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Case Report

Pinhole Surgical Approach in the Treatment Modality of Gingival Recession: A Case Report

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ABSTRACT

The technique for the treatment of gingival recession has been a debated topic in dentistry in recent years. This paper consists of new technique for the treatment of gingival recession i.e Pinhole surgical technique (PST). Pinhole surgical technique is a minimal invasive surgical technique given by Chao et al. 2012. This paper shows that Pinhole surgical technique allows to reposition the gingiva quickly and easily, with the less invasive method, a decreased patient discomfort, a shorter treatment and recovery time, and much less pain.

Key words: Pinhole surgical approach, minimally invasive surgery, recession

INTRODUCTION

Gingival recession is defined as the displacement of marginal gingiva apical to the cement-enamel junction.^[1] Gingival recession can cause by periodontal disease (gingivitis, periodontitis, and advanced periodontitis), abrasive habits when it comes to brushing the teeth. When a gingival recession occurs, the root structure of the tooth becomes exposed, and loss of the tissues covering the root.^[2] This means that there are high chances of tooth decay and other problems can affect the teeth along the gingival line and beneath the gingiva.^[3]

The concept of “minimally invasive surgery (MIS)” is one such approach which produces minimal tissue injury, reduced pain, minimal flap reflection, and gentle handling of the soft and hard tissues.^[4] Wickham and Filtz described the techniques of using smaller incisions as “MIS” which was later defined by medical subject headings as those procedures that avoid the use of open invasive surgery in favor of closed or local surgery.^[5] In recent years, a novel surgical approach of root coverage, called the pinhole surgical technique (PST), was introduced by Chao in 2012. Chao introduced it for Miller Class I and II, recession defects and reported favorable predictability for root coverage and defect reduction up to 18 months following procedure.^[6] The purpose of this review was to examine the predictability and the effectiveness of PST.

METHODOLOGY

Initially, local anesthesia was given to the patient at the site of surgery, convexities and irregularities which were present on the root were removed and planed using rotary burs. A minimal horizontal incision of 2–3 mm was made in the alveolar mucosa near the base

of the vestibule using a no.12 scalpel (Bard-Parker). For the PST, a specially designed instrument (transmucosal papillae elevators) Figure 1 was inserted through the incision [Figure 2], and the full-thickness flap was elevated. The extension of the flap was coronally and horizontally to allow the elevation of the two adjacent papillae on each side of the denuded root. PRF membrane was placed into the sub-gingival space under the papilla and marginal soft tissue. Gentle digital pressure is applied over the flap for approximately 5 min. The entry incision was left without suturing in order to heal by the first intention. To stabilize the flap sling, suture was given at the opposite contacts allowed the sutures to be tightened and knotted from the facial aspect.^[6] Postoperative instruction was given and recalled after 1 month for re-evaluation [Figure 3].

MAIN OUTCOMES OF SELECTED STUDIES

This treatment is a more conservative and alternative to common periodontal treatments, such as coronally advanced flap. With the PST, the operator makes a small hole in the gingiva and then manipulates the tissue to correct the recession and other issues. In addition, for some cases, an additional agent is inserted, filling the space between gingival tissue and the roots, which helps heal the area and allows healthy tissue to attach to the teeth.^[7]

Zucchelli and Sanctis conducted a case series to evaluate the root coverage treated with pinhole surgical approach and with coronally

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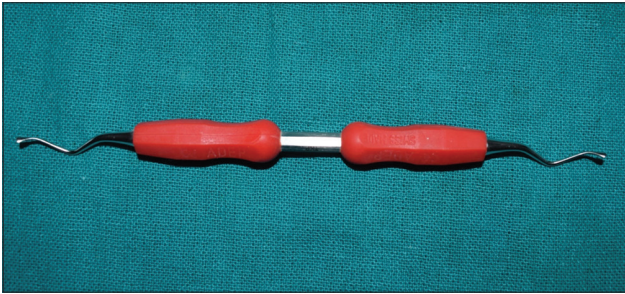


Figure 1: Transmucosal papilla elevator



Figure 2: Pre-operative

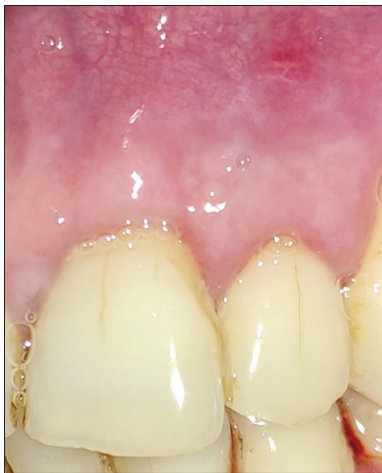


Figure 3: Post-operative

advanced flap procedure for the treatment of multiple gingival recession defects. The results showed 88% complete root coverage and greater reductions in gingival recession in cases with less amount of keratinized tissue apical to recession defect.^[8] In 2005, Zucchelli and Sanctis conducted a long-term case series for the treatment of multiple gingival recession defects using envelope type coronally advanced flap and the 5-year follow-up showed increased in keratinized

tissue, and 85% of treated recession defects showed complete root coverage.^[9] Chambrone *et al.* conducted a study of periodontal plastic surgery in the treatment of multiple gingival recession type defects and concluded that the mean width of keratinized tissue increased significantly and mean root coverage achieved ranged from 94% to 98% and the need for more randomized controlled trials to identify the indication for each surgical technique.^[9,10] Another randomized controlled trial was conducted by Prato *et al.* in 2010 to compare the coronally advanced flap versus connective tissue graft in the treatment of multiple gingival recession with a 5-year follow-up and concluded that 52% sites showed completed root coverage when treated with coronally advanced flap and connective tissue graft in comparison to 35% coverage in coronally advanced flap treated sites.^[11]

A novel approach for the treatment of more than one recession defects using a pinhole surgical technique was introduced by Chao and stated that 94% mean defect reduction was obtained along with minimum post-operative complications. The Chao PST is a minimally invasive option for treating gingival recession. Unlike traditional grafting techniques, PST is incision and suture free. Gingival recession treatments involve the use of donor tissue or soft-tissue grafts to rebuild the gingival margin. During PST, a needle is used to make a small hole in the gingival tissue. Through this pinhole, special instruments are used to gently loosen the gingival tissue. These tools help to expand and slide the gingiva to cover the exposed root structure. There is no need for any grafts or sutures in the Chao PST. It simply involves the adjustment of the existing tissue.

Indications and contraindications of PST^[11]

1. Miller Class I recession
2. Thick biotype
3. Localized gingival recession
4. Esthetic concern
5. Increased keratinized tissue width.

Contraindications^[12]

1. Heavy smokers
2. Uncontrolled or poorly controlled diabetes
3. Under medication.

CHAO-CONDUCTED DIFFERENT ADVANTAGES AND DISADVANTAGES OF THE PST

Advantages

- a. Less discomfort for the patient post-operatively
- b. Faster healing of the tissue
- c. No need for surgical instrument
- d. No need to take donor tissue from the patient's palate
- e. Excellent, esthetic appearance, and long-lasting results.

Disadvantages

- a. Result is unpredictable if recession height is more
- b. Cannot be done in thin biotype.

The PST is an incision-free and suture-free procedure for treating gingival recession. Since there is no incision or suturing, patients can expect minimal post-operative symptoms (pain, swelling, and bleeding).^[6]

CONCLUSION

PST is one such novel technique which is minimally invasive, predictable, efficient, time, and cost-effective procedure for recession coverage in Millers Class I and Class II recession defects mainly occurring in buccal areas. There is a need for more long-term research to be carried out to analyze the success of PST in management of single or multiple recession defects.

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