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Periosteal Pedicle Graft – A Predictable Way For Treatment Of Gingival Recession: A Case Report

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ABSTRACT:
The periosteum is a dense layer of connective tissue enveloping the bones with high cellular content and rich vascularity and regenerative potential, making it a suitable autograft.Therefore, coronally advanced flap technique with periosteal pedicle graft has been employed in patients with anterior gingival recession. A patient with Miller's class I and II gingival recessions are treated with periosteal pedicle graft, and the amount of root coverage (RC), gingival thickness(GT), clinical attachment gain (CAG)was calculated at 3 and 6 months. Results showed complete coverage

I. INTRODUCTION:

Gingival recession is defined as displacement of marginal tissue apical to the cementoenamel junction. [1] Gingival recession may lead to esthetic and functional loss. Therefore, appropriate treatment with less invasiveness and improved results are required. One of such procedures is periosteal pedicle graft which has its blood supply and can be harvested adjacent to the recession site in sufficient amounts without any second surgical site.[1] It also has the potential to regenerate lost periodontium.Therefore this case report presented was to evaluate the effect of periosteal pedicle graft in the management of two adjacent Millers class I gingival recessions.

II. CASE REPORT:

A patient of age 37 years had been recruited from the department of Periodontics, Sri Sai College Of Dental Surgery, Vikarabadwith Miller's class - I gingival recession in the upper left anterior region.Exclusion criteria included the following: patients unwilling to maintain appointment schedules; pregnant or lactating women; smokers; previous periodontal surgery within one year; a clinical sign of untreated acute infection at the surgical site, apical pathology, root fracture, and severe root irregularities;history of antibiotic therapy in pastsix months.

Clinical assessments:

Recession depth (RD), Probing depth (PD),and clinical attachment level (CAL) were assessed at the mid buccal aspect of the tooth using a UNC 15 periodontal probe (Fig 1). Recession width (RW) was recorded tangential to the CEJ. Keratinized tissue width (KT) was determined as the distance from the gingival margin to the mucogingival junction. Gingival thickness was measured 2mm apical to the recession defect with a no. 15 reamer and digital vernier calipers with a precision of 0.01mm. In addition, FMPS[6], full mouth bleeding scores (FMBS)[7], modified gingival index (MGI)[8]were recorded. The clinical parameters were assessed at baseline, 3 months, and 6 months post-operatively.

Surgical technique:

After achieving adequate anesthesia, a spilt thickness flap leaving periosteum onto the bone is elevated from 22 to 24 regions until a tension-free coronal advancement of the flap is achieved (Fig 2,3,4). Periosteum, which is on the bone surface, is separated and coronally advanced to adequately cover the gingival recession area. Root planing and de-papillation on adjacent papilla were done. Independent sling suture is placed initially for the periosteum to stabilize it to the recession area (Fig 5). Then the same suturing technique is placed for the flap covering the periosteum, achieving complete root coverage (Fig 6). The patient was given analgesics on the 1st, 2nd, and 3rdday and recalled after 2 weeks for suture removal. Oral hygiene instructions were given. Clinical parameters like %RC, KT, CAG were assessed at 3 months and 6 months (Fig 7). At the end of 3 and 6 months, there was uneventful healing of gingival tissues with almost complete coverage of the recession areas with reduced sensitivity.

III. DISCUSSION:

Many studies and techniques have been introduced to treat gingival recessions, but all of them have some or other drawbacks. Though subepithelial connective tissue graft is considered the gold standard, it has shortcomings like the secondary surgical site and a limited quantity of graft. But periosteal pedicle graftovercomes these disadvantages by preventing a second surgical site and harvesting the required amount of graft without any complication or necrosis because of the pedicle attachment to the bone and the coronally positioning of the flap over the graft, ensuring good protection of the graft.[2]It is a dense layer of connective tissue enveloping the bones with high cellular content and rich vascularity and regenerative potential, making it a suitable autograft. It consistsof two layers, an inner cellular or cambium layer and an outer fibrous layer.[1] The inner layer contains numerous osteoblasts, and osteoprogenitor cells, and the outer layer is composed of dense collagen fiber, fibroblasts, and their progenitor cells,hence the regenerative potential of the periosteum is immense.[3]

Mahajan,in his study,was the first to use this periosteal pedicle graft for recession coverage and achieve complete root coverage in all the cases.[4] Lekovic et al. used the periosteum as a barrier membrane for the treatment of periodontal defects.Dandu and Murthy done a study to compare the vestibular incision subperiosteal tunnel access (VISTA) technique by means of Geistlich membrane improved with Osteohealth to PPG with coronally advanced flap and concluded that both VISTA and PPG techniques provided better root coverage.[5]The results ofMahajan were in accordance with our case report and the study concluded that periosteal Pedicle Graft with coronally advanced flap for the treatment of Multiple gingival Recession and periosteal pedical graft has better results than to coronally advanced flap alone.[6]

IV. CONCLUSION:

Periosteal pedicle graft should be the future technique for treatment of gingival recession as well as periodontal defects, as it overcomes all the disadvantages of standard techniques. It is feasible but requires certain prerequisites like good surgical dexterityin separating it from the bone. Future studies with histological evaluation with other techniques and certain randomized controlled trials with standard techniques would bring some light to the advantages of periosteal pedicle graft.

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Images:

Fig 1: Measurement of Recession height
Fig 2: Oblique incisions
Fig 3: Reflectiio of partial-thickness flap
Fig 4: Separation of periosteum from the bone
Fig 5: Suturing periosteal graft to the recession defect
Fig 6: Covering the periosteal graft with the epithelium
Fig 7: 3 months post-operative picture

Images:

Figure 1

Fig

Figure 2

Figure 3

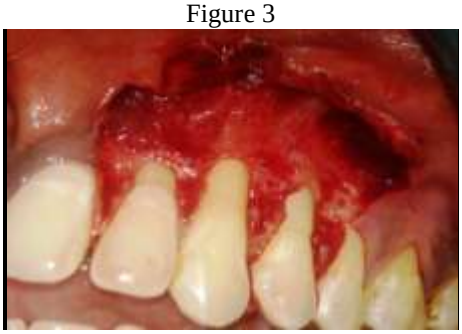

Figure 4

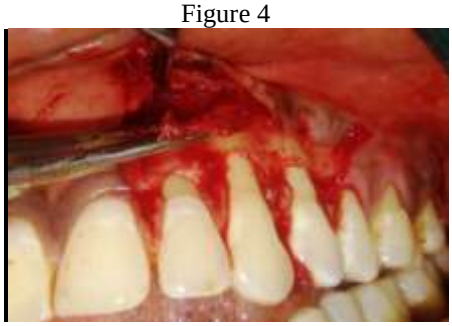

Figure 5

Figure 6

Figure 7