

GUIDED BONE REGENERATION USING DEMINERALISED FREEZE DRIED BONE ALLOGRAFT (DFDBA) - A CASE REPORT

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Abstract : The ultimate goal of periodontal therapy is to restore the lost the lost tissues and to facilitate the optimal function of the teeth in occlusion. The modality for restoration includes regenerating the bone is Guided Bone Regeneration. Numerous bone grafts and substitute materials have been utilised for such purpose. One such case where regeneration of lost bone due to advanced periodontal disease was achieved is presented in this case report.

Index Terms - Guided Bone Regeneration, Collagen Membrane, Allograft, Periodontal Defect

I. INTRODUCTION

The cornerstone of periodontal therapy has long been the prevention of diseases and the establishment of optimal periodontal health. The pragmatic goal of periodontal therapy has been mainly to arrest the disease process and subsequent destruction of the periodontal apparatus and to provide the dentition, a state of health and function for patient comfort. This often meant accepting whatever destruction that had already occurred as irreversible. While it has been shown that such a reduced periodontium due to periodontal disease, can still be maintained in health and comfort with adequate plaque control, but the ideal goal of regeneration of lost periodontium on a predictable basis has long been sought. Dentists frequently face situations where, providing the confidence to the patient, by achieving optimal results resulting in the regeneration of the lost bone to holds the tooth in its place. Thus, regeneration of lost periodontium can be a practical consideration as well as ideal one. One such cases of regenerative approach using demineralised Freeze dried allograft presented in this paper.

II. Case Report

A male patient by age 30 yrs, reported to dental Centre with a chief complaint of Mobility of upper front tooth and pain in the gums since last 15 days. Upon elaborating the history the patient started to notice the mobility of the upper teeth and change in position of the tooth around a month back. Initially the mobility was less to a certain extent, later progressed slowly to the present state. Pain was present in the gums and it was dull aching, non-radiating in nature. An occasional episode of bleeding on brushing was seen. Patient did not give any history of trauma to the region. Patient's medical was not significant and non contributory. Patient had undergone few restorations in the past. Patient's general physical examination revealed that patient did not show any signs of systemic illness and vitals were stable. On intra oral examination the patient had a fair oral hygiene. All the complement of teeth were present. Gingival examination revealed that the colour was bluish pink, rolled margins, stippling was absent, and bleeding on probing present in the upper anterior region related to 11 region. Consistency was soft and edematous in nature. Grade - II Mobility was elicited in relation to 11 the Probing depth of was an average of 10 mm in relation to mesial side of 11. An IOPA radiograph was taken which revealed that there was vertical bone loss in relation to 11 extending and only apical one third of bone was seen on mesial aspect of 11. On eliciting the vitality of the tooth 11 with electric pulp tester, it turned out to non vital. Routine Hematological and urine examination revealed no abnormality. Based on the history, clinical examination the patient was diagnosed as Chronic Localized severe periodontitis with pulpo-periodontal lesion in relation to 11 was made. A comprehensive treatment plan was formulated and the patient was taken for phase -1 therapy and later for surgical therapy.



Figure - 1 Pre OP Pics with IOPA Radiograph

Before the patient was taken up for surgery, the tooth was splinted on the palatal side and a root canal treatment was completed on 11. Later the patient was prepared for surgery and anesthesia was administered - lidocaine with adrenalin (1:80,000) for ASA with nasoplatine nerve blocks. Sulcular incision was placed in the region and an full thickness envelop flap raised from 12 to 21 region. Granulation tissue was removed and the defect exposed. A osseous defect was seen in relation to 11 involving loss of the labial cortical plate.

The dimensions of the defects was examined and the depth of the defect was 10mm from CEJ was noted. The exposed root was completely curetted to remove the diseased cementum. Root Bio-modification with tetracycline application. A resorbable resorbable membrane was trimmed to the dimension needed for coverage according to the template created using foil. The membrane was secured on the palatal side first and the defect was filled using Demineralised Freeze dried bone allograft (Dembone). Later the membrane was closely adapted to cover the graft material and a primary closure achieved by interrupted sutures. Periodontal pack was placed.

Antibiotics and analgesics were prescribed. Patient was recalled after 2 weeks and sutures were removed. Gingival position after the surgery was satisfactory. patient was put on chemical plaque control using Chlorhexidine mouth wash. Patient was evaluated after 1, 3, and 6 months and the periodontal parameters compared to baseline. There was dramatic improvement in the gain in the attachment level and the probing depth was reduced to 2 mm. 6 months post op radiograph revealed that bone fill levels were quite satisfactory. Post surgically a mild amount of recession was evident, however overall esthetic results were acceptable to the patient.



Figure -2 Intra OP Photographs

Figure -3 Membrane Placement & flap closure



Figure - 4 Post OP Results at 06 Months

III. Discussion

Infrabony defects with loss of bone is most prominent finding during periodontal examination. Multiple regenerative techniques have been described in the literature by which these defects can be managed with varying clinical results. Guided tissue regeneration (GBR) in combination with bone graft stands as a successful treatment modality in periodontal regenerative surgeries [Gottlow J 1984, Nyman S 1993]. The biological basis is that, cells that finally occupy the space during healing determine the nature of attachment at the tooth-soft tissue interface, Hence making the space available for selective re-population of the cells for bone formation is made use of, to regenerate the lost bone in GBR [Karring T 1993].

GBR involves the reflection of a full-thickness of flap and the placement of a barrier membrane tightly against the tooth at its coronal aspect and covering the osseous defects with placement of bone graft, before replacing the flap [Schallhorn R 1988]. Guided regeneration was found to be more effective when compared with conventional surgery in the gain of clinical attachment, reduction in probing depth mainly in the management of intrabony and furcation defects. Numerous studies support the use of the bone graft material and the collagen membrane used in this case. The bone graft occupies the intrabony defect as a filler material. It helps in supports the membrane It and prevents folding acts as a substitute for the lost bone and facilitates native bone formation [Teri Brooks Lovelace, 1998]. This process of formation of native bone is done by osteoconductive/osteoinductive activity [Mark Reynolds 2010]. Thus enhancing the process of healing. The bone graft maintain a framework for osteoblasts and budding blood vessels thereby encouraging formation of healthy new bone.

Bone grafts have been used to treat the osseous defects caused due to periodontal disease for a very long time [Needleman 2006]. This procedure has been proven to be successful by assessing the clinical parameters before and after treatment [Mahantesha 2013].

Various types of resorbable and non-resorbable barrier membranes are available in a variety of configurations designed for specific applications [Keels. G.C, 2010]. The configuration most suitable for covering the defect is selected and additional tailoring of the material is performed. For optimal performance the barrier should be placed with its margin 2-3 mm apically to the flap margin. This

procedure must be followed up with effective plaque control by the patient on an everyday basis and must be monitored by a professional on a regular basis for proper maintenance. To reduce the risk of infection and to assure optimal healing, gentle brushing with a soft brush and CHX (0.2%) rinses for 4-6 weeks. In addition, systemic antibiotics are frequently administered before and after surgery to prevent infection and loss of grafts [Sheetal O, 2014].

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