

CASE REPORT

Pinhole Technique and T-PRF: Proportioning Pink and White Esthetics – A Case Report

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ABSTRACT

Introduction: Field of periodontal plastic surgery is gaining fascination, because the importance of pink esthetics is increasing. Preserving the lost soft tissue that too by minimally invasive procedure is being an attractive treatment modality which is been accepted by patients on a larger scale. Hence, the aim of the article was to reposition the gingival margin to it's original position with minimally manipulating the tissues. **Materials and Methods:** A 45-year-old male patient reported to our department with chief complaint of unaesthetic appearance and sensitivity in upper front tooth region. Following which patient has been planned for minimally invasive pinhole surgery technique (PST), along with placement of titanium-platelet rich fibrin (T-PRF) after thorough phase I therapy. **Results:** The patient had 4 mm of recession depth before surgery which was coronally advanced until CEJ after 15 days postoperatively with the beneficial effects of T-PRF as a biomaterial and minimally invasive PST. **Conclusion:** The patient treated by minimally invasive Pinhole technique showed reduction in recession depth after 15 days with minimal post-operative complications.

Key words: Gingival recession, minimally invasive surgery, pinhole surgery, titanium platelet rich fibrin

INTRODUCTION

Gingival recession is an apical displacement of marginal tissue from cemento-enamel junction leading to root surface exposure, which clinically lead to appearance of elongated tooth surface.^[1] There are various factors responsible for gingival recession such as plaque induced disease, anatomical, traumatic, and developmental causes.^[2]

Various techniques have been introduced for its treatment which includes free gingival graft, pedicle graft, coronally advanced flap, and connective tissue graft (CTG). Recently, minimally invasive surgical approaches have been introduced such as pinhole surgery, vestibular incision subperiosteal tunnel access (VISTA), and semilunar surgery which offer certain advantages such as no secondary donor site, no elevation of flap, and some cases which are treated even suture-less. This reduces the morbidity to the patient.^[3]

Pinhole technique has been used in this article which was introduced by Chao in 2012. Here, pinhole is made at the alveolar mucosa to coronally displace the flap.^[4]

As the earlier blood concentrate showed, few limitations such as the contamination by silica particles.^[5] Newer biomaterial was introduced by Tunali *et al.*, that is, titanium-platelet rich fibrin

(T-PRF) which is an autologous blood concentrate prepared by medical grade titanium tubes. It has better hemocompatibility and platelet activation property as compared to earlier platelet concentrates.^[6]

CASE REPORT

A patient aged 45 years reported to the Department of Periodontics and Implantology, Institute of dental sciences Bareilly with the chief complaint of sensitivity and unaesthetic appearance in the respective tooth region. Treatment protocol was initiated by phase 1 therapy, the patient was kept on follow-up, and then, surgical therapy was planned after 15 days, which was explained to the patient.

After local anesthesia infiltration, a pinhole incision is made of about 2–3 mm in diameter at the height of mucobuccal fold. If multiple teeth are involved, then incision is placed at the center most tooth of the defect. A special tunnel instrument was used to

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free the attachments from the underlying bone. All the muscular and fibrous attachments were dissected and the apicocoronal flap was made movable for coronal advancement. A complete mucogingival unit was made free and passive for the advancement.

For the preparation of T-PRF, 10 ml blood was withdrawn from the patient and prepared using medical grade titanium tubes at the centrifugation speed of 3500 rpm for 15 min. After preparation of T-PRF, retrieval of T-PRF membrane was done with the help of curettes. Compressed between the gauge and finally the membrane is inserted under the flap through pinhole incision. The coronally anchored sutures were placed using composite stops. Periodontal pack was placed at the surgical site.

Post-operative instructions were given to the patient. Medication were prescribed to the patients and the patient was recalled after 15 days for pack removal and suture cutting.

DISCUSSION

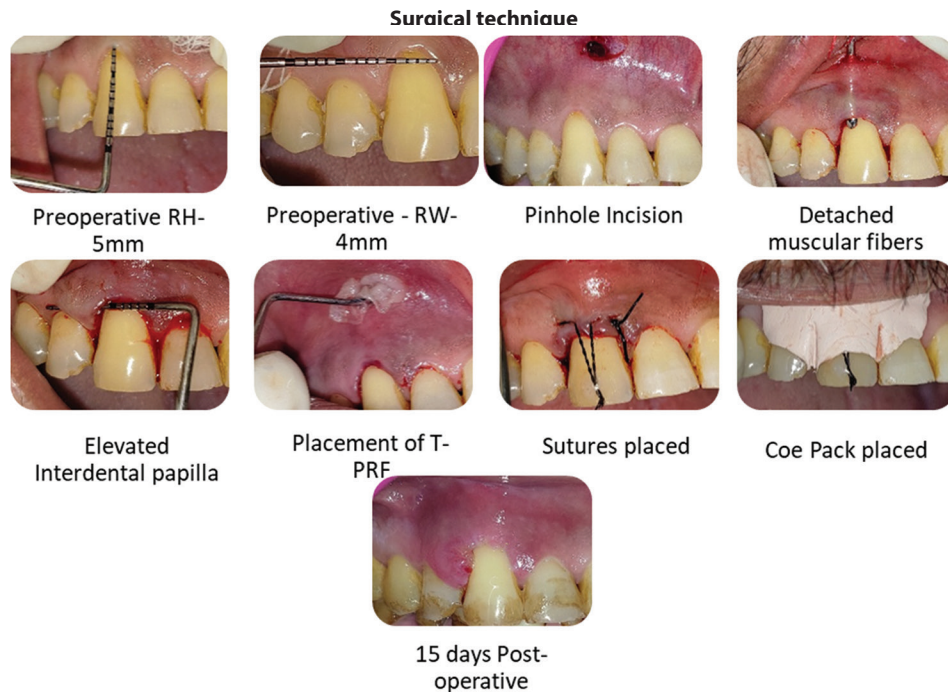
Successful treatment outcome can be achieved by pinhole surgery in the treatment of miller's Classes I and II recession defect. After surgical therapy, reevaluation of the surgical site is utmost important step in determining the effectiveness and predictability of the surgical procedure performed by periodontist. The predictability of pinhole surgery decreases with the increase in the height and width of recession depth, while its predictability increases in cases which exhibit miller's Class I and Class II recession type.^[7] The assessment of the root coverage achieved by doing different techniques is evaluated by determining the root length with the recession coverage achieved. The effectiveness of procedure performed can be analyzed by evaluating the actual amount of tissue coverage achieved in individual sites which are termed as

mean root coverage.^[8] It was shown that 98% root coverage was achieved with 100% coverage in 89% of sites with CTG.^[9] Root coverage is directly associated with the positive esthetic outcome which can be evaluated by root coverage esthetic score, where value <7 is indicative of esthetic failure.^[10]

Root coverage treatment also involves patient satisfaction and post-operative pain and morbidity. Patients who are treated with grafting procedures have shown higher morbidity and post-operative pain than the patients treated by non-grafted treatment modalities. When different grafting procedures had been compared; then, it was stated that highest amount of post-operative pain and morbidity was seen in patients those who are treated with FGG than those treated with CTG, while no difference was found at 3 weeks postoperatively.^[11] While comparing the CTG and subepithelial CTG, there was no difference in post-operative pain.^[12]

A retrospective study of pinhole surgical technique involving miller's Classes I and II marginal tissue recession treating 121 sites which were evaluated for 18 months interval has shown 94% mean root coverage. The amount of post-operative pain, swelling, and morbidity was minimal in pinhole surgical technique.^[13]

The high success rate of pinhole surgery technique (PST) is due to least invasive nature, as there is no incision which is incorporated. Patients can appreciate the results postoperatively. Vertical incisions hamper the blood perfusion to the tissues which alter the post-operative healing also a keloid like tissue that is formed at the vertical incision space which appears unaesthetic, especially in areas of esthetic demand. With PST, there are no vertical incisions which will be beneficial for maintaining the vascularity of the periodontal flap after surgery. With PST, there is also an added advantage of time, there is reduced treatment time



when patients are treated with PST.^[14] One of the limitations with PST is that it requires specialized instrument, and also, a learning curve is required for carrying out this procedure.

The soft-tissue thickness is also one of the important factors for soft-tissue stability postoperatively which may also lead to 100% root coverage. Hence, with the use of PST, no soft tissue is elevated which leads to complete utilization of flap as no flap is elevated, this can also be one reason for faster wound healing process.^[15] The present case report is also in accordance with the case series published by Agarwal *et al.*, where there was stability of gingival margin position after the procedure and also the gain in width of keratinized tissue.^[16]

CONCLUSION

Selecting the appropriate surgical technique among various techniques should be critically evaluated by the clinician for the treatment of miller's Classes I and II recession defect. Among, different minimally invasive surgical technique pinhole surgical technique is promising technique for treatment of marginal tissue recession. It is done to achieve maximum patient acceptance, esthetic outcome, and minimum patient discomfort along with the less intraoperative time. Addition of a titanium enriched blood concentrate product appeared to be beneficial in maintaining the long-term integrity of the repositioned tissue as it will increase the thickness of the tissue.

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