



## CASE REPORT

# Clinical Evaluation of Increase in the width of Attached Gingiva Using Modified Apically Repositioned Flap - A Case Report.

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**ABSTRACT** An adequate amount of attached gingiva is required to protect the periodontium and promote periodontal health and also increase resistance and stabilization of gingival margin against frictional forces and external injury. Inadequate width of attached gingiva mucogingival surgeries like free tissue grafts, connective gingival grafts are used with other surgical procedure to increase the zones of attached gingiva and disadvantage of these technique are requirement of donor tissue. So the alternate technique was proposed by Carnio, which is simple, involving the use of a single horizontal incision in the recipient site without any donor tissue requirement.

*Key words: modified apically repositioned flap, schiller's iodine solution, attached gingiva.*

## INTRODUCTION

Attached gingiva is the distance between the mucogingival junction and the projection on the external surface of the bottom of gingival sulcus or the periodontal pocket<sup>(1)</sup>. The width of the attached gingiva varies in different individuals and on different teeth of the same individual<sup>(2)</sup>. It is composed of keratinized epithelium and dense connective tissue periosteum, while it plays an essential role in the protection of periodontal structures<sup>(3)</sup>.

The attached gingiva increases the resistance of the periodontium to external injury, contributing to the stabilization of the gingival margin position, and thus aids in the dissipation of physiological forces that are exerted by the muscular fibres of the alveolar mucosa onto the gingival tissues, besides facilitating plaque control<sup>(4)</sup>.

An adequate amount of attached gingiva is required to protect the periodontium and promote periodontal health<sup>(5)</sup>. Inadequate width of gingiva would facilitate sub gingival plaque deposition due to improper pocket closure resulting from the movability of the marginal tissues<sup>(6,7)</sup>. The amount is generally considered to be insufficient when stretching of the lips and cheeks induces movement of the free gingival margin<sup>(8,9)</sup>. To avoid risk of gingival recession, the modified apically

repositioned flap technique (MARF) is required.

The advantages of the MARF technique includes its simplicity and ease of execution as it involves the use of a single horizontal incision in the recipient site, absence of palatal donor tissue, shorter operative time, and enhanced colour match between the treated and native gingival tissues<sup>(10)</sup>.

This paper presents the case report of increased width of attached gingiva used a technique of variation of modified apically repositioned flap (MARF).

## MATERIALS AND METHODS :

A 25 yr old male patient reported to our OPD for oral prophylaxis. Intra oral examination revealed an inadequate width of attached gingiva in relation to 44 with gingival inflammation. The patient was informed regarding the treatment for mucogingival deficiencies (inadequate width of attached gingival), and the surgical procedure was explained carefully and informed consent was obtained for MARF treatment.

The patient was given oral hygiene instructions and oral prophylaxis was done one month before the surgery. For MARF to be performed successfully it



Fig. 1



Fig. 2



Fig. 1



Fig. 4



Fig. 5

was ensured that there was no gingival inflammation, a physiologic sulcus depth and atleast 0.5mm of attached gingiva. The clinical parameters evaluated were the width of the attached gingiva, keratinized tissue, marginal tissue recession, and probing depth measured on the mid-buccal aspect of the treated teeth with a University of North Carolina probe and Schiller's iodine solution(Fig.1). Patient was subjected to routine blood investigations.

#### **SURGICAL TECHNIQUE:**

Local anesthesia was given at surgical site in relation to 44. An initial horizontal bevelled incision with

a #15 blade was placed in relation to 44 (Fig.2), parallel to the mucogingival junction. It was ensured that atleast 0.5 mm of attached gingiva was presents coronal and apical into the incision The mesio-distal extent of the initial horizontal incision included at least one-half tooth to the mesial and distal direction of the teeth where the gingival augmentation was desired. A split-thickness flap was elevated (Fig.3) and the dissection was extended in the apical direction as far as it was required. The flap was then sutured in an apical position to the periosteum with a 4-0 non-absorbable suture (Fig.4). Using a moist 2 × 2 inch gauze pad, gentle digital pressure was applied to the surgical area for 3 to 4 minutes to maintain the

flap in close contact with the underlying periosteum. Periodontal dressing was applied to the wound during the first postoperative week. Postoperative care consisted of 0.12% chlorhexidine rinses for 4 weeks and analgesic medication (paracetamol, 500 mg for every 6 hours) as needed. The dressing was removed 1 week postoperatively and instructions were given to avoid mechanical oral hygiene measures of the surgical area in the form of brushing and flossing, until the beginning of the fifth postoperative week.

**RESULTS**

Measurements were taken at baseline and 6 months after surgery(Tab.1). Post-operative measurement was taken and a healing zone of attached gingiva was clearly visible with increase in the width of attached gingiva, confirmed with schillers iodine application. There was an increase of 3 mm in the width of attached gingiva over baseline value of 1 mm. (Fig.5).

**TABLES**

Table 1: Clinical Measurement at Baseline and 6th Month.

**DISCUSSION**

Friedman introduced various procedures to correct problems associated with the lack of attached gingiva, the first among them being apically repositioned flap(7). Carnio and Miller in 1999 introduced a modified apically repositioned flap technique (MARF)(3) and later Carnio and Camargo in 2006 introduced a modification of the originally proposed

MEASUREMENTS	PERIODONTAL POCKET	GINGIVAL RECESSION	WIDTH OF KERATINIZED GINGIVA	WIDTH OF ATTACHED GINGIVA
BASELINE	1mm	0mm	2mm	1mm
6 MONTH	1mm	0mm	4mm	3mm

MARF technique(4).

A total of 54 areas were surgically corrected for inadequate width of attached gingiva using MARF by Carnio et al and he achieved increased in the width of the attached gingiva, but vertical incisions into the buccal mucosa tended to generate excessive bleeding and is contraindicated in the mandibular

premolar and molar because presence of mental foramen(4).

Carnio et al in 2007 reported a case series using the modification of MARF for treating inadequate width of attached gingiva(5). They reported significant increase of attached gingiva with stable results beyond 6 months post operatively. Here only horizontal incisions were used with the advantage of increased patient and operator comfort.

In our case report too there is a significant increase of 3mm of attached gingiva in surgical site. Healing was uneventful and granulation in relation to surgical site could be observed during the 1st week postoperatively. At the end of 3rd week complete healing with normal clinical gingiva could be appreciated. The healing sequences were similar to those observed in Carnio et al in their studies.

Carnio et al reported improved patient comfort, shorter chair time and minimal morbidity as the advantages of the modified MARF over other conventional technique .Our patient reported no discomfort even during the first week of healing.

Surgical wound created by MARF is surrounded completely by keratinized tissue. This prevents non-keratinized epithelial cells originating from the oral mucosa from proliferating onto the surgical site(3).

**CONCLUSION**

MARF offers considerable advantages over other mucogingival surgery techniques for increasing width of attached gingiva, such as low morbidity because of the absence of palatal donor tissue, predictable color match, simple and predictable surgical technique and ,limited chair time for the patient and operator.

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