

Case Report

RIDGE SPLIT FOR MANDIBULAR POSTERIOR REGION: A CASE REPORT

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ABSTRACT

In order to achieve a success in implant procedures main requirement is availability of adequate bone width around the implant placed. Narrow alveolar ridges with a bone width of less than 5mm require bone augmentation before or after implant placement. Alveolar bone splitting and immediate implant placement have been proposed for patients with severe atrophy of the maxilla and posterior mandible. The foremost advantage of the crest expansion technique is a substantially less invasive method; the buccal wall expands after the medullary bone is compressed against the cortical bone. This article presents a case report where ridge split is performed in posterior mandible followed by immediate implant placement.

KEYWORDS

Alveolar bone splitting, immediate implant, bone augmentation

needed for success of implant, which many a times is not available. Thereby various surgical widening techniques are undertaken to increase the width of narrow edentulous ridges. Guided bone regeneration³, ridge expansion or ridge splitting osteotomy⁴, lateral augmentation are few of them. Split crest bone augmentation techniques is performed with or without bone graft either for immediate implant placement or delayed placement once the adequate alveolar bone thickness is achieved. Spreaders of increasing diameters are gently introduced sequentially to expand the implant site. With each insertion of a larger diameter spreader the bone is pushed laterally. Scipioni et al suggested using the partial-thickness flap (PTF) approach instead of the traditional full-thickness flap (FTF) approach to preserve periosteal blood supply and therefore minimize the amount of alveolar bone loss⁵. This paper describes a technique for widening the mandibular cortical bone to improve the placement of implant.

CASE REPORT

A 26 year old female patient reported to the department of prosthodontics with a chief complaint of missing lower left back tooth since one year. There was no significant present or past medical history. Clinical examination revealed missing 36, 46 (Fig 1) along with grossly decayed 37 (Fig 2). Oral hygiene was acceptable. OPG revealed congenital missing third molar in third

INTRODUCTION

Alveolar bone resorption after tooth extraction often is a challenge for ideal dental implant placement and stability¹. Patients with long standing edentulous arches may have narrow knife edge ridge crest². Ideal requirement of at least 1-2 mm of bone width around implant is

quadrant. Intraoral examination along with bone mapping revealed narrow bone width (less than 5 mm) in region of 36.



Fig.1. Pre-op intraoral view

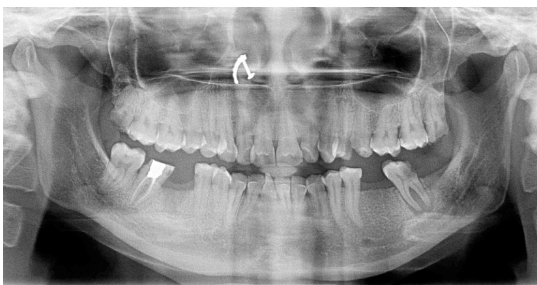


Fig.2. Pre-op OPG



Fig.3. Extracted 3rd molar

Treatment plan included surgical extraction of 37 followed by ridge expansion extending from the extraction socket towards the region of implant placement and immediate implant placement for replacement of first molar. Patient was instructed to take 2.0g of amoxicillin 1 hour prior to surgery. The surgical procedure was performed under local anaesthesia, 2 per cent xylocaine, 1:80,000 adrenaline. Atraumatic extraction of 37 was done (Fig 3), socket thoroughly debrided to remove granulation tissue and remnants of periodontal ligament. Post extraction a partial-thickness flap was raised to expose the alveolar ridge. With the help of mallet and chisel

osteotomy site was prepared, extending from the region of extracted second molar till the desired implant site (Fig 4).

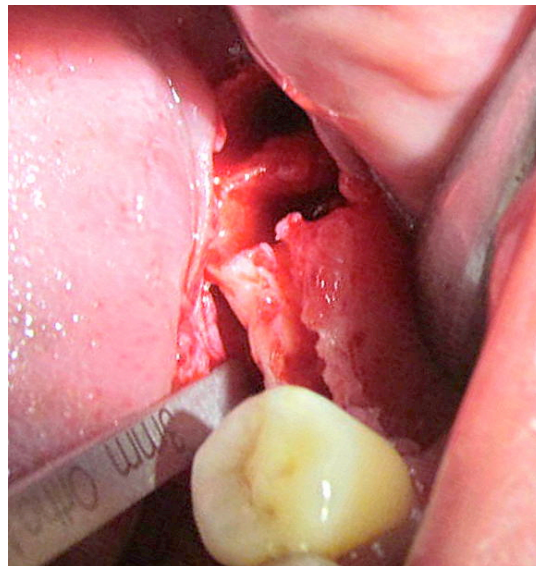


Fig.4. Ridge split i.r.t 37



Fig.5. Implant i.r.t 36

Successive bone spreaders were used to achieve the desired expansion, split was done in coronal portion and final drill was used to create a osteotomy till desired depth. Implant measuring (3.8 mm x 11 mm, Myriad Plus, Netherlands) placed with a insertion torque of 60 Ncm (Fig 5). Hydroxyapatite graft with collagen (Novabone putty) was placed between the implant and the cortical plate. Gingival former was placed

followed by interrupted sutures³⁶ (Fig 6,7). Patient was placed on 625 mg augmentin BD for 5 days and was instructed to maintain good oral hygiene, use ice packs over the surgical area during the first 24 hours after the operation.

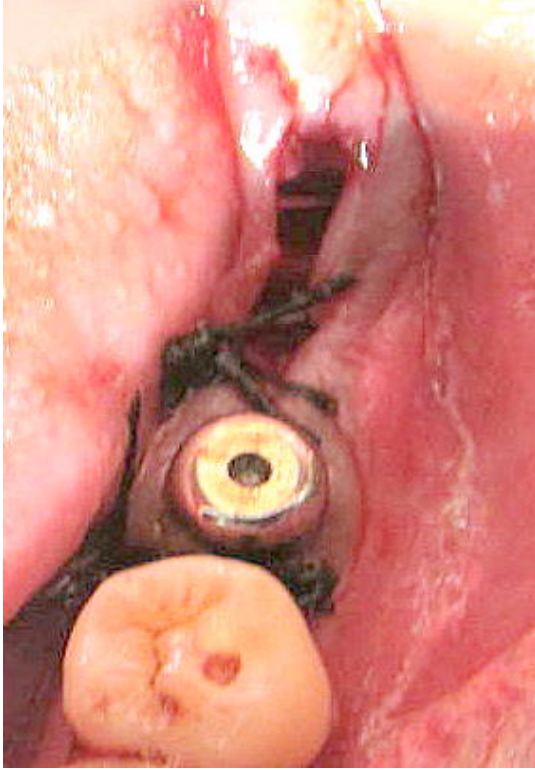


Fig.6. Implant with gingival former

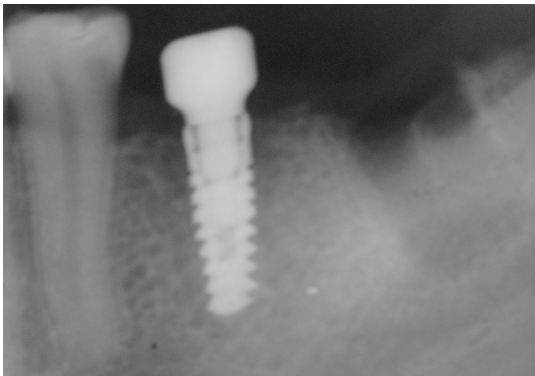


Fig.7. IOPA i.r.t 36

Sutures were removed at the seventh postoperative day. Patient was recalled after 4 months for the prosthetic phase.

DISCUSSION

The ultimate objective of implant treatment is to provide support for the replacement of missing

teeth. As with any treatment, pre surgical planning is decisive to the success. . Use of different techniques like distraction osteogenesis⁶, piezoelectric surgery⁷ are reported to increase bone width, but is less predictable for single implant site .Immediate implant placement following the cortical plate dilation in posterior mandible can be a treatment of choice for ridges with decreased width and is better treatment approach than 2 stage approach with a waiting period of few months between ridge split and implant placement. The edentulous ridge expansion technique was developed by Scipioni et al⁵. to slowly dislocate the buccal plate in a facial direction. The healing period for implant insert with this technique seems to be the same as other implant. With each insertion of a larger spreader the bone is pushed laterally. Patient acceptance of this technique has been very high. In this case instead of following a conventional approach of creating osteotomy site directly at precise location of implant, osteotomy site is extended from the extractions socket to the final implant site. The apical portion of bone was not split; it was treated in the conventional approach with drills and osteotomes. There are several disadvantages to this technique. It cannot increase height, only width and it is operator dependent technique.

CONCLUSION

Mandibular ridge expansion using a split-crest technique along with immediate implant placement with synthetic graft has proved to be a treatment of choice than conventional protocol of extensive bone graft without split. In an effort to shorten the duration of treatment, avoid an additional surgical appointment, and decrease patient morbidity this could be a treatment of choice. A technique which would both lessen the trauma to patient and conserve the maximum amount of alveolar bone at precise site of anticipated implant placement and offer clinical benefits.

REFERENCES

1.Pietrokovski J, Massler M. Ridge remodeling after tooth extraction in rats. J Dent Res 1967;46:222–231.

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2. Albrektsson, Zarb G. The long-term efficacy of currently used dental implants: A review and proposed criteria of success. *Int J Oral Maxillofac Implant* 1986; 1:11-25.
 3. Pieri F, Corinaldesi G, Fini M, Aldini NN, Giardino R, Marchetti C. Alveolar ridge augmentation with titanium mesh and a combination of autogenous bone and anorganic bovine bone: A 2-year prospective study. *J Periodontol* 2008;79:2093–2103.
 4. Laino L, Iezzi G, Piattelli A, Lo Muzio L, Cicciu M. Vertical ridge augmentation of the atrophic posterior mandible with sandwich technique: Bone block from the chin area versus cortico cancellous bone block allograft—clinical and histological prospective randomized controlled study. *Biomed Res Int* 2014;2014:982104.
 5. Scipioni A, Bruschi GB, Calesini G. The edentulous ridge expansion technique: a five-year study. *Int J Periodontics Restorative Dent* 1994; 14: 415-459.
 6. Takahashi T, Funaki K, Shintani H, Haruoka T. Use of horizontal alveolar distraction osteogenesis for implant placement in a narrow alveolar ridge. A case report. *Int J of Oral & Maxillofac Implants* 2004;19:291-294.
 7. Vercellotti T. Piezoelectric surgery in implantology. A case report. A new piezoelectric ridge expansion technique. *Int J Periodontics Restorative Dent* 2000; 20:359-365.