Case Report

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Alveolar Ridge Augmentation in Anterior Maxillary Esthetic Zone Using Subepithelial Connective Tissue Graft: A Case Report

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ABSTRACT

Background: Alveolar ridge deformity arises commonly following tooth loss resulting in esthetic and functional problems mainly in the anterior maxilla region. In such individuals, ridge augmentation has been carried out as a common periodontal-prosthetic practice. Here we report a case where anterior maxillary alveolar ridge augmentation was carried out to improve prosthetic prognosis in a 36 year old male patient using subepithelial connective tissue graft.

Keywords: Alveolar ridge augmentation, Connective tissue graft, Esthetics, Fixed partial denture, Maxilla.

INTRODUCTION

The main concern while replacing tooth is restoring normal form and architecture of the soft and hard tissues of that region, especially in anterior maxillary region, where apart from restoring function, esthetics also play a major role. The incidence of residual ridge deformity subsequent to anterior tooth loss is high (about 91%).[1] These defects have insufficient volume of soft tissue and bone within the alveolar process. Alveolar ridge deformity most probably arise due to various causes like traumatic tooth extraction, traumatic accidents, severe periodontal diseases, endodontic or implant failure and developmental defects. An insufficient alveolar ridge can result in esthetic and functional deficiencies, more so in the anterior maxillary region.[2]

Alveolar ridge deformities have been categorized into 3 classes by Siebert(1983) [3, 4]

1. Class I, in which there is faciolingual loss of tissue width with normal ridge height.
2. Class II, in which there is loss of ridge height with normal ridge width.
3. Class III, in which there is loss of tissue in both dimensions.

Allen et al categorized alveolar ridge deformities based on the severity of defect as[5]

1. Mild deformity <3 mm of defect,
2. Moderate deformity 3-6 mm and
3. Severe deformity >6 mm defect.

Abrams et al found that class III defects were the most common (55.8%), followed by Class I defects (32.8%) and Class II defects (2.9%).[6]

Many grafting procedures have been used for the reconstruction of deformed edentulous ridges. Soft tissue autografts have been proved to be successful to improve residual ridges and these include subepithelial connective tissue grafts, onlay grafts and hard tissue grafts like guided bone regeneration (GBR). Subepithelial connective tissue grafts are used to augment ridge height and width, hence employed in treating mainly Class III deformities.[7, 8] Here we report a class III case where we used autogenous subepithelial connective tissue graft to augment anterior maxillary alveolar ridge in

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Fig 1: Intraoral view.

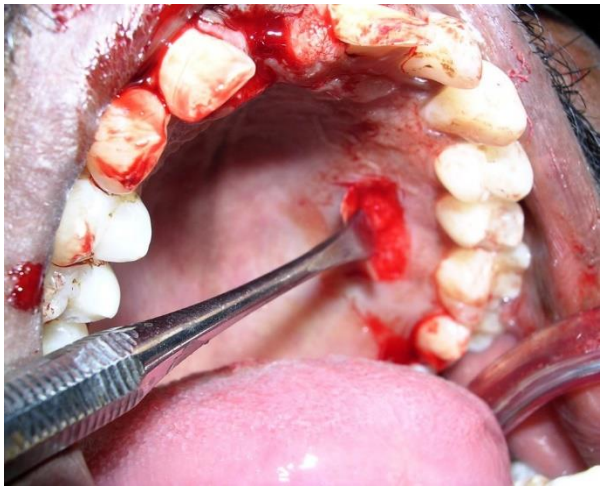

Fig 2: Subepithelial connective tissue graft from the palatal side of first premolar upto first molar.

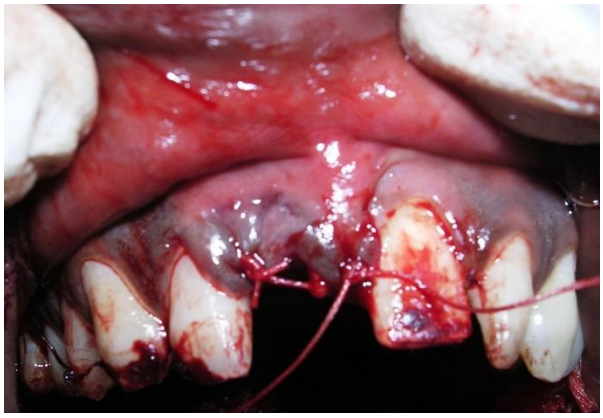

Fig 3: Placing graft at the reciepient site.

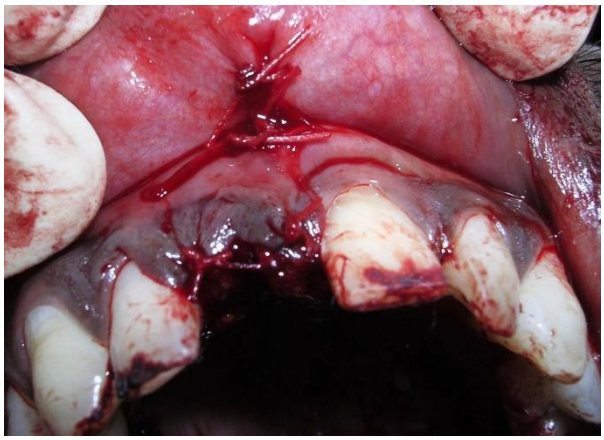

Fig 4: Graft placed and held with sutures.

Fig 5: Post treatment photograph showing improved esthetics.

a 36 year old male patient to improve prosthetic prognosis.

CASE REPORT

A 36 year old male patient came to Darshan Dental College and Hospital, Loyara, Udaipur, with a chief complaint of missing upper right front tooth since one year. He was referred to the department of periodontics and implantology, for augmentation of anterior maxillary ridge. History of the patient revealed that he met with an accident one year back and his right upper front tooth was fractured. He went to a local dental practitioner, where a radiograph was taken and the remaining fractured tooth along with root was removed under local anesthesia. Patient revealed that the procedure was very painful.

On intraoral examination, 11 was missing. The alveolar ridge at the extracted site showed class

III deformity with buccolingual and apicocoronal tissue loss (Fig 1). We explained him the replacement types and procedure. The patient chosen to have a usual fixed partial denture instead of implant due to economic reasons. Surgical ridge augmentation procedure was considered and discussed with the prosthodontist, and the decision was made to augment the ridge with a subepithelial connective tissue graft collected from the palate. The same thing was explained to the patient and after taking consent we started with the surgical procedure. We adopted the method of Langer and Calagna as surgical protocol for ridge augmentation. According to them, connective tissue graft has to be placed between the facial pedicle flap and the edentulous ridge.

Surgical procedure:

Donor Site: After infiltrating local anaesthesia, a subepithelial connective tissue graft was taken from the palatal side of first premolar up to the mesial aspect of first molar (Fig.2). Initially a horizontal incision was given with a 15 number surgical blade on the palate, apical to the free gingival margin from left first premolar up to first molar. Then two vertical releasing incisions were given at both ends of the horizontal incision, so as to reflect a split thickness flap. Then the split thickness flap was reflected away without damaging the palatine artery and was used as the donor material. Periodontal dressing was placed over the donor site and the dressing was held with the help of a pre-adjusted surgical stent. Thus obtained connective tissue was stored in a moist, sterile gauze pad till further use.

Recipient site: A 15 number surgical blade was used to remove the epithelium at the extracted site, keeping in mind to remove the least amount of connective tissue. Then the connective tissue obtained from the palate was placed over the alveolar ridge defect and compressed lightly to alter the shape of the edentulous ridge in anterior maxillary region and then was sutured to immobilize the graft in the required position (Fig 3 and 4).

After the procedure, systemic antibiotics (Amoxicillin 500 mg thrice daily) and analgesics (Ibuprofen+Paracetamol twice daily) were prescribed for 5 days. The patient was advised to use 0.2% chlorhexidine gluconate mouth rinse. For follow up, the patient was recalled after one week. At the donor site , periodontal dressing and sutures were removed and the surgical area was irrigated with saline and betadine. At the recipient site also the sutures were removed and the area was irrigated. The healing was found to be uneventful. The patient was recalled again after 2 months and we could observe a significant improvement in the contour of the alveolar ridge. Then the patient was explained about replacement procedure and a metal ceramic bridge was made. Thus a restoration with good esthetics and function was given to the patient and the patient was comfortable. We are following the patient at regular intervals and the patient is having no complications (Fig 5).

DISCUSSION

Routinely in our daily practice, we are noticing increased expectations and demands of patients mainly concerned with esthetics. In order to meet these expectations, the field of dentistry especially the speciality of periodontology is improving with newer techniques and recent advances. The development of periodontal plastic surgery is one such way to meet the expectations of the patients. In order to improve the esthetics, form and function of the restorations, periodontics has a major role along with other restorative specialities.[4, 9, 10]

While planning replacement of teeth, it is mandatory to cautiously evaluate the contour of edentulous ridge. Ideal ridge allows a natural looking esthetic restoration which facilitates maintenance of plaque free environment. Whereas, defective residual ridge may result in unesthetic open gingival surfaces (black triangle), food impaction and percolation of saliva during speech. Localized alveolar ridge defects are usually seen after traumatic extractions as was seen in our case and prosthetic replacement in such areas compromise esthetics, phonetics, oral hygiene complications as well as function. To augment the loss of ridge width and height, usually autogenous connective tissue grafts are used. Studies have shown the success of subepithelial connective tissue grafts in augmentation of ridge defects. These grafts generally have a better chance of survival with stability ranging from 7 to 12 years. The advantages

of connective tissue grafts is that they give excellent colour matching with the surrounding tissues. This might be due to good blood supply that is well received by the recipient site. The other advantage is that these grafts can be well stabilized by periosteal suturing.[1, 11-15]

Before carrying ridge augmentation procedure, a multidisciplinary treatment planning involving periodontist and prosthodontist should be carried out to attain an optimal esthetic result. Our case showed class III ridge defect and we used autogenous subepithelial connective tissue graft taken from palate and placed it over the defect. We observed an uneventful healing and improved esthetics which was acceptable to the patient. Thus subepithelial connective tissue graft can be used to treat Seibert class III ridge deformities. But still more clinical studies using large sample size with long term analysis are necessary to determine the success rate and predictability of this surgical technique.

CONCLUSION

Our case shows that, anterior maxillary ridge augmentation with autogenous subepithelial connective tissue graft harvested from the palate, in combination with a metal ceramic bridge, results in a aesthetically acceptable as well as functionally competent and effective restoration.

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