The soft tissue management is very important in fixed prosthodontics. Pontic design in the anterior region should meet esthetic and functional demands. Most of the time, the convex shape of the residual ridge makes the pontic to be very unaesthetic. The lack of proper emergence profile of the pontic in an anterior fixed partial dental prosthesis can result in esthetic failure of the restoration. The surgical contouring of the soft tissue and the residual ridge has to be done in such situations for excellent aesthetic results. This article describes the use of a surgical technique for modifying the shape of residual ridge. A specially designed provisional fixed partial dental prosthesis is also used to preserve and shape the soft tissue during the healing period to achieve maximum esthetics.

Key words: gingival shaping, soft tissue esthetics, ovate pontic, pontic design

Introduction

Esthetics associated with the health of adjacent tissues in anterior fixed prosthesis is often a challenging issue in a dental treatment plan. The success of fixed prosthodontic restoration is dependent on the health and stability of the surrounding soft tissue. Pontic should be designed and fabricated to meet the functional demand, promote access, ensure esthetics along with the health of surrounding tissues. The ovate pontic design, with a convex tissue surface, creates an illusion of the tooth growing out of the gum, creating an accurate duplication of ‘emergence profile’ thus meeting the esthetic demands. It also helps to create and maintain interdental papilla thus eliminating ‘black triangle’ spaces. However, the convex shape of the residual alveolar ridge can pose difficulty in fabricating pontic satisfactorily. Contouring the shape of the residual ridge by surgical intervention or gradual positive pressure is a management strategy to improve tissue contours.

Even though it was believed that pressure over residual ridge resulted in the inflammatory process, studies by Tripodakis and Constantinides showed that a well-controlled hyper pressure applied with a convex and highly polished pontic associated with rigid plaque control resulted only in thinning of epithelium and shortening of rete pegs, without inflammation. Thus, the procedure can improve esthetics without degrading the health of the adjacent tissue.

The development of the recipient sites involved surgical sculpturing of the tissue and subsequent use of a long-term provisional restoration. The
gingivoplasty can be conducted by either the use of high-speed rotary instruments, laser or electrosurgery. The timing of the gingivoplasty can also vary. It can be prior to impression taking or immediately prior to the fitting of the definitive restoration. Before the procedure the site should be anaesthetized so that the depth and visco-elastic nature of the mucosa can be assessed by bone sounding with a periodontal probe. This article is a case report of surgically contouring the soft tissue over the residual ridge and improving gingival profile with a provisional restoration.

Case report

A female patient aged 26, was referred to the Department of Prosthodontics for prosthetic rehabilitation of missing right upper front tooth from the Department of Orthodontics. The maxillary right lateral incisor of the patient was congenitally missing. The maxillary right canine was transposed into the lateral incisor’s position creating an edentulous space between the canine and first premolar. Intraoral examination revealed an inadequate inter-arch space of 2mm due to
supra-erupted mandibular right canine. (Figure 1) However, bone sounding with periodontal probe showed 4mm of soft tissue over the ridge crest.

Treatment options such as implant and fixed bridgework were evaluated. Since the inter-arch clearance was minimal, implant treatment was not feasible. As the patient was extremely concerned about the aesthetics of the restoration, prosthetic rehabilitation was planned with fixed bridgework with ovate pontic design after contouring the soft tissue, thus simulating the lost tooth in form, function as well as aesthetics.

Procedure

The diagnostic cast was used for the fabrication of the wax up model. Facebow transfer was done and the casts were mounted on a semi-adjustable articulator. Protrusive and lateral records were used to program the articulator and anterior guidance was established in the wax up pattern, which was later verified in the patient's mouth. The occlusal scheme established was canine guided occlusion. Tooth preparation of 13 and 14 was done, after which polyvinyl siloxane impression of the arch was made. The recipient site for ovate pontic was surgically contoured using scalpel no.15 (Figure 2, 3) and coronoplasty of 43 was done. Thus, an inter arch clearance of 4mm was achieved.

On the cast, 3mm from the pontic site was scored and smoothed with a scalpel and a provisional prosthesis was fabricated using wax-up model. Once the slight bleeding from the prepared site has reduced, the provisional prosthesis was inserted with pressure. Initially, the gingiva in the contoured area becomes depressed and blanching is evident. After approximately 5 min, the gingiva returned to a normal light pink color. Then the provisional bridge with ovate pontic was temporarily cemented. (Figure 4)

The patient was reviewed every two weeks for twelve weeks and was given instruction on proper oral hygiene. The first week of temporization, the patient was instructed not to clean the area under the temporary ovate pontic because such cleaning will possibly interfere with wound healing under the pontic.

After twelve weeks, the provisional prosthesis was removed and the pontic site was inspected. The pontic site was adequately contoured to achieve proper emergence profile. (Figure 5). Proper retraction of the prepared teeth was done and final impression was made with polyvinyl siloxane impression material. After the final prosthesis with ovate pontic was made, it was tried in the patient's mouth. The prosthesis was checked for marginal integrity, proximal contact, occlusion, and the patient was asked about satisfaction with the color and appearance of the teeth. Once all the prerequisites had been completely checked and any corrections made, the final bridge was cemented. (Figure 6,7,8) Following cementation of the bridge, dental appointment was scheduled for review after two weeks to check the occlusion and gingival condition.

Discussion

The most commonly used pontic design for the functionally visible region in the mouth is the modified ridge lap design. In the present case, the inter arch space was not adequate for a pontic and thus surgical sculpturing of the residual ridge soft tissue was necessary for prosthetic rehabilitation using a fixed partial dental prosthesis. Ovate pontic design was considered best in this scenario as it can give excellent esthetics and better strength. Emergence of the ovate pontic from the ridge mimics the natural tooth and the broad convex geometry makes it stronger than the modified ridge lap. The surgical modification of the residual ridge soft tissue increased the inter arch space which helped in achieving adequate connector height and establishing the canine guided occlusion. The ovate pontic contacts a larger surface area.
of the soft tissue but applies only minimal or light pressure on to the tissues\textsuperscript{8}. The pontic design prevents any food impaction and its convex surface makes cleaning easy. Nevertheless, careful oral hygiene measures are essential to avoid any tissue inflammation\textsuperscript{9}. An interim bridge with an ovate pontic was given to support the pseudo papillae and socket depression formed after the surgical sculpturing of the gingival tissue\textsuperscript{7}. The convex surface of the pontic was glazed for achieving maximum biocompatibility and cleanability.

**Conclusion**

The surgical gingival sculpting technique was used to achieve excellent aesthetics in the prosthetic rehabilitation of the congenitally missing tooth. The emergence of the pontic from the residual ridge exactly resembled the natural tooth making the patient very satisfied with the treatment.

**References**