

A Single Step Surgical approach for Root coverage and Vestibuloplasty in Mandibular anterior teeth- A Case Study

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Introduction

Mandibular teeth face more challenge and are difficult to treat because of certain anatomical factors like thin gingival biotype, shallow vestibular depth and high frenum attachment. Recession in the mandibular anterior teeth region not only results into esthetic problem but also difficulty in oral care due to shallow vestibule .Gingival recession is an issue which is faced both by the clinician and the patient. The treatment of gingival recession is important as its presence compromises both esthetic and gingival health. Mucogingival surgery done for recession coverage becomes a necessity when esthetics, dentinal sensitivity, and carious and noncarious cervical lesions poses a problem [1]. Moreover, the presence of recession defects creates unfavorable contour of the gingival margin or leads to insufficient keratinized gingiva, thereby, limiting the proper plaque control. From the past few decades, several surgical techniques, not only for the preservation but also for the increase of the gingival dimension as part of periodontal treatment, were described

in the periodontal literature [2,3,4,5,6]. Various factors have to be taken care in selecting the procedure of choice for root coverage like extent of recession, width of attached gingiva, aesthetic concern, patient comfort, and the position of tooth in the arch [7, 8]. The majority of the published literature on Miller Class I and Class II soft-tissue recession have demonstrated better results with Subepithelial Connective Tissue Graft (SCTG), hence, regarded as “gold standard” approach for root-coverage procedures [9]. On the contrary, a survey conducted by Zaher et al., indicated that FGG was the favourite choice of the clinicians for the management of denuded root surface despite of its disadvantages, followed by the SCTG, and the CAF [10].The 1996 World Workshop in Periodontics has stressed primarily on regaining gingival tissue coverage over the denuded root surface, with the ultimate goal of complete root coverage (CRC) and esthetics satisfaction rather than increasing width of attached gingiva [11]. Recession with shallow vestibule is also a common problem in mandibular anterior teeth

region. Bohannon in studying procedures for deepening the vestibule found that it is necessary to expose bone at the depth of the incision to achieve a lasting result. This gave rise in the early 1960s to the periosteal separation technique by Corn which did produce the apical scar and a deepened vestibule [12]. Hence a single step procedure can be performed using Free gingival graft and periosteal fenestration for the treatment of mandibular anterior teeth recession and shallow vestibule.

Case Study

The study group consisted of 4 patients aged 25-30 years who were referred to the Department of Periodontics at Government Dental Hospital, Mumbai. Patients complaint of gingival recession, bleeding gums and plaque accumulation in the mandibular anterior teeth region. A total of 5 mandibular sites were selected having Millers class II recession. Gingival biotype of teeth adjacent to gingival recession was assessed by transgingival probing method. Patient's having thin gingival biotype (<1mm) of teeth adjacent to recession were selected for the study. Tooth selected for root coverage were vital, non carious and without cervical abrasion. Initial therapy was consisted of scaling and root planing and oral hygiene was reinforced by giving oral hygiene instructions. After 2 months, patients' periodontium was evaluated and sites without any signs of gingival inflammation and bleeding on probing were selected. [Fig 1a,2a,3a,4a]

Clinical parameters evaluated for patients at mid buccal aspect at baseline, 6 and 9 months using UNC 15 (University of North Carolina) probe by the same examiner to avoid any bias are as follows: (i) Recession depth (RD) was measured as distance from cemento-enamel junction (CEJ) to the gingival margin.. (ii) Probing depth (PD) was measured as the distance from the gingival margin to the base of the sulcus in millimetres. (iii) Clinical attachment level (CAL) was measured as the

distance in millimetres from the cemento-enamel junction to the base of the sulcus and assessed from recession depth and probing depth. (iv) Width of attached gingiva (WAG) was measured as the distance between the mucogingival junction and gingival margin minus the probing depth. (v) Esthetic score (Cairo and Rotundo, 2009)

Surgical Procedure

Recipient site preparation

Local infiltration of 2% lidocaine with a concentration of 1:200000 epinephrine was administered. Before starting the surgical procedure, root planning was performed. A 15 no. surgical blade was used to make horizontal incision in the interdental papilla at right angle to create a margin against which the graft can have a butt joint with the incision. Vertical were made at the proximal line angles of the adjacent teeth. A partial thickness incision is made such that the periosteum remains intact in the recipient site. The periosteum was fenestrated with oblique full thickness incision at the base of the sulcus. [Fig 1b,c]

Donor site preparation-

Local infiltration of 2% lidocaine with a concentration of 1:200000 epinephrine was administered. The template determining the desired graft size was placed on the palatal site adjacent to premolar-molar region. With the help of 15# blade, partial thickness graft of 1.5mm thickness was harvested from the donor site. Bleeding from the donor site is controlled with hemostatic agent. Patient was asked to wear a passive Hawleys retainer for 1 week. [Fig 1d]

Placement of graft

The graft was placed on the recipient bed and suturing was done as described by Holbrook and Oschenbein. The graft is secured in such a way that it lies 3-4 mm apical to the area of recession and also acts as barrier to prevent the shallow vestibule. Periodontal dressing was placed at the surgical site. The subjects were asked to refrain from tooth

brushing at the surgical site for two weeks. Totally, 0.12% chlorhexidine mouth rinsing twice daily for 3 weeks and a course of antibiotics including amoxicillin 500 mg thrice daily and 400 mg of ibuprofen thrice daily for 5 days. The pack was removed 2 weeks post operatively (Figure 5). Subjects were recalled at 3 and 6 months for follow up. Clinical Parameters were recorded at 3 and 6 months. There was uneventful healing without any complications.[Fig 1e,f,g]

Result-Table 1

Clinical parameters	Baseline	3 month	6 month
Recession depth	3.70±1.22	0.96 ±0.88	0.91 ±0.70
Probing Depth	2.09±0.65	1.27 ±0.33	1.27 ±0.33
Clinical attachment loss	5.79 ±1.58	2.13 ±0.38	2.27 ±0.33
Width of Attached Gingiva	0.55±0.58	3.01±0.42	3.01±0.42
Esthetic score	-	6.5	7.5

Results

There was statistically significant difference in clinical parameters pre and post operatively after 3 and 6 months. There is significant gain in the width of attached gingiva from 0.55±0.58 to 3.01±0.42. There was significant root coverage from baseline 3.70±1.22 to 0.91 ±0.70.

According to the criteria for esthetic root coverage , 10 points is a perfect score. Esthetic score obtained was 7.5 after 6 months. Results suggest that combination of Free gingival graft and periosteal fenestration is a successful Procedure In Terms Of Root Coverage And Vestibuloplasty.

Discussion

Free gingival graft is a versatile mode of treatment which can be used to cover denuded roots and to increase the width of attached gingiva. It can be used as a single step or two step procedure. The technique proposed by Miller is a one-step procedure or the direct approach, whereas the one described by Bernimoulin et al. involves two surgical

steps and is referred to as the indirect approach.[13]Recession in the mandibular anterior teeth results into shallow vestibule .Absence of adequate vestibular depth and an insufficient amount of attached gingiva compromises adequate plaque control and paves way to pathologic consequences such as gingival inflammation, recession and pocket formation. The main three techniques have been described in the literature are 1.Submucosal vestibuloplasty , 2.Secondary epithelialization vestibuloplasty (Kazanjian technique) and 3.soft tissue grafting vestibuloplasty[14]Over the past decades, using free gingival grafts (FGG) with vestibuloplasty has become more popular. Main advantage of FGG is that, it provides abundant tissue to entirely resurface the opposing connective tissue walls and adequate keratinized tissue to stabilize lip muscle. A Combination of FGG and Periosteal fenestration not only helps to achieve root coverage but also increases the vestibular depth.

Conclusion

The results of present investigation, seems to offer basic and objective information concerning root coverage and vestibular fornix extension. First, it is clear that increase in the vestibular depth and root coverage can be achieved and second, that these results, once achieved, are relatively stable following the active healing period. This single step procedure helps to achieve root coverage and vestibuloplasty at the same time. The advantages of this combined procedure are- 1.No second surgery is required.2.Predictable results.3.Esthetic as well as function is improved.

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