

Treatment of Gingival Recession Using Coronally Advanced Flap – Case Reports

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Received November 28, 2013; Revised December 08, 2013; Accepted December 24, 2013

Abstract One of the most common esthetic concern associated with the periodontal tissues is gingival recession. Gingival recession is the exposure of root surfaces due to apical migration of the gingival tissue margins; gingival margin migrates apical to the cemento-enamel junction. Although it rarely results in tooth loss, marginal tissue recession is associated with thermal and tactile sensitivity, esthetic complaints, and a tendency toward root caries. This paper views the etiology, consequences, and the available surgical procedures for the coverage of exposed root surfaces, including two case reports.

Keywords: *gingival recession, Coronally positioned flap*

Cite This Article: J.Kavitha, M.Navarasu, and Venkata Srikanth, "Treatment of Gingival Recession Using Coronally Advanced Flap – Case Reports." *International Journal of Dental Sciences and Research* 2, no. 1 (2014): 1-4. doi: 10.12691/ijdsr-2-1-1.

1. Introduction

Gingival recession is defined as the displacement of the marginal tissue apical to the cemento-enamel junction [1]. The most common factors that influence gingival recession are alveolar bone dehiscence, high muscle attachment, frenal pull, iatrogenic factors, hard tooth brush, traumatic tooth brushing habits, orthodontic tooth movements and periodontal disease [2]. Recession has been clinically related to a higher incidence of root caries, periodontal attachment loss, hypersensitivity, unaesthetic gingival appearance and cervical wear [3].

The periodontium has been described as having two basic forms are thin and scalloped or thick and flat. Olsson & Lindhe referred to these as periodontal biotype. He found the thick and flat periodontal biotype to be more prevalent than the thin and scalloped form (85 to 15 %). Each biotype has its own characteristics which impact on the clinical outcome. The highly scalloped gingivally complex is greater than 5mm interproximally and therefore is the most difficult to maintain postsurgically. Care must also be excised during tissue retraction and placement of crown margins within the sulcus to prevent recession. The stability of the osseous crest and position of the free gingival margin are directly proportional to the thickness of the bone and gingival tissue [4].

The surgical modalities assessed include Connective Tissue Graft (CTG), Free Gingival Graft (FGG), Guided Tissue Regeneration (GTR) and the Coronally Advanced Flap (CAF). Reports of surgical root coverage procedures have shown conflicting rates of success and predictability and have led to the development of number of surgical

techniques from the time, Grupe and Warren introduced lateral sliding flap for root coverage. Bjorn is frequently quoted as having introduced the free soft tissue autograft, but a detailed description of the technique was published by Sullivan and Atkins [3,5,6,7,8,9,10,11,12].

Norberg(1926) introduced Coronally positioned flap procedure [13]. The Coronally positioned flap is one of the valid surgical options in the treatment of Millers class I and class II gingival recession. Coronally positioned flap was more commonly used as a means of gaining root coverage and has varying degree of success. The advantage is that it is not technique sensitive and also discriminates the need to harvest donor tissue and minimize the morbidity of donor areas.

2. Classification of Recession

2.1. Sullivan And Atkins Classification [13]

- Shallow – Narrow
- Shallow – Wide
- Deep – Narrow
- Deep – Wide

This classification was used from 1968.

2.2. Miller's [15]

Class - I

Marginal tissue recession does not extend to the mucogingival junction. There is no loss of bone or soft tissue in the interdental area. This type of recession can be narrow or wide.

Class - II

Marginal recession extends to or beyond the mucogingival junction. There is no loss of bone or soft

tissue in the interdental area. This type of recession can be wide and narrow.

Class - III

Marginal tissue recession extends to or beyond the mucogingival junction. There is bone and soft tissue loss interdentally or malpositioning of the tooth.

Class - IV

Marginal tissue recession extends to or beyond the mucogingival junction. There is severe bone and soft tissue loss interdentally or severe tooth malposition.

The prognosis for class I and II is good to excellent; whereas for class III only partial coverage can be expected. Class IV has a very poor prognosis with current techniques.

Based on Miller's classification 100% root coverage can be anticipated in class-I and class- II recession. All forms of Sullivan and morphological categories fall within these two classes. In class – III recession, partial root coverage can be expected. In class – IV recession, root coverage is not anticipated although occasionally it can be obtained. Usually however root coverage is not attempted.

Although Miller's classification provides a convenient tool for prognosis evaluation, it has some limitations:

The position of the tooth and the alveolar ridge are not taken into account. Recession in labially positioned teeth may require orthodontic treatment prior to surgical procedures.

The size of the defect in both vertical and horizontal directions must be considered. As a rule of thumb, the literature classifies the defects as shallow (< 3mm), moderate (3-5mm) or deep (> 5mm). It is to be assumed that the larger the recession area, the less root coverage should be expected.

The residual depth of the vestibule also seems to be of importance for the selection of procedures.

Palatal recession was not considered.

Periodontal plastic surgery and non-surgical treatments for gingival recession have been reviewed in the dental literature. The aim of this paper is to assess the validity, use of surgical treatment and to evaluate the outcome of Coronally advanced flap for gingival recession.

The clinical trial was conducted on 2 patients, selected from those attending the out patients unit of Rajah Muthiah Dental College and Hospital. The patients were treated for bilateral Miller Class I gingival recessions by using Coronally Positioned Flap technique. The patients were informed about the study and a written informed consent was obtained from them.

3. Clinical Measurements

Width of the Defect (WD):

The width was recorded at a level of 1mm apical to the Cemento-enamel junction. (WD)

Depth of the Defect (DD):

Distance between Cemento-enamel junction and gingival margin.

Width of the Keratinized Tissue (WKT):

Distance between gingival margin (GM) and Mucogingival junction (MGJ).

Relative Clinical Attachment Level (RCAL):

Calculated as Relative Recession + Probing depth (PD).

4. Pre- Surgical Preparation

- Initial therapy consisting of scaling and root planing was carried out.
- Occlusal adjustment was done.

5. Procedure

After obtaining adequate anesthesia (Lignocaine 1:80,000) the exposed root surface was scaled and planed using hand and ultra sonic instruments. A horizontal intra crevicular incision was made at the recession and extended with two vertical releasing incision in correspondence to the line angles. The interdental papilla was preserved as much as possible. Their facial portion was deepithelialized to create a connective tissue bed. Full thickness flap was elevated. Horizontal incision was placed at the base of the flap to ensure tension free coronal displacement of the flap. The flap was then Coronally positioned to completely cover the defect and secured using continuous sling suture (No 5-0 bioabsorbable polyglactin material). Vertical releasing incisions were approximated using interrupted suture technique.

6. Post Surgical Care

Immediately following surgery, use of icepacks was recommended intermittently for three hours. [Pini Prato [16], Pagliaro, Baldi et al]. All patients were instructed to discontinue tooth brushing around the surgical site and advised to use 0.12% chlorhexidine gluconate mouthrinse for four weeks. Systemic antibiotics were prescribed (Amoxicillin-500 mg, three times daily for five days) along with analgesics.

7. Case Presentation

7.1. Case Report 1



Figure 1. preoperative view of recession in 14

7.2. Case Report 2



Figure 2. sulcular and vertical incision placed



Figure 3. full cum partial thickness reflected



Figure 4. coronally displaced



Figure 5. suture placed



Figure 6. 6month post-operative view



Figure 7. preoperative view of recession in 23



Figure 8. sulcular and vertical incision placed



Figure 9. full cum partial thickness reflected



Figure 10. suture placed



Figure 11. 6 month post-operative view

8. Results

There was reduction in the recession width, and recession depth at first month, third month and sixth month from baseline, and there was gain in Relative Clinical Attachment Level at first month, third month and sixth month, there was increase in Width of Keratinized Tissue at first month, third month and sixth month from baseline following treatment with Coronally Positioned Flap.

9. Discussion

High rate of gingival recession defects among the general population, it is imperative that dental practitioners have an understanding of the etiology, complications and treatments of the condition. The aim of this paper has been to elucidate the current body of research in a manner that is clinically applicable and relevant, the findings of the present study indicated that acceptable root coverage can be achieved in class I gingival recessions when treated with Coronally positioned flap.

The present study aimed at treating Millers Class I recessions, with a mean initial recession height of 3-4 mm. This type of defect could be treated with many variations of three basic approaches: 1) pedicle soft tissue grafts; 2) free soft tissue grafts; or 3) combinations of the two. Among the pedicle grafts, the Coronally positioned flap is one of the valid surgical options to cover exposed root surfaces. It has many advantages over other surgical procedures used to treat gingival recessions: it does not require a separate surgical site to obtain a graft, the tissue of the pedicle provides a perfect color/contour match with the surrounding tissue, the procedure is simple to perform, and does not require an extended surgical or recovery time. The true benefits for the patient are improved esthetics and the stability of the results overtime.

In addition it is important to consider the patients tooth brushing technique for the long-term maintenance of the clinical outcomes achieved by any root coverage surgical procedure. Anatomical factors such as root prominence, depth of the vestibule, soft tissue quality must also be considered.

Longitudinal studies with a longer duration and histological analysis have to be done for evaluating the success and stability of the surgical procedure.

10. Conclusion

Maintaining good oral hygiene and using the appropriate oral hygiene aids and cleaning techniques

should be reviewed. Patients with recession should always be made aware of the possibility that such areas can be surgically repaired. Before undertaking surgical or non-surgical forms of therapy for gingival recession, we must address the etiology of the problem. It goes without saying, that therapeutic interventions will be undermined in the long run if the cause of the problem is not removed. Once the etiology of the condition has been uncovered and addressed, we may proceed to plan a treatment to arrest or reverse the gingival recession. The treatment plan will be based on the severity of symptoms, the goal of the patient and the body of knowledge in the current literature.

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