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DOUBLE LATERAL SLIDING BRIDGE FLAP – A LESS TRODDEN PATH FOR THE COVERAGE OF DENUDED ROOTS- A CASE REPORT

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ABSTRACT

Root coverage has become an important aspect of periodontal plastic surgery. It is a challenge in the presence of a high frenal pull and inadequate attached gingiva. This article reports a case of gingival recession, which has been treated with double lateral sliding bridge flap. The main advantages of this technique are that it doesn't require a separate frenectomy procedure and it can be used to cover multiple gingival recession defects, without a second surgical site. The treated case demonstrated adequate root coverage and increase in width of the attached gingiva at three months follow-up.

Keywords - Root coverage, bridge flap, gingival recession

INTRODUCTION

"Pink esthetics" is the terminology of concern in periodontal plastic surgery for root coverage. Gingival recession is an intriguing and complex phenomenon that may present numerous therapeutic challenges to the clinician. Patients are also frequently disturbed by recession owing to sensitivity and esthetics. Gingival recession is the exposure of the root surface by an apical shift in the position of the gingiva1.

The term "marginal tissue recession" was proposed by Maynard and Wilson in 19792 to indicate exposure of root surface caused by apical migration of the soft tissue margin. The term was widely accepted because the soft tissue margin may not always be composed of gingiva; it may even be formed only by alveolar mucosa in some instances.

For many years the presence of an adequate zone of gingiva was considered critical for the maintenance of gingival health and for the prevention of progressive loss of connective tissue attachment. It is generally acknowledged that an inadequate zone of gingiva would facilitate subgingival plaque formation as well as the apical spread of plaque-associated gingival lesions.

Bowers in 19633 stated that it is possible to maintain a clinically healthy gingiva despite a narrow zone of attached gingiva i.e. <1mm. Ainamo and Loe in 19664 found that in patients with different degrees of recession, the width of the attached gingiva was more or less the same. Lang and Loe in 19725 showed in a clinical study that in areas with <2mm of keratinized gingiva, inflammation persisted irrespective of effective oral hygiene. They suggested that 2mm of keratinized gingiva were adequate to maintain clinical health. The conclusion drawn from various studies is that gingival health can be maintained independent of its dimensions6.

Important functional points in the treatment of mucogingival problems are to stop the progressive recession process and to facilitate plaque control in the affected area7. Appropriate mucogingival therapy can also result in the creation of adequate vestibular depth in areas where there is a deficiency. If untreated, gingival recession may progress and can compromise the prognosis of the affected tooth.

Furthermore, root surface exposure may result in caries or abrasion, both of which may give rise to subsequent pulpal pathology8&9. Aberrant frenal attachment, inadequate vestibular depth, absence of the keratinized gingiva, gingival recession without pocket formation, and plaque accumulation despite effective home care are the indications for a bridge flap to form an adequate zone of attached gingiva. Mucogingival therapy includes increasing the dimensions of the gingival tissues to stop or prevent recession, to facilitate plaque control, and to improve aesthetics and to reduce or eliminate root sensitivity6.

The double lateral sliding bridge flap technique was originally proposed by Marggraf in the year 198510 to cover gingival recession and to extend the gingiva in a one-step procedure. This technique utilizes a combination of a coronally advanced flap and the modified Edlan and Mejchar technique. The advantages of this technique are that it doesn't require a second surgical site as in free soft tissue grafting procedures and a separate frenectomy procedure. This article reports a case treated with this technique.

CASE REPORT

A patient with the complaint of gingival recession and hypersensitivity was examined and various clinical parameters were recorded with a William's periodontal probe.

- Probing pocket depth [PPD].
- Gingival recession [GR], by measuring the distance between the cementoenamel junction [CEJ] and the free gingival margin.
- Width of the attached gingiva, by measuring the distance from the base of the pocket to the mucogingival junction.

The parameters were recorded before and after surgery. The surgical procedure was explained to the patient and informed consent was obtained.

Clinical Presentation

Intraoral examination of the 21-year old male patient revealed the following: Miller's class II gingival recession of 4mm was present in relation to 41 and Miller's class I gingival recession of 2mm was present in relation to 31. A high frenal attachment was present in relation to 31 and 41. The width of the attached gingiva was 1mm in relation to 31 and 41. PPD of 2mm was present in relation to 31 and 41 [Fig 1].

Preparatory Phase

Preparation of the patient included scaling and root planing of the entire dentition and oral hygiene instructions.

Surgical Technique11

The bridge flap technique is a combination of the coronally repositioned flap and a modified vestibuloplasty procedure by Edlan and Mejchar (1965)12.

- Prior to starting the procedure, local anaesthesia was administered by infiltration technique from 33-43 region and on the labial mucosa with 2% lignocaine. The first incision is arch shaped with a distance to the vestibule of approximately 2 x GR + 2mm. This is necessary in order to produce a sufficiently wide bridging flap ensuring a sufficient blood supply.
- A split thickness flap is elevated in a coronal direction and an incision into the periosteum is placed at its base.
- This flap is elevated in a corono-apical direction after a sulcular incision.

- The whole bridge flap is coronally repositioned to cover the denuded root surface and pressed to the alveolar bone for at least 3 minutes to avoid hematoma.

The patient was given antibiotic (Amoxycillin 500 mg every 8 hours for 5 days) and analgesics (Ibuprofen 400mg and paracetamol 500mg combination for 3 days) and post-operative instructions were given. Antibiotics were prescribed to control any post-operative infections. 0.2% chlorhexidine mouthrinse was prescribed for 4 weeks after surgery. A periodontal pack was placed in the operative site. The donor area was left to granulate and heal by secondary intention after the flap was coronally positioned [Fig 2-5].

Healing

The sutures were removed 10 days after the procedure. The surgical site was examined for uneventful healing. There was no post – operative complication and healing was satisfactory[Fig 6]. The patient did not have any post-operative morbidity.

The patient was recalled for post-operative examination on the 90th day. Complete root coverage was achieved. The width of the attached gingiva increased from 1mm to 5mm in relation to 31 and 41. PPD of 2mm was present in relation to 31 and 41. The patient was instructed to use a soft toothbrush for mechanical plaque control in the surgical area by a coronally directed roll technique.

DISCUSSION

Root hypersensitivity, predisposition to root caries and patient's intense esthetic concern has broadened the scope of root coverage therapy. Several procedures have been proposed to cover gingival recessions. Marggraf in 198510 presented a surgical procedure namely, the double lateral sliding bridge flap technique, which is a combined Edlan-Mejchar technique with a coronally repositioned bridging flap.

In the original Edlan-Mejchar technique12, which was developed to deepen the vestibule and not to cover gingival recessions, there was alveolar bone exposure. But in this modification there is no alveolar bone exposure. This could explain the uncomplicated and rapid healing in most cases. Also, in this technique, a coronally repositioned flap [CRF] could be used for root coverage even in the presence of an attached gingival width of less than 3mm10.

Scientific data obtained from well-controlled clinical and experimental studies have unequivocally demonstrated that the apico-coronal width of the gingiva and the presence of an attached portion of gingiva are not of decisive importance for the maintenance of gingival health and height of the periodontal tissues. Consequently, the presence of a narrow zone of gingiva per se cannot justify surgical intervention15&16. Although increasing the band of attached gingiva is not the main aim of this technique, this was also achieved in the due course of the treatment.

In this case, complete root coverage as defined by Miller in 198715 was achieved. Miller in 198715 defined complete root coverage in clinical terms as location of soft tissue margin at the CEJ, presence of clinical attachment to the root, a sulcus depth of 2mm or less and absence of bleeding on probing.

The other advantages of this technique are that by releasing the periosteal fibers, the frenal pull also can be relieved, as seen in this case-report. There is no necessity for a separate frenectomy procedure. Also, as seen in this case, this technique can be used to cover multiple recessions. Even in the presence of a narrow width of attached gingiva, a high level of root coverage was achieved. This was in accordance with the study done by Romanos and Bernimoulin, 199311.

In this case, neither the quantity of gingival recession, nor the quality of the supporting

tissues affected the success of this technique. This observation is supported by two human studies which showed that the absence of a narrow band of keratinized gingiva did not interfere with gingivectomy / flap surgery results17.

Also, some of the technical aspects described during the bridge flap procedure were key to its success. The initial semilunar incision was at least 2GR+2mm apical to the gingival recession and this provided a wide flap11.

The results of our case reports are consistent with the previous studies done by Romanos et al 1993, Margraff et al 1985 who found 70% coverage even after a follow-up period of 5 – 8 years. This technique resulted in the development of keratinized epithelium of the transposed alveolar mucosa13&14. The possible sources of induction of keratinization of the underlying tissues according to the study done by Ivan Bokan et al, 199717 would be the remnants of the attached gingiva left on the flap margin after the paramarginal incision, the retained deepithelialized gingival tissue and the periodontal ligament.

In the treated case, the double lateral sliding bridge flap technique has been successful in treating gingival recession in the presence of high frenal pull and shallow vestibule and the outcome was dependent on the careful performance of the operation. However, future long term studies are needed for evidence about the procedure. We assume that this case report will be useful in the future meta-analysis about this procedure.

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Fig 1 – Pre-operative view

Fig 2 – Bridge flap raised

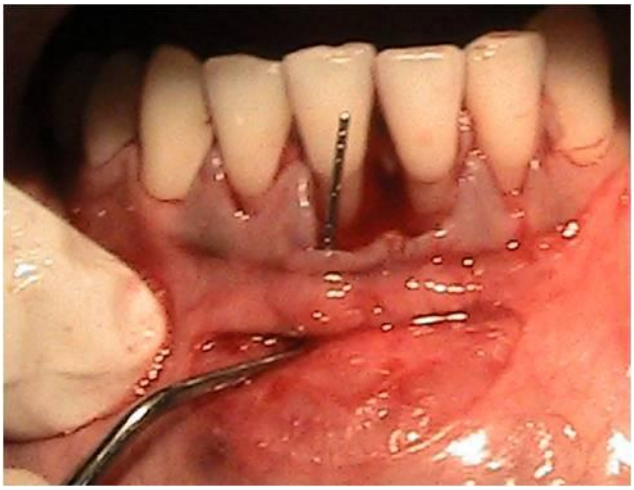

Fig 3 – Bridge flap coronally placed

Fig 4 – Bridge flap sutured

Fig 5 –Periodontal pack placed

Fig 6 – Post-operative view