

## Enhancing Aesthetics in Anterior Fixed Partial Denture by Soft Tissue Ridge Augmentation: A Clinical Report

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### ABSTRACT

The anterior maxillary jaw is called as the aesthetic zone because of its high visibility and influence on facial appearance. Residual ridge defect following the loss of an anterior natural tooth presents a challenge for an aesthetic restoration. Ridge augmentation is an effective way to develop high well rounded soft tissue architecture to facilitate an aesthetic restoration. This article demonstrates soft tissue augmentation of a Seibert's class III defect by subepithelial connective tissue graft harvested from the palate, which was followed by fabrication of four unit porcelain fused to metal restoration.

**Key words:** Ridge augmentation, Subepithelial connective tissue graft, Metal ceramic restoration.

### INTRODUCTION

Before a fixed partial denture is undertaken, the edentulous ridge's contour and topography should be examined carefully<sup>1</sup>. Excessive alveolar bone loss sometimes occurs in the anterior region as a consequence of traumatic tooth extraction, external trauma, advanced periodontal disease and so forth. This excessive bone loss may create aesthetic problems and complicate the prosthetic

reconstruction. If a fixed partial denture is fabricated in a resorbed ridge condition, the resultant pontic will be long and oversized so as to accommodate a large irregular edentulous area. It will be unaesthetic and will retain food and plaque, which will further lead to inflammation and periodontal problem. Loss of alveolar ridge contour may also lead to unaesthetic open gingival embrasures (black triangles) and percolation of saliva during speech<sup>2</sup>.

Ridge deformity has been grouped into three categories by Seibert (1983)<sup>3</sup>. Class I : Loss of facio-lingual ridge width with normal apico-coronal ridge height. Class II : Loss of apico-coronal ridge height with normal facio-lingual ridge width. Class III : Loss of both apico-coronal ridge height and facio-lingual ridge width.

The type and amount of destruction indicates the necessity for reshaping the ridge

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surgically. Developments in surgical techniques have made it simpler to change the configuration of a ridge to create a more aesthetic and more easily cleansable shape. Present article demonstrates a case where ridge augmentation was carried out using subepithelial connective tissue graft (SECTG) which was followed by fabrication of a four unit metal ceramic restoration.

### Case report

A 22 year male patient reported to the Department of Prosthodontics, Govt. Dental College and Hospital, Mumbai, with the chief complaint of missing upper front teeth. His medical history did not reveal any systemic disease. The dental history revealed that his left maxillary central and lateral incisor teeth were extracted following a road traffic accident 7 months back. Clinical evaluation revealed missing 21, 22. The alveolar ridge defect was classified as Seibert class III in the edentulous region (Figure 1). After thorough evaluation of the history, clinical condition and radiological evaluation, surgical modification of the defect area by SECTG harvested from the palate, followed by fabrication of four unit (11 to 23) conventional porcelain fused to metal restoration was planned.

**Figure 1. Intraoral preoperative view showing Seibert's class III Defect**



### Treatment

Oral prophylaxis was carried out. The abutment teeth 11 and 23 were prepared before surgical procedure. Four unit (11 to 23) provisional restoration was fabricated to evaluate the amount of graft required for augmentation.

### Surgical phase

Full thickness crestal incision was made in the keratinized mucosa of an edentulous ridge, under local anaesthesia, extending from mesial of 11 to mesial of 23 (Figure 2). The amount of graft required for augmentation was marked on the palate and appropriate incision made (Figure 3). The SECTG was harvested from lateral half of palate, from the premolar region by Trap Door Technique. The SECTG and the overlying flap were sutured in place with 4-0 vicryl suture. The provisional restoration was cemented in place in order to support the healing tissue with desired contour. The patient was recalled for suture removal after 10 days.

**Figure 2. Crestal incision with flap reflected**



**Figure 3. Donor site**



### Restorative phase

At approximately two months following surgery, the treatment site was found to be of adequate

height and width, healthy and stable. Preparation of the abutment teeth 11 and 23 was modified and subgingival finish line was prepared to provide an emergence profile (Figure 4). Gingival retraction was done and elastomeric impression was made with addition silicone elastomeric impression material (Figure 5). The impression was poured in type IV die stone. A coping for four unit porcelain fused to metal bridge was fabricated in the laboratory with a modified ridge lap pontic design (21, 22). Coping trial was done to check marginal integrity (Figure 6). Bisque trial was done to perform occlusal adjustment (Figure 7). After ceramic glazing, the prosthesis was cemented using glass ionomer cement (Figure 8). The patient was recalled 1<sup>st</sup> after two weeks and then after 6 months to evaluate the surgical site. There was no relapse of the augmented area. Esthetic and function of the restoration was found to be satisfactory (Figure 9).

**Figure 4. 2 months after surgery**



**Figure 5. Impression of prepared abutment**



**Figure 6. Coping trial**



**Figure 7. Bisque trial**



**Figure 8. Porcelain fused to metal restoration with 11 21 22 23**



**Figure 9. Extraoral pre-operative and post-operative view**



## DISCUSSION

In today's world of esthetics, everyone wants to look good and this especially matters when the anterior teeth need to be replaced. In the present case, Seibert's class III defect is corrected by using a SECTG. Without the surgery, the permanent replacement would have been long & bulky, which would have retained food and plaque. Also, this space would have created unsightly dark triangles.

Various ridge augmentation techniques have been documented in the management of ridge defects, but in the present case, soft tissue ridge augmentation using SECTG was followed. Autograft from the palate has been used for many years for soft tissue ridge augmentation and is still considered the gold standard. SECTG from the palate has many advantages such as, close proximity of donor and recipient site, convenient surgical access, color match with recipient site & decreased donor site morbidity and cost. Wilcko et al<sup>4</sup> reported a technique using SECTG under full thickness envelop flap for root coverage. We report here, an adaptation of this technique for ridge augmentation. The possible advantage of full thickness flap at recipient site is less chance of flap perforation due to greater flap thickness.

However, patient's inability or unwillingness to undergo surgery, will force the consideration of an alternative form of treatment such as, addition of pink porcelain in the embrasure area to hide black triangles and Andrews bridge system<sup>1</sup>.

## CONCLUSION

This clinical report describes a method of preprosthetic preparation of an edentulous ridge to create natural appearing soft tissue architecture, which enabled fabrication of a restoration that fulfilled esthetic as well functional requirements.

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