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TREATMENT OF MARGINAL TISSUE RECESSION: PINHOLE SURGICAL TECHNIQUE – REVIEW ARTICLE

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ABSTRACT
Marginal tissue recession most commonly seen in young adults due to excessive pressure applied during tooth bruising which leads to apical displacement of marginal tissue apical to the cement- enamel junction. MTR can be seen commonly in lower anterior teeth and the most common problem associated with MTR was sensitivity to hot and cold items. One of the most common classification used worldwide to describe the gingival recession was Miller's Classification. This review article describes the etiology and pinhole surgical technique protocol for the coverage of exposed root surfaces.

KEYWORDS: root; exposure, coverage.

INTRODUCTION

Esthetic is an important issue for both female and males known a days and periodontal tissue plays an important role in it to create a beautiful smile. A beautiful smile creates by both tooth and gingival tissue. Gingival Recession can be seen in Varity of age groups from 18-55 years. It can be defined as apical shifting of marginal tissue from the cement enamel junction.[1]

Mucogingival complex plays an important role, in which gingival tissue can sustain the integrity of biomorphologic and maintain an attachment to teeth as well as the underlying soft tissue. There are two outcome can be seen if there was problem occur in mucogingival problem are close disruption formation periodontal pocket and in case of open disruption gingival recession.[2]

In many condition like calculus and initial dental caries are unnoticed by the patient but in case of gingival rescission occur in anterior teeth can be noticed easily by the patients and some of the patient visit the dental clinic for taking the advice of a dentist for the same.

In cases of Miller Class III and Class IV occur in anterior teeth, creates an esthetic problem in these types of cases and patient have the anxiety about the tooth loss due to progression of destruction. In this type of case patient also complains the problem of sensitivity, root caries, abrasion, erosion because of exposure root surface to oral environment and increase in dental plaque accumulation.[3]

Miller's Classification of Marginal Tissue Recession

Class I Marginal tissue recession that does not extend to the mucogingival junction.
Class II Marginal tissue recession that extends to or beyond the mucogingival junction with no periodontal attachment loss (bone or soft tissue) in the interdental area.
Class III Marginal tissue recession that extends to or beyond the mucogingival junction with periodontal attachment loss in the interdental area or malpositioning of teeth.
Class IV Marginal tissue recession that extends to or beyond the mucogingival junction with severe bone or soft tissue loss in the interdental area and/or severe malpositioning of teeth.

CAUSES AND RISK FACTORS

Gingival recession was attributed to tooth movement; however, recent studies established that epithelial attachment was at the same position on the tooth. Moreover, supraerupted teeth show no gingival recession, and thus other factors would explain the disease rather that teeth supereruption and movements. A multifactorial causation is the culprit behind gingival recession, and can simply be divided into predisposing and precipitating factors. Precipitating factors are specified mechanisms that eventually lead to recession;

predisposing factors are the ones which put the patients' gums at risk of developing recession.[4]

Precipitating factors of recession mainly include: trauma, social mal-behaviors, plaques (through inflammation) and dental treatment. Trauma by hard (or excessive) brushing is reported in several studies as a risk factor due to repeated traumatic damage. Moreover, habits such as smoking and mouth piercings are common causes of gingival recession. Commonly predisposing factors include bone dehiscence, tooth malposition, thin tissue, inadequate keratinized mucosa and frenum pull.[5]

Thinner gingival tissue has been reported as a predisposing factor of recession; stemming from the notion that thicker tissue is more resilient after periodontal intervention (surgical and non-surgical). Repeated pulling force (as occurring in normal oral motion during eating or speaking) on frenum is reported as a predisposing factor, but several studies have not been able to illicit such association. However, a high frenum attachment was greatly linked to the localized recession of the gums especially. Nguyen-Hieu et al. suggested that a narrow width of keratinized gums, as well as teeth misalignment and maxillary teeth, are linked to gingival recession development.[6]

DIAGNOSIS

Dentists should have a good clinical suspicion in order to diagnose a patient with gingival recession, as these patients may never realize that they have a problem in their gingiva, especially if it was generalized. Clinically, diagnosis can be done via establishing the exact location of the recession and examining the most common site of the disease (buccal surface) are all are considered vital in diagnosis. It should be noted that buccal surface is usually the site where the most severity of the disease progression and complications (if any) is found. Nevertheless, examining other surfaces (e.g. interproximal surfaces of the teeth) is still expected from dentists to establish the overall state of the disease. Late diagnosis of gingival recession is associated with increased risk of tooth loss, dentinal hypersensitivity and poor aesthetics.[7]

Pinhole surgical Technique[8-10]

After giving the local anesthesia, Small horizontal incision was placed 2-3 mm above the recession point of the mucobuccal fold. A set of special instruments was used to gain access through the pinhole incision placed in the alveolar mucosa of the centermost teeth with multiple recessions to elevate the mucosal tissues in apicocoronal direction. All the muscular and fibrous adhesions are freed away using the instrument through the single pinhole incision, and the supraperiosteal closed blunt dissection was done till the interdental papillae. Complete passive mobilization of the entire mucogingival tissues was made until the tissues advance coronally. To stabilize the advanced tissues, collagen membrane was used. The membrane was cut longitudinally having a width of 2 mm each in multiple pieces. The cut membranes were introduced into the pinhole and positioned at interdental papillae until there is sufficient fullness in the papillary tissues for self-holding the mucogingival tissue complex. There was no other incision placed elsewhere, and there was no requirement of any sutures. The advantages are being minimally invasive, no flap, no other incisions, and no sutures. The entire mucogingival complex moved coronally maintained by fullness of the papillary tissues, and the patient is able to visualize the coverage immediately. No periodontal dressing was placed. The patients were advised analgesics for 5 days and were informed to discontinue medications when there was the absence of pain.

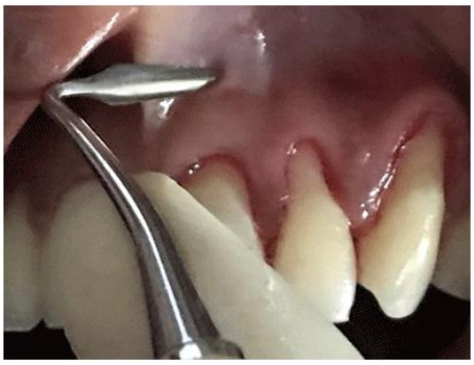

Figure 1: Access incision made with Orban's knife

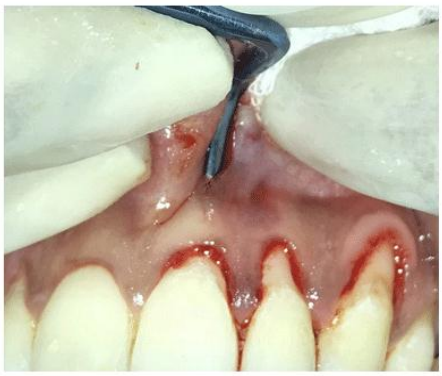

Figure 2: Blunt Dissection carried out through pin hole with the help og gingival elevators

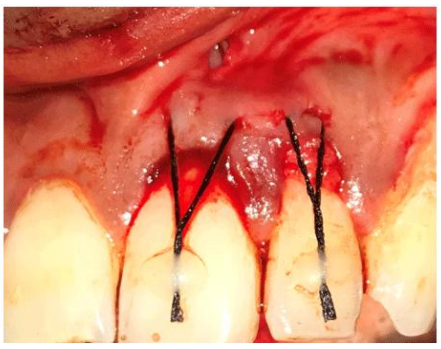

Figure 3: Passive Advancement maintained with the help of sutures.

DISCUSSION

The Pinhole surgical technique appeared to be very promising in the management of multiple Miller's Class I and II recessions which resulted in highly esthetic root coverage outcome. The methods of assessing the outcomes of any surgical technique are of utmost importance. Without reevaluation, it may be difficult to understand the predictability, effectiveness, and efficacy of a new procedure. The predictability was found to be inversely proportional to the RH and RW. It increases in case of Miller's Class I and II type of MTR.[11]

There is an overlapping variation in the results of various studies with various techniques of root coverage and this is because of the different protocols and difference in assessment of outcomes. It has been studied that one of the important parameters to be considered in assessing the outcomes of root coverage procedure is to determine the amount of coverage in relation to mean root length. A root coverage of 5 mm in a 10 mm and 12 mm root length is 50% and 41%, respectively. There is no assessment of the predictability of a technique unless the root length factor is being considered.[12]

The effectiveness of a procedure is measured by MRC which is the actual amount of root coverage achieved in individual sites. It was shown that 98% root coverage was achieved with 100% coverage in 89% of sites with connective tissue graft (CTG). Further there was also a cosmetic method of root coverage assessment with before-after panel scoring method, and a root coverage esthetic score with score of <7 was considered as an esthetic failure.[13]

The ultimate goal of any root coverage treatment is also to assess the patient satisfaction and assessment of any technique should include postoperative problems of the patient. When it comes to the amount of postoperative pain after root coverage procedures, it was consistently seen that grafting procedures had higher amount of pain. Out of grafting methods, free gingival graft had a higher incidence of postoperative pain in the early wound healing period than CTG and there was no difference after 3 weeks.[14]

The high amount success in PST can be attributed to being the least invasive procedure with no incisions/sutures. The results are esthetic since they are very obvious to the patients immediately after surgery. It is well understood that vertical release incisions in periodontal flaps do reduce the vascularity of the flap. A good vascular perfusion is the key point in any surgical procedure for faster healing. From an esthetic point of view, the vertical release incisions also lead to unesthetic keloid-like tissues along the incision line. Although there is no significant difference between the outcomes of surgery with or without vertical release incision in terms of root coverage, there exists a difference when esthetic demands are high.[15-17]

In PST, there is an additional biologic, esthetic, and time advantage wherein there is no disruption of the lateral vascular supply, no scar formation, and reduced time. The procedure can even be applied to treat full mouth recessions in one sitting. Hence, the advantage of PST is very obvious which includes least invasiveness, no scar, no sutures, and self-retentive coronal positioning of the MTR.

The limitation of PST is it requires specialized instruments and a long learning curve. There are no histological studies available and there is no evidence about the fate of the packed collagen membranes in the interdental papilla region. It is a known fact that absorbable collagen membranes take varied amounts of time for resorption based on various factors. It is also been stated that acellular dermal matrix (ADM) can also be used with a slight modification of the PST.[18]

CONCLUSION

Gingival recession is an asymptomatic disease that is mostly diagnosed in late stages due to its complications. Thus, the role of dentist is vital to recognize these patients, in order to provide the best treatment option, and prevent further consequences. Gingival recession is associated with variousrisk factors. Surgical management is mainstay in treatment of gingival recession which includes buffing the soft tissue of the inferior margin and apical margin to achieve aesthetic favorability.

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