Management of gingival recession defects - a case report

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Introduction

Gingival recession, referring to the exposure of the root of a tooth caused by loss of gingival tissue and/or apical displacement of the gingival margin from the cemento-enamel junction (Wennström 1996), is a common clinical observation. According to Kasah et al. (2005), more than 50% of the population exhibits gingival recessions. Gingival recession has a multifactorial etiology associated with anatomical factors or pathological factors (Figure 1). Plaque-related inflammation and traumatic brushing have been considered primary or triggering factors in gingival recession. Furthermore, predisposing factors have also been identified: bone fenestration and dehiscence, position of the tooth within the dental arch, thickness of the marginal gingiva, high attachment of the labial frenulum and intrageneric factors (uncontrolled orthodontic movement related to force, direction, or dental tipping and inappropriate restorations).

Gingival recessions can be localized or generalized, involving one or more tooth surfaces. Among various classifications proposed to describe the clinical features of gingival recessions, Miller’s classification (Miller 1985) of gingival recession is probably the most widely used. This classification, based on (i) the height of the interproximal papillae and interdental bone adjacent to the defect area, and (ii) the relation of the gingival margin to the incisogingival junction (Figure 2), allows for a relatively reliable prediction of the outcome of treatment.

The exposure of the root surface is generally associated with aesthetic issues, a radicular hypersensitivity as well as difficulties to maintain an optimal buccodental hygiene (Stanin et al. 2004, Daprile et al. 2007). In many cases, these symptoms may require treatment.

Treatment

Treating gingival recessions is a challenge for the dental practitioner who must consider the objective clinical signs, subjective symptoms, and the patient’s expectations regarding the treatment outcome.

The management of gingival recession is based on a thorough assessment of the degree of tissue involvement and the etiological factors. The control of the causative factors in the development of gingival recession should always be addressed during the initial treatment phase and will in most cases prevent further progression of the recession. Vigorous brushing should be addressed by advising patients to carry out an appropriate brushing technique (i.e. modified Bass technique) with a soft/medium toothbrush, a less abrasive dentifrice. When tooth mis-positioning is a contributing factor, appropriate consideration to orthodontic correction should be considered. If the recession is related to a piercing, its removal should be recommended.

If the recessions have been successfully stabilized by identifying and avoiding causative factors, and by eliminating hypersensitivity, no further treatment might be needed. However, in cases of objectionable aesthetic alterations, progressive recessions, or increased hypersensitivity, surgical correction using mucogingival plastic surgical techniques such as gingival grafting should be considered. The objectives of gingival grafting are (i) to provide a degree of root coverage and (ii) to enhance the amount of keratinized attached gingival tissue around the tooth. While the latter of these two objectives is very predictable, the amount of root surface coverage may vary depending on the severity of the recession defect.

Periodontal plastic surgery is technique sensitive and involves delicate handling of the mucogingival tissues, demanding a great dexterity of the surgeon, a selection of specific instruments and innovative surgical and suturing approaches. The use of magnification and microsurgical instruments to handle the tissues improves vascularization of connective tissue grafts and increases root coverage compared to macrosurgical techniques (Burkhart & Lang 2005, Cortelini et al. 2007).

Two main types of periodontal plastic surgical procedures have
been described in the literature to treat the gingival recessions.

- Pedicle soft tissue graft procedures

A pedicle graft involves repositioning donor tissue from an area adjacent to the recession defect to cover the exposed root surface (coronally advanced flap, laterally sliding flap, flapapillar flap, tunnelling technique). These techniques have many advantages as no second surgical site is needed and as the flap retains its own vascularity from the base of the flap. To minimize tissue trauma and thus improve the aesthetic result, these surgical techniques have over the years been modified and improved (Bartké 1985, Allen 1994, Brunoo 1994, Zacchelli and De Sanctis 2000). The use of enamel matrix derivative in the regenerative procedure has been described in the literature (Corbella et al. 2008). The full list of references is available from the publisher.

**Figure 1. Clinical case treated by epithelialized graft. C) Buccal gingival recession at tooth #14 (a), harvested epithelialized graft (b), positioning and suturing of the epithelialized graft over the recipient site (c), healing situation after 2 years of follow-up (d).**

**Figure 2. Clinical case treated by sub-epithelial connective tissue graft and the adjunctive use of enamel matrix derivative protein (Straumann Emdogain) (a-c).**

**Figure 3. Clinical case treated by connective tissue graft substitute materials (Gistenich Matrix dressing for tooth #41 and #14 (a, b): Gistenich Maestro® is positioned under the modified coronal advanced flap (b) which is then sutured (c), healed situation showing a complete root coverage 1 year after surgery (d).**

**Figure 4. Clinical case treated by sub-epithelial connective tissue graft multiple gingival recessions at teeth #14, #11 and #12 (a), preparation of the recipient site according to the tunnelling technique (b), harvested sub-epithelial connective tissue graft (c) which is positioned under the tunneled flap (d) and sutured (e); 1 year post-op visit, full root coverage was achieved (f).**

**Figure 5. Clinical case treated by coronally advanced flap combined with a sub-epithelial connective tissue graft and the adjunctive use of enamel matrix derivative protein (Straumann Emdogain®) (a-c).**

**Figure 6. Clinical case after a 2-year follow-up in which a coronally advanced flap was used in combination with an epithelialized graft. Soft tissue surface graft (coronal advanced flap) from the distal aspect of the right first premolar to the mesial aspect of the root of the right first molar. The single-incision technique was used to remove the graft. The root was removed with a thickness of 1.5 mm (Figure 6g) and the palatal site was stitched with single sutures.**

**Donor Site Preparation**

The second step was to harvest a sub-epithelial connective tissue graft from the palatal mucosa. The selected area extended from the distal aspect of the right first premolar to the mesial aspect of the root of the right first molar. The single-incision technique was used to remove the graft. The root was removed with a thickness of 1.5 mm (Figure 6g) and the palatal site was stitched with single sutures.

**Graft Positioning and Suturing**

The graft was positioned under the flap and over the exposed root surface of tooth #13 and secured with 6/0 Prolese® sutures. The buccal flap was coronally advanced and sutured with 6/0 Prolese® sutures (Figure 6h). Straumann Emdogain® was applied over the gingival margin for 5 minutes to enhance soft tissue healing (Figure 6i).

**Postoperative Instructions**

The patient was instructed to take analgesic medication (paracetamol, 750 mg) three times a day for 4 days an anti-inflammatory drug (ibuprofen, 100 mg) twice a day for 2 weeks following the surgical procedure. The color of the tissues was homogenous 2 weeks following the surgical procedure. The thickness of the recipient tissue was assessed during the first month, monthly until the third month, and annually up to the second year.

**Clinical Evaluation**

The healing process was uneventful, and the patient did not report pain or discomfort during the overall postoperative period. The colors of the tissues was homogenous 2 weeks following the surgical procedure. The thickness of the recipient tissue was assessed during the first month, monthly until the third month, and annually up to the second year.

**Conclusion**

Gingival recession is a common clinical observation. Underlying etiology and recession area should always be investigated and addressed. Appropriate oral hygiene aids and cleaning techniques should be reviewed. In cases where the recession is more significant, causing aesthetic concerns or ongoing problems with root hypersensitivity, surgical treatment should be recommended. Due to the highly specialized nature of mucogingival surgery and the fact that root coverage procedures are very technical sensitive, patients requiring surgical correction of recession defects should be referred to a periodontist for management.

**References**


