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RESEARCH ARTICLE

ONE STEP SOLUTION FOR MULTIPLE MARGINAL TISSUE RECESSION IN THIN GINGIVAL BIOTYPE"

Dr. Zeba Rahman Siddiqui[1], Dr. Sanjay Gupta[2] and Dr. Sidra Rahman[3]

1. Reader, Department of Periodontology,Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, Uttar Pradesh, India.
2. Professor and Head, Department of Periodontology, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, Uttar Pradesh, India
3. Post graduate student, Department of Periodontology, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, Uttar Pradesh, India.

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Abstract

Gingival recession is a common concern due to esthetic and root sensitivity especially in mandibular anterior teeth. Various treatment modalities and mucogingival techniques have been carried out for the treatment of recession. The presence of shallow vestibule, inadequate width of attached gingiva may pose a challenge for which several surgical solutions are reported in the literature. Bridge flap technique is one such technique that can be used as a single surgical entity for covering multiple gingival recession, along with increasing vestibular depth without a second surgical site. The treated cases showed adequate root coverage & increase in width of attached gingiva 12 months post operatively.

Introduction:-

In multiple anterior teeth gingival recession is a common concern due to estheticsand root sensitivity.[1] Gingival recession is defined as exposure of the root surface due to apical displacement of the gingival margin from cemento-enamel junction (CEJ).[2] This is commonly associated with insufficient keratinized tissue, especially in mandibular anterior teeth, which hampers theproper oral hygiene measures.[3]

The etiology of gingival recession is multifactorial and can encompass inflammatory periodontal disease, mechanical trauma from tooth brushing,high frenal attachment,occlusal trauma, tooth malposition or root prominence leading to the thinning of bony plate, thin gingival biotype, and iatrogenic factors.[4] Undoubtedly surgical treatment of gingival recessions is one of the most challenging tasks in periodontal treatment. Frequently it can be observed as denudation of root surfaces together with a flat vestibule, abnormal frenal attachment,and a narrow zone of attached gingiva.[5]

Various surgical approaches are reported in the literature for multiple root coverageand they include free gingival graft, free connective tissue graft, coronally advanced flap, combination of connective tissue grafting with coronally positioned flap.[6]In several cases where inadequate width of attached gingiva is present, a variety of techniques to increase the width of attached gingiva are performed prior to root coverage procedures.[7]

Corresponding Author:- Dr. Zeba Rahman Siddiqui
Address:- Reader, Department of Periodontology, Career Post Graduate Institute of Dental Sciences and Hospital, Lucknow, Uttar Pradesh, India.

In this way, two separate surgical procedures may be required for adequate root coverage, which is very tedious for both patient and dentist.[8]A single-step solution to mucogingival problems by surgical intervention, namely the "Bridge flap procedure," has been developed by "Marggraf" in 1985 and modified by Romanos in 1993.[9] The present article will provide an insight of this single step technique through a case report.

Platelet rich fibrin (PRF) has various applications in wide variations of procedures in both the medical and dental fields. Results from many randomized clinical trials have now pointed to its marked ability to promote soft-tissue wound healing where PRF has been documented to facilitate wound closure and regeneration of mucogingival recessions.[10] In this case report, two surgical procedures are combined in a single technique to treat multiple recession in anterior region and simultaneously to increase the width of attached gingiva with additive advantage of use of Platelet Rich Fibrin (PRF) to increase the gingival thickness and to restore the gingival health.

Case Report:
A 25 year old male reported to Department of Periodontology Career Dental college & Hospital with the complaint of sensitivity in mandibular anterior teeth region for past 3 months. The sensitivity exaggerated on intake of hot or cold liquid. On examination the patient had Millers Class II recession in relation to 31,32,41,42 region along with a shallow vestibule. Patient was in good health and gave no history of any systemic ailment.

Various clinical parameters were recorded with a UNC-15 periodontal probe such as,probing pocket depth (PPD), gingival recession (GR), by measuring the distance between the cement-enameljunction (CEJ) and the free gingival margin. Width of the attached gingiva was determined by the distance from the base of the pocket to the mucogingival junction.

The distance from CEJ to marginal gingiva in relation to 31, 32, 41, 42, region along with a shallow vestibule was 3 mm (Fig. 1). The clinical probing depth was 1 mm in all these teeth. The parameters were recorded before and after surgery.

Surgical Procedure
The procedure was described to the patient, and informed consent was obtained. After full mouth scaling and root planning and meticulous oral hygiene practice any remainingetiology that may contribute for the progression of recession was identified and ruled out. Also, instructions for proper tooth brushing and oral hygiene were given to ensure maintenance beforeand after therapy. The procedure was explained to the patient, and informed consent was obtained from him. A root coverage surgery with bridge flap technique, utilizing PRF membrane was planned after phase I therapy (4 weeks interval). Immediately before the procedure, the patient asked to rinse with a 0.2% chlorhexidine digluconate solutionfor two minutes.

The surgical procedure included the bridge flap technique as introduced by Marggraf[8] and later on modified by Romanos.[9]After local anesthesia with 2% lignocaine hydrochloric acid (1:200,000 adrenaline), sulcular incisions were given from 32 to 42 recession defect (Fig. 2)and a spilt-thickness flap was elevated in the apicocoronal direction with a Bard-Parker No. 15 blade. Followed by incision into the periosteum at its base, joining it with the sulcular incisions and the bone was exposed so that scar formation can take place. The splitthickness flap was raised without any vertical incisions, which extended apically beyond the mucogingival junction (Fig. 3). After flap elevation, the exposed root surface was thoroughly planed with a curette. Root planing was performed till the root surfaces were smooth and to create an optimal surface onto which the reattachment, repair, or regeneration will take place.

PRF membrane was placed at the desired recipientsite (Fig. 4). The whole mucosal/bridge flap was coronally positioned and pressed against the alveolar bone for at least 3 minutes to avoid haematoma formation. Then, the flap was repositioned coronally with interrupted sutures using 4-0 silk suture and periodontal dressing (Coe-pack) was placed at the surgical site (Fig.5). Postsurgical instructions were given and the patient was advised to take amoxicillin 500 mg t.i.d for 7 days and aceclofenac 100 mg twice daily for 5 days. Chlorhexidine digluconate 0.2% twice a day was prescribed as a means of chemical plaque control for 4 weeks. The patient was asked not to brush surgical area for the first four weeks after the procedure.Patient was recalled after 10 days for coe-pack and suture removal, and the surgical area was carefully irrigated with 0.2% chlorhexidine solution. It was observed as complete root coverage in immediate postoperative visit for 1 month without any post-operative morbidity (Fig. 6) and asignificant root coverage with enhanced gingival biotype was obtained at 12 months follow up visit (Fig.7).

Discussion:-

Numerous techniques have been advised and attempted for treatment of gingival recession. Following procedures like the coronally advanced flap, semilunar flap and lateral pedicle flap demand an adequate width of attached gingiva, which may not be adequately present always. In such critical circumstances, a variety of gingival augmentation techniques like the free gingival grafting and connective tissue grafting may performed to increaseattached gingiva width preceding root coverage procedures.[11]

A one-step surgical procedure which was described as "Double Lateral Bridging Flap" also known as "Bridge Flap Technique" for coverage of multiple denuded root surfaces. It is a combination of coronally repositioned flap and vestibule extension procedure. In this procedure, the flap covering the denuded root surface is supplied by plasmatic circulation from capillaries in the adjacent portion of the gingiva, permitting it to survive.[3]Proper diagnosis and treatment planning is important in the treatment of gingival recession.

In the present case, the patient presented with multiple recessions in mandibular anterior region. Hence, choosing the suitable technique for treating multiple recessions simultaneously becomes prime objective. The bridge flap technique employs two treatment procedures at the same time, a vestibular deepening in addition to coronally advanced flap as recession coverage technique. Thus, there is increase in width of attached gingiva in addition to root coverage. The flap which covers a denuded root surface is supplied by plasmatic circulation from capillaries in the adjacent portion of the gingiva, allowing it to survive.[12]

As a soft-tissue graft is not obtained, a second surgical site is avoided. Time has been saved by avoiding graftharvesting from secondary surgical site (palate), thereby decreasing the overall time of the surgery. In addition to this, intra-operative and post-operative complications like bleeding and pain at the donor surgical site (palate) is prevented. Additionally, this technique makes it possible to use the coronally repositioned flap (CRF) for root coverage even in the situations where the width of the attached gingiva is less than 3 mm.

The result of the present case was in consistent with the previous studies done by Gupta et.al.,[13]Romanos et. al.[14] and Marggraf[3] who found 70% coverage even after a follow-up period of 5 - 8 years. There was adequate gain in the width of the attached gingiva and improved gingival thickness noticed compared to baseline.

Recently, the preparation of platelet-rich fibrin (PRF), which is a concentrated suspension of the growth factors found in platelets is being widely used. The growth factors promote of tissue regeneration.[15]In 1974, platelets regenerative potentiality was introduced, and Ross et al. were first to describe a growth factor from platelets.[16] After activation of the platelets which are trapped within fibrin matrix, growth factors released and stimulate the mitogenic response in the bone periosteum during normal wound healing for repair of the bone. Choukroun and his associates were amongst the pioneers for using PRF protocol in oral and maxillofacial surgery.[17]

With this concept, in the present case we have utilised Platelet rich fibrin (PRF) with bridge flap technique. Here PRF served as a resorbable membrane in which platelet cytokines, growth factors, and cells are trapped and may be released after a certain time. Systematic review also demonstrated that PRF enhances gingival thickness and results in thick gingival biotype and enhances blood supply to the underlying structure.[18]The bridge flap technique is one of the innovations that have been evolved for mucogingival surgeries, especially in flap design. In this case, coronally advanced flap with PRF membrane, was used for root coverage of multiple recession defect along with vestibular deepening, where the alveolar bone is exposed for scar formation.[19] The presence of an adequate zone of the gingiva is critical for the maintenance of gingival health and for prevention of loss of connective tissue attachment. Thus, this technique is ideal to cover multiple recessions in patients with inadequate attached gingiva apical to recession.

Conclusion:-

Numerous surgical techniques have been described in the literature to correct mucogingival deformities. The bridge flap procedure is one such technique and a reliable solution for attaining root coverage, increasing the width of attached gingiva, deepening the vestibule, and simultaneously correcting the problem of high frenum (if present) in a single step. Future research with larger sample size and long-term follow-up is needed to establish bridge flap as a steadfast treatment modality for root coverage.

Figure 1:- Preoperative view

Figure 2:- Crevicular incision.

Figure 3:- Preoperative view.

Figure 4:- PRF placement.

Figure 5:- Suture placement.

Figure 6:- 10 days postoperative.

Figure 7:- At 12 months follow up.

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