

## Periodontal Plastic Surgery for Cosmetic Root Coverage: A Case Report

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### Abstract:

Based on clinical observation that gingival recession may occur during orthodontic therapy involving sites that have an "insufficient" zone of gingiva, it is suggested that grafting procedure to be adapted to increase the gingival dimensions preceding the initiation of the orthodontic therapy. But once it is created, should be solved in appropriate way. We report a case treated for post-orthodontic gingival recession. The procedure involved the utilization of subepithelial connective tissue graft (SCTG) combined with coronally advanced flap procedure. At the post-operative follow-up visits the success of the surgical approach was confirmed by the absence of bleeding to probing and periodontal pockets as well as presence of gingival tissue with normal color, texture and contouring. After 12 months of follow-up, the clinical conditions were better than immediate post-operative result with satisfactory root coverage and periodontal health by the process known as creeping attachment. An excellent esthetical outcome was achieved and the patient was satisfied with case resolution.

**Key Words:** Periodontal plastic surgery, cosmetic root coverage, subepithelial connective tissue graft, gingival recession.

### Introduction:

Gingival recession is defined as the location of the marginal tissue, apical to the cemento-enamel junction (CEJ) with exposure of the root surface (Wennstrom, 1996). Localized gingival recession is an unesthetic condition that is usually observed over the labial aspect of prominent teeth and may be associated with root caries and hypersensitivity (Vekalahti, 1989). Many etiological and predisposing factors have been reported in the literature. It can be caused by traumatic injuries (excessive or inadequate brushing) and by destructive periodontal disease (Joshipura et al, 1994). Other predisposing factors may also play a role in recession development, i.e., tooth malpositioning, alveolar bone dehiscence, thin and delicate marginal tissue covering a nonvascularized root surface, high muscle attachment and frenal pull, occlusal trauma, lip piercing and iatrogenic factors related to reconstructive, conservative periodontologic, orthodontic or prosthetic treatment (Wennstrom & PiniPrato, 2006). Experimental evidence suggests that orthodontic tooth movement does not actually cause gingival recession but might create an environment that predisposes some people to the condition, particularly if teeth are repositioned in a facial direction and alveolar bone dehiscences are created (Wennström et al, 1987). Similarly, orthodontic tooth movement lingually or

palatally will probably result in resolution of any alveolar bone dehiscences and an increased bucco-lingual dimension of gingiva on the facial aspect of the tooth. Widespread use of prophylactic gingival grafts to prevent recession in orthodontic patients has been reported (Vanarsdall, 1995) to augment bucco-lingual width of the gingiva, while some periodontist suggested wait and watch approach (Andlin-Sobocki & Bodin, 1993).

Once recession has occurred, it needs to be covered for various reasons discussed above. Several techniques have been used including formation of a free gingival graft (FGG), laterally positioned flap (LPF) or coronally advanced flap (CAF) as well as guided tissue regeneration (GTR) and sub-epithelial connective tissue grafts (SCTG) alone or in combination with other techniques (Wennstrom & PiniPrato, 2006). This case report presents a case of post orthodontic gingival recession treated by subepithelial connective tissue graft surgery.

### Case report:

A 16 year old girl reported to the Department of Periodontics with the chief complaint of unaesthetic appearance of her front lower teeth. On examination, it was found that 7mm class II gingival recession (Miller, 1985) was there on the lower left central incisor (Fig.I). She had undergone orthodontic correction and was on retention appliance. Such type of recession was not present prior to the commencement of the orthodontic treatment. For the root coverage, periodontal plastic surgery was planned with sub-epithelial connective tissue free graft. Systemic

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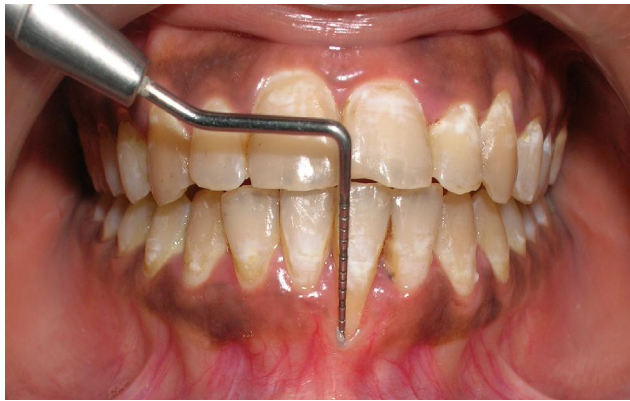


Fig:I Photograph showing 7mm of recession.

problems were ruled out before the surgery. Recipient site was prepared carefully with reflection of partial thickness flap. For this, two vertical incisions were given with the help of #15 blade, keeping in mind that recipient bed should be 3mm wide all around from the root surface (Fig.II).

Root surface was prepared with scaling and root planning without using any kind of root conditioner. After the preparation of recipient site, measurement was



Fig.II: Showing recipient bed preparation with partial thickness flap.

taken for donor tissue with the help of template made up of tin foil. Recipient site was covered with moist gauge piece. Donor site was selected for graft harvesting. Graft was removed from right palatal vault, 10 mm away from the gingival margin and just mesial to the first maxillary molar. Using a trap door approach, a template size sub-epithelial connective tissue graft was removed from the palate (Fig.III) kept in moist gauge piece and inspected for the size and thickness. Excess connective tissue and fat was carefully removed with the help of castroviezo scissor to make it 1.5- 2.0 mm thick. Graft was placed on the recipient site, stretched and stabilized with the help of horizontal suture (resorbable,vicryl, 5-0).

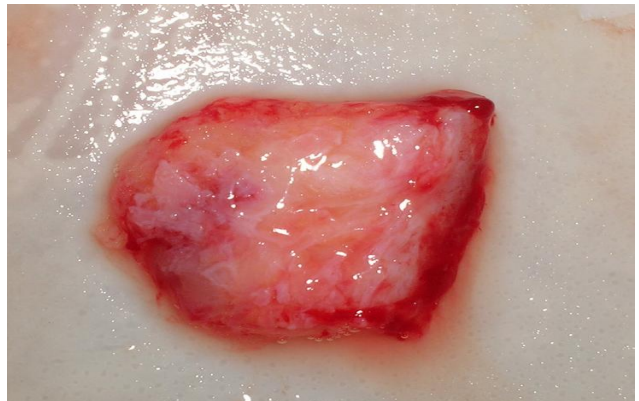


Fig:III: Showing subepithelial connective tissue graft.

All the four corners of the graft were sutured to underlying recipient tissue. After stabilization of the graft, pressure was applied on the graft for at least 5 minutes for close adaptation of the graft tissue and removal of blood clot, which may be present in between the donor and recipient tissue, to increase the possibility of graft acceptance. Now the reflected flap of recipient tissue was coronally repositioned and sutured with recipient tissue with sling suture (Fig.IV).



Fig. IV: Showing recipient site after graft placement and coronal positioning of the flap.

Periodontal dressing was placed on the recipient site. After suturing, the donor site was covered with the retention plate appliance, which patient was using. Post operative instructions were given to the patient and she was instructed to avoid brushing at surgical site for at least two weeks; medications were prescribed along with povidone iodine mouthwash. Follow up on tenth day revealed signs of graft acceptance (Fig.V). From donor as well as recipient site sutures were removed; oral hygiene instructions were reinforced. After 2 months, local examination showed that graft was completely accepted and recession was markedly covered with the graft tissue (Fig.VI). Donor site was



Fig.V: Surgical site after 10 days showing signs of graft acceptance.

completely healed. Patient was put on 3 months of recall period and after 12 months of follow up, further coverage of recession was noted by the probable process of creeping attachment (Fig.VII).



Fig.VI: Showing 75% recession coverage after 2 months



Fig.VII: Showing 85% recession coverage after 12 months by the process of creeping attachment.

**Result and Discussion:**

Immediately, after completion of the procedure, approximately 75% of recession was covered. After twelve months, coverage has become

85% by the probable process of creeping attachment.

The success of surgical procedures for root coverage depends on several factors, such as elimination and/or control of the etiology of gingival recession ( Ando et al, 1999), evaluation of the interproximal bone level and choice for the most appropriate surgical technique, which are inherent to each clinical situation and region to be treated (Greenwell et al, 2000).

During the last two decades several periodontal plastic surgery (PPS) procedures have been described in an attempt to cover exposed root surfaces e.g., laterally positioned flaps, coronally advanced flap, free gingival grafts, subepithelial connective tissue grafts (SCTG), acellular dermal matrix allografts and guided tissue regeneration (Lindhe et al, 2006). However, the predictability of such PPS procedures may be associated with different conditions, especially the initial recession classification.

The optimal method of root coverage is based on recession etiology and activity and the patient’s age, as well as esthetic demands. The most important factor determining treatment modality is the presence of appropriate (height and width) gingival papillas, which guarantees good vascular supply of the graft and creates the possibility of its proper placement to the Cemento enamel junction. Considering the various anatomic factors and socioeconomic status of the patient, SCTG technique was chosen for the root coverage procedure. SCTG was first introduced by Langer & Langer (1985) and modified by Harris (1992), Allen (1994) and Bruno (1999). It combines the advantages of the pedicle flap procedure and guarantees a double blood supply from both the overlying pedicle flap and the underlying periosteum. Other advantages of connective tissue graft is the good color match with neighboring soft tissues, less invasive palatal wound as well as long-term results in terms of root coverage.

Although all PPS procedures are effective in reducing the extent of exposed root surface, with a concomitant gain in Clinical attachment level (CAL) and in width of keratinized tissue but from an esthetic and subjective point of view, complete root coverage represents a desired treatment goal. A summary of published studies shows that on an average, 63-86% root coverage may be expected, depending on the treatment procedure used (Wennstrom & PiniPrato, 2006). There are many factors, which influence the degree of root coverage e.g., Patient related factors,

which include maintenance of oral hygiene, method of brushing and smoking; Site related factors, like interdental periodontal support and extent of recession (complete coverage is possible only in Miller class I and II recession, while in III and IV, only partial coverage is possible). In addition, in class II recession, the dimension of the recession also plays an important role in degree of root coverage. Less favorable treatment outcome has been reported at sites with wide (> 3mm) and deep (>5mm) recession (PiniPrato et al, 1992; Trombelli et al 1995). In this case also since recession was deeper than 5mm, complete coverage could not be achieved.

Result after twelve months of surgery have shown better root coverage than immediately after the surgery. This may be possible by the process known as creeping attachment. It is a postoperative migration of the gingival marginal tissue in a coronal direction, covering areas of previously denuded root surface (Goldman et al, 1964). Although the dental literature is limited as to when migration stops, how it progresses, and the ideal point for evaluation but it has been frequently demonstrated in the literature, 6-8months postoperatively at the surgical site (Harris, 1997; Lee et al 2002).

In conclusion, surgical treatment using SCTG resulted in significant root coverage of class II recession and increased gingival width with good colour matching with the surrounding tissues.

**Bibliography:**

1. Allen AL: Use of the suprapariosteal envelope in soft tissue grafting for root coverage. (I) Rationale and technique. *International Journal of Periodontics & Restorative Dentistry*, 1994; 14:216-227.
2. Andlin-Sobocki A, Bodin L: Dimensional alterations of the gingiva related to changes in the facial/lingual tooth position in permanent anterior teeth of children. A 2-year longitudinal study. *Journal of Clinical Periodontology*, 1993; 20: 219-224.
3. Ando K, Ito K, Murai S: Improvement of multiple facial gingival recessions by non-surgical and supportive periodontal therapy: A case report. *Journal of Periodontology*, 1999;70:909-913.
4. Bruno JF: Connective tissue graft technique assuring wide root coverage. *International Journal of Periodontics & Restorative Dentistry*, 1999; 14:126-137.
5. Goldman H, Schluger S, Fox L, Cohen DW: Periodontal therapy. 3rd Edn.; The CV Mosby Co., St. Louis, 1964; pp 569.

6. Greenwell H, Bissada NF, Henderson RD, Dodge RJ: The deceptive nature of root coverage results. *Journal of Periodontology*, 2000; 71:1327-1337.
7. Harris RJ: The connective tissue and partial thickness double pedicle graft: a predictable method of obtaining root coverage. *Journal of Periodontology*, 1992; 63: 477-486.
8. Harris RJ: Creeping attachment associated with the connective tissue with partial-thickness double pedicle grafts. *Journal of Periodontology*, 1997; 68: 890-899.
9. Joshipura KJ, Kent RL, DePaola PF: Gingival recession: intraoraldistribution and associated factors. *Journal of Periodontology*, 1994; 65:864-871.
11. Langer B, Langer L: Subepithelial connective tissue graft technique for root coverage. *Journal of Periodontology*, 1985; 56: 715-720.
12. Lee Y-M, Kim JY, Seol Y-J, Lee Y-K, Ku Y, Rhyu I-C, Han S-B, Choi S-M, Chung C-P : A 3- Year longitudinal evaluation of subpedicle free connective tissue graft for gingival recession coverage. *Journal of Periodontology*, 2002; 73:1412-1418.
13. Miller PD Jr: Classification of marginal tissue recession. *International journal of Periodontics & Restorative Dentistry*, 1985;5:9.
14. PriniPrato GP, Tinti C, Vincenzi G, Magnani C, Cortellini P, Clauser C: Guided tissue regeneration versus mucogingival surgery in the treatment of human buccal gingival recession. *Journal of Periodontology*, 1992; 63:919-928.
15. Trombelli L, Schincaglia GP, Scapoli C, Calura G: healing response of human buccal gingival recessions treated with expanded polytetrafluoroethylene membranes. *Journal of Periodontology*, 1995; 66: 14-22.
16. Vanarsdall RL: Orthodontics and periodontal therapy. *Periodontology 2000*, 1995; 9:132-149.
17. Vekalahti M : Occurance of gingival recession in adults. *Journal of Periodontology*, 1989;60:599-603.
18. Wennström JL: Mucogingival therapy. *Annals Periodontology*, 1996;1: 671-701.
19. Wennstrom JL, PiniPrato GP: Mucogingival therapy-periodontal plastic surgery. In: *Clinical Periodontology and implant dentistry*. J Lindhe, N P Lang, T Karring, Eds; 4<sup>th</sup> Edn.; Blackwell Publication, Munksgaard, 2003;pp576-649.
20. Wennström JL, Lindhe J, Sinclair F, Thilander B: Some periodontal tissue response to orthodontic tooth movement in monkeys. *Journal of Clinical Periodontology*, 1987;14:121-129.