

Socket Preservation with A-PRF and Xenograft – A Case Report with 3 Month Follow Up

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Abstract: *Introduction:* After extraction of a tooth, bone resorption is a normal physiological process often leading to decreased bone width and height. Thus, the further treatment plan with implant therapy and prosthetic becomes difficult. Literature shows A-PRF and bone graft has successful regeneration of soft and hard tissue.

Case Report: A 50-year-old female patient with infected root canal treated teeth was planned for extraction based on radiographical finding and Socket preservation with A-PRF and xenograft. Clinical results were evaluated after 3 months and implant was placed.

Conclusion: Clinical evaluation reveals the socket preservation with A-PRF and Xenograft preserves the alveolar bone for implant placement.

Keywords: Socket preservation, Advanced-Platelet rich fibrin, Xenograft.

1. Introduction

Extraction of teeth leads to various anatomical changes in alveolar bone due to physiological remodelling. This physiological remodelling often in alveolar bone height and width [1], [2]. Following extraction rate of alveolar bone is faster during first 3 to 6 months. The mean reduction of alveolar bone height is 1.24 mm and alveolar width is 3.8 mm [3]. Implant survival to provide adequate function and aesthetic outcome was based on alveolar bone housing. In this paper we present a case of socket augmentation with A-PRF and xenograft. As in Advanced PRF (A-PRF) spinning protocol are slower it favours higher growth factors release than prototypical PRF which in turn may directly influence tissue regeneration by increasing fibroblast migration, proliferation and collagen mRNA levels.[4] Osseograft consists of type I collagen that is prepared from bovine cortical bone samples of 250 µm that are completely replaced by host bone in 4–24 weeks [5].

2. Case Report

A 50-year-old female patient with non-contributory medical history reported to department of periodontics, CDCRI with chief complaint of mobile tooth in the left upper back tooth region for the past six months. Past dental history revealed root canal treated tooth before five years and PFM crown in upper back tooth region. Periodontal examination revealed

erythematous marginal, attached and interdental papilla, rolled out margins, soft and oedematous in consistency, blunt interdental papilla and absence of stippling with periodontal probing pocket depth of 3mm in relation to 24. On hard tissue examination reveals Millers grade III mobility and tender on percussion present in relation to 24. Radiographical evaluation of the patient revealed vertical root fracture maxillary first premolar for which of root canal treatment was done before 5years. Prognosis of the tooth was concluded hopeless based on endodontic opinion. Then the patient was given a treatment option for extraction followed by socket preservation with A-PRF and xenograft (ADVANCED BIOTECH OSSEOGRAFT DMBM) and implant placement. Inform concern was obtained from the patient. oral prophylaxis was done to patient and was recalled after two weeks for the surgery.

A. A-PRF Preparation

10 ml of venous blood without anticoagulant was collected prior to the surgery. The collected blood samples were immediately transferred to vacutainer and placed in centrifuge machine. It is centrifuged for at 1500rpm for 14 minutes [6]. The fibrin clot was separated from the centrifuged blood clot and membrane was prepared.

B. Surgical Treatment

Local anaesthesia containing 2% lignocain with adrenalin 1:80000 was used for supra periosteal infiltration technique and greater palatine block. After getting anesthetized 24 was extracted atraumatically. Once the tooth was extracted, the socket was well curetted, the granulation tissue was debrided and irrigated with saline. Following that decortication was done to induce fresh bleeding and the release of bone forming cells from underlying marrow. Then the bone graft (ADVANCED BIOTECH OSSEOGRAFT DMBM) xenograft - 2X0.25 G was placed and condensed with a bone compactor. Prepared A-PRF membrane was placed over the bone graft. A-PRF membrane was secured with 3-0 silk thread sutured using figure of eight. Post operatively patient was prescribed for non-steroidal anti-inflammatory drug for thrice daily for three days, antibiotics for 3days and chlorhexidine 12% mouth wash was asked to rinse twice daily for 2 weeks.

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C. Implant Placement

After six months post operatively post-surgical evaluation was done site was ideal for implant placement. Under local anaesthesia mid crestal incision was given and full thickness mucoperiosteal flap was raised. A dental implant (Noris Medical Dental Implants System, Israel) of 4.2mm width and 11.5 mm length was placed.

Table 1
Clinical evaluation

Alveolar ridge width	Pre extraction	Post extraction	After 6 months Follow up
	7 mm	6 mm	6 mm



Fig. 1. a) Preoperative intraoral left lateral view, b) Preoperative radiograph showing vertical root fracture in 24

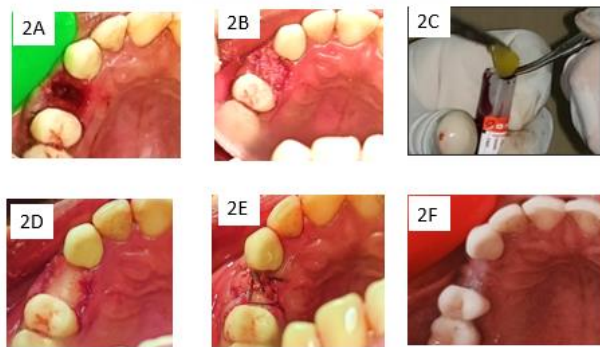


Fig. 2. a) Atraumatic extraction of 24, b) Bone graft - ADVANCED BIOTECH OSSEOGRAFT DMBM (DE MINERALIZED BONE MATRIX) placed in relation to 24, c) A-PRF, d) A-PRF placed into socket, e) Figure of 8 suture placed, f) 1 month postoperative

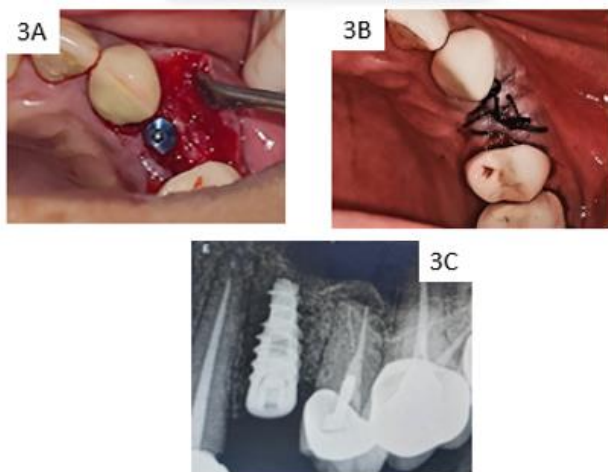


Fig. 3. Implant placement in relation to 24

El-Chaar et al., study on socket preservation with de mineralized bone matrix (DMDB) xenograft alone showed

considerable alveolar ridge preservation [7]. The de mineralized bone graft helps to release VEGF. This VEGF helps to stimulate the bone forming cell.

Zhao et al study on socket preservation with A-PRF states that A-PRF alone is sufficient for socket preservation [8], [9]. A-PRF has individually found to stimulate bone osteogenic cells and other growth factors.

Thakkar et al study on socket preservation with both A-PRF and DFDB allograft showed a considerable bone width and height preservation [10].

Sampath and Reddi studied on subcutaneous implantation of coarse powders (74–420 µm) of DMBM which resulted in local differentiation of bone. When Osseograft is placed in the osseous defect there is a sequential differentiation of mesenchymal-type cell to form cartilage and bone [11]. The cell differentiation and bone formation occur in 4 stages - Stage 1 within in 2days there is a migration of mesenchymal-cell into the vascular spaces. In stage 2, between day 2 and 18 there is a differentiation of mesenchymal cells into giant cells and chondrocytes. In stage 3, from 8-20 days the poorly vascularized areas of matrix show cartilage formation, and from day 10 to 20 woven bone develops in the vascularized areas of matrix. During stage 4, between day 20 and 30 bone formation occurs [12].

Zhang Y et al., 2009 did study on effect of PRF on osteoblast of rat and found gradual release of autologous growth factors from PRF with durable proliferation and differentiation effect. The promoting effect of PRF occurred maximal at day 14 which suggested that the growth factors in PRF may serve a major role in promoting bone regeneration, over a prolonged period of time [13].

This case we have used an A-PRF and DMDB (xeno graft) for socket preservation has showed to be significant preservation of alveolar bone height and width. With a follow up of 6 months.

3. Conclusion

In this case report A-PRF along with xeno graft used for socket preservation has showed to beneficial for both bone regeneration and reduction bone resorption. Furthermore, cases and longtime follow up clinical evidences are needed to prove the acquired results.

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