Treatment Of Millers Class I Gingival Recession Defects Using Coronally Advanced Flap.- Case Report Of Two Cases.


Affiliation
1. Senior Lecturer, 
   Department of Periodontics 
   Mamata Dental college and hospital Khammam, 
   Telanagana.

Corresponding Author:
Dr. Ramanarayana. Boyapati
Senior Lecturer, 
Department of Periodontics 
Mamata Dental college and hospital Khammam, 
Telanagana.

Conflict of Interest – Nil

ABSTRACT
Mucogingival therapy is defined as the correction of defects in morphology, position, or amount of soft tissue and underlying bone. 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. Factors implicated in the etiology of GR, include traumatic, overzealous tooth brushing technique (i.e; forceful, horizontal) frequently associated with a pre-existing lack of cortical bone or acquired bone deformities, uncontrolled marginal inflammation with accumulation of dental plaque or high muscle attachment and frenal pull.
Gingival recession (GR) occurs in population with low oral hygiene levels. Root coverage may be achieved by a number of surgical techniques, including pedicle gingival grafts, free grafts, connective tissue grafts, GTR may also be used. The objective of the present study was to evaluate Coronally advanced flap (CAF) procedure in the treatment of Miller's class I gingival recession defects in maxillary teeth.
Key words: Gingival recession, Flap surgery, Mucogingival surgery.

INTRODUCTION
The oral exploration of the root surface due to displacement of the gingival margin apical to CEJ leads to tactile and thermal dental hypersensitivity, root abrasion and deterioration of smile aesthetics. [1] The main goal of the periodontal therapy is to improve periodontal health and thereby to maintain patients functional dentition throughout his/her life. [2]
Numerous procedures and different
techniques have been designed to provide predictable root coverage.\textsuperscript{[3]} According to Zucchelli and De Sanctis the selection of one surgical technique over another depends on several factors, some of which are related to the defect i.e the size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, width and height of the interdental soft tissue, depth of the vestibulum or the presence of frenuli while others are related to patients such as oral hygiene maintenance, smoking.\textsuperscript{[4]}

In patients with aesthetic requests if there is adequate keratinized tissue apical or lateral to the recession defect, pedicle flap surgical techniques (coronally advanced or laterally moved flaps) are recommended (Grupe & Warren 1956). Kalmi (1949) first described a type of coronally repositioned flap that was performed after gingivoplasty of the attached gingiva. Nordenram (1969) and Harvey (1965, 1970) employed surgical techniques to cover denuded roots by coronally repositioning mucoperiostial flaps. In addition, Sumner (1969) and Ward (1973) have modifications of the coronal repositioned flap to repair gingival recession using straight horizontal incisions in the alveolar mucosa. Bernimoulin et al. (1975), reported the clinical evaluation of a two-step coronally repositioned periodontal flap.\textsuperscript{[5]} Zucchelli and De Sanctis modified the coronally advanced procedure. The aim of the present study is to evaluate the clinical efficiency of modified CAF procedure in the treatment of class I and class II gingival recession defects.

**CASE REPORT-**

A female patient aged 42 years reported to the department of periodontics Mamata Dental Collge & Hospital with the chief complaint of receded gums. On Clinical examination isolated Miller's class I Gingival recessions in relation to Maxillary right canine.

Probing depth 2mm with no bleeding on probing, Width of the keratinized tissue 3mm. Recession height 3mm and Clinical attachment level 5mm. (Fig-1).

**CASE REPORT-2**

A male patient aged 35 years reported to the department of periodontics Mamata Dental College & Hospital with the chief complaint of receded gums. On Clinical examination isolated Miller's class I Gingival recessions in relation to Maxillary right canine.

Probing depth 3mm with no bleeding on probing, Width of the keratinized tissue 3mm. Recession height 5mm and Clinical attachment level 8mm (Fig-7).

For both cases written and verbal informed consent was obtained after a thorough explanation of nature, risks and benefits of the clinical investigations and surgical procedures. The study was approved by the Institutional Ethical Committee. Patient was subjected to full mouth scaling and root planning.

**Clinical data collection**

Baseline full mouth plaque and gingival index scores were recorded according to Silness & Loe, and Loe & Silness, respectively. Clinical parameters were assessed at the mid-facial surface of teeth using CEJ as the reference point. All measurements were recorded using a Williams periodontal probe at baseline 3 months and 6 months. Measurements were recorded to the nearest millimeter. Recession Height (RH) was measured as the distance from CEJ to GM. Width of Keratinized Tissue (WKT) was measured as the distance between the GM and the MGJ, PD was measured from GM to the base of the sulcus. CAL is calculated from PD and gingival recession.
Surgical procedure

The modified Coronally advanced flap as described by Zucchelli and De Sanctis in 2000 was performed. The area was anesthetized with 2% lignocaine hydrochloride containing adrenaline at a concentration of 1: 80,000. An intra-sulcular incision was made at the buccal aspect of the involved tooth.(Fig-2) Two horizontal incisions were made at right angles to the adjacent interdental papillae, at the level of the CEJ, without interfering with the gingival margin of the neighboring teeth( Fig-3). Two oblique vertical incisions were extended beyond the muco gingival junction to relieve muscle tension and a trapezoidal split- full- split thickness flap was raised and extended apically beyond the mucogingival junction, releasing the tension and favoring the coronal positioning of the flap (Fig-4). If the root is prominent, then as the flap is advanced over the root the flap must cover more area because of the root prominence, if the incisions are parallel, the flap will be too short mesial to distal. If there is no root prominence, then the incisions can be more parallel because the mesial to distal distance will not change. The amount of flap divergence is dictated by the root prominence. The epithelium on the adjacent papillae was de-epithelized. The root surface was instrumented with curettes and irrigated with sterile saline solution. The tissue flap is coronally advanced, adjusted for optimal fit to the prepared recipient bed, and secured at the level of the CEJ by suturing the flap to the connective tissue bed in the papilla regions by single sling sutures. Additional lateral interrupted sutures are placed to carefully close the wound of the releasing incisions using a small reverse cutting needle and 5-0 or 4-0 sutures. Proper suturing should allow adaptation of the donor tissue without any tension on the flap. Pulling the lip out to see if the donor tissue moves is the best way to check for graft stability. If the movement is detected, additional sutures may need to be placed. Non-Eugenol periodontal dressing (Coe – Pak™) was placed over the surgical site and sutures were removed after 14 days.

Post surgical care

Patient was instructed to discontinue tooth brushing around the surgical site for the first 3 weeks after the surgery. During this period, patients were advised to use 0.2% chlorhexidine solution twice daily for 3 weeks. Systemic antibiotics and analgesics were prescribed for 7 days post surgically (Amoxicillin 500mg t.i.d). The sutures were removed after 14 days. After suture removal patient advised for gentle topical application of 2% chlorhexidine gluconate gel. Three weeks after the surgery, the patient was 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. Patient was periodically recalled every month for evaluation. The clinical parameters were measured during the follow up visit at 3 (Fig-5 & Fig-8) months and at 6 months(Fig-6&Fig-9).
FIGURE 1- PRE OPERATIVE RECESSION HEIGHT

FIGURE 2- INCISIONS GIVEN

FIGURE 3- OPERATIVE

FIGURE 4- OPERATIVE - CORONALLY ADVANCED FLAP

FIGURE 5- Three (3) months post op - CASE-1
FIGURE-6-Six (6) months post op- 1
FIGURE-7-- Pre op Recession height- CASE-I
CASE- II

FIGURE-8- Post op 3 months- CASE-II
FIGURE-9-Post op 6 months-CASE-II
Discussion

The objectives of root coverage is complete restoration of all anatomical structures in the area of recession. This evident histologically as regeneration of the periodontal attachment with the formation of new cementum, periodontal ligament and bone. Treatment of gingival recession is becoming an important issue in clinical periodontology due to the increasing demand for cosmetic treatment. The few millimeters of root exposure poses problem when smiling. Thus, only surgical procedures that provide the clinician with a very high percent of complete root coverage should be included in the mucogingival plastic surgical techniques. Moreover, excessive thickness or poor colour blending of the surgically treated areas, as those resulting from soft tissue graft, should be avoided. Patient-related aesthetic considerations would suggest the utilization of surgical techniques that can predictably obtain complete root coverage by using the soft tissue adjacent to the defect. The only limiting criteria in utilizing a coronally advanced flap is the need of a band of at least 1mm of keratinized tissue; the amount of root coverage utilizing coronally advanced flap with or without the presence of a connective tissue graft will not show any significance difference at the 2-year interval. More recently, the results from a systematic review on periodontal plastic surgery (Roccuzzo et al. 2002) stated that the use of a barrier membrane or connective tissue, together with a coronally advanced flap, do not give better results than coronally advanced flap alone when root coverage is considered.

In the present study, the patients were non-smokers, smoking causes alteration in physiological and cellular functions causing negative impact on the gingival blood flow. Nicotine inhibits proliferation, adhesion and chemotaxis of periodontal ligament cells, alters the interaction between the epithelial cells and gingival fibroblasts. A modified CAF procedure (Zucchelli and de Sanctis in 2007) was selected as there were some clinical and biological advantages over the conventional as proposed by Allen and Miller. Complete root coverage seems to be influenced by post surgical positioning of GM and by baseline depth. The gingival margin is placed 2mm coronal to CEJ so as to counteract the gingival retraction following the surgery. This was in accordance with the previous studies conducted by Pini Prato and Baldi, Cairo et al. Healing progressed normally as that occurs in periodontal flaps with the gingival colour, texture and contour identical to the adjacent soft tissues. The ultimate goal of root coverage procedures is the complete resolution of the recession defect, with minimal probing depths after treatment, along with a nice chromatic and texture integration of the covering tissues with the adjacent resident soft tissues.
TABLE 1

Comparison of clinical parameters in CASE-1 and CASE-2

<table>
<thead>
<tr>
<th></th>
<th>BASELINE</th>
<th>3 MONTHS</th>
<th>6 MONTHS</th>
<th>BASE LINE</th>
<th>3 MONTHS</th>
<th>6 MONTHS</th>
<th>BASELINE</th>
<th>3 MONTHS</th>
<th>6 MONTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
<td>3.0</td>
<td>1.0</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>CAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WKT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The gain in probing attachment and clinical attachment level (CAL) was mostly due to formation of the new connective tissue attachment and epithelial attachment. This was in accordance with previous studies conducted by Carlo Baldi et al [11], Cleveron Oliveira Silva et al [7], Giovanpaolo Pini Prato et al, Mauro Padrine Santamaria et al, Ignazio Berlucchi et al, Andrea Pilloni et al. The gain in CAL was mostly due to improvement of probing depth at 3 months and 6 months postoperatively.

There was significant reduction in both cases. Recession height from baseline to 3 months and 6 months. The percentage of root coverage obtained in case-I is 93.3% and in Case II is 90%, which was consistent with the findings of other investigators, Cleveron Oliveira Silva et al, Pini Prato et al [6], M. Del Pizzo et al, James G. Woodyard et al, Michael K McGuiere et al. There was increase in width of keratinized tissue (WKT) in both cases from baseline to 3 months and 6 months in agreement with the previous studies conducted by Pini Prato et al, Eun–Ju Lee et al, Cem A. Gurgan et al.

Conclusion.
Overall considering all the aspects, Coronally advanced flap provides consistently better esthetics, healing and improvement in all the clinical parameters including increase in width of keratinized tissue.

References
1. Learndo Chambrone, Daniela Chambrone,


Competing interest / Conflict of interest The author(s) have no competing interests for financial support, publication of this research, patents and royalties through this collaborative research. All authors were equally involved in discussed research work. There is no financial conflict with the subject matter discussed in the manuscript.
Source of support: NIL