

CASE REPORT

MODIFIED OVATE PONTIC – A SOLUTION TO REGAIN THE AESTHETICS

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ABSTRACT: A modified design for ovate pontics is proposed to achieve the aesthetic, functional, and hygienic requirements for fixed partial dentures. Clinically healthy conditions can be established at pontic sites if appropriate plaque control is performed. As the ovate pontic suffers from certain disadvantages, the modified ovate pontic design was developed to circumvent the problems encountered with the ovate pontic. A case report presented where the modified ovate pontic design was employed for replacing upper anterior teeth.

KEY WORDS: Aesthetics, modified ovate pontic, ovate pontic

INTRODUCTION: Design of pontic is probably the most important factor in determining the success of the restoration. If the patient is unable to effectively clean and maintain the pontic, the restoration will be unsuccessful. Without suitable mechanical and biologic design of the connectors, the FPD will be a biologic compromise. Mechanical requirements includes strength, smooth and rounded surfaces and acceptable aesthetics.¹ Ovate pontic is the most aesthetically appealing design. Its convex tissue surface resides in a soft tissue depression or hollow in the residual ridge, which makes it appear that a tooth is literally emerging from the gingiva. However, meticulous oral hygiene is necessary to prevent tissue inflammation resulting from the large area of tissue contact.² The modified ovate pontic design was developed to circumvent the problems encountered with the ovate pontic. The modification of the ovate pontic involves moving the height of contour at the tissue surface from the center of the base to a more labial position. It does not require as much faciolingual thickness to create an emergence profile and easier to clean.

CASE REPORT: A 25-year-old male patient reported to the department of prosthodontics, with a chief complaint of replacement of missing teeth in upper front region. On oral examination left maxillary central incisor, right central incisor and lateral incisor were missing because of trauma 6 months back (Fig.1). The left lateral incisor and canine were at lower occlusal plane level than right side canine. Also the soft tissue in edentulous area having less thickness indicating thin tissue biotype.

Option of implant therapy was explained to the patient but due to his poor financial condition this option was ruled out. A conventional fixed partial denture was planned using right side canine, left lateral incisor and canine as abutments. Pontic design is important to determine prior to fixed partial denture reconstruction. The sanitary pontic is non-aesthetic and not for use in the cosmetic zone. Total ridge lap pontic has reasonably good aesthetics, but concave tissue surface acts as a food trap and is contributory to tissue inflammation. Modified ridge lap promotes easier cleansing than total ridge lap, but there is not enough air seal for speech. Saliva may be forced through this space during speech and food gets trapped at lingual triangle open area. While ovate

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pontic requires meticulous oral hygiene. The modified ovate pontic design meets all the requirements that one desires in a pontic, whereas the other types of pontics may not.³

PROCEDURE: Endodontic evaluation of 13, 22 and 23 was done and diagnostic impressions were made. Face-bow transfer and a mockup was done on the diagnostic cast using semi-adjustable articulator (Hanau wide-hue) (fig. 2). Ridge augmentation procedure was done by harvesting connective tissue graft from palate (fig. 3).

Tooth preparation was done in relation to the right canine and left lateral incisor and canine with finish line was extended to the gingival margin. Ridge contouring for modified pontic design was done with help of Lasers in 12, 11 and 21 region (fig. 4). Provisional was built up to create a modified ovate pontic with a shallow convexity, then the provisional was cementated (fig. 5). The temporaries were kept for about 7 days, after analyzing soft tissue contour decision was made to make final impression (fig. 6).

Retraction procedure was carried out with expasyl. A polyvinyl siloxanes (Aquasil Soft Putty and Aquasil LV, Dentsply Int.) impression was made using the putty reline technique in a rim-lock impression tray and removable dies were fabricated. Die ditching was done to expose the restoration margins. Definitive prosthesis was cemented with type I glass-ionomer cement (Fuji 1, GC, USA) (Fig. 7). Oral hygiene instructions were reinforced at each clinical visit.

DISCUSSION: Pontics of fixed partial dentures have to fulfill aesthetic, functional, and hygienic requirements. For years controversy has existed regarding the pontic surface abating the tissue. With the use of the ridge lap pontic, alveolar ridge deficiencies were accommodated, but oral hygiene was difficult because of the concave pontic design. The sanitary pontic and the modified ridge lap pontic were developed to avoid or minimize any contact between the pontic and edentulous ridge mucosa, but they did not satisfy the aesthetic requirements. The ovate pontic was developed to fulfill aesthetic and functional requirements. Its convex pontic design was intended to fabricate a concave soft tissue outline in the edentulous ridge mucosa. However, at times floss cannot pass through the center of pontic, especially in anterior teeth area, where the distance from the top of papilla to the labial gingival margin is longer than in posterior teeth area. The modified ovate pontic was developed to circumvent this problem. This pontic is less convex and often requires little or no ridge augmentation.⁴

Zitzmann and colleagues' study on premolars and molars noted that an edentulous space with an ovate pontic supported by adequate oral hygiene was not associated with overt clinical signs of inflammation. Histologically, the ovate pontic design was associated with a thinner keratin layer and with changes in the composition of the connective tissue component subjacent to the epithelium.⁵

Indentation of the underlying gingival tissue was a common response to all materials used for pontics. However, increased intracellular edema (hydropic degeneration) of the prickle cells, which is an indication of excessive pressure, was not noted. Therefore, it is possible that the indentation phenomena is a result of epithelial proliferation rather than pressure. Whatever the cause, this cuff of epithelium surrounding the pontic could play a major role in keeping debris from accumulating between the tissue and the pontic.⁶

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Edmund Cavazos, demonstrated that the adaptation of a pontic to the ridge or the amount of “relief” (scraping of the cast) provided in the cast is highly significant and directly proportionate to the amount of unfavorable tissue change. Absolute minimal contact (0.0 to 0.25 mm. of cast scraping) produced no tissue change. When the cast scraping was increased to 1 mm., tissue changes were produced varying from mild inflammation to acute ulceration.⁷

CONCLUSION: The modified ovate pontic has less soft tissue contacting surface and less curvature than the ovate pontic. This modified pontic fulfills not only the aesthetic and functional demands but also the hygienic requirements. It is much easier to clean than the ovate pontic.

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Fig. 1: Intra-oral Photograph



Fig. 2: Wax mock-up



Fig. 3: Ridge augmentation using connective tissue graft from hard palate



Fig. 4: Indentation prepared using Lasers

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Fig. 5: Temporization



Fig. 6: Final Impression



Fig. 7: Final prosthesis cemented



Fig. 8: Post-operative extra-oral photograph

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