

# Free Gingival Graft as a one Step Process for Management of Mandibular Miller Class III Recession Defects: A Case Report

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## ABSTRACT

**Background:** Case report of free gingival graft in management of Miller grade III gingival recession. Predictability of the free gingival graft is determined as a single step procedure in terms of root coverage and to increase width of attached gingiva.

**Materials and Methods:** First, the recipient site was anesthetized and de-epithelialization was done and recipient bed was prepared. After tracing the palatal donor site with the aluminium foil template, bleeding points marked and graft was harvested. Graft is closely adapted over the recipient bed with sutures so there was no dead space left between the root surface and graft, by 5-0 vicryl suture.

**Result:** In Miller's Class III type of gingival recession present 80% root coverage achieved along with increase in width of attached gingiva.

**Conclusion:** FGG chosen best alternative for the treatment of gingival recession with inadequate width of attached gingiva and depth of vestibular fornix but main disadvantage of FGG is unesthetic appearance, donor site morbidity, age and limitation of patient systemic condition. So proper case selection along with definitive treatment planning for every case is necessary.

**Key Words:** Perio-plastic surgery, Aesthetics, Gingival recession, Attached gingiva

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## INTRODUCTION

The increasing interest of patients in aesthetics has led to a refinement of mucogingival surgery's objectives. Both the practitioner and the patient frequently deal with gingival recession. It is described as the gingival border moving apically away from the cement-enamel junction<sup>1</sup>. Root sensitivity, root caries control, aesthetics, and cervical abrasion are the primary indicators of root coverage procedures.<sup>2</sup> According to Miller, recession is highly predictable and results in patient satisfaction, contrary to Dorfman's assertion that treatment of recession should not be addressed if marginal tissue can be kept free of inflammation.<sup>4</sup> The degree of recession, the width of the associated gingiva, aesthetic considerations, patient comfort, and the position of the tooth in the arch must all be taken into consideration while deciding on the best approach for root coverage.<sup>5,6</sup> There are various surgical techniques available for root coverage like rotational flaps,<sup>7</sup> coronally advanced flap,<sup>8</sup> free gingival graft,<sup>4</sup> guided tissue regeneration,<sup>9</sup> connective tissue graft and combination of these.<sup>10</sup> Despite of the advances in technique of correction of gingival recession, free gingival graft continues to be a reliable procedure for increasing the width of keratinized gingiva and stopping the progression of gingival recession.<sup>11</sup> At present, even though the free gingival grafts have lost their race to subepithelial connective tissue grafts as far as root coverage is concerned, they still hold an edge in considerations like being simple, multiple teeth can be treated at one time, easy tissue handling, and can be performed when keratinized gingiva adjacent to involved is insufficient.<sup>12</sup>

The main cosmetic unpredictability of free gingival grafts is a problem. Due to various anatomical features, such as thin gingival biotype, shallow vestibular depth, and high frenum attachment, mandibular teeth are more challenging and challenging to treat.<sup>13</sup> Given these anatomical considerations, a free gingival graft may be the best option for treating recession problems. Additionally, in the Indian context, patients' gingiva are characterized by high melanin

pigmentation, and free gingival reshaping can improve esthetics.<sup>14</sup> In this case, free gingival graft as a single step procedure for treatment of mandibular miller class III recession defects has been assessed.

### **CASE DESCRIPTION**

A 22year old female patient reported to the department of Periodontics, Post Graduate Institute of Dental Sciences, Rohtak, Haryana for routine cleaning of teeth with the complaint of repeated debris deposition in mandibular anterior. On examination, the patient had Miller's Class III gingival recession defect in mandibular right and left central incisor(Figure1 &2) and deficiency in attached gingiva in relation to 41 which is leading to compromised oral hygiene maintenance and plaque accumulation.



**Figure 1: Preoperative image showing Miller class III gingival recession.**

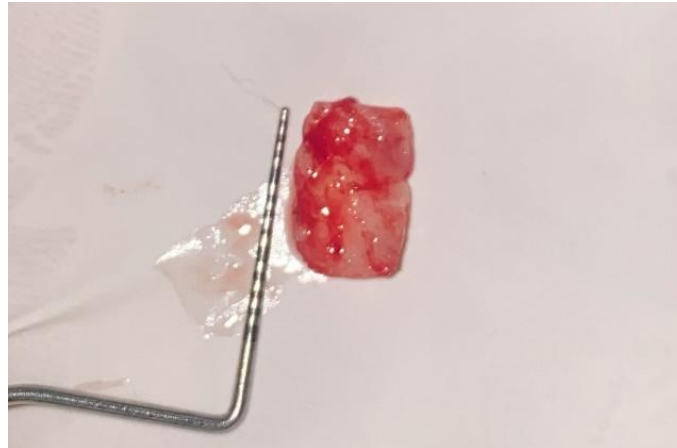


**Figure 2: IOPA showing interdental bone loss with respect to mandibular central incisors.**

The teeth chosen for root covering were healthy, non carious, and free of cervical abrasion. Scaling and root planing made up the initial course of treatment, and oral hygiene recommendations were made to encourage good oral hygiene. After two months, the periodontium of the patient was assessed, and locations were chosen that showed no evidence of gingival irritation or bleeding upon probing.

Using the UNC 15 probe, the following parameters were assessed at the beginning, three months, and six months. (i) Recession depth (RD) was calculated as the distance from the gingival margin to the cemento-enamel junction (CEJ). (ii) The distance across the buccal surface at the CEJ level was used to calculate the recession width (RW). (iii) The width of attached gingiva (WAG) was calculated as the distance between the mucogingival junction and the projection of the most apical part of the gingival sulcus or periodontal pocket on the external gingival surface.

After achieving adequate local anesthesia, exposed root surface was planed thoroughly. The horizontal incision was given extending from the line angle of adjacent teeth on either side of the recession at the level of CEJ. Two vertical incisions were made to extend well into the alveolar mucosa at the distal terminal of horizontal incision. A split thickness flap was elevated without disturbing periosteum. Root biomodification with citric acid was done for 5 min. The amount of donor tissue needed was accurately determined by using a foil template. The area between first and second premolar which had a greater thickness was selected to harvest the donor tissue (Figure 3).



**Figure 3: Image showing free gingival graft harvested from palate.**

The graft was placed on the recipient bed and suturing was done as described by Holbrook and Oschenbein<sup>15</sup> (Figure 4). Periodontal dressing was placed at the surgical site.



**Figure 4: Image showing Holbrook and Oschenbein suturing for placing graft on recipient 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 (Figure 7) for follow-up. There was uneventful healing without any complications (Figure 5&6).



**Figure 5: Postoperative image showing successful healing at 2 weeks at grafted site with root coverage and increased width of attached gingiva.**



**Figure 6: Postoperative image showing successful healing of palate (donor site).**



**Figure 7: Postoperative image showing successful healing at 6 months at grafted site and stable peridontium.**

## RESULTS

Results suggest the success of free gingival graft as a procedure for recession in terms of root coverage and increased attached gingiva (vestibular depth). From baseline to 3 months coverage of approximately 82% was achieved in mandibular central incisors along with increased vestibular depth which remained stable till 6 month follow up.

## DISCUSSION

The results of this case report indicated that free gingival grafting was a successful method for covering the roots and widening the associated gingiva. Both the practitioner and the patient must deal with gingival recession. There are many different treatment techniques available, and the procedure to be used will rely on the local anatomical conditions, the operator of choice, and the patient's comfort. A sufficient amount of keratinized gingiva acts as a barrier to physical injury and the development of future recession. Although there isn't a clear agreement on how much connected gingiva is necessary for good periodontal health, it is generally believed that areas with less than 2 mm of keratinized gingiva are more likely to experience recession.<sup>16</sup>

A flexible kind of treatment, free gingival grafting can be utilized to widen associated gingiva and cover roots that have been stripped of tissue. Both a one-step and two-step procedure can be used. Miller's method, known as the "direct approach," is a one-step process, whereas Bernimoulin et al.'s method, known as the "indirect approach," calls for two surgical stages.<sup>17</sup> The gold standard in treating class I and II gingival recessions has been reported to be connective tissue grafts, which completely cover the roots.<sup>18</sup> Complete root coverage is characterized as having a soft margin at the cemento enamel junction, clinical adhesion to the root, a sulcus depth of 2 mm or less, and no bleeding when the root is probed.

It is demonstrated that free gingival graft has less chances of success and predictability as compared to connective tissue grafts.<sup>19</sup> There are different reasons for incomplete root coverage like improper classification of marginal tissue recession, inadequate root planing, improper preparation of recipient site, inadequate size of interdental papilla, inadequate graft size and thickness, dehydration of donor tissue, inadequate adaptation of graft to root and remaining periosteal bed, failure to stabilize the graft, excess or prolonged pressure in coaptation of sutured graft, reduction of inflammation prior to graft, trauma to graft during initial healing, excessive smoking.<sup>20</sup>

Previous studies have reported coverage of 40-70% using FGG in class I and II recessions.<sup>21</sup> Free gingival graft was used in this case because: (i) Shallow palatal vault was observed in the studied population which was not suitable for harvesting the connective tissue graft. (ii) The case presented here with relatively thin gingiva phenotype. Technique such as laterally placed flap could not be employed as chances of donor tissue recession was there. (iii) there was insufficient apicocoronal gingiva that can't be placed coronally.<sup>19,22</sup>

The majority of investigations that have been published in literature have incorporated findings of abnormalities in mandibular and maxillary recession.<sup>19</sup> The treatment outcomes for the two arches are not comparable because of anatomical issues.<sup>22</sup> Free gingival grafting still has an advantage over connective tissue grafting in terms of ease and invasiveness of the treatment even though it is now trailing behind the latter. Studies on the treatment of gingival recession with free gingival grafts are lacking in the Indian context, where higher melanin pigmentation makes this procedure more effective for achieving better aesthetic results. However, free gingival grafts offer unpredictable results when compared to other techniques regarding color match between donor tissue and recipient site.<sup>14</sup>

Results of this study indicated 82% root coverage in class III Miller recession with fairly acceptable results in terms of esthetics suggesting free gingival graft also a viable option for increasing width of attached gingiva.

## CONCLUSION

Free gingival graft as a single step procedure is acceptable in terms of root coverage and aesthetics and to increase width of attached gingiva to maintain proper oral hygiene measures.

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