

CASE REPORT



## Surgical correction of alveolar ridge defect with subepithelial connective tissue graft: A Case report

Renu Gupta<sup>1</sup>, Nitai Debnath<sup>2</sup>, Sumita Banerjee<sup>3</sup>, Vikas Kumar<sup>4</sup>

<sup>1</sup>Department of Periodontology, Consultant Periodontics, Imphal, Manipur, India, <sup>2</sup>Department of Prosthodontics, Regional Institute of Medical Sciences, Imphal, Manipur, India, <sup>3</sup>Department of Oral Pathology and Microbiology, Regional Institute of Medical Sciences, Imphal, <sup>4</sup>Periodontology, Hazaribag College of Dental Sciences, Hazaribag, Jharkhand

### Keywords:

Black triangle, Emergence profile, pontic, porcelain-fused metal bridge

### Correspondence:

Dr. Renu Gupta, Department of Periodontology, Consultant Periodontics Lamphelpat, Imphal West – 795004, Manipur, India. E-mail: rrenu2003@gmail.com

Received: 11 March 2019;

Accepted: 18 April 2019

doi: 10.15713/ins.jcri.268

### Abstract

Localized alveolar ridge defect in the partially edentulous maxillary anterior region creates an esthetic challenge for the restorative dentist. The formation of black triangle and residual space at the pontic ridge interface makes the prosthesis esthetically unpleasant and biologically unhealthy. Hence, the surgical correction of localized ridge defect has paramount importance before prosthetic replacement.

### Introduction

Soft tissue esthetic is one of the important components of beautiful smile. In partially edentulous patients, localized alveolar ridge defects are frequently present which lead to esthetic, phonetic, and oral hygiene difficulties. Traumatic tooth extractions, advanced periodontal disease, periapical pathologies, developmental defects, external trauma, and tumors lead to deficit in the volume of bone and soft tissues within the alveolar process and form localized alveolar ridge defects.

Esthetics associated with the health of surrounding soft tissues in fixed prosthodontics are arduous, especially, when treating the maxillary anterior region. Any unfavorable relationship in residual alveolar ridge, pontic, and gingival soft tissue compromises the result. The shape of a pontic should be designed to fulfill the functional demands, esthetic, and proper access to maintain the health of the adjacent tissue and hygiene. For this reason, tissue surface of the pontics should be convex in the esthetic zone.

According to Siebert,<sup>[1]</sup> alveolar ridge deformities are classified as follows (based on the horizontal and vertical defect):

Class I: Loss of faciolingual ridge width with normal apicocoronal ridge height.

Class II: Loss of apicocoronal ridge height with normal faciolingual ridge width.

Class III: Loss of both apicocoronal ridge height and faciolingual ridge width.

According to Abrams *et al.*, the prevalence of anterior ridge deformities in the mandibular and maxillary arches of partially edentulous patients is 91%. Class III defects were the most prevalent (55.8%), followed by Class I defects (32.8%) and Class II defects (2.9%).<sup>[2]</sup>

For improvement of ridge contour, surgical intervention is the valuable management strategy.<sup>[3]</sup>

Various techniques have been proposed to correct these tissue deformities such as guided bone regeneration, bone grafts, and bone substitutes below a flap or in a tunnel made in the damaged ridge area and procedures for ridge augmentation with soft tissues.<sup>[4]</sup> Within the latter category, three main techniques have been employed:

1. Full-thickness free gingival graft using the palate as a donor area (Seibert).<sup>[1]</sup>
2. Free subepithelial connective tissue graft implanted in a tunnel or pouch prepared in the mucosa that lines the defect, as proposed by Langer and Calagna<sup>[5]</sup> and modified by Garber and Rosenberg.<sup>[6]</sup>
3. “Roll” technique described by Abrans.<sup>[7]</sup>

This clinical report describes the soft tissue ridge augmentation to correct Class III alveolar ridge defect along

with fixed prosthesis to achieve maximum esthetics, comfort, and function.

### Case Report

A female patient aged 24 years reported to the outpatient department with the chief complaint of missing upper right central incisor. The dental history revealed a road traffic accident and following exfoliation of 11.

A thorough clinical and radiographic examination revealed a Siebert's Class III defect in the anterior maxillary edentulous region. She presented with a moderate horizontal ridge defect with a minimum loss of ridge height. In the present case, the loss of faciopalatal ridge width was more pronounced with a minimum loss of ridge height [Figure 1]. She desired replacement of teeth with a fixed prosthesis.

A fixed partial denture with a long pontic would be required; however, this type of restoration would not esthetically acceptable. Restorative options were discussed and explained to the patient. Soft tissue augmentation of the defect area in the maxillary alveolar ridge was planned to improve the esthetics to be carried out in the Department of Periodontics.

Subepithelial connective tissue autogenous graft was planned for the correction of ridge defect followed by porcelain-fused metal bridge.

### Surgical procedure

After anesthetizing the surgical site, the horizontal incision was made on the palatal side of the defect by 15 no blade. Two vertical incisions were started from either side of the defect. Vertical incision extended up to the alveolar ridge. Partial thickness flap was elevated till the labial extent of the defect [Figure 2]. From labial alveolar ridge to mucobuccal fold, full-thickness flap was reflected to create pouch for connective tissue graft. Subepithelial connective tissue graft was harvested from left palatal surface and sutured at the donor site. Flap was repositioned, and the interrupted suture was given. Periodontal dressing Coe-Pak was given. The patient was advised to follow routine post-operative instructions. Systemic antibiotics and analgesics were prescribed (amoxicillin 500 mg, thrice daily for 3 days, and ibuprofen 400 mg, thrice daily for 3 days). The sutures were removed 7 days after surgery. At the post-operative recall, healing was satisfactory. The patient was then recalled after 3 months [Figure 3]. The surgical site demonstrated a well-contoured ridge for acceptable placement of fixed prosthesis [Figure 4].

### Discussion

For improvement of esthetics in alveolar ridge deformity, there are various prosthetic and surgical options available. Gingival (pink) ceramic or long pontic design can be used in the cervical area to improve the esthetics in such cases.<sup>[8]</sup>



Figure 1: Pre-operative facial view

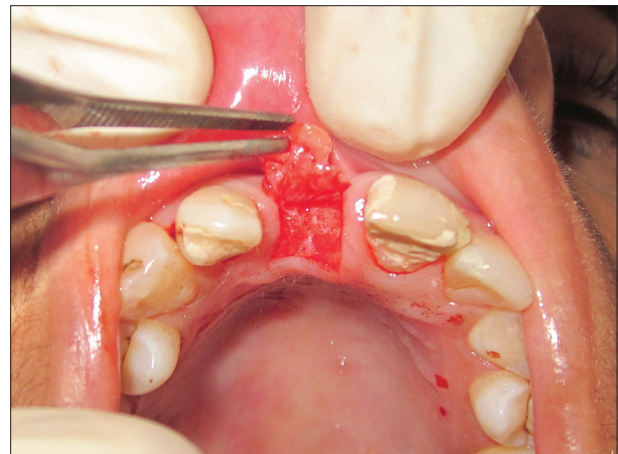


Figure 2: Recipient site preparation



Figure 3: Post-operative facial view

Surgical procedures using soft tissue autogenous graft, various alloplastic materials, autogenous bone graft, and guided tissue regeneration can correct such type of ridge defects.<sup>[9,10]</sup>

In the present case, the loss of ridge width was more evident. Hence, an autogenous subepithelial connective tissue graft was used to augment the ridge defect. Autogenous subepithelial connective



**Figure 4:** Post-operative view with FPD

tissue graft from the palate has been used for many years for soft tissue ridge augmentation and is still considered the gold standard. The advantage of subepithelial connective tissue graft is a close approximation of donor and recipient site, convenient surgical access, color match with recipient site, and decreased donor site morbidity and cost. Examination of the patient on 3 months' recall visit showed the clinical success of the procedure performed, restoring esthetics, function, and health of the patient.

Correction of localized alveolar ridge defects through the pouch technique is a valuable method for fixed prosthodontic treatment. It improves the mucogingival esthetics of the pontic region, improves phonetics, and reduces food lodgement in the pontic region.

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

## References

1. Seibert JS. Reconstruction of deformed, partially edentulous ridges, using full thickness onlay grafts. Part I. Technique and wound healing. *Compend Contin Educ Dent* 1983;4:437-53.
2. Abrams H, Kopczyk RA, Kaplan AL. Incidence of anterior ridge deformities in partially edentulous patients. *J Prosthet Dent* 1987;57:191-4.
3. Jacques LB, Coelho AB, Hollweg H, Conti PC. Tissue sculpturing: An alternative method for improving esthetics of anterior fixed prosthodontics. *J Prosthet Dent* 1999;81:630-3.
4. Gasparini DO. Double-fold connective tissue pedicle graft: A novel approach for ridge augmentation. *Int J Periodontics Restorative Dent* 2004;24:280-7.
5. Langer B, Calagna L. The subepithelial connective tissue graft. *J Prosthet Dent* 1980;44:363-7.
6. Garber DA, Rosenberg ES. The edentulous ridge in fixed prosthodontics. *Compend Contin Educ Dent* 1981;2:212-23.
7. Abrams L. Augmentation of the deformed residual edentulous ridge for fixed prosthesis. *Compend Contin Educ Gen Dent* 1980;1:205-13.
8. Mishra N, Singh BP, Rao J, Rastogi P. Improving prosthetic prognosis by connective tissue ridge augmentation of alveolar ridge. *Indian J Dent Res* 2010;21:129-31.
9. Rosenstiel SF, Land MF, Fujimoto J. *Contemporary Fixed Prosthodontics*. 3<sup>rd</sup> ed. Missouri: Mosby; 2001. p. 513-5.
10. Taskanak B, Ozkan Y. An alveolar bone augmentation technique to improve esthetics in anterior ceramic FPDs: A clinical report. *J Prosthodont* 2006;15:32-6.

**How to cite this article:** Gupta R, Debnath N, Banerjee S, Kumar V. Surgical correction of alveolar ridge defect with subepithelial connective tissue graft: A Case report. *J Adv Clin Res Insights* 2019;6:91-93.

This work is licensed under a Creative Commons Attribution 4.0 International License. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in the credit line; if the material is not included under the Creative Commons license, users will need to obtain permission from the license holder to reproduce the material. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> © Gupta R, Debnath N, Banerjee S, Kumar V. 2019