Miller’s class I gingival recession defects management using Semilunar coronally repositioned flap
Ramanarayana Boyapati, Leela R Moka, Rameshbabu Mutthineni, Kiran Kumar Nagubandi

ABSTRACT
Background: Gingival recession is a common condition in population with poor oral hygiene. The Semilunar coronally repositioned flap (SCRF) is one of the procedures described in the Journal of Clinical Periodontology in 1986 for the treatment of shallow recession. Aims and Objectives: To assess the efficacy of Semilunar Coronally Repositioned Flap procedure in the treatment of Miller’s class I gingival recession defects in maxillary teeth. Materials and Method: Ten patients, with isolated Miller’s Class I gingival recessions, were selected and were treated with SCRF without sutures and assessed the surgical outcome by measuring probing depth, recession height, gain in clinical attachment levels, width of keratinized tissue between central incisors, canines and premolars. Descriptive statistical analysis has been carried out. Student- t test (two tailed, dependent) has been used to find the significance of study parameters between baseline and third month and baseline and sixth month readings. Results: The mean recession height at baseline 2.10±0.31 and at third month and sixth month is 0.70±0.58. There was statistically significant difference (p<0.001) from baseline to third month and sixth month. The mean root coverage obtained is 66.75%. Conclusion: In conclusion, clinical attachment levels, percentage of root coverage and complete root coverage was found to be satisfactory in SCRF along with a significant increase in width of keratinized tissue.

Keywords: Cemento enamel junction; Gingival Recession; Root Coverage; Semilunar Coronally Repositioned Flap.

Introduction
Mucogingival therapy is defined as the correction of defects in morphology, position, or amount of soft tissue and underlying bone.1 Friedman introduced it in 1957 and was defined as “surgical procedures designed to preserve gingiva, remove aberrant frenulum or muscle attachments, and increase the depth of the vestibule.”1 Mucogingival therapy was renamed as periodontal plastic surgery by 1996 world work shop in clinical periodontics. This term was originally proposed by Miller in 1993.1 Harvey published the surgical method involving coronal repositioning of the gingival in 1965.5 Tarnow in 1986 reported the semilunar coronally re-positioned flap (SCRF) technique. The decision to use the SCRF technique as designed by Tarnow, depended on factors related to the height and class of gingival recession and width and thickness of the keratinized tissue. It is designed primarily for attaining root coverage where 2 to 3mm of root coverage is required.6 Recent studies have evaluated new modifications to the technique such as incision design and suturing, use of microsurgical procedures for flap manipulation and suturing and effects of EDTA root conditioning on clinical outcome6 and tissue adhesive EPIGLU. This study was conducted to assess the efficacy of original Semilunar coronally repositioned flap as described by D. P. Tarnow in the treatment of Miller’s class I gingival recession defects in maxillary teeth.

Materials and methods
Study population: A prospective pilot study was conducted as a part of postgraduate thesis. Ten systemically healthy patients with isolated Miller’s class I gingival recessions reporting to the Department of Periodontics, MAMATA Dental college and Hospital were selected. Written and verbal informed consent was obtained after the explanation of surgical procedure to the patient and the Institutional Ethical Committee approved the study. The inclusion criteria were patients aged 20 – 45 years with no contraindications for periodontal surgery, Miller’s Class I isolated recession defects, Probing depth ≤ 3mm with no bleeding on probing, width of the keratinized tissue ≥ 2mm, absence of caries or restoration in the area to be treated. Exclusion criteria were; smokers, subjects with immunosuppressive systemic diseases, Miller class II, III or IV recession defects, presence of apical radiolucency. All the patients were subjected to full mouth scaling and root planing where indicated.

Clinical data collection: Baseline full mouth plaque and gingival index scores were recorded according to Silness and Loe, 1964 and Loe and Silness, 1963 scales respectively. Clinical parameters were assessed at the mid-facial surface of teeth using Cemento enamel junction (CEJ) as the reference point. All measurements were recorded using a UNC 15 periodontal probe at baseline, three month and six month interval. Measurements were recorded to the nearest millimeter. Recession Height (RH) was measured as the distance from CEJ to gingival margin (GM). Width of keratinized tissue (WKT) was measured as the distance between the GM and the mucogingival junction (MGJ), pocket depth (PD) was measured from GM to the base of the sulcus. Clinical attachment level (CAL) is calculated from PD and gingival recession.

Semilunar flap: The procedure is performed as originally described by D.P Tarnow (1986). Local anesthesia was established using 2% lignocaine hydrochloride with 1:80,000 adrenaline. The bone should be sounded to determine the location of the facial bone. This location will influence the apical extent of the scallop. When the tissue is coronally positioned, it is critical to have tissue cover the root and the crestal bone and to avoid having root exposed apical to the semilunar incision. The incision begins at one interdental site, which is slightly coronal to the proposed level of the flap advancement, and continues in a semicircular arc ending at the opposite interdental site At
least 2 mm must be left on either side of the flap, not extending into the interdental papilla since this is the main area from which the blood supply will come. The height of the semilunar flap must be greater than the distance from the CEJ to bone, so that the apical border of the flap in its final position rests on the bone not on denuded root. Then a split –thickness dissection was performed from the initial incision coronally until connecting to the intrasulcular incision. The mid-facial tissue was completely released and flap is coronally positioned to the CEJ and held in place against the tooth with a moist gauze pad placed with light pressure for 5 minutes. No sutures were placed.

Post surgical care: All patients were instructed to discontinue tooth brushing around the surgical site for the first three weeks after the surgery. During this period, patients were advised to use 0.2% chlorhexidine solution twice daily for three weeks. Systemic antibiotics and analgesics were prescribed for seven days post surgically (Amoxicillin 500mg t.i.d) and gentle topical application of 2% chlorhexidinegluconate gel. Three weeks after the surgery, the patients were instructed to resume careful mechanical tooth cleaning of the treated areas using a soft bristled toothbrush. Patients were given instructions to report to the department if they had any discomfort following surgery. All the patients were periodically recalled every month for evaluation. The clinical parameters were measured during the follow up visit at third and sixth months.

Results

The recessions were located in seven canines, two first premolars, and one central incisor. All ten patients were free of any postoperative complications. All ten patients were compliant and maintained good oral hygiene throughout the study. Healing was uneventful for all ten patients. Statistical analysis of the parameters, probing depth, recession height, gain in clinical attachment levels, width of keratinized tissue between central incisors, canines and premolars showed an improvement during third month and sixth month values. Table 1 gives mean probing depth at baseline, third month and sixth month. The mean probing depth at baseline was 1.55±0.51 that was reduced to 1.15±0.33 at third months and sixth month. There was statistically significant difference (p<0.003) from baseline to third month and sixth month.

Table 2 gives the baseline mean CAL and at third month and sixth month. The mean clinical attachment level at baseline is 3.65±0.61 and at third month and sixth month it is 1.95±1.08, which shows statistically significant difference (p<0.001). Table 3 shows mean recession height at baseline, third month and sixth month, i.e., 2.10±0.31 at baseline and 0.70±0.58 at third month and sixth month with a p<0.001. The mean root coverage obtained is 66.75%.

Table 4 shows the baseline mean keratinized tissue height at baseline, third month and sixth month. The mean of Width of keratinized tissue at baseline is 2.90±0.31. At third month and sixth month, there was an increase in the mean to 3.75±0.67 which was statistically significant (p<0.001).

Discussion

SRCF is a simple technique with greater reproducibility and decreased cost-benefit ratio, which was designed by D.P. Tarnow in 1986. In this study, smokers were excluded because smoking causes alteration in physiological and cellular functions causing negative impact on the gingival blood flow and could contribute to the poor wound healing.12

Sutures were not necessary in this case because the thin clot formed by applying pressure with wet gauze for 5 minutes stabilized the flap adequately. The periodontal dressing was not given because it can dislodge the tissue upon placement.6 Wound healing after mucogingival surgery relies on clotting, revascularization and maintenance of the blood supply.13 Full thickness flaps preserve gingival vascular patency and display dilation of the supraperiosteal vessels. If there is proper tissue adaptation, revascularization between flap and underlying bone establishes within days. The possibility of achieving a new connective tissue attachment in the apical portion of the defect seemed to be considerably better in narrow recession defects than in wider ones, most likely because the periodontal ligament at the lateral parts of the defects will serve as a source of granulation tissue from which a new connective tissue attachment can develop.2 There was a statistically significant reduction in probing depth (p=0.003) from baseline to third month and sixth month as reported in the earlier studies.9,10 There was no significance difference from third month to sixth month.

The percentage of root coverage attained was 66.75% and complete root coverage was seen in 50% of the sites. This compares well with the previous studies in terms of complete root coverage6,11 and superior to the some other studies with inferior results.9,12 The frequency of complete root coverage is related to the technique predictability.14 In the present study there was statistically significant increase (p<0.001) in WKT from baseline to third month and sixth month, which are in accordance with the previous studies.5,7 In the SCRF the granulation tissue that fills the semilunar area will generally turn into same type of tissue that was present before the repositioning of the tissue. According to Ainamo et al 1992, the increase in

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**Table 1. Probing Depth**

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<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>3rd Month</th>
<th>6th Month</th>
<th>% Change</th>
<th>P Value</th>
</tr>
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<tr>
<td>Baseline</td>
<td>1.55±0.51</td>
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**Table 2. Clinical Attachment Level**

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<th>6th Month</th>
<th>% Change</th>
<th>P Value</th>
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</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.10±0.31</td>
<td>0.70±0.58</td>
<td>0.70±0.58</td>
<td>66.75%</td>
<td>&lt;0.001</td>
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**Table 3. Recession Height**

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<tr>
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<th>Baseline</th>
<th>3rd Month</th>
<th>6th Month</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.90±0.31</td>
<td>3.75±0.67</td>
<td>3.75±0.67</td>
<td>&lt;0.001</td>
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**Table 4. Width of Keratinized Tissue**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>3rd Month</th>
<th>6th Month</th>
<th>% Change</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.90±0.31</td>
<td>3.75±0.67</td>
<td>3.75±0.67</td>
<td>&lt;0.001</td>
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the width of keratinized tissue is due to the tendency of the coronally displaced mucogingival line, to regain its original, “genetically determined” position, after the soft tissue margin attains stability at the level of the cemento enamel junction.14

From the results obtained from the present study, SCRF considered to be a predictable technique to obtain root coverage in the treatment of Miller’s class I gingival recession defects.

**Conclusion**

In conclusion, considering all the parameters, such as clinical attachment levels, percentage of root coverage, SCRF is a predictable technique to obtain root coverage along with a significant increase in width of keratinized tissue.

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**References**


**How cite this article**


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