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Soft Tissue Ridge Augmentation Using "Roll Technique"– A Case Report

Medical Science

KEYWORDS : Ridge augmentation, Roll technique, Alveolar ridge defects

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ABSTRACT

The defects of the alveolar ridge can result from various causes, most common being the collapse of alveolar bone during extraction. Localized defects of alveolar crest impair prosthetic rehabilitation due to poor emergence profile of function. Several alternatives have been proposed to restore the damaged ridge by hard and soft tissue augmentation. Various soft tissue ridge augmentation techniques have been used to augment alveolar ridge with varying success. The present clinical report describes the "roll technique" as a means of soft tissue ridge augmentation to treat alveolar ridge defects.

Introduction

Localized alveolar defects are frequently found in partially edentulous patients that impair the prosthetic restoration of damaged ridge area causing aesthetic, phonetic and oral hygiene complications [1]. These defects are associated with the deficit in the volume of bone and soft tissues within the alveolar process resulting from tooth extractions, advanced periodontal disease, abscess formations, periapical pathologies, developmental disorders, external trauma and tumors [2]. Seibert (1983) classified these defects into three different categories [3]: Class 1 defect: buccolingual loss of normal height in apicocoronal dimension. Class 2 defect: apicocoronal loss of tissue with normal ridge width in buccolingual dimension. Class 3 defect: combination of buccolingual and apicocoronal loss of tissue resulting in loss of normal height and width.

Allen, et al. (1985) classified the ridges as to the depth of the deformity in relation to the adjacent alveolar level, as [4]: 1. Mild: depth less than 3 mm 2. Moderate: ranging from 3-6mm 3. Severe: more than 6 mm Various techniques have been employed to correct these tissue deformities like guided bone regeneration, bone grafts, bone substitutes, and soft tissue ridge augmentation. The later includes the epithelial connective tissue graft (Meltzer, 1979) [5], onlay grafts (S [3], subepithelial connective tissue graft and Calanga, 1980) [6], and roll pedicle graft technique (Abrams, 1980 [7 Tarnow, 1992 [8]; Barone, et al Gasparini, 2004 [10].). The roll technique, described by Abrams 1980, comprises de-epithelialization of flap. The length of the palatal pedicle flap should be compatible with the height of the buccal aspect and similar to the crest in mesiodistal direction. This pedicle is rolled under the buccal mucosa to increase the buccal dimension of the edentulous ridge for later fabrication of a fixed prosthesis. The flap is released by two vertical incisions extended beyond the mucogingival junction. This technique may be employed for correction of moderate defects, Seibert's Class 1 class 2 ridge defects. It provides the advantages of: 1. Increased vascularity to the tissue 2. Good color match with the surrounding tissues 3. Involvement of a single surgical site 4.Patient comfort. Over the years, new techniques are constantly being developed to treat alveolar ridge defects. The choice of technique should be based on predictability of the outcome and may vary from case to case. Taking into account the advantages of roll flap procedure, this article describes the roll technique to treat the alveolar ridge defects.

CASE REPORT

A 52 year old male patient referred to the Department of Periodontology and Oral Implantology, Bharati Vidhyapeeth Deemed Dental College and Hospital pune came with Seibert class I deformity in the edentulous ridge following traumatic extraction of maxillary lateral incisor due to which maxillary bone was lost several years back. Prior to fabrication of definitive prosthesis, it was decided to augment the defect by 'roll technique

Prior to surgery, patient was instructed to rinse with 0.2% chlorhexidine gluconate solution for 30 seconds. The area was anesthetized by nerve anesthesia using local anesthetic solution, 2% lignocaine with 1:80,000 epinephrine. Preoperatively the defect was measured both mesiodistally and apicoronally (Photo-1,2).The technique involves dissecting a epithelialized palatal flap and creating a pedicle toward the vestibular aspect by full thickness flap towards the palatal mucosa (Photo - 3) incisions were made from the crest of the ridge towards the palate. The length of the incision depends on the length of the tissue desired. The icisions were placed 2 mm away from the sulci of adjacent teeth to preserve the papilla. Once the flap was reflected to the crest of the ridge, a pouch was created between the buccal mucosa and the alveolar mucosa. The tissue was then rolled in a pouch (Photo-4) and secured with interrupted braided silk sutures. (Photo 5). Passive touching partial prosthesis was given to the patient after surgery for the desired contour of gingiva (Photo 6). Pre operatively patient was prescribed antibiotics (amoxicillin 500 mg t.d.s. for 5 days), analgesic (ibuprofen b.d. for three days). Patient was advised to rinse with 0.2% chlorhexidine gluconate mouth wash twice daily for two weeks. Healing was uneventful and the sutures were removed after ten days. Patient was followed at 14 days and after one month post operatively for the prosthetic rehabilitation(Photo 7).

Discussion

The ridge defects create a functional and aesthetic challenge to maintain normal anatomy of the oral tissues. The standard restorative treatment procedures cannot be carried out because tooth to gingival relationship is not maintained resulting in unattractive prosthesis.

Localised alveolar ridge defects may be corrected by two different approaches: ridge augmentationtation and soft tissue augmentation procedures. However, when planning fixed partial denture as definitive prosthesis, soft tissue augmentation procedures alone provides a satisfactory aesthetic outcome in majority of cases [12, 13]. Various surgi-

cal approaches have been proposed to augment ridge defect using soft tissue and have been widely accepted 15]. The roll flap procedure, originally proposed by Abrams [7] in 1980, is widely accepted technique. The free gingival graft and sub epithelial connective tissue although established procedure, have certain disadvantages. In free gingival graft and sub epithelial connective tissue graft vascularization is not maintained, predisposes it to necrosis and shrinkage of graft. Moreover, there are chances of haemorrhage at the donor site and postoperative pain and discomfort related to second surgical site. In addition, free gingival graft also poses problems of

PHOTO 1

PHOTO2

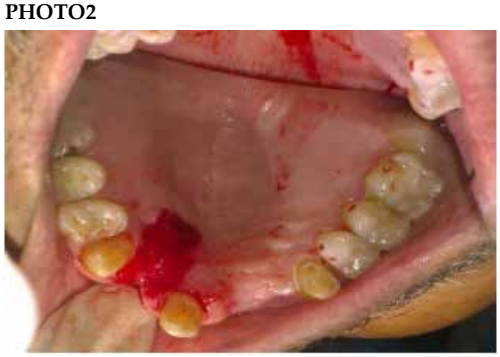

PHOTO 3

PHOTO 4

PHOTO 5

PHOTO 6

PHOTO 7

colour match and therefore cannot be used in aesthetic areas [10]. This case report explains the treatment of a Seibert class 1 alveolar ridge defect involving two teeth with satisfactory result. Advantage is a good colour match of the surrounding tissues involving a single surgical site; however, the disadvantage is the to treat larger defects because of the lack of donor tissue availability and postoperative discomfort due to healing by secondary intention.

Conclusion

The replacement of missing teeth is only a part of the treat-

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ment. Another important aspect therapy consists of replacing the lost portion of the alveolar process and the associated soft tissue. The reestablishment of a normal alveolar contour is a critical step in aesthetic success. The procedure described in this case report showed satisfactory results in an aesthetic region with a single surgical procedure of roll flap that overcomes the limitations of the other soft tissue graft techniques along with better healing and stability post-operatively.

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