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Case Report

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RIDGE AUGMENTATION USING MANDIBULAR SYMPHYSEAL BONE GRAFT FOR THE PLACEMENT OF DENTAL IMPLANT – A CASE REPORT

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ABSTRACT

Dental implants are artificial tooth root inserted into the jaw to hold a an artificial tooth or bridge for replacing missing teeth. To optimize aesthetic implant placement in the resorbed or damaged ridge, augmentation is required. We are presenting a case report to describe a method and to assess the success of bone reconstruction of atrophic anterior mandibular alveolar ridge utilizing intraoral bone grafts.

KEYWORDS: Implant, rige augmentation, bone grafts.

INTRODUCTION

It can be a trial to place implants in severely resorbed alveolar ridges when there is an inadequate height and width of alveolar bone.[2] Long-standing success for osseointegrated implants rest on the presence of suitable bone volume, quantity, and quality of the edentulous site. Alveolar ridge morphology is principally significant in carrying out aesthetic prosthetic rehabilitation and implant placement.[1]

To optimize aesthetic implant placement in the resorbed or damaged ridge, augmentation may be required.[5]

Bone augmentation methods employed to restructure these ridge imperfections depends on the horizontal and vertical degree of the imperfections.[1]

Autogenous bone grafts have been used in alveolar ridge augmentation for several years and have long been considered the gold standard for jaw reconstruction.[1] Autogenous bone is the utmost suitable grafting material owing to its osteoconductive, osteoinductive, and osteogenic properties.[2]

Earlier studies have validated the occurrence of bone remodeling and revascularization in grafted autologous bone, providing a perfect spot to support the occlusal forces of implant-supported prostheses.[2]

Autogenous bone graft locations can be extraoral or intraoral.[2] Autogenous grafts are collected from intraoral sites such as the mandibular symphysis, ramus, or maxillary tuberosity, and extraoral sites such as the iliac crests, ribs, cranium, and tibial metaphyses. Extraoral sites are employed when significant quantities of bone are required to reconstruct larger defects.[1]

Intraoral grafting offers several benefits over extraoral because surgical techniques can be carried out in the clinic and general anesthesia is optional.[2] In addition, the intraoral grafts derived from intramembranous bone have a lesser amount of resorption than the grafts derived from endochondral bones like the iliac crest, fibula, and tibia.[1] The main disadvantage of autogenous bone grafts is morbidity of the donor site.[5]

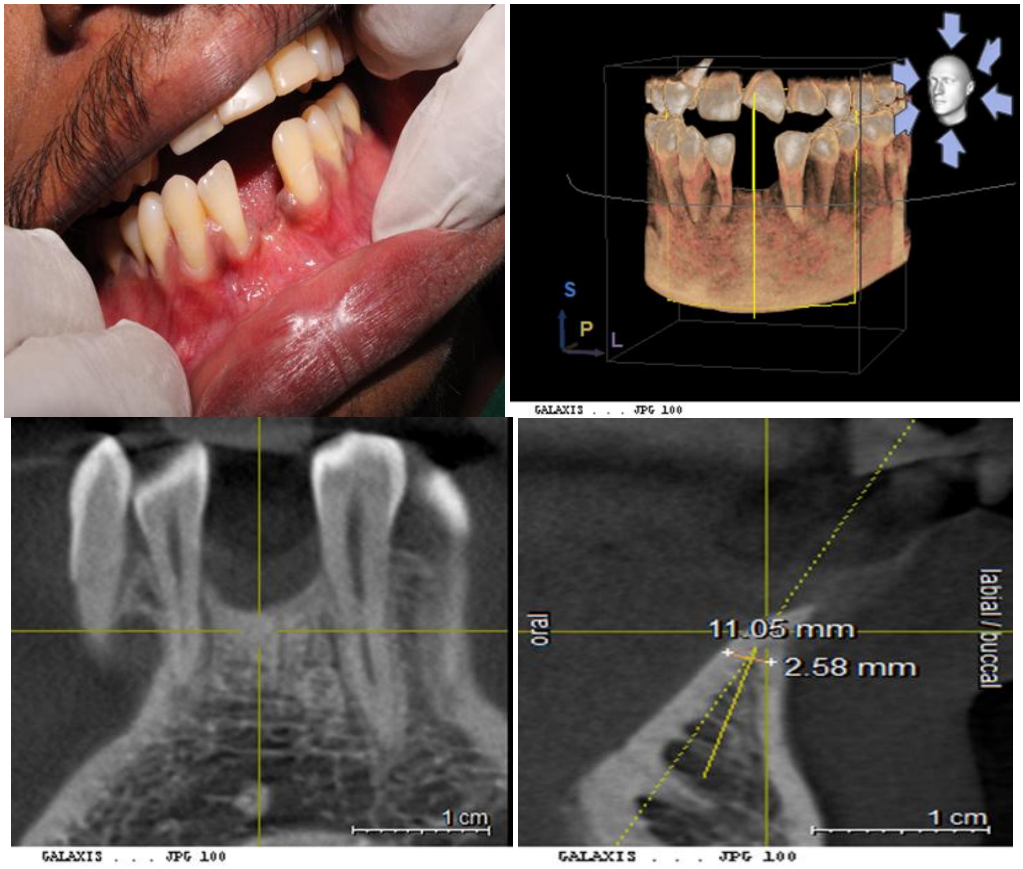
Mandibular symphysis bone grafts have been used for alveolar repair to allow implant placement with extremely favourable results.[4]

The aim of the present case report is to describe a method and to assess the success of bone reconstruction of atrophic anterior mandibular alveolar ridge utilizing intraoral bone grafts.[1]

CASE REPORT

A 27 year old male patient reported to the Department of Prosthodontics, SGDC seeking replacement for his missing tooth in mandibular anterior tooth region. Patient gave a history of missing tooth due to an accident before 13 years. Patient was in good health with non-contributory medical history.

Clinical and radiographic examination revealed severe horizontal and vertical ridge resorption of the edentulous site. Bone height and width i.r.t. 31 was 11.05 and 2.58mm respectively, which was inadequate for prosthetic reconstruction. Placement of dental implant directly to the edentulous site would lead to apically positioned abutment crown junction and would have resulted in unfavourable crown root ratio and to an unaesthetic restoration. Therefore it was decided to augment the ridge defect using mandibular symphysis graft and later on place the dental implant.

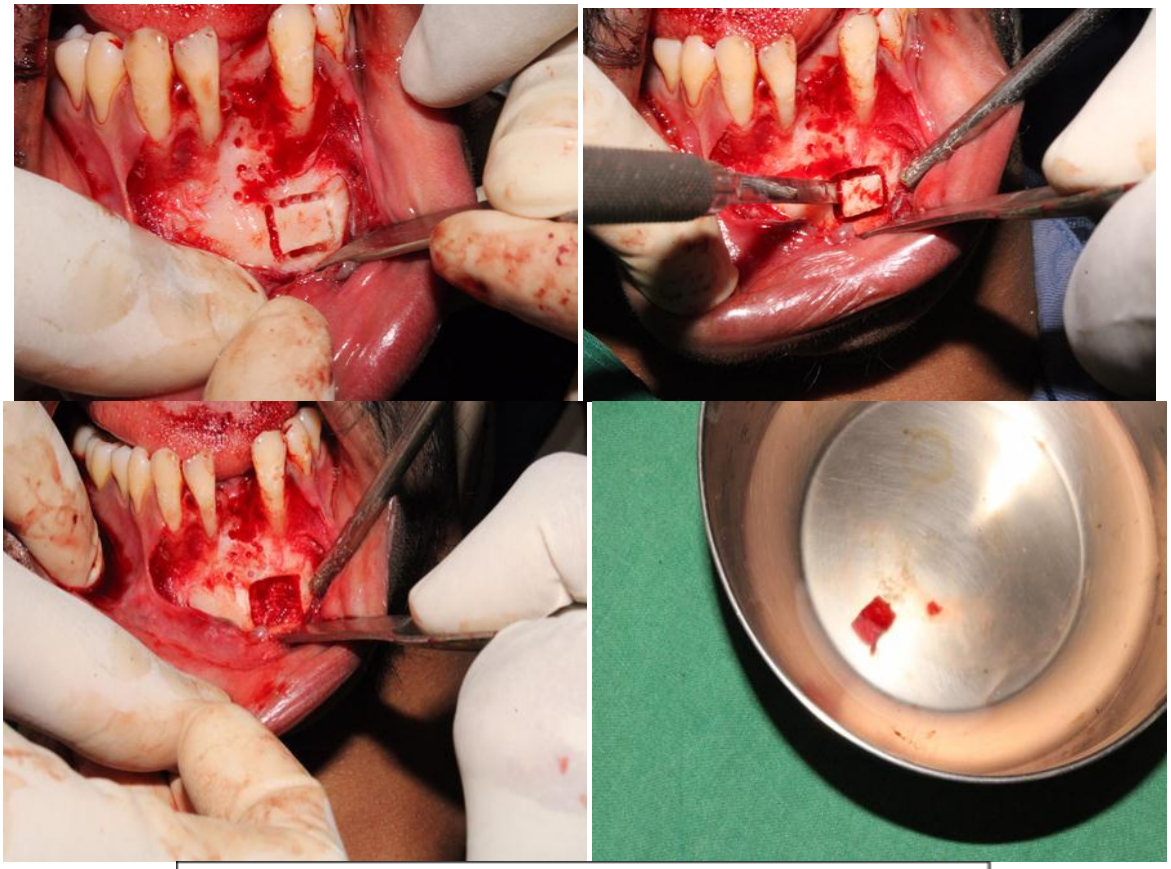


The procedure was performed under local anesthesia (lignocaine hydrochloride and adrenaline bititrate injection I.P, 1:200000). 8mg Dexona was given intramuscularly an hour before the procedure. A full thickness flap with vertical releasing incisions was reflected. Horizontal and vertical ridge deficiency was evident. After the bony defect was evaluated and measured, symphysis was exposed by a sulcular incision between the mandibular canines. A carbide bur was used to remove the bone. The osteotomy was performed atleast 5mm apical to the mandibular incisors under copious saline irrigation.

All fibrous tissue was removed from the recipient site and perforations were made into the marrow spaces using surgical burs to improve vascularization and incorporation of the graft.

Harvesting of the chin graft

The donor site selected was the mandibular symphysis region. Autogenous bone graft of size 1.5 X 1cm was harvested in the form of a small rectangular block. The block was then trimmed into appropriate shape and size and fixed on to the labial cortical plate with 1.5mm X 6mm screw in relation to 31 for ridge augmentation for the purpose of dental implant placement. PRP and osseograft were placed in donor site and around the block graft. Sutures were placed at the recipient and donor site to obtain a tension free closure of the soft tissues.



Bone is harvested from the mandibular symphysis

Trimmed graft is fixed in place to augment the anterior mandible








Amoxicillin plus Clavulanic acid 625mg twice daily for seven days, Metrogyl 400mg twice daily for seven days, Becosules once daily for ten days, Tramadol 100mg thrice daily for two days and after two days Meftalforte thrice daily for two days, Betadine mouthrinse after 48 hours thrice daily for one week were prescribed postoperatively. Patient was instructed to avoid brushing and trauma to the surgical site. Patient was recalled for suture removal after fifteen days. Postoperative follow up was advised at fifteen days, three months and five months.

Following a 4 month healing phase, the site was re-entered for implant placment and minimal resorption was found. The fixation screw was removed and the site was prepared for implant placement.

Removal of fixation screw and placement of implant

DISCUSSION

Dental implants are a safe substitute for replacing missing teeth; though, there need to be an adequate volume of bone for long-term success of implant-supported prostheses.[2] Ridge augmentation procedures are indicated in case of inadequate height and width of alveolar ridge prior to conventional fixed prosthodontics or implant therapy.[3]

Alveolar ridge irregularities are categorised according to morphology and severity. Several methods depending upon the degree of defect have been employed for bone augmentation. These methods include; grafting techniques, distraction osteogenesis, bone splitting and guided bone regeneration.[3]

Appropriate alveolar bone height can be achieved by grafting in patients with local alveolar bone defects.[6]

Bone grafting procedures for ridge augmentation utilize either autografts, allografts, xenografts and alloplasts alone or in combination.[3]

The usage of autogenous bone is well-thought-out to be the gold standard.[1] They have proven osteogenic, osteoinductive and osteoconductive potential and have no danger of rejection or adverse immunological reaction. Autogenous grafts from both extra and intraoral sites have been used in periodontal therapy yet, intraoral sites are more preferred particularly for the treatment of localized bone defects in partially edentulous jaws.[3]

In the present case report autogenous bone graft from mandibular symphysis region was harvested.

Autogenous intramembranous bone graft delivers numerous benefits, such as negligible resorption and high concentration of bone morphogenetic proteins and growth factors. The mandibular symphysis, as a contributor location for the ridge augmentation, provides a comparatively small quantity of bone, but offers easier access, little morbidity, nominal graft resorption, and the prevention of an undesirable cutaneous scar.[1]

Autografts have some limitations, such as additional surgical site, possible resorption, size discrepancy and insufficient volume of graft material.[3] In the present case, any of these possible problems were not come across. Uneventful healing was observed during the follow-up period.

CONCLUSION

Alveolar ridge augmentation by means of autogenous bone graft can efficiently increase alveolar ridge height and permit for a satisfactory level of osseointegration. This method offers significant advantages, including fewer surgical procedures and shorter treatment time.[1] Bone grafting allows implants to be engaged where there has been inadequate bone and can improve the esthetics of the final restoration.[6]

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