Case Report
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Free Gingival Graft: A Versatile Technique

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ABSTRACT

Root sensitivity, caries, compromised aesthetics along with difficulty in oral hygiene maintenance are the major complications of gingival recession. Different surgical techniques for root coverage with variable success rate have been documented till date. Free gingival autograft (FGG) is an autologous technique which is in practice for more than 50 years. However, the success rate for FGG is not so convincing. This case series presents a variety of recession cases classified on Miller's recession subtypes managed successfully to counteract gingival recession and widening the band of keratinised gingiva along with special highlights on points to be considered for its success.

Keywords: Case series; free gingival autograft; gingival recession; root coverage.

INTRODUCTION

Prevalence of gingival recession in Nepal was found more compared with global prevalence.[1,2] There are ranges of treatment options for management of gingival recession. Free gingival graft (FGG), a popular technique, described by Bjorn et al. in 1963 was primarily indicated to increase the width of attached gingiva and deepening of the vestibule. FGG for the purpose of root coverage was advocated by Miller in 1985.[3] But, the mean root coverage percentage of FGG has been reported to be ranging from 43%-85.3%.[4] However, refined surgical procedures with proper techniques can improve the outcome with FGG.

CASE REPORTS

Case 1

A 21-year-old male patient presented with downward shifting of gingiva in lower anterior tooth. Intraoral examination revealed Miller's Class I recession in respect to 41 (according to two-digit tooth numbering system) measuring 3×5 mm in mesiodistal and apicocoronal dimensions respectively (Figure 1a). As inadequate width of attached gingiva was evident, FGG was planned and informed consent was taken prior to periodontal plastic surgery. An infiltration local anaesthesia was given followed by a horizontal incision at the base of mucogingival junction measuring 10×7 mm and de-epithelialisation was done in respect to 31, 41, and 42 to prepare a connective tissue recipient bed. Free gingival autograft was harvested from hard palate using the following guideline (Figure 1b): a) Anteriorly (A) - rugae area; b) Posteriorly (P) - palatal root of maxillary first molar; c) Laterally (L) - 3-4 mm from gingival margin; and d) Medially (M) - superior to greater palatine vessels following the Rieser et al. guidelines[5] that states the distance from cementoenamel junction to greater palatine vessels for shallow, average, and high palate are 7 mm, 12 mm, and 17 mm respectively.

The graft was shaped to create butt joint to the recipient area and was sutured using 4-0 silk suture by interrupted suturing technique (Figure 1c). Graft was then protected with tin foil and non-eugenol periodontal dressing. Dressing was removed after two weeks of surgery. The donor site was managed by use of bite guard. Almost 100% of root coverage was obtained in apicocoronal direction. Widened zone of attached gingiva and thick gingival biotype was also achieved in this case (Figure 1d).

Figure 1a: Preoperative recession.

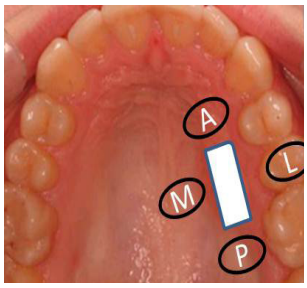

Figure 1b: Donor site landmarks.

Figure 1c: FGG in recipient site.

Figure 1d: Post-operative at three months.

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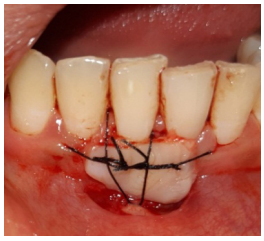

Figure 2a: Preoperative recession.

Figure 2b: FGG in recipient site.

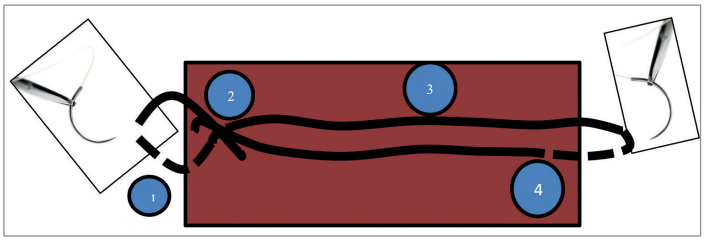

Figure 2c: Graft stretching suture: 1-Point of entry from fixed adjacent area; 2-Point of exit from undersurface of graft and tying a knot; 3-Runs over the graft and enters to fixed adjacent area of other side; 4-Point of exit from undersurface of graft to top of graft on other side. Last knot is tied again at point 2.

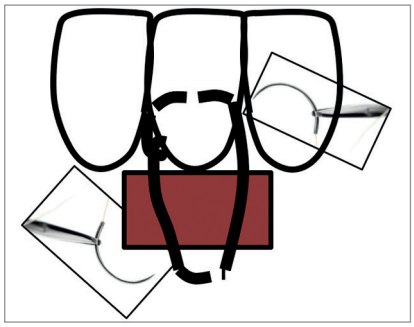

Figure 2d: Horizontal circumferential suture.

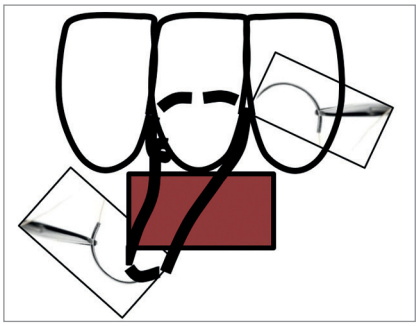

Figure 2e: Interdental concavity suture.

Figure 2f: Post-operative three months.

Case 2

A 22-year-old female patient presented with receded gingiva in lower anterior tooth. Intraoral examination revealed Miller's Class III recession with respect to 41 measuring 3×4 mm in mesiodistal and apicocoronal dimensions respectively (Figure 2a). The FGG was planned for the case owing to the inadequate vestibular depth and keratinised tissue. Three different suturing techniques were followed to prevent excessive graft penetration by sutures, to stretch the graft and to remove the possibility of any dead spaces in this case (Figure 2b):[6] a) Graft stretching suture (Figure 2c); b) Horizontal circumferential suture (Figure 2d); and c) Interdental concavity suture (Figure 2e). Healing was uneventful and results were satisfactory. Partial root coverage (67%) with adequate width of keratinised gingiva was the final result (Figure 2f).

Case 3

A 33-year-old female patient was referred from Department of Orthodontics for management of deep gingival recessions with respect to 31 and 41. Orthodontic treatment was completed a year ago. Intraoral examination revealed Miller's Class III recession with respect to 31 and 41 measuring 3×5 mm and 3×7 mm in mesiodistal and apicocoronal dimensions respectively (Figure 3a). The case was managed successfully with FGG with partial root coverage (35%) and widened band of keratinised gingiva post-operatively (Figure 3b, 3c). Though the graft was fully integrated to the recessed area, the graft later necrosed in two weeks period as the interdental bone was absent and graft vascularity was not possible from the avascular root cementum (Figure 3d). Hence, the graft should be always placed where collateral blood supply is intact.

Figure 3a: Preoperative photograph.

Figure 3b: FGG in recipient site.

Figure 3c: Post-operative three months.

Figure 3d: Healing phase (necrotic graft in interdental area with missing bone).

Figure 4a: Preoperative photograph.

Figure 4b: FGG at recipient site.

Figure 4c: Post-operative three months.

Figure 5a: Preoperative photograph.

Figure 5b: FGG at recipient site.

Figure 5c: Post-operative at three months.

Case 4

A 22-year-old female patient came to the department with downward shifting of gingiva in lower anterior tooth. Intraoral examination revealed Miller's Class III recession in with respect to 31 and 41 measuring 5×4 mm and 3×3 mm in mesiodistal and apicocoronal dimensions respectively (Figure 4a). There was hardly any attached gingiva present for proper placement of toothbrush. Patient had crowded lower anterior teeth but was not willing for orthodontic treatment. The treatment aim was to widen the zone of attached gingiva with thick gingival biotype which was achieved successfully post-operatively (Figure 4b, 4c).

Case 5

A 31-year-old female patient presented with elongated teeth in lower anterior region. Intraoral examination revealed Miller's Class III recession with respect to 31 and 41 measuring 3×6 mm and 4×3 mm in mesiodistal and apicocoronal dimensions respectively (Figure 5a). Patient was finding difficulty in performing proper oral hygiene procedure. Hence, the motive was to widen the zone of attached gingiva using FGG. Enough width of attached gingiva was achieved post-operatively for effective oral hygiene performance (Figure 5b, 5c).

DISCUSSION

The FGG is in practice from more than 50 years' time. Flexibility of FGG has been demonstrated time and again. It was used traditionally for management of inadequate width of attached gingiva and inadequate vestibular depth. Now, it has been well documented to be used for root coverage and to increase gingival thickness around dental implant.[7] The advantages with this technique are: technically less demanding, can be harvested in good quantity, found to be stable in a scientifically documented 25 years long follow-up study and is less time-consuming procedure when compared with its counterpart connective tissue graft.[8,9] Patient compliance, colour mismatch, and open raw wound at donor site are the major drawbacks of FGG. The percentage of root coverage achieved was satisfactory and was primarily dependent on the presence or absence of interdental bone which was one of the basis for Miller's classification of recession. Following the scientific literature available closely, compiling and implementing it in periodontal clinical practice will ensure great results with FGG. All cases achieved thick gingival biotype where 1 mm creeping attachment over a one-year period post-surgery can be anticipated. Creeping attachment will further increase the percentage of root coverage as mucogingival junction is genetically determined and stable throughout human life.[10]

Conflict of Interest: None.

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