CASE REPORT

Intramembranous Autogenous Osseous Transplant in Reconstruction of Maxillary Ridge Atrophy: A Case Report

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ABSTRACT

Maxillary ridge atrophy involving the esthetic zone negatively affects a patient’s life. Dentoalveolar trauma is one of the common causes for maxillary anterior ridge atrophy. Autogenous block graft transplants for alveolar ridge reconstruction are considered as gold standard in the restoration of osseous volume. We here report a case of reconstruction of atrophic maxillary anterior alveolar ridge with block bone graft harvested from the chin, and subsequent prosthetic rehabilitation. A 27-year-old male presented atrophic alveolar bone in relation to 21 as a result of dentoalveolar trauma. Reconstruction was performed with autogenous block graft harvested from chin. After 3 months metal ceramic fixed partial denture was fabricated and inserted and followed up for 1 year. It can be concluded that autograft harvested from chin is a safe and effective option for alveolar ridge defects reconstruction.

CASE DESCRIPTION

A 27-year-old male patient was referred from the Department of Prosthodontics to the Department of Periodontics in Narayana Dental College and Hospital-INDIA for reconstruction of atrophic alveolar ridge in relation to missing maxillary left central incisor. Patient gives history of trauma, which resulted in dento-alveolar fracture 1 year back. Patient reported that he got the tooth extracted and the labial bony fractured fragment was also removed along with the tooth. Later root canal treatment was done in the adjacent lateral incisor. Since then the missing tooth was not restored.

During clinical intra-oral examination, Sibert’s class I ridge deficiency was observed in relation to 21 (FDI system of tooth notation) (Fig. 1). An intraoral periapical radiograph was requested (Fig. 2). Complementary exams were requested in order to evaluate the patient’s general state of health; thus, the patient was graded into surgical risk ASA I, in accordance with the American Society of Anesthesiologists (1963). Temporary acrylic fixed partial denture was fabricated before surgical intervention.

INTRODUCTION

Dentoalveolar traumas are common causes among maxillary anterior ridge atrophy. Other causes could be a result of traumatic extraction, advanced periodontal diseases and periapical cysts and tumours. These cases have always been the most challenging situations in restorative procedures, because successful replacement of tooth/teeth is dependent upon adequate volume of keratinised mucosa and bone at the site. The goal of bone reconstructions by means of grafts is to re-establish adequate bone dimension, allowing correct rehabilitation with prosthetic restoration. Autogenous block graft transplants for alveolar ridge reconstruction are considered as gold standard in the restoration of osseous volume. This is because intramembranous ossification is characterised by the formation of osseous tissue without the intermediate stage of cartilage formation and without occurrence of foreign body reaction. Autogenous bone graft may be trabecular, cortical or combination of both that can be harvested from extra or intra oral donor sites. Intraoral donor sites include the maxillary tuberosity, mandibular symphysis, angle of the mandible, ramus and exostoses.

The mandibular symphysis block graft is primarily cortical but also constitutes medullary bone. It has many advantages like short healing period, minimal resorption that could maintain osseous density, convenient surgical access, low morbidity, minimal discomfort and no cutaneous scar.
Reconstruction of the alveolar ridge in relation to 21 was planned by means of an autogenous chin block graft.

**Surgical Procedure**

After taking written consent the surgical procedure was performed in sterile surgical field. Preoperative decontamination of oral cavity with chlorhexidine 0.2% mouth rinse for 1 min and perioral skin disinfection with 5% povidone iodine solution was done. Site was anesthetised using 2% lidocaine with 1:1,00,000 epinephrine.

Newman mucoperiosteal incision was given using a scalpel blade (15s) and full thickness flap was reflected to expose the receptor site. Extensive bone resorption was observed in the vestibular-palatine direction (Fig. 3). The defect is debrided completely without any remnants of granulation tissue. Decortication was performed by means of spherical burs under constant irrigation with 0.9% physiologic solution.

Chin donor area was exposed by reflecting a mucoperiosteal flap by incising the mucosa at the depth of the anterior vestibular fornix and vertical incision. The size of the graft necessary for the reconstruction was delimited in the donor area (Fig. 4), followed by monocortical osteotomy (Fig. 5), performed with Bur 702. The monocortical block bone graft was removed with the aid of chisel and hammer. The graft was shaped (Fig. 6) and inserted in the defect (Fig. 7) and the gap around the graft was filled with demineralised bone matrix xenograft (Fig. 8). The muscle plane was sutured.
Fig. 6  Harvested bone graft.

Fig. 7  Passive accommodation of bone graft in receptor area.

Fig. 8  Gap around the bone graft was filled with demineralised bone matrix xenograft.

Fig. 9  a,b: Suturing of receptor and donor areas.

Fig. 10  One year follow-up after bonding porcelain-fused metal bridge.

CONCLUSION

It can be concluded that the autogenous bone graft harvested from the chin is a safe and effective option for alveolar ridge defects reconstruction, allowing a further placement for prosthetic restoration.

REFERENCES


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