laser surgery over scalpel are bloodless or comparatively less blood in surgical field, heals by secondary intension as there is no need for sutures and comparatively less postoperative pain and intense of postoperative swelling are less intense or even absent[8]. Both the conventional classical technique of frenectomy using scalpel with diode laser provided uneventful healing with less postoperative discomfort in case of laser frenectomy.

Conclusion

The present case report suggests that frenectomy using diode laser has provided better results and less discomfort postoperatively when compared to that of conventional technique. Hence this case reports concludes

laser frenectomy can be done before orthodontic treatment as an alternative for frenectomy procedures.

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I thank Almighty and my well wisher

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