



## CASE REPORT

# Efficiently Plumping the Deficient! Pontic Site Development

<sup>1</sup>Aditi Ashok Rathod, <sup>2</sup>Ashvini Mukul Padhye, <sup>3</sup>Sabita Ram, <sup>4</sup>Saili Chandavarkar

## ABSTRACT

Replacing a missing tooth in a maxillary anterior esthetic zone displaying a Seibert's class III ridge defect is a big challenge in the field of perioesthetics. In order to achieve maximum esthetics, form and function, an ideal pontic should have a natural emergence profile and support the labial soft tissue as well as the adjacent papillae. This is of paramount importance, especially if the patient has a high smile line. Augmentation protocols differ based on the treatment plan for implants or fixed prosthesis. The most popular techniques for soft tissue ridge augmentation for Seibert's Class III ridge defects include the roll technique, the wedge technique and the pouch technique among others. This article presents a case of an 18-year-old female patient with a challenging Seibert's Class III ridge defect treated for pontic site development using a combination of the pouch and the roll technique followed by a fixed prosthesis with ovate pontics.

**Keywords:** Pontic site development, Connective tissue graft, Pouch technique, Seibert's class III ridge defect.

**How to cite this article:** Rathod AA, Padhye AM, Ram S, Chandavarkar S. Efficiently Plumping the Deficient! Pontic Site Development. *J Contemp Dent* 2014;4(3):173-177.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Esthetics of the restorations is impaired when ridge defects are found in the anterior maxillary esthetic zone. These defects could result from trauma, improper tooth extraction, advance periodontal diseases or may be congenital in nature. Seibert in 1983 classified these ridge defects as, class I: Buccolingual loss of tissue, class II: apicocoronal loss of tissue and class III: combination of buccolingual and apicocoronal loss of tissue.<sup>1</sup> Allen in 1985 modified Seibert's classification with a quantification of the amount of tissue lost, where, type A-apicocoronal loss of ridge, type B-buccolingual loss of ridge contour

and type C-combined buccolingual and apicocoronal loss of the ridge. The ridge is further described by assessing the depth of the defect: Mild less than 3 mm; Moderate 3 to 6 mm; severe is greater than 6 mm.<sup>2</sup>

The pontic designs used earlier in the anterior region were the ridge lap and modified ridge lap. They gave the impression that they rest on the top of the ridge rather than emerge from within the alveolar process. They also lack interdental papillae due to which the black triangles appear in the embrasure area between the abutments and the pontics, leading to an unaesthetic restoration and an unsatisfied patient. To get a good emergence profile and help in building up the interdental papilla, the ovate pontic is the choice of pontic in the anterior esthetic zone. In order to achieve maximum esthetics, an ideal pontic should appear to emerge from the gingiva like a natural tooth. But when there is a hard and soft tissue defect, it may not be possible unless the tissue is built and contoured around the emerging pontic.<sup>3</sup>

Ridge defects can be overcome either restoratively or surgically. Restorations could include elongated pontics with gingival ceramics. However, these may not be esthetically acceptable especially in a patient with a high smile line. Therefore surgical ridge augmentation becomes the treatment of choice. This can be done using both soft and hard tissue procedures according to the morphology of the defect to complement the bridge or implant prosthesis. The various soft tissue procedures are, the pouch procedure including the roll flap technique, interpositional (inlay) grafts, the onlay graft procedure and the combination onlay-interpositional graft procedure.<sup>4-10</sup>

In the following case report, an ovate pontic site development was done using a combination of pouch technique using subepithelial connective tissue graft and a palatal roll flap technique in order to prepare the site to receive a fixed partial denture with an ovate pontic design to achieve maximum esthetics.

## CASE REPORT

An 18-year-old female patient was referred to the department of Periodontics for an opinion with respect to 11 and 23 (Figs 1 to 3) as they presented with grade I mobility. The history revealed that the patient had suffered trauma to the facial region 1 month back resulting

<sup>1,4</sup>Postgraduate Student, <sup>2,3</sup>Professor and Head

<sup>1,2</sup>Department of Periodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India

<sup>3,4</sup>Department of Prosthodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India

**Corresponding Author:** Aditi Ashok Rathod, Postgraduate Student, Department of Periodontics, MGM Dental College and Hospital, Navi Mumbai, Maharashtra, India, Phone: 02227436604, e-mail: aditirathod88@gmail.com

in avulsion of 21, 22. Scaling and root planing was carried out and the patient was recalled after a period of 2 weeks. On re-evaluation a reduction in the mobility with 11 and 23 was observed.

Since, the patient was young, she desired a fixed restoration for the missing teeth. Study models, bone mapping and radiography revealed a knife edge ridge and a Seibert's class III ridge defect in the 21 and 22 regions. A Seibert's class III defect can be augmented using a block graft technique followed by implant placements. This would require a waiting period of 5 to 6 months. Since, the patient wanted early replacement of teeth and was reluctant to undergo through a block graft harvesting procedure it was decided to go for a fixed partial denture with an ovate pontic design. To get an ideal emergence profile, a subepithelial connective tissue graft with pouch and tunnel technique was planned on the buccal aspect of the defect. Blood investigations were done to rule out any systemic medical condition. As the pulp chambers were large, intentional root canal treatment was carried out with 11 and 23 to prevent sensitivity. A wax up for the fixed partial denture was done on the study cast to get proper contour of the

restoration. A putty index was made for the fabrication of provisional fixed partial denture which would be placed immediately post grafting for the development of the pontic sites. A Hawley's device was fabricated to protect the donor site during the postoperative recovery phase.

## SURGICAL PROCEDURE

Patient was given a presurgical rinse using 0.2% chlorhexidine. After analgesia was achieved using 2% lignocaine with 1:200,000 adrenaline, a vertical incision was made at the mesiobuccal line angle of the maxillary left canine (23) using a #15 blade and a pouch was prepared by partial thickness dissection extending horizontally till the mesiobuccal line angle of the maxillary right central incisor.<sup>11</sup> Once the defect dimensions were gauged using a UNC #15 probe, a subepithelial connective tissue graft was harvested from the palate in the region between the canine (23) and first molar (24) using the trap door technique. The graft was immediately tucked into to the pouch prepared at the recipient site and secured in place using 5-0 (polyglactin 910) synthetic absorbable



Fig. 1: Preoperative buccal view



Fig. 2: Occlusal view



Fig. 3: Left lateral view



Fig. 4: Papilla sparing vertical incision given on mesial aspect of 23

sutures to stabilize the graft during healing. Since, the amount of graft procured from the palate was inadequate due to lack of thickness of palatal tissue, an additional palatal roll technique was performed a connective tissue graft was harvested from the adjacent palatal mucosa and rolled into the pouch prepared earlier. The graft was sutured using 5-0 (polyglactin 910) synthetic absorbable sutures using interrupted and pressure sutures. The partial thickness palatal flap was sutured back to the donor site using interrupted black silk sutures and the patient was given a Hawley's device to for 7 days to protect the donor site. The provisional fixed partial denture with the ovate pontic design was placed in order to develop the pontic site during the healing phase (Figs 4 to 11).

The patient was given a prescription for analgesics (diclofenac sodium 50 mg, paracetamol 500 mg, serratiopeptidase 15 mg) and antibiotics (amoxicillin 500 mg) to be taken thrice daily for 5 days. She was advised to follow scrupulously all the normal oral postoperative hygiene instructions. She was instructed not to brush or floss the surgical site for 2 weeks and rinse the oral cavity with 0.2% chlorhexidine mouth rinse twice daily for at

least 2 weeks. Suture removal at the donor site was done after 7 days and the healing was uneventful. Healing of the graft and the donor site was observed after 2 weeks followed by intervals of 1, 3 and 6 months.

Postoperative evaluations after 6 months revealed well developed papillae between 21 and 22 and a significant increase in the buccolingual width and complete epithelialization of the donor site (Figs 12 and 13). The patient was referred for fabrication of the final prosthesis using porcelain fused to metal crowns. There was a good emergence profile, no black triangles and the patient was pleased with the esthetics achieved (Fig. 14).

## DISCUSSION

Ridge defects pose a restorative challenge especially in the anterior esthetic zone. In order to achieve maximum esthetics, an ideal pontic should appear to emerge from the gingiva and support the labial soft tissue as well as the adjacent papillae. This is of paramount importance, especially if the patient has a high smile line. Due to lack of palatal tissue procured after the subepithelial connective tissue harvesting technique, an Abrams roll technique was performed to increase the buccal bulk



Fig. 5: Pouch being created using #15 blade



Fig. 6: Vertical calibrations for obtaining the graft



Fig. 7: Horizontal calibration for obtaining the graft



Fig. 8: Subepithelial connective tissue graft obtained from the palate

of the defect.<sup>4</sup> A provisional restoration was given in order to develop and shape the pontic site for emergence profile and interdental papilla. The location and shape of the proximal contact areas in provisional prosthesis determines where the papillae are molded on the healing ridge. The developed papillae along with the buccolingual width of soft tissue results in excellent emergence profile thus eliminating the appearance of black triangle between the pontics.<sup>3</sup>

## CONCLUSION

In this case report, a combination of the pouch technique and the palatal roll technique were used to create a satisfactory result in the anterior esthetic zone. The resulting soft tissues closely mimicked normal anatomical gingival contours and form a concave contour to receive a convex pontic. However, more clinical studies with long term follow-up evaluation are needed to determine the predictability of this technique.



Fig. 9: Graft transferred to the recipient site



Fig. 10: Palatal roll technique performed



Fig. 11: Suturing done using absorbable sutures



Fig. 12: Postoperative healing after 6 months



Fig. 13 : Postoperative healing after 6 months



Fig 14: 6 months postoperative view with final prosthesis

**REFERENCES**

1. Seibert JS. Reconstruction of deformed, partially edentulous ridges, using full thickness onlay grafts. Part II. Prosthetic/periodontal interrelationships. *Compend Contin Educ Dent* 1983 Nov-Dec;4(6):549-562.
2. Allen EP, Gainza CS, Farthing GG, Newbold DA. Improved technique for localized ridge augmentation. A report of 21 cases. *J Periodontol* 1985;56(4):195-199.
3. Liu CL. Use of a modified ovate pontic in areas of ridge defects: a report of two cases. *J Esthet Restor Dent* 2004;16(5):273-281.
4. Abrams L. Augmentation of the deformed residual edentulous ridge for fixed prosthesis. *Compend Contin Educ Gen Dent* 1980;1(3):205-213.
5. Scharf DR, Tarnow DP. Modified roll technique for localized alveolar ridge augmentation. *Int J Periodontics Restorative Dent* 1992;12(5):415-425.
6. Langer B, Calanga L. The subepithelial connective tissue graft. *J Prosthet Dent* 1980;44(4):363-367.
7. 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(5):437-453.
8. Seibert JS. Treatment of moderate localized alveolar ridge defects: preventive and reconstructive concepts in therapy. *Dent Clin North Am* 1993 Apr;37(2):265-280.
9. Seibert JS, Louis JV. Soft tissue ridge augmentation utilizing a combination onlay interpositional graft procedure: a case report. *Int J Periodontics Restorative Dent* 1996;16(4):310-321.
10. Garber DA, Rosenberg ES. The edentulous ridge in fixed prosthodontics. *Compend Contin Educ Dent* 1981 Jul-Aug;2(4):212-223.