

Enhancing Anterior Esthetics with the Abram's Roll Technique: A Clinical Case Report

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ABSTRACT

The maxillary anterior region presents challenges in prosthetic rehabilitation due to its high aesthetic demand and the crucial function of the soft tissues. Among various soft tissue augmentation procedures, Abrams's roll technique has been widely used in the maxillary anterior region where aesthetics is a prime concern. This case report entails the prosthetic rehabilitation of missing maxillary right and left central incisors with conventional porcelain fused to metal fixed partial denture. The esthetic enhancement was analyzed with digital smile design, and facilitated by the ovate pontic site development with the help of Abram's roll technique which was also used for the correction of Seibert's Class I ridge defect. The soft tissue augmentation procedure can be used as a valuable and predictable aid for enhancing the esthetic outcome in conventional fixed partial denture in maxillary anterior teeth region.

Keywords: Abram's roll technique; Ovate pontic; Siebert Class I

INTRODUCTION

Prolonged edentulism frequently results in a localized alveolar ridge defect. These abnormalities can be brought on by severe periodontitis, periapical diseases, and extraction-related decrease in the amount of soft tissue and bone. It is difficult to replace a lost anterior maxillary tooth with a ridge defect due to high aesthetic demand in this area.¹ Obtaining the emergence profile of a pontic in the anterior esthetic zone is a potential challenge. Harmony between the prosthesis and soft tissue is crucial for the three-dimensional emergence profile of

the pontic, which determines the aesthetic result of a fixed prosthesis.² Ridge defects have been divided in to different classes according to the depth of the deformity or height and width of ridge.^{3,4}

Different techniques to correct ridge deformities have been recommended in the past.⁵ Soft tissue ridge augmentation procedures include onlay free gingival graft, connective tissue grafts, pouch graft, roll and modified roll grafts. Among various augmentation procedures, the present case report demonstrates rolled palatal pedicle connective tissue graft combined with immediate temporization of the area to correct the localized maxillary anterior alveolar ridge defects and to get an emergence profile for the pontic.

This was proposed by Abrams, and is indicated in small-to-moderate class I ridge defects.⁶ This

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procedure was the first among the periodontal surgical procedures that have been developed to augment ridge deformities. The basic concept of the procedure entails the creation of a pedicle of connective tissue that is placed or tucked into a subepithelial pouch. After achieving profound local anesthesia, a rectangular pedicle flap is created on the palatal aspect of the defect. The flap dimension should tally with the amount of soft tissue required at the recipient site. It must be noted that if there are two or three pontic spaces to be treated, separate pedicles are raised. A sharp Bard-Parker blade is used to remove the epithelium over the palatal flap. A pouch is then created in the supra-periosteal connective tissue on the labial aspect. The palatal pedicle graft, which is de-epithelized, is now rolled back and tucked into position labially. Sutures are placed to secure the rolled flap in its position. The de-epithelized area heals by secondary intention.⁷

CASE REPORT

A 43 years old female patient presented to Department of Prosthodontics, Dhulikhel Hospital for replacement of missing teeth on upper front teeth region. Her medical history was insignificant. Dental history revealed multiple extractions and removable partial denture w.r.t. 11, 21, leading to Type II denture stomatitis. Written informed consent for publication of clinical data and images was obtained from the patient.

Patient had high smile line (Figure 1), thus, was concerned about her esthetics. She had Siebert Class I alveolar ridge defect on anterior partial edentulous area. She also had multiple carious teeth, root stumps and partial edentulous areas (Figure 2). Hence, the treatment plan was formulated accordingly, which included oral prophylaxis, extractions, root canal treatment,

multiple restorations, implant and fiber reinforced post and core on maxillary right and left lateral incisor followed by six unit fixed partial denture incorporating pontic site modification with Abram's roll technique.

PROCEDURE

1. Post space preparation was done w.r.t 12, 22, followed by fiber reinforced post cementation with dual-cure resin cement (Para Core by Coltene, Switzerland). Tooth preparation was done with respect to 12,13,22,23.
2. The Abram's roll technique was initiated by removal of the epithelium with BP blade, and elevation of pedicle, creating a pouch (Figure 3).
3. Sutures were placed at the mucogingival junction to catch the tip of the pedicle flap, pull it to place it into the pouch and the flap was secured (Figure 4).
4. Immediate temporization was done with the prosthesis fabricated with self-polymerizing acrylic resin (Figure 5).
5. On 3-months follow-up, the gingival contour and the height of interdental papilla was still unsatisfactory (Figure 6). Thus, further tissue modulation was done with a new 3D-printed temporary prostheses (Figure 7).
6. On 6-months follow-up (Figure 8), the definitive digital impression was made (Figure 9). The porcelain-fused-to-metal fixed partial denture with ovate pontic was fabricated (Figure 10), adjusted, and cemented with Type I Glass Ionomer Cement (GC Corporation, Japan) (Figure 11). Patient was happy with esthetic outcome of the prosthesis. (Figure 12)



Figure 1: Preoperative extra-oral image **Figure 2:** Preoperative intra oral images showing Seibert Class I ridge defect on maxillary arch

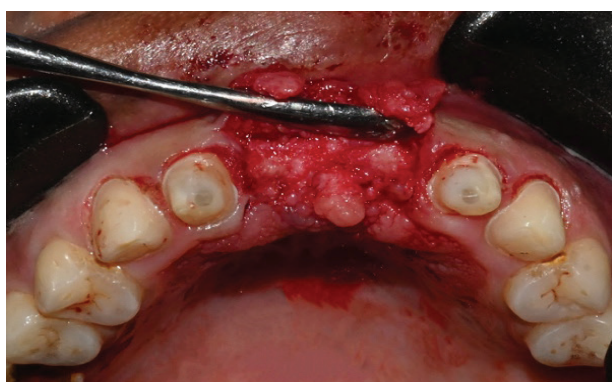


Figure 3: Elevation of pedicle soft connective tissue full thickness flap

Fig. 4: Pedicle graft rolled and sutured at MGJ



Figure 5: Immediate temporization



Figure 6: Follow – up after 3 months



Figure 7: Replacement of temporary prostheses



Figure 8: Follow up after 6 months

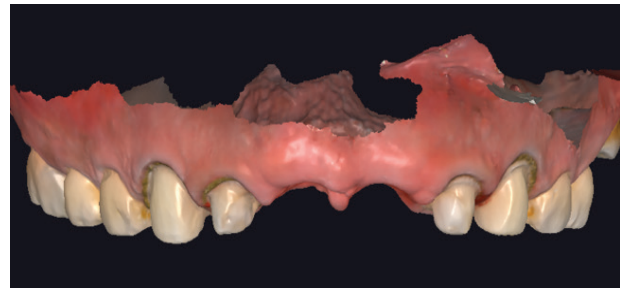


Figure 9: Digital impression



Figure 10: Definitive prosthesis 6 units porcelain fused to metal fixed partial denture



Figure 11: Prosthesis cementation with Type I Glass Ionomer Cement



Figure 12: Postoperative external photographs

DISCUSSION

Localized alveolar ridge defect is common finding following prolonged edentulism. These defects may be caused by the deficiency in volume of bone and soft tissue resulting from extraction, advanced periodontitis and periapical pathologies. Volumetric loss causes a concavity at the facial surface of the alveolar ridge, which may make it difficult to create a natural-looking prosthesis, since the emerging profile seems to come from the surface rather than within.⁸

These defects can be corrected either by hard tissue augmentation or soft tissue augmentation procedure depending upon the severity of

defects. In this case, Seibert Class I defect was present, thus, soft tissue augmentation was done. Among various soft tissue augmentation procedures, Abram's roll technique has many advantages, such as, better blood supply resulting in rapid healing of tissue, less graft shrinkage, and higher probabilities of graft acceptance. However, there are some limitations, such as, risk of graft necrosis and pain due to healing by secondary intention.¹

Mali et al. have described the roll flap procedure as an alternative to restore the damaged ridge with varying success.⁸ Besides the roll flap procedure, Padhye et al. compared the subepithelial connective tissue graft (SCTG)

and buccally displaced flap, and the results showed an increase in the width and thickness of keratinized mucosa in the buccally displaced flap group than the SCTG group, with reduced surgical sites, less post operative pain, and good blood supply.⁹

There are different materials of choice for anterior fixed partial denture like porcelain-fused-to-metal, zirconia, lithium disilicate, etc. Zirconia is the material of choice for the anterior region. However, due to its fracture risk in connector design in long span prosthesis, and the higher cost, porcelain-fused-to-metal prosthesis has been used in the present case.¹⁰

CONCLUSION

Alveolar ridge and soft tissue augmentation is a critical component of prosthetic rehabilitation. This case report highlights a technique indicated for mild-to-moderate Seibert Class I defects in the anterior maxilla. This approach addresses the limitations of traditional soft tissue procedures, providing enhanced healing and superior dimensional stability.

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