MANAGEMENT OF INFRABONY DEFECT WITH DECALCIFIED FREEZE DRIED BONE ALLOGRAFT

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ABSTRACT: Periodontal regeneration is a clinical and histologic reality. A number of basic requisites for periodontal regeneration have been identified and the search continues for identification of additional factors which will favorably enhance safe, effective, and predictable outcomes of therapy. The decalcified freeze dried bone allograft (DFDBA) has osteoinductive potential that induced bone formation due to the influence of bone-inductive proteins, a class of transforming growth factorβ super family, called Bone Morphogenetic Proteins (BMPs). The purpose of this case report is to demonstrate the successful management of infrabony defect by DFDBA.

KEYWORDS: bone graft, decalcified freeze dried bone allograft, infrabony defect.

INTRODUCTION:
The goals of periodontal therapy include not only the arrest of periodontal disease, but also the regeneration of lost structures due to disease. Periodontal regeneration is defined histologically as regeneration of the tooth's supporting tissues, including alveolar bone, periodontal ligament, and cementum over a previously diseased root surface.3 Bone replacement grafts, such as autografts, allografts, xenografts, and alloplasts, remain among the most widely used therapeutic strategies for the correction of periodontal osseous defects.4 The results from previous studies have indicated that decalciﬁed freeze dried bone allograft (DFDBA), an osteoinductive graft, provide demonstrable clinical improvements in periodontal osseous defects compared to surgical debridement alone.5 This case report demonstrated the management of infrabony defect with decalcified freeze dried bone allograft (DFDBA).

CASE REPORT
A 40 years old male patient reported to the department of Periodontics, institute of dental sciences, Bareilly, for persistent dull pain in upper and lower arch. His medical history was non contributory. On intraoral examination generalized bleeding on probing, periodontal pockets, and clinical attachment loss was revealed. Radiographic examination showed generalized bone loss and infrabony defects on the mesial aspect of lower left first molar. (Fig.1)

After four weeks of phase I therapy patient was reassess for the management of infrabony defect. DFDBA was use as bone grafting material for intraosseous defect. After administration of local anesthesia intrasulcular incision was given in lower left first molar region with one tooth mesially and distally. (Fig.2) Full thickness mucoperiosteum flap was raised and defect area was debrided. DFDBA was reconstitute with saline water in a dappen dish, and defect was filled with bone graft upto the level of alveolar crest.(Fig.3) Flap was readapted on the site and sutures were given with 3-0 black silk. A periodontal dressing was given for 7 days.(Fig.4) Postoperative regime was 500 mg amoxicillin eight hourly, Ibuprofen 400 mg eight hourly for three days, and Chlorhexidine gluconate mouthrinse 0.2% twice daily (10ml) for 2 weeks. Patients were informed neither to brush the surgical site nor manipulate it in any way for 10 days. Sutures were removed in 7 days and the sites were debrided with saline water. Thereafter, patients were placed on a maintenance program that included oral hygiene instructions and professional tooth cleaning biweekly. After three and six months the clinical and radiographical parameters were reassessed. Adequate improvement in the condition was seem clinically and radiographically.(Fig.5-7)

DISCUSSION
There are several types of bone allografts available from commercial tissue banks. These include iliac cancellous bone and marrow, freeze-dried bone allografts, and decalciﬁed freeze-dried bone allografts.6 DFDBA remains a viable treatment modality for attempts to regenerate the periodontal attachment apparatus. The initial use of demineralized freeze-dried bone allograft in clinical periodontics was based on compelling experimental data suggesting that it possesses osteoinductive potential.6 The pioneering work of Urist revealed that demineralized freeze-dried bone allograft was osteoinductive.7 The allograft induced bone formation in nonorthotropic sites, presumably due to the influence of bone-inductive proteins called bone morphogenetic proteins. Some studies have suggested that the quantity of bone morphogenetic proteins in demineralized freeze-dried bone allograft is too small to induce bone formation and that, if bone formation does occur, it is by other processes.8 Strastric standards from bone banks in evaluating the potency of their preparations, including the possibility of using bones from individuals under a specific age and/or free of bone diseases and/or using fresh bone and developing assays that can test the inductive capacity of the material prior to sales, may lead to more consistent and reliable clinical results.9 Safety is always a concern when an allograft material is used. The risk of disease transmission for freeze-dried bone allograft and demineralized freeze-dried bone allograft has been reviewed.10 Concern of disease transmission is minimal if the material is harvested and processed according to the protocol standards of the American Association of Tissue Banking.11 With medical and social screening, antibody testing, direct antigen and serological tests, bacterial culturing, autopsy and follow-up testing, the chance of disease transfer is approximately one in 1.7 million.12 Freeze-drying the material further reduces the risk to
The probability that a brand of demineralized freeze-dried bone allograft might contain HIV following screening and processing has been calculated to be one in 2.8 billion. The predictability of results after bone grafting depend on the defect morphology, systemic condition, and patients compliance. Narrow and deep defects heal well than shallow and broad defect.

CONCLUSION

In conclusion DFDBA is a successful graft for the management of infrabony defects. Further long term studies are mandatory for gaining the solid data about the bone grafting outcomes.

REFERENCES

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Fig 1- Preoperative pocket depth  
Fig 2 Bone graft in infrabony defects 
Fig 3 Suturing  
Fig 4 Periodontal dressing 
Fig 5 Post operative probing after 6 months  
Fig 6 Preoperative radiographs  
Fig 7 Postoperative radiographs after 6 months.