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CLINICAL ARTICLE

TREATMENT OF MILLER'S CLASS I GINGIVAL RECESSION WITH ZUCHELLI'S TECHNIQUE USING PRF: A CASE REPORT

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Abstract

Gingival recession is the apical migration of the gingival margin with exposure of root surfaces. Treatment of gingival recession is always a technique sensitive and skilled procedure for the periodontist. While treating adjacent multiple recession defects in aesthetic areas, selection of appropriate surgical procedure that restores optimal aesthetics and functional stability is of paramount importance, which allows the clinician to gain optimal structural correction of the soft tissue deficiency yet does not compromise the soft tissue architecture and aesthetics. This case report presents bilateral multiple gingival recessions treated with Zucchelli's modified coronally advanced flap with the use of Platelet Rich Fibrin.

Key-words: *Gingival recession; Dentinal hypersensitivity; Zucchelli's technique; Platelet Rich Fibrin*

Introduction

Gingival recession is defined as the exposure of the root surface due to the displacement of the gingival margin apical to the cementoenamel junction. The exposed root surfaces are frequently associated with aesthetic complaints, root hypersensitivity and difficulties in achieving optimal plaque control. The risk factors that have been postulated to play a role in the etiology of gingival recession include tooth malposition, tooth shape, alveolar bone dehiscence, muscle attachment and frenal pull, periodontal disease and treatment, improper oral hygiene methods etc. The most important factor increasing the risk of gingival recession is thin gingival biotype.

In most cases, root coverage procedures not only aim to obtain complete root coverage (CRC) and to improve aesthetics, but also to increase the thickness of the soft tissue covering the recession to enable long-term stability.[1] Gingival recession is very seldom

localized to a single tooth and more frequently, affect groups of adjacent teeth. In order to minimize the number of surgical interventions and to optimize the esthetic result, all the contiguous recessions should be treated simultaneously. Periodontal plastic surgery includes the treatment of problems associated with the amount of gingiva and recession type defects, correction of ridge form and soft tissue esthetics (Miller).

ZUCCHELLI's technique has been proposed for the surgical treatment of gingival recession. This technique avoids vertical releasing incisions and does not damage the blood supply to the flap. Other advantages are derived from split – full – split – flap elevation, which facilitates the coronal displacement of the flap and it guarantees anchorage and blood supply to the surgical papilla in the inter- proximal areas between the root exposures. In the present case report, ZUCCHELLI's technique has been used along with PRF[2] for root coverage procedure.[3]

Case report

A 30-year-old male patient reported to the department of periodontology, with a chief complaint of dentinal hypersensitivity and poor esthetics due to receded gums in the upper front tooth region with no relevant medical history. On clinical examination, Miller's class I recession was evident with 11, 21, 22, 23 [figure 1], with recession depth of 1mm,1mm,2mm, 3mm and width of 2mm,2mm,3mm and 4mm respectively. The periodontium was healthy with no signs of inflammation. At first visit after recording case history of the patient and routine investigations, thorough scaling and root planing was performed. After 1 month root coverage with Zucchelli's coronally advanced flap was planned and informed consent was obtained from the patient.

Surgical procedure

Before performing the surgery Complete hemogram, which includes hemoglobin percentage (Hb%), erythrocyte sedimentation rate (ESR), packed cell volume (PCV), total leukocyte count (TC), differential leukocyte count (DLC), bleeding time (BT) and clotting time (CT) were done to evaluate the fitness of the patient for periodontal plastic surgery. Other investigations, as deemed necessary, were also done. After the baseline measurements were recorded, the surgical procedure was initiated. After extra oral preparation with 5% povidone iodine solution, the patient was asked to rinse with 10ml of 0.2% chlorhexidine digluconate solution for one minute. The surgical site was anaesthetized by local infiltration (2% lidocaine with adrenaline 1:80,000). prior to the incision, 10 milliliters of blood were drawn from antecubital vein, directly transferred to medical grade titanium tubes and subjected to centrifugation based on Tunali M et al protocol (3500 rpm for 15 minutes) [figure 3].[4] A horizontal incision was made with a scalpel to design an envelope flap. This consisted of oblique submarginal incisions in the interdental areas, and these incisions were continued with the intrasulcular incision at the recession defects. The interdental papilla was kept intact, and only the surgical papilla was dislocated by the oblique interdental incisions [figure 2]. The surgical papilla mesial to the flap midline was dislocated more apically and distally while the papilla distal to midline was shifted more apically and mesially. The envelope flap was raised with a split-full-split approach in the coronal-apical direction. The oblique interdental incisions were carried out keeping the blade parallel to the long axis of the teeth in order to dissect the surgical papilla in a split-thickness manner. A full thickness flap was raised apical to the root exposure in a manner to provide that portion of the flap critical for root coverage with more thickness, and a partial thickness flap was elevated in the most apical portion of the flap to facilitate the coronal displacement of the flap. Platelet rich fibrin[5,6,7,8] was placed over the denuded roots and stabilized [figure 4]. The interdental papilla was deepithelialized for the placement of the flap. The flap was then advanced coronally to completely cover the membrane and the marginal portion of the flap was placed at a level coronal to the CEJ at each single tooth in the surgical site and secured using sling sutures to accomplish a precise adaptation of the flap on the exposed root surfaces [figure 5]. Then the operative site was covered with non-eugenol periodontal dressing for protection.[9]

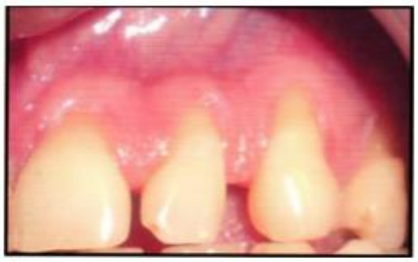

Figure 1. *Pre-operative view*

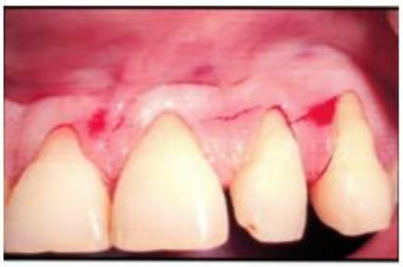

Figure 2. *Split-full-split thickness flap*

Figure 3. *PRF membrane*

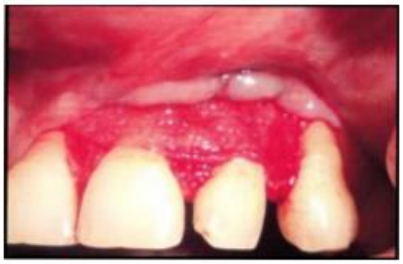

Figure 4. *PRF membrane in recipient site*

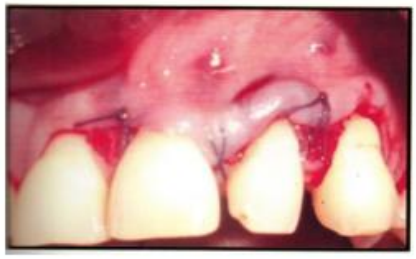

Figure 5. *Coronally advanced and sutured in place*

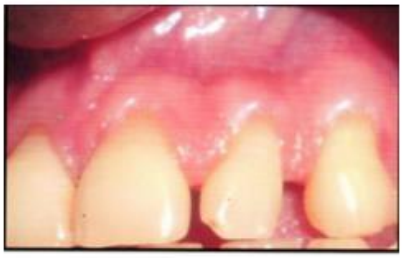

Figure 6. *Post-operative view at 6 months*

Post-surgical care

Patients were instructed not to brush their teeth in the treated area, but to rinse their mouth with 10ml of 0.2% chlorhexidine digluconate solution twice daily for 10 minutes. Patients were advised to avoid hard and spicy food for 3 days following surgery. Systemic antibiotics (Amoxicillin 500mg t.i.d for 5 days) and analgesics (Ibuprufen 400mg, b.i.d for 3 days) were prescribed. The periodontal pack (noneugenol; COEPAK^{TM}) was removed on 1 week recall and the surgical site was irrigated gently with saline. The sutures were removed 2 weeks after surgery. Patients were seen at 3 months, 6 months and 9 months for post-operative follow up. During the initial 4 weeks, patients were instructed to brush only the uninvolved teeth. After this period, the patients were instructed in mechanical plaque control of the treated tooth region using a soft bristled tooth brush and a roll technique.

Discussion

Present case report was a detailed description of ZUCCHELLI's technique using PRF in the treatment of gingival recession. There are no complications in healing of surgical site, no scar formation, complete wound closure was noticed. Recession depth scores were recorded at baseline, 3 months, 6 months, 9 months. The mean recession depth recorded at baseline was 2.79±0.58mm. At 3 months, the mean recession depth recorded was 0.57±0.65mm and was maintained at 6 months follow up [figure 6]. At 9 months follow up the mean recession depth recorded as 0.79±0.7. A statistically significant reduction in mean recession depth was obtained at 3months when compared to baseline and this remained unchanged at 6 months follow up. At 9 months the reduction in the mean recession depth when compared to baseline was 2 ±0.12 which was statistically significant. Mean width width of the keratinized gingiva recorded at

baseline, 3 months, 6 months, 9 months. The Mean width width of the keratinized gingiva at baseline was 1.43±0.76mm, which increased to 2.79±0.7mm at 9 months, with a mean increase of 1.36±0.06mm from baseline recordings, which was statistically highly significant($p<0.01$).[10] Clinical attachment level was recorded at baseline, 3 months, 6 months, 9 months. The mean clinical attachment level at baseline was 3.93±0.62mm at 6 months it was 1.57±0.65mm and at 9 months it was 1.79±0.89, there was a mean gain of 2.36±0.03mm in attachment level at 6 months and 2.14±0.27 which was statistically significant ($p<0.01$). gingival thickness was measured at baseline, 3 months, 6 months, 9 months. The mean gingival thickness recorded at baseline was 0.93±0.30mm, at 3 months it was 1.71±0.43mm, at 6 months it was 1.81±0.40 and at 9 months 1.80±0.43. A statistically significant increase in mean gingival thickness of 0.78±0.13mm was obtained at 3 months, at 6 months it was 0.88±0.1 and 9 months it was 0.87±0.13 when compared to baseline.

Conclusion

Within the limitations, the current case report demonstrated the effectiveness of Zucchelli's modified coronally advanced flap technique with satisfactory root coverage, excellent tissue contour and increase in amount of keratinised tissue. Although statistically not significant, the the addition of PRF showed clinically significant improvement in the percentage root coverage and increase in width of attached gingiva resulting in better esthetic outcome.

Declarations

Conflicts of interest and financial disclosures

The author declares that he has no conflict percent and there was no external source of funding for the research in question.

Ethical approval

The study was approved by the University ethics committee and was conducted in accordance with the Declaration of the World Medical Association.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Source of funding

The work was not funded.

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