MAVEN

CASE REPORT

SOCKET WHETHER TO PRESERVE IT NOW OR TO CREATE LATER? - A CASE REPORT

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ABSTRACT:

This case report described the clinico-radiographic efficacy of demineralized freeze-dried bone allograft (DFDBA) in preserving extraction sockets. Extrac- tion socket was measured clinically by both horizontally and vertically, imme- diately following atraumatic extraction and in radiographic evaluation, IOPA radiograph was taken for vertical measurement of the socket. After proper evaluation, the socket was filled with DFDBA bone graft and covered with a free mucosal graft obtained from the patient's palate. Clinically, there was a significantly less decrease in relative socket depth after 6 months. Radio- graphically, the difference in socket height, residual ridge, and width (coronal, middle apical third of socket) after 3 and 6 months was lower as compared to the pre-operative measurements. The use of DFDBA with free mucosal graft as a barrier membrane was effective in socket preservation. Being non-im- mune, cost-effective, easily procurable, osseoinductive, regenerative bio- material DFDBA proves to be an insight into the future biofuel for regenera- tion. (2017, Vol. 01; Issue 01: Page 50 - 55)

Keywords: DFDBA, extraction sockets, Periotome, FMG.

INTRODUCTION:

Following tooth extraction, the alve- olar bone undergoes remodelling. Difficult tooth extraction proce- dures may also result in additional bone loss due to the surgical trauma. Implant therapy is often considered one of the best options to replace a tooth functionally and

aesthetically. However sufficient alveolar bone volume and favourable architecture of alveolar ridge are essential to obtain ideal functional and aesthetic reconstruction following implant therapy (1).

Bone resorption continues over time, but during the first month, after tooth extraction the most statistically significant loss of tissue contour occurs, averaging 3–5mm in width at 6 months (2, 3).

The mandible will resorb 4 times more than the maxilla and the buccal side will lose more volume than the lingual (4, 5). The amount of width bone lost to the resorption process has been estimated at 31.6% after 3 months, 42.4% after
6 months, and 50.73% after 12 months (6).

Clearly, such a defective ridge form will not allow for appropriate prosthetic fabrication or correct placement of endosseous implants. To prevent this devastating clinical situation, different authors have described several surgical procedures ranging from regenerative techniques for socket preservation to immediate implant placement (7).

Ridge preservation or socket preservation refers to the placement of graft material in the socket with either a membrane or an advanced or rotated flap or both following atraumatic extraction. The goal of socket preservation starts with atraumatic extraction.

The purpose of this case report is to highlight the benefits of ridge preservation at the time of extraction and evaluate the efficacy of DFDBA materials and further adding this procedure to the implant protocol in the site.

CASE REPORT:

Seikh Jamiruddin, a 21 year old, male patient reported to the Department of Periodontology, Dr. R Ahmed Dental College & Hospital, Kolkata, with a complain of grossly decayed lower left molar (Fig 1A). After diagnosing, extraction was planned for that particular tooth under local anaesthesia. Written informed consent was obtained from the participant.

Scaling and root planing were performed before the procedure to ensure an oral environment more favourable to wound healing.

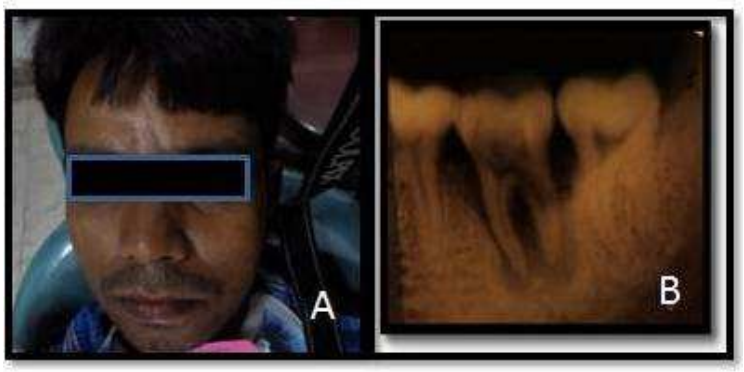

Fig 1: A- Extraoral view, B- I.O.P.A.R of 37 Pre-operative

SURGICAL PROCEDURE

• Before surgery, alveolar ridge width was calculated with a perio- dontal probe and radiograph was made (Fig 1B).

• A manual periotome and forceps were used to perform atraumatic extraction in order to maintain the buccal bone and the surrounding soft and hard tissues.

• The height of the buccal and lin- gual bone plate was clinically exam- ined at the mid buccal and mid lin- gual region with help of a periodon- tal probe as well as the height of the socket was measured till the base which helped to measure the amount of vertical bone loss on buccal plate as compared to the lin- gual plate.

• Granulation tissues were removed with the help of curettes and the socket was irrigated with sterile normal saline.

• DFDBA was mixed with the coag- ulum procured from the extraction sockets and condensed into the ex- traction sockets until the crestal level and a FMG membrane was used to cover the bone graft mate- rial (Fig 2).

• An acrylic cover plate is given to the donor site.

• The patient was recalled after 10 days for suture and periodontal pack removal.

• He was further recalled at 3 and 6 months interval (Fig 3).

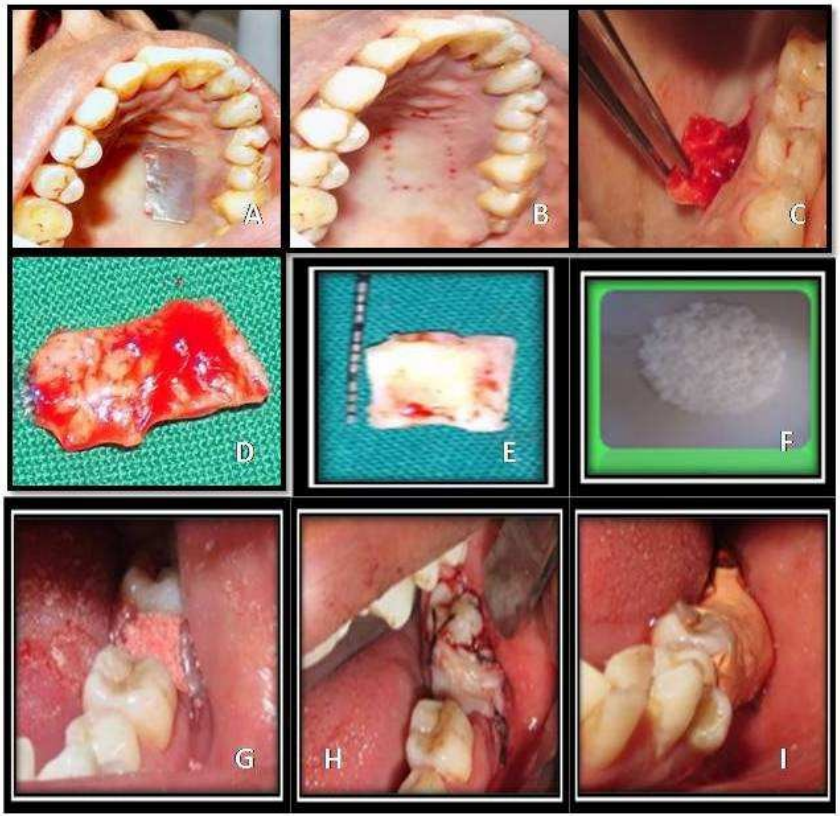

Fig 2: A- Template, B- Donor site, C- FMG Procured form palate (reflected view), D- FMG, E- FMG, F- DFDBA Granules, G- Extraction socket filled with DFDBA and Coagulum, H- FMG placed and sutured, I- COE pak placed.

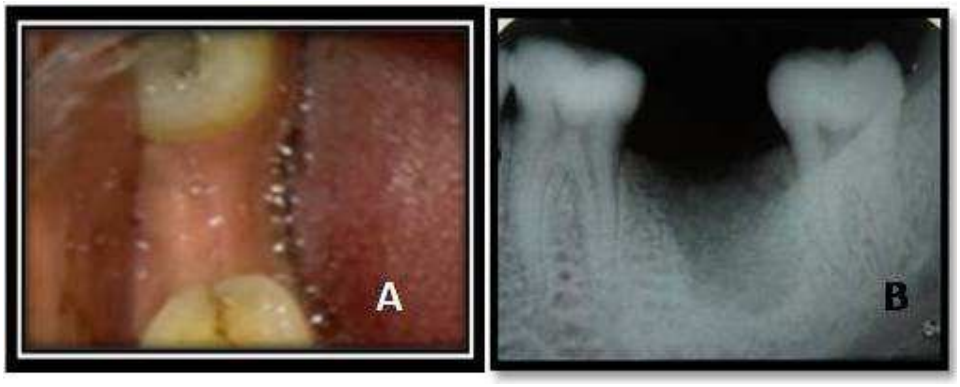

Fig 3: A- 6 months post op photograph, B- 6 months post op radiograph.

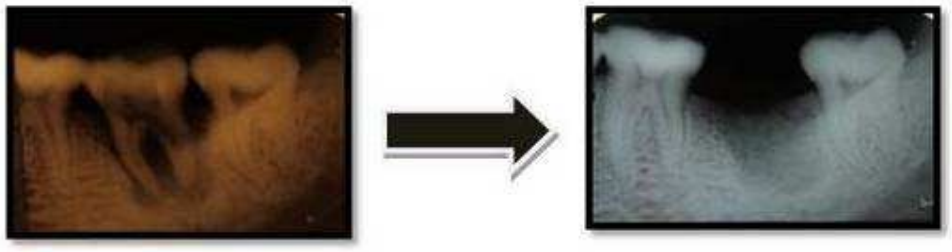

Fig 4: Before extraction and after socket preservation.

Clinically, there was a significantly less decrease in relative socket depth and width after 6 months. Radiographically, the difference in socket height, residual ridge and width (coronal, middle and apical third of socket) after 6 months was lower in DFDBA treated extraction socket as compared to the non-preserved extraction socket.

DISCUSSION

To achieve a predictable esthetic and functional restoration, it is im- portant to preserve the dimension of alveolar ridge width and height after tooth extraction. Rationale for socket preservation includes:

• Designed to preserve the ana- tomical dimensions (height and width) of the alveolus of the ex- traction site.

• Avoidance of additional surgeries.

• Procedure is simple, safe and effective.

A case report showed horizontal measurements for bone loss and compared them at grafted and non-grafted sites which gave a results of 1.20mm for grafted site and 2.75 mm for non-grafted site where as the vertical measurement changes at grafted and non-grafted sites was

0.45 mm and 1.95mm, for horizon- tal changes. Healing was compara- tively faster on grafted site as com- pared to the non-grafted site (8). Alloplasts are a synthetic graft ma- terial which is inert and implanted into tissue.

Hydroxyapatite, trical- cium phosphate, calcium sulfate and bioactive glass polymers are common examples of synthetic bone graft materials. This graft ma- terial is inert, osteoconductive filler material, which serves as a nidus or scaffold for new bone formation (9). The formation of a new attachment

apparatus was observed when in- trabony defects were grafted with DFDBA (1.21 mm); significantly more new attachment apparatus (P less than .005), new cementum (P less than .005), new connective tis- sue (P less than .05), and new bone (P less than .0001) formed in intra- bony defects grafted with DFDBA than in nongrafted defects. Monali Shah, Jay Patel, Deepak Dave, and Sujal Shah in 2015 stated that De- mineralized freeze-dried bone allo- graft (DFDBA) has been histologi- cally proven to be the material of choice for regeneration (10). In 1989, Bowers GM et al. has suc- cessfully proven in a histologic study wherein 80% of test sites showed complete regeneration by the use of DFDBA (11). Vignoletti et al. in a systematic review in 2012 included 14 studies that met their criteria and used 9 in a meta-anal- ysis. They concluded that ridge preservation significantly reduced the loss of alveolar bone in both the vertical and horizontal component (12).

Table 1 shows average results found for the different treatment modalities using the systematic reviews.

	Control Sites (No Treatment)	Bone Graft Only	Membrane Only	Combined Bone Graft + Membrane
Horizontal bone changes	-2.51 mm Range: 0.16 – 4.5 mm (loss)	-1.18 mm Range: 0.75 – 2.0 mm (loss)	-0.08 mm Range: 0.1 (loss) – 2.90 mm (gain)	+0.47 mm (gain) Range: 3.48 (loss) – 3.27 mm (gain)
Vertical bone changes	-2.07 mm Range: 0.8 – 5.24 mm (loss)	├1.31 mm Range: 0.48 – 2.48 mm (loss)	+0.14 mm (gain) Range: 0.38 (loss) – 1.30 mm (gain)	-0.15 mm Range: 0.02 (loss) – 1.3 mm (gain)
Percentage of vital bone	42.4% Range: 25.7 – 54.0%	46.2% Range: 32.4 – 59.5%	N.A.	31.7% Range: 28 – 35.5%

Results are averages found from multiple studies using several different materials with follow-up of 4 –6 months healing. N.A. = no studies avail- able. Control sites are all extractionwithout augmentation (Da-ta com- piled from 14 studies in systematic reviews)

CONCLUSION:

Many choices are available to the clinician and success is based on the care at the time of extraction to preserve the remaining walls of the alveolus (extraction socket) through minimal trauma.

DFDBA bone graft helps in preser- vation of the height and width of the socket and ultimately preserves the ridge which helps in less resorption of the socket and ridge which finally helps in better future prosthesis for the patient like complete denture, removable partial denture and in implants also.

Thus we can rightly say it's better to preserve it now than to create later.

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