FRENECTOMY WITH LATERAL PEDICLE FLAP- A NOVEL FRENECTOMY TECHNIQUE FOR PREVENTION OF SCAR: A CASE REPORT

A Case Report

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ABSTRACT

An aberrant frenum is postulated to create functional and aesthetic problems. Archer's 'classical frenectomy' is an extensive procedure including the excision of fibers, interdental papilla, and exposure of alveolar bone up to the palatine papilla. The resultant delayed healing, loss of interdental papilla, and abnormal scar led towards the conservative approaches like Edward's frenectomy, frenum relocation by Z-plasty and free gingival graft; with their technical and aesthetic limitations. A better approach to make a primary closure in midline and to avoid anesthetic scar by creating a zone of attached gingiva, frenectomy is assisted with lateral pedicle graft. The interdental papilla is left surgically undisturbed and healing takes place by primary intention. This article is a case report of frenectomy with laterally displaced flap.

Key Words: Aberrant frenum, frenectomy, lateral pedicle graft

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INTRODUCTION:

A frenum is an anatomic structure formed by a fold of mucous membrane and connective tissue, sometimes muscle fibers. The superior labial frenum is triangular in shape and attaches the lip to the alveolar mucosa and/or gingiva. It extends over the alveolar process in infants and forms a raphe that reaches the palatal papilla. Through the growth of alveolar process as the teeth erupt, this attachment generally changes to assume the adult configuration[1]. Taylor has observed that a midline diastema is normal in about 98% children between six and seven years of age, but the incidence decreases to only 7% in persons 12-18 yrs old[2]

This high coronal attachment is generally associated with a hypertrophy of the frenum. Depending upon the extension of attachment of fibers, frena have been classified as: [3]

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.

Clinically, papillary and papilla penetrating frena 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[4,5]

Abnormal or aberrant frena are detected visually by applying tension over it to see the movement of papillary tip or blanch produced due to ischemia of the region.[6] Miller has recommended that 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.[7]

In such cases, it is necessary to perform a frenectomy for aesthetic, psychological, and functional reasons. There are numerous surgical techniques for the removal of labial frenum. In the "classical frenectomy" by Archer[8] and Kruger,[9] the frenum, interdental tissue, and palatine papilla are completely excised leading to exposure of underlying alveolar bone and thus leading to scarring. Though this technique resulted into an anesthetic scar, but this approach was advocated to assure removal of muscle fibers, supposedly connecting the orbicularis oris with the palatine papilla. It was thought that if this was not done, the diastema would reopen.

Edwards[10] method consisted of three procedures:

1. Apically repositioning of the frenum (with denudation of alveolar bone),

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2. Destruction of the trans-septal fibers between the approximating central incisors,
3. Gingivoplasty of any excess labial and/or palatal tissue in the interdental area.

One of the salient aspects of Edward's technique was the aesthetic maintenance of the interdental papilla. But the healed scar in the midline appeared anesthetic to the subjects.

Coleton[11] and Lawrence[12] have used free gingival graft combined with frenectomy. This procedure avoids the scar, but a mismatched gingival color in midline and need of a second surgical site to achieve donor tissue complicate the technique.

Miller has presented a surgical technique combining the frenectomy with a laterally positioned pedicle graft. Closure across the midline by laterally positioned gingiva and healing by primary intention resulted in aesthetically acceptable attached gingiva across the midline. No attempt was made to dissect the trans-septal fibers and hence, interdental papilla remained undisturbed. Aesthetically and functionally better results were obtained

MATERIALS AND METHODOLOGY :

A 19 year old female, referred from the department of orthodontics for frenectomy. The chief complaint was spacing between the front teeth. On general examination the patient was apparently healthy. On clinical examination, aberrant frenum was detected.It was found that patient had a type III frenal attachment. Tension test was positive and hence frenectomy procedure was planned. Written informed consent was obtained from the patient before the surgical procedure.

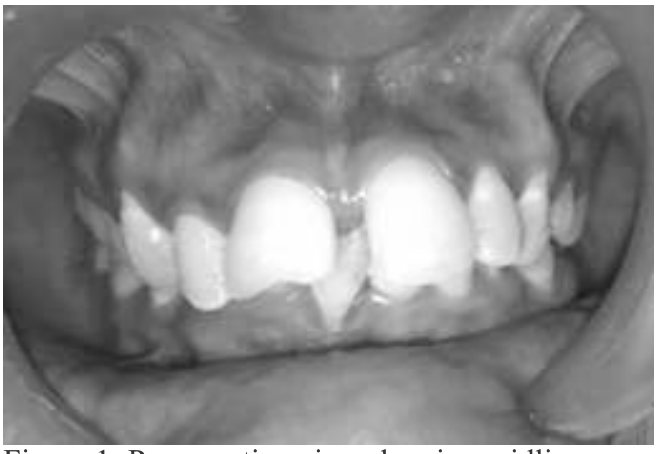
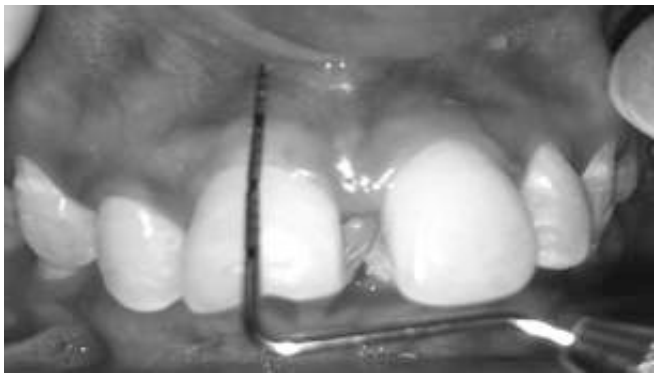


Figure 1: Preoperative view showing midline diastema and type III frenal attachment



Surgical Technique :

After local anesthesia, using 2% lignocaine with I;80000 adrenalin, primary incision was given at the base of the papilla and extended to the depth of vestibule to separate the frenum from underlying alveolar mucosa. Any remnant of frenal tissue in the mid line was excised. A vertical incision parallel to the primary incision was given on the mesial side of lateral incisor, 2-3mm apical to marginal gingiva, up to vestibular depth. The gingiva and alveolar mucosa in between these two incisions were undermined by partial dissection to raise the flap. A horizontal incision was made connecting the coronal ends of the two vertical incisions . Flap was raised, mobilized mesially and sutured to obtain primary closure with 4-0 vicryl interrupted suture across the midline. No attempt was made to dissect trans-septal fibers between approximating central incisors. Gingivoplasty of any excess labial and/or palatal tissue in the interdental area was done, preserving the integrity of the interdental papilla. The surgical area was dressed with COE PAK. Dressing and the sutures were removed one week later. A healing zone of attached gingiva was clearly visible with no loss of interdental papilla

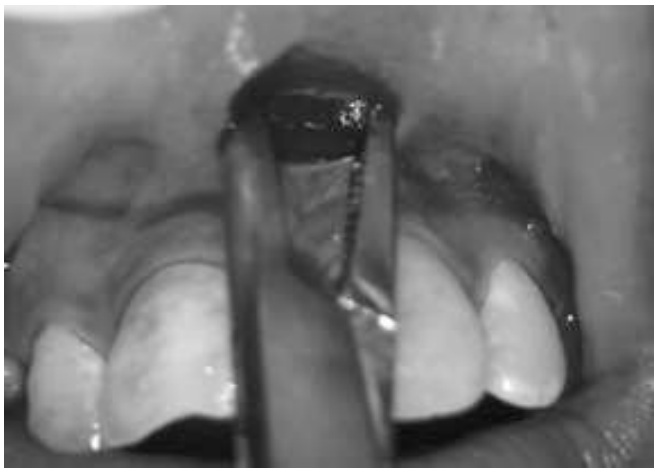


Figure 2:Resected frenum site

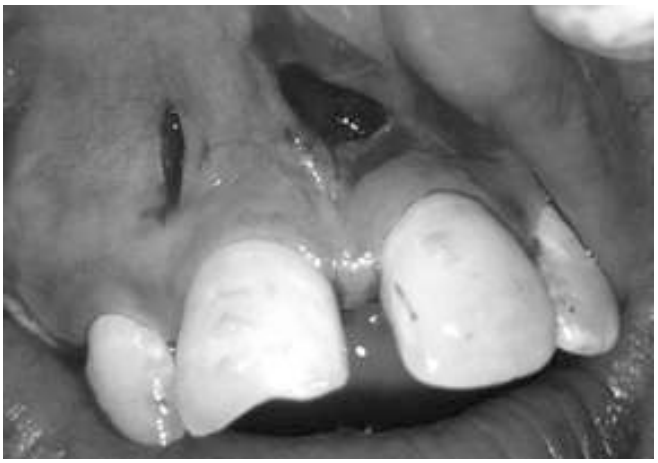


Figure 3:Vertical incision mesial to lateral incisor and undermining of the pedicle

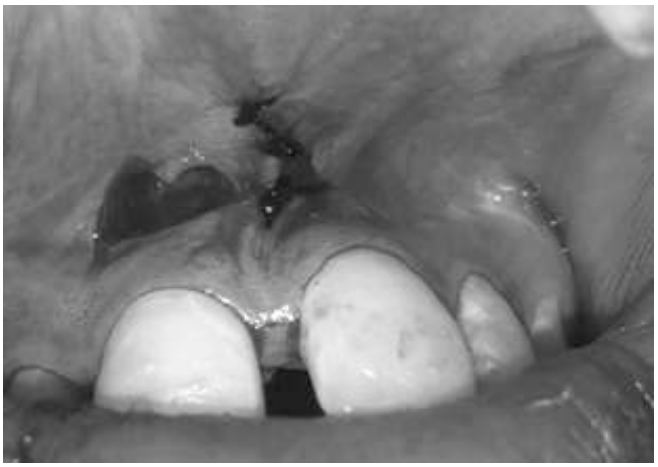


Figure 4:Displacement and suturing of the pedicle at midline

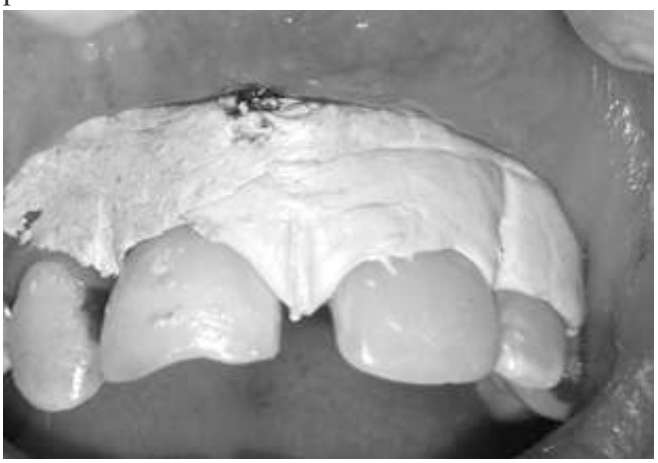


Figure 5:Application of Coe –Pak

Post op care:

Patient was instructed not to have hot and spicy foods after the surgical procedure. Antibiotics and analgesics were prescribed for 3 days. Patient was advised to report for next appointment 1 week after surgery for review

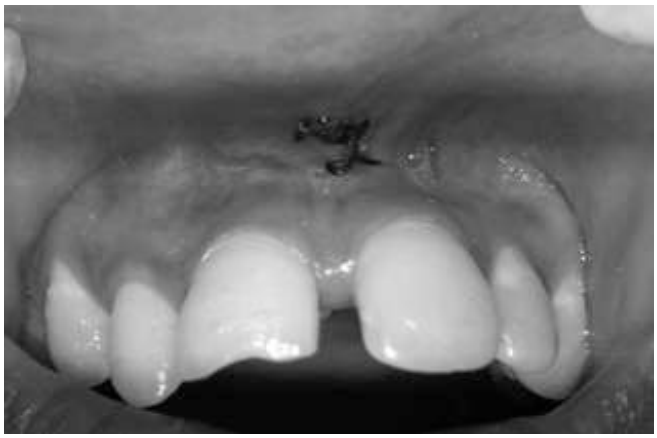


Figure 6:post operative view at 1 week

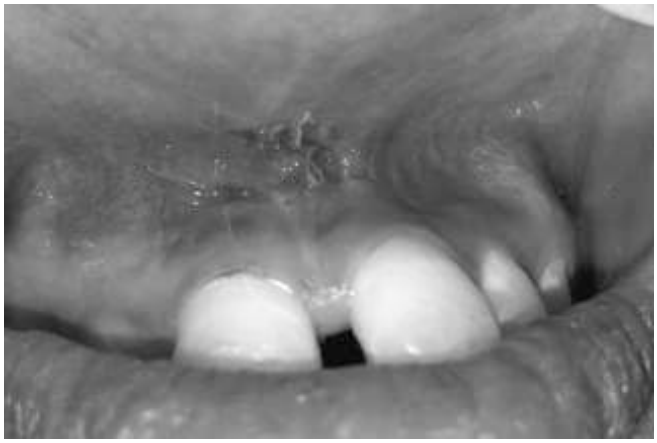


Figure 7: post operative view at 1month

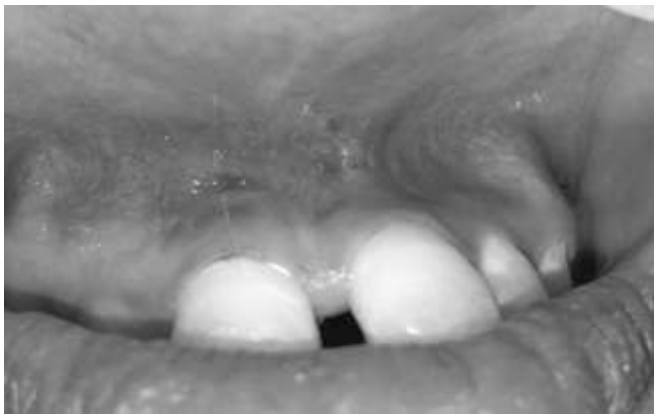


Figure 8:post operative view at 3 months

RESULTS

The outcome of this surgical procedure shows this technique produced a pleasing aesthetic result. Scar formation in the midline could be avoided. On healing, a wider zone of attached gingiva was obtained. It was color matched with adjacent tissue. Healing was obtained by primary intention. No loss of interdental papilla was observed. No complication was noted during healing period. Patient's compliance was also very good.

Discussion

In the era of periodontal plastic surgery, more conservative and precise techniques are being adopted to create more functional and esthetic results. The technique for management of aberrant frenum has undergone changes from Archer's[8] and Kruger's[9] "classical techniques" of total frenectomy to Edward's10 more conservative approach. Recent techniques added frenal relocation by Z-plasty[15], frenectomy with soft-tissue graft[11, 12] and Laser[13, 14] applications to avoid typical diamond shaped scar and facilitate healing. A frenum is evaluated in relation to vestibular depth, zone of attached gingiva, interdental papilla and diastema. A zone of attached gingiva is considered to prevent recession and it also gives an aesthetically pleasant appearance. Miller's technique combined with a laterally positioned pedicle graft[7] was attempted in this case. This technique offers two distinct advantages. First, on healing there is a continuous band of gingiva across the midline rather than unesthetic scar. The second advantage is that trans-septal fibres are not disrupted surgically, to avoid any trauma to interdental papilla. This prevents loss of interdental papilla.

CONCLUSION

The present study describes the surgical technique combining frenectomy with a lateral pedicle graft. This method has certain distinct advantages e.g.-

1. Healing takes place by primary intention
2. A zone of attached gingiva, matching with adjacent tissue, forms in midline which is pleasing to the individual
3. No unesthetic scar formation
4. No recession of interdental papilla occurs because the transseptal fibers are not severed out

The attached gingiva in midline may have a bracing effect which helps in prevention of orthodontic relapse

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