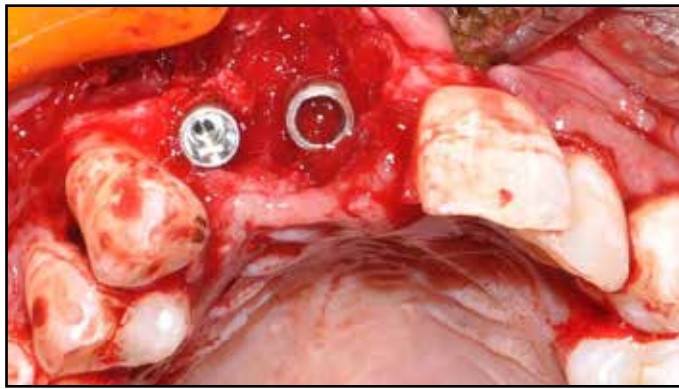


Immediate Implants with Guided Bone Regeneration Using Titanium Mesh and Alloplast in an Infected Site: A Case Report

Dr. Lanka Mahesh¹ • Dr. Ajay Bibra² • Dr. Vishal Gupta³

Abstract



Years of research and advancement in techniques and biomaterials have made surgical procedures more predictable, which leads to confidence in clinicians for trying ambitious procedures in their day to day practices. GBR is one such procedure with which we can try to achieve unachievable in implant dentistry.

Bone reconstruction should restore bone volume in both horizontal and vertical directions.

Besides autogenous grafts being the golden standard of augmentation, various bone substitutes have been used with promising results. The main rationale in guided bone regeneration (GBR) techniques is the creation of space for matrix producing cells if significant volumes of bone are to be achieved. This case report highlights the technique of using graft and titanium mesh on the principles of GBR technique with satisfactory clinical results.

KEY WORDS: Dental implants, guided bone regeneration, alloplast, case report

1. Dr. Lanka Mahesh, Private practice, New Delhi, India
2. Dr. Ajay Bibra, Professor and Head, Oral and Maxillofacial Surgery Department, Genesis Institute of Dental Sciences Research, Ferozpur, Punjab, India
3. Dr. Vishal Gupta, Private practice, New Delhi, India

INTRODUCTION

Sufficient bone volume is one of the most important requirements for proper dental implant placement.¹⁻⁸ Various pathologies can lead to early loss of teeth along with the loss of hard and soft tissue. This inadequate amount of tissue can lead to various complications. Over the past decade, augmentation of atrophic ridges for implant surgeries has seen a number of researches which have led to more predictable bone regeneration procedures with guided bone regeneration (GBR) being one of the most researched techniques.¹⁻⁸

GBR employs a physical barrier to selectively allow new bone growth into the space created between the barrier and the existing bone. Introduction of a variety of bone substitutes (natural or synthetic) have created possibilities for endless types of procedures for regenerating bone. The rationale of using a titanium mesh is to contain and stabilize the graft allowing the maximum bone regeneration. Grafting materials such as alloplasts when used in combination with titanium membrane has shown more predictable outcomes in treating bone defects.

CASE REPORT

A 26 year old lady visited our practice with missing maxillary right lateral incisor (Figure 1) and mobility in relation to the maxillary right central incisor. Patient gave history of trauma which led to mobility of her teeth. On clinical examination, grade II mobility was evident in relation to maxillary right central incisor. Patient was a non-smoker with no medical conditions and had satisfactory oral hygiene and a strong desire to restore the area with a fixed prosthesis. On radiographic examination, vertical and horizontal bone loss was evident. She had a low lip line on extra-oral examination.

Treatment planning

The patient was presented with various treatment modalities. After discussion, patient agreed for an implant supported fixed restoration along with augmentation of alveolar ridge in areas of bone loss. The augmentation was planned with alloplast bone graft and secured with titanium mesh membrane.

Treatment procedure

A local anesthetic was administered in the maxillary right lateral incisor and central incisor region. The central incisor was extracted with minimal trauma (Figure 2). Pathology was evident on the apex of extracted central incisor. A full thickness flap was then reflected from the maxillary right first premolar till maxillary left central incisor. Vertical and horizontal bone loss was evident (Figure 3). Osteotomies were created under copious irrigation at the surgical site. Two Top DM Conical implants of 3.5/11.5 mm (Bioner-Barcelona, Spain) were inserted at 35 Ncm (Figure 4). Approximately one cc of calcium phosphor-silicate morsels (Nova-Bone, Alachua, FL, USA) was mixed with sterile saline and allowed to hydrate before being placed and packed into the defect (Figure 5). All the voids were filled adequately. A titanium mesh (CTi- mem: NeoBiotech, Seoul, Korea) was secured after appropriate shaping with the help of cover screw of the implant (Figure 6). To get complete coverage of the membrane, periosteal releasing incisions were made in the facial flap. Primary wound closure was obtained by horizontal mattress and interrupted cytoplasm 4-0 sutures (Osteogenics, Lubbock, TX, USA)

The patient was put on a two week, one month, three month and six month recall ensur-



Figure 1: Initial clinical presentation.



Figure 2: Extraction of central incisor.



Figure 3: Ridge defect following tooth removal.

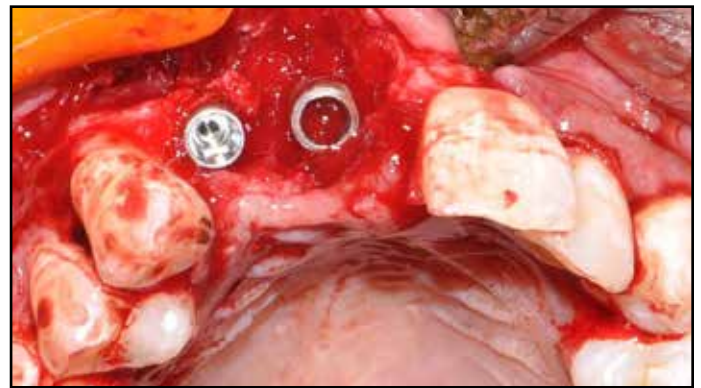


Figure 4: Placement of dental implants.

ing the proper management of surgical site. A Maryland bridge was given as interim prosthesis in healing phase. After 4 months and prior to second stage surgery, a cone beam computed tomography (CBCT) scan was performed revealing excellent bone growth (Figure 7). In the second stage surgery, the titanium membrane was

removed and a healing collar was placed on the dental implant. Following three weeks to achieve soft tissue healing, impressions were made (Figure 8) using an open tray technique with Impregum (3M ESPE, St. Paul, MN, USA) and the final Zirconia prosthesis was delivered (Figures 9, 10). The 14 month recall has been uneventful. ●



Figure 5: Placement of alloplast graft material.

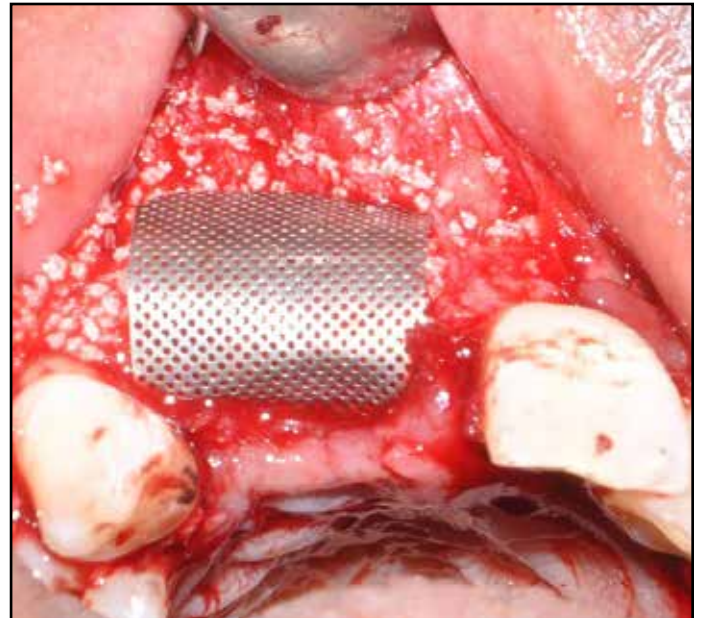


Figure 6: Titanium mesh placement.



Figure 7: CBCT scan of grafted site with dental implants.



Figure 8: Closed tray impression copings placed on dental implants.



Figure 9: Panoramic radiograph of final restoration.



Figure 10: Clinical presentation of final restorations (non-retracted view).

Corresponding Author

Corresponding Author

Dr. Lanka Mahesh

M-6 Saket

New Delhi, India

drlanka.mahesh@gmail.com

Disclosure

The authors report no conflicts of interest with anything mentioned in this report.

References

1. Ueda M, Yamada Y, Ozawa R, Okazaki Y. Clinical case reports of injectable tissue-engineered bone for alveolar augmentation with simultaneous implant placement. *Int J Periodontics Restorative Dent* 2005;25:129-37.
2. Becker W, Becker BE, McGuire MK. Localized ridge augmentation using absorbable pins and e-PTFE barrier membranes: a new surgical technique. Case reports. *Int J Periodontics Restorative Dent* 1994;14:48-61.
3. Buser D, Brägger U, Lang NP, Nyman S. Regeneration and enlargement of jaw bone using guided tissue regeneration. *Clin Oral Implants Res* 1990;1:22-32.
4. Nevins M, Mellonig JT. Enhancement of the damaged edentulous ridge to receive dental implants: a combination of allograft and the GORE-TEX membrane. *Int J Periodontics Restorative Dent* 1992;12:96-111.
5. Belser UC, Schmid B, Higginbottom F, Buser D. Outcome analysis of implant restorations located in the anterior maxilla: a review of the recent literature. *Int J Oral Maxillofac Implants* 2004;19 Suppl:30-42.
6. Belser U, Buser D, Higginbottom F. Consensus statements and recommended clinical procedures regarding esthetics in implant dentistry. *Int J Oral Maxillofac Implants* 2004;19 Suppl:73-4.
7. Mellonig JT, Triplett RG. Guided tissue regeneration and endosseous dental implants. *Int J Periodontics Restorative Dent* 1993;13:108-19.
8. Shanaman RH. The use of guided tissue regeneration to facilitate ideal prosthetic placement of implants. *Int J Periodontics Restorative Dent* 1992;12:256-65f dental implants. *Int J Oral Maxillofac Implants* 1996;11:387-9412. Doblin JM, Salkin LM, Mellado JR, Freedman AL, Stein MD. A histologic evaluation of localized ridge augmentation utilizing DFDBA in combination with e-PTFE membranes and stainless steel bone pins in humans. *Int J Periodontics Restorative Dent* 1996;16:120-9.
9. Lupovici J. Regeneration of the anterior mandible: a clinical case presentation. *J Implant Reconstr Dent* 2009;1:31-4.