

Case Report

Sub-epithelial Connective Tissue Graft: A predictable method for coverage of recession associated with orthodontic treatment

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ABSTRACT:

Aesthetic concerns and functional abnormalities, such as dentin hypersensitivity, are often associated with gingival recession defects. Root coverage procedures aim to restore both gingival aesthetics and function in recession. There was a strong correlation between the severity and extent of gingival recessions and past orthodontic treatment, and it was suggested that orthodontic tooth movement might lead to a gingival recession. Miller's Classes I and II recessions, in which the etiological factors are well diagnosed and eliminated, show great predictability of total coverage when the technique of subepithelial connective tissue graft is used. The purpose of this case report was to illustrate the relationship between orthodontic therapy and gingival recession and to describe the successful treatment of this case. A 25-year old girl with gingival recession and hypersensitivity in the anterior mandibular region was admitted to periodontology clinic. Treatment consisted of oral hygiene instructions, mechanical debridement, and surgical root coverage was by subepithelial connective tissue graft (SCTG).

Keywords: Gingival recession, etiology, orthodontic, treatment, subepithelial connective tissue graft (SCTG)

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INTRODUCTION:

The etiology of gingival recession is multifactorial. Many factors play a role in recession development, i.e., excessive or inadequate teeth brushing; destructive periodontal disease; tooth malpositioning; alveolar bone dehiscence; thin and delicate marginal tissue covering a non-vascularized root surface; high muscle attachment and frenal pull; occlusal trauma; lip piercing; and iatrogenic factors related to reconstructive, periodontal, orthodontic, or prosthetics treatment (1). Among these etiologic factors, a strong correlation was found between the severity and extent of the gingival recession to past orthodontic treatment, and it was suggested that orthodontic tooth movement, especially beyond the labial or lingual alveolar plate, may lead to a gingival recession (2).

Coverage of denuded roots has become one of the most challenging procedures in mucogingival periodontal surgery (1). The subepithelial connective tissue graft (SCTG)

introduced by Langer and Langer in the year 1985, achieved a high success rate by combining the advantages of both free gingival and pedicle grafts. This technique has been proposed as "Gold standard", as far as predictability and esthetics are concerned (3).

CASE REPORT:

A 25-year-old girl was referred by her orthodontist to the Department of Periodontology of our college for evaluation and treatment of the gingival recession associated with the mandibular left incisor. Her general health condition was good, did not take any medications, had no known allergies and was a non-smoker. Her chief complaint was concern relative to the recession associated with the lower front tooth. Clinical evaluation revealed gingival recession on the buccal surface extending 6 mm apical to the CEJ and a narrow zone of attached gingiva (Fig-1). There was no loss of papilla height on the mesial and distal aspect of the

incisor. No plaque accumulation was detected in the affected site. There was no gingival recession associated with adjacent teeth. There was no bone loss on the mesial and distal aspects of the affected tooth. It was decided to treat this problem with a Sub-epithelial connective tissue graft.



Figure 1: Pre-Op Photograph



Figure 2: Desired Incisions Given



Figure 3: Surgical-bed Preparation



Figure 4: Sub-epithelial Connective Tissue Graft



Figure 5: Root Conditioning with Tetracycline Hydrochloride



Figure 6: 5-0 Bio-absorbable Sutures Placed



Figure 7: Suture Removal Ten Days after Surgery



Figure 8: Post-op Photograph after Three Months

SURGICAL PROCEDURE:

The exposed root surface was carefully planned and was gently irrigated with a sterilized physiological saline solution. Before surgery, extra-oral antisepsis was performed with 10% povidone-iodine solution. After local anesthesia with 2% lignocaine with epinephrine 1:2,00,000 a recipient bed was prepared for the graft, a horizontal incision was made at the level of the CEJ in correspondence to the base of adjacent papilla to the line angles of the neighboring teeth from which vertical incisions were realized to the apical extent of the recipient bed, 3mm apical to the recession, such delimited tissue was then removed by a partial thickness incision (Fig-2 & Fig-3). The flap was divided beyond the muco-gingival junction and was extended until it could be passively positioned coronally over the defect without tension. The SCTG of adequate size and about 1mm thickness was then harvested from the palate in correspondence to the bicuspid area by a partial thickness incision with a no.15 blade; the graft was kept moist till placement (Fig-4). Before placement of the graft, root conditioning was done with tetracycline hydrochloride and the grafted tissue was then compressed for about 5 min onto the recipient bed (Fig-5). An effort was made to place the coronal margin of the graft in correspondence to the CEJ. The graft was then sutured over the defect with a 5-0 bio-absorbable sutures, and the previously reflected partial-thickness flap was coronally positioned to cover the entire graft and was sutured in place with 5-0 bio-absorbable sutures (Fig-6). The donor and recipient sites were protected with a periodontal pack. The patient was prescribed analgesics and instructed to rinse twice daily with 0.12% chlorhexidine rinse for two weeks postoperatively and to avoid trauma or pressure at the surgical site. Tooth brushing activities in the operated sites were discontinued during this time. The dressing and sutures were removed ten days after surgery (Fig-7), home care instructions were given. Professional prophylaxis was done weekly for the first month, and then at three months, postoperative There was uneventful healing after 24 hours. Three months following surgery, the affected area had completely healed. Probing depth at the mid-buccal site was less than 2 mm, and the amount of attached gingiva was adequate (Fig-8)

DISCUSSION:

The case described here demonstrates that past orthodontic treatment is a potential cause of the gingival recession and attachment loss. Typically, gingival recessions result in an asymptomatic onset and develop slowly over time. In the present case, there were tooth hypersensitivity and an aesthetic problem of the patient.

The main advantages of the connective tissue graft procedures are thought to derive from the availability of two sources of blood supply to the graft: one from the recipient bed and the other from the overlying flap, and the perfect chromatic integration and an optimal esthetic outcome (4). Since the success rate of root coverage depends on the survival of graft tissue itself, it has been suggested that the overlying flap should cover most of the graft. This is thought to provide enough blood supply to nourish the underneath portion of the graft over the denuded root (5). The level of adjacent periodontal tissue, i.e., interdental papilla and alveolar bone, showed the direct impact to the final results (6). In summary, the coronally positioned flap with SCTG can resolve aesthetic and functional problems in a variety of defects.

CONCLUSION:

The success of this clinical case may be attributed to the precise indication of the technique of sub-epithelial conjunctive tissue graft due to the high predictability of root coverage in Miller's class I and II and the double blood supply for the graft's nutrition. Careful case selection and surgical management are critical if a successful outcome is to be achieved.

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