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"Z PLASTY- AN ELIXIR FOR MUCOGINGIVAL DEFORMITY"

Periodontology

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ABSTRACT

Objective- The objective of this case report is to assess whether a Z-plasty of the lower labial frenum can increase the vestibular depth, the width of attached gingiva, and eliminate the aberrant frenal attachment. **Clinical consideration-** A 29 year old female presented for esthetic rectification associated with gingival recession and pathological migration of lower central incisors. The mandibular central incisors were associated with gingival recession due to shallow vestibular depth, high frenal attachment and inadequate width of attached gingiva. Z plasty of lower labial frenum was done to manage this predicament. Satisfactory clinical results were observed **Conclusion-** This case report demonstrates a type of single stage periodontal plastic surgery aimed at increasing the vestibular depth, replace the sentence - removing aberrant frenal attachments, and widening the width of attached gingiva. The results of the study are encouraging and warrant further case-controlled studies.

KEYWORDS

Aberrant frenal attachment, width of attached gingiva, vestibular depth, Mucogingival deformity, Z plasty ,Periodontal plastic surgery

INTRODUCTION

The periodontium a complex structure composed of both hard and soft tissues. The width of attached gingiva and the depth of the vestibule are an important biological criterion to maintain periodontal health. Attached gingiva is a part of the gingiva which is demarcated coronally by free gingival groove and apically by mucogingival junction [1]. The width of attached gingiva varies in different areas of the oral cavity. In maxillary anteriors – 3.5 to 4.5mm, in mandibular anteriors – 3.3 to 3.9mm, in maxillary first premolar region 1.9m and in mandibular first premolar region 1.8mm [2]. It is essential to maintain the width of attached gingiva as it provides resistance to external injury, for gingival margin stabilisation, for periodontal health maintenance and to prevent gingival recession[3].

Vestibular depth is defined as the distance measured between the most coronal part of attached gingiva and the mucobuccal fold. Goldman has accentuated that shallow vestibule steer to food impaction against marginal gingiva and interdental areas making it difficult to maintain oral hygiene [4]. Shallow vestibular depth, inadequate width of attached gingiva and aberrant frenal attachment are most commonly associated with gingival recession and poor oral hygiene maintenance.

Friedman introduced the term mucogingival surgery to correct the relationship between gingiva and oral mucosa, in reference to their anatomical areas – attached gingiva, shallow vestibular depth and an aberrant frenal attachment with marginal gingiva [5]. Later in 1986 World workshop of periodontics renamed it as periodontal plastic surgery. This case report showcases a single-stage periodontal plastic surgery technique aimed at increasing the vestibular depth, removing aberrant frenal attachments, and widening the width of attached gingiva.

Case report

A 29-year-old female came to the out-patient department of Periodontics with a chief complaint of increased spacing and deposits accumulation in lower front tooth region. On enquiring history, the patient brought forth the history of already existing interdental space from the period of permanent tooth eruption, however the space got gradually increased in the past 2 years. On intraoral examination oral hygiene was good but there was score 2 calculus (Oral Hygiene Index) in relation to 31,41 teeth regions. Distal displacement or inclination was present in both the teeth. There was no occlusal interference. Clinical Attachment loss (CAL) of 3mm was noted in 31. Vestibular depth of 2mm.

For evaluating frenal attachment, tension test was done which showed blanching of tissue and movement in the interdental papilla while applying tension, suggesting aberrant Class IV frenal attachment (Placek et al) (Figure 1A and 1B). Intraoral periapical radiographic examination revealed mild interdental crestal bone loss. She was diagnosed with a diminished periodontium, mucogingival deformities, and Cairo Type II recession (RT2) in tooth 31, along with an aberrant frenal attachment, shallow vestibular depth, and pathological migration of tooth 31 and 41.

Figure 1 -Preoperative image depicting aberrant frenal attachment, inadequate width of attached gingiva and gingival recession in 31,41

She was planned to undergo phase I therapy followed by z plasty.3 weeks after Scaling and root planing probing pocket depth was around 1 to 2mm.

Informed consent was obtained from the patient. The lower labial frenum and the area around the frenum were anesthetised by bilateral mental nerve block. Using 15C Bard Parker blade one central incision was given in the centre of the frenum and two bilateral lateral incisions were given at an angle of 60^0.The incision depth was given to allow reflection of partial thickness flap. Submucosal dissection was done. Two equal bilateral triangular flaps were obtained.

Adequate undermining were done on both the flaps to achieve mobilisation and approximation of the flaps (Figure 2). One of the triangular flaps is first approximated and sutured to the attached gingiva of 31 and 41. The second triangular flap was sutured on one side to the periosteum and on the other side to the depth of the vestibule using a 5-0 resorbable suture. (Figure 3). Periodontal dressing (Coe Pak) placed.

Figure 2 - Z plasty incisions

Figure 3 – Z plasty - suturing of the flaps

Patient was re-evaluated 1 week later where recession of 1mm was noted in 31 with uneventful healing (Figure 4). On 14th day and third month re-evaluation there was complete recession coverage in 31 with an increase in vestibular depth to 5mm (Figure 5).

Figure 4 – One-week post-operative image

Figure 5 – Three months postoperative image depicting correction aberrant frenal attachment, increase in width of attached gingiva and gingival recession coverage in 31,41

DISCUSSION

In this case report, a Z-plasty of the lower labial frenum was performed to alleviate the aberrant frenal attachment and two triangular flaps were utilized to increase the vestibular depth and width of attached gingiva. Creeping attachment of 1mm was noted in 31 resulting in complete root coverage.

Gingival recession is defined as the apical migration of junctional epithelium below the level of cementoenamel junction (CEJ). It has diverse etiologies. The most common are due to inadequate width of attached gingiva, shallow vestibular depth, poor oral hygiene maintenance and aberrant frenal attachment. They embark on dentinal hypersensitivity and unesthetic appearance.

Pini prato et al has reported that inadequate width of attached gingiva and shallow vestibular depth favours accumulation of food against gingival margin and interdental spaces during mastication and poses a difficulty for oral hygiene maintenance [6].

Ochsenbein stated that muscular and fibrous attachments caused by shallow vestibule and aberrant frenal attachment produces gingival traction leading to plaque accumulation and further progression of recession [7]. Hence it is essential to have adequate width of attached gingiva and vestibular depth for periodontal health. Conventionally they are treated by vestibuloplasty, yet there is often a probability for recurrence of shallow vestibular depth and an inadequate width of attached gingiva.

Several authors have reported diverse techniques for treating aberrant frenal attachment, inadequate width of attached gingiva and to increase vestibular depth. However most of the procedures requires multiple surgeries or surgical sites. Griffin et al has compared the post operative complication frequencies following various soft tissue grafting techniques and has found a probability of 4% increase in development of moderate to severe pain and a 3% increase in probability for moderate and severe swelling [8].

Fowler and Breault has reported an one mm of creeping attachment following lower labial frenectomy [9]. Stylianou et al has also reported an early creeping attachment of 1 mm after mandibular labial frenuloplasty [10].

The surgical technique used in this case report has provided the advantage of avoiding a secondary surgical site for soft tissue grafting and helps in reduction of intraoperative time thereby reducing postoperative pain and swelling.

CONCLUSION

Periodontal plastic surgery comprises of wide range of surgical procedures to treat mucogingival deformities and it attempts to restore periodontal health and esthetics. An appropriate surgical procedure renders not only oral hygiene maintenance but also the treatment of etiology. Within the limitations of this case report it was found that Z plasty of lower labial frenum is an effective technique for treatment of aberrant frenal attachment and to increase the width of attached gingiva and vestibular depth. However a large sample size with longer follow up periods needs to be conducted to assess the long-term benefits..

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