ISSN: 0975-3583, 0976-2833 VOL12, ISSUE06, 2021

SMILES WITHOUT GATEWAYS -A CASE REPORT

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ABSTRACT :

Demanding esthetic requirements of patients demands highly skilled and multidisciplinary approach in dentistry. Mimicking tooth contour and giving it a life like appearance while replacing anterior missing teeth is a challenge to a prosthodontist. Choosing appropriate design of the pontic plays a crucial role in deciding the successful outcome of the treatment. Among the various types of pontic recommended for anterior tooth replacement, modified ovate pontic addresses the shortcomings of others and overcomes them by giving more esthetically pleasing appearance.It fulfills the esthetic as well as functional requirement of a fixed prosthesis along with enhanced hygiene maintenance for the longevity of it.

KEY WORDS: Aesthetics, Modified ovate pontic, Gingival re-contouring, Electrocautery

INTRODUCTION:

Appearance distinctively influences ones social behaviour and the perception in today's society. Demanding esthetic requirements of patients demands highly skilled and multidisciplinary approach in dentistry. Mimicking tooth contour and giving it a life like appearance while replacing anterior missing teeth is a challenge to a prosthodontist.The success of the restoration will likely be most heavily influenced by

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the pontic's design. Choosing appropriate design of the pontic plays a crucial role in deciding the final outcome of the treatment. Among the various types recommended for anterior pontic, ovate pontic gives more esthetically pleasing appearance.[1] The Ovate Pontic was first promoted in 1933 by Dewey and Zugsmith.[3] It appears as though a tooth is really emerging from the gingiva due to the convex tissue surface that is located in a soft tissue depression in the remaining ridge.It overcomes the drawbacks of ridge lap and modified ridge lap pontics by replicating the emergence profile with accuracy and preserving the interdental papilla,avoiding black triangles.[2]However, due to the extensive area of tissue contact,it applied pressure on the underlying soft tissues.It was observed that diligent dental hygiene is required to prevent soft tissue inflammation.[1-3] The modified ovate pontic design was created to address the shortcomings of the ovate pontic. In order to enhance the esthetic requirement and hygiene maintenance Chiun-Lin Steven Lin[4] modified the design of ovate pontic by shifting the height of the contour at the tissue surface from the base's centre to a more labial location.

For the modified ovate pontic to provide a good emergence profile, less faciolingual thickness is needed. Because it is less convex than an ovate pontic, it is much simpler to clean.Its main advantage over the ovate site is that surgical augmentation of the ridge is frequently not necessary.

The present case report describes the use of modified ovate pontic design to replace a missing anterior tooth and restoring confidence of patient by enhancing the smile.

CASE REPORT:

A 25 year old male patient reported to the department of prosthodontics and crown and bridge with a chief complaint of missing tooth in the upper front region of the jaw due to history of fall 1 year back for which he desired replacement .(**Fig 1.**)On intraoral examination, upper left central incisor (21), lower left first molar(36) was missing. Discoloration was seen with respect to upper left lateral incisor (22) due to trauma. It was also noted that 22 was rotated mesiobuccally.Fixed metal prosthesis was observed with respect to lower left fist molar (46) which was done 2 years back.(**Fig. 2a& 2b**)

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Radiographic examination revealed periapical translucency with PDL widening of 22. Pulp Vitality test of 22 showed no pulpal response indicating its non vitality whereas 11 was found to be vital.

The edentulous site showed buccal defect resulting in reduced faciopalatal width and thin gingival biotype. Patient was explained about various treatment options including implant supported prosthesis for replacement of missing anterior tooth. Considering financial constrains of the patient a 3 unit fixed dental prosthesis was chosen as a treatment option. After evaluation of the edentulous site,to enhance aesthetics of the restoration, modified ovate pontic was chosen as a type of pontic. Patient was explained about it and an informed consent was obtained prior to the treatment.

CLINICAL TREATMENT:

Diagnostic impressions were made for both maxillary and mandibular arches using irreversible hydrocolloid impression material (Zetalgin, Zhermack).Models were poured and articulated using facebow transfer to evaluate space available for pontic.

Root canal treatment followed by fibre post and core build up was carried out with respect to left lateral incisor (22).Mock preparation of 11 and 22 followed by cast scoring at the edentulous site to receive modified ovate pontic was done and diagnostic wax up was carried out on the diagnostic model. Putty index was made using elastomeric impression material (Zetaplus, Zhermack) which was used as a guide to tooth preparation and provisionalization.Tooth colored heat cured provisionals were kept ready by using indirect technique.The pontic's tissue surface was kept highly polished to prevent tissue irritation and plaque buildup.

Abutment teeth (11&22) were prepared to receive zirconia layered with E-max prosthesis.Gingivoplasty was performed using electrocautery with respect to 11 and 23 to match zeniths and at 21 region to create pontic recipient site. (**Fig.3**) The labial edentulous region had a 30- to 40-degree gingivoplasty that extended apically and palatally 1.5-2 mm from the labial gingival edge. A shallow concavity was produced in the palatal edentulous region.

Provisional restoration was inserted immediately after the pontic site preparation which simulated modified ovate pontic with shallow convexity.Unlike an ovate pontic

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE06, 2021

,it was more labially positioned on the ridge. Using an intermediate luting agent free of eugenol, the provisionals were cemented.(Templute, Prime dental)

A recall was scheduled after one week, one month, and three months during which the condition of the tissue at the abutment teeth and the pontic was checked. At each of the appointment, the soft tissue's health was evaluated by removing the temporary restoration and inspecting the modified ovate pontic site for any signs of ulceration or blood vessel extravasations. Little tissue rebound and pink healthy tissue were anticipated. The tissue surface of the modified ovate pontic was polished at each visit.

After three months, tooth surfaces were polished ,gingival tissue retraction was carried out and final impressions were made using elastomeric impression material(Zetaplus). The right shade was then chosen and sent to the ceramist.Coping trial and bisque trial was taken to check the marginal fit and reevaluate the intaglio surface of the pontic. Hypoplastic areas on the the adjacent teeth were replicated in the final prosthesis for a better life like appearance of the prosthesis.

On receiving the final prosthesis complete seating and marginal adaptation was ensured. After providing adequate isolation, the prosthesis was cemented using resin modified glass ionomer cement.(Fuji-cem ,GC)

The interdental papilla was emphasized at the pontic location with controlled physiological pressure, giving the impression that the pontic was protruding from the soft tissue.

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Fig.1 Pre-operative extraoral view

Fig.2a :Pre-operative Intraoral view of maxillary arch

Fig.2b :Pre-operative Intraoral view of mandibular arch

Fig.3 :Tooth preparation of abutment 11 and 22
Gingival recontouring and pontic site prepapartion using electrocautery

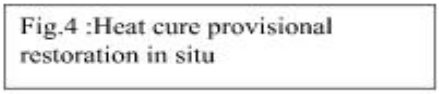

Fig.4 :Heat cure provisional restoration in situ

ISSN: 0975-3583, 0976-2833 VOL12, ISSUE06, 2021

Fig.5 : Final impression

Fig.6 :Final zirconia layered with E-max fixed partial denture wrt 11-22 in situ

Post-operative extraoral view

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DISCUSSION:

In place of conventional pontic forms for replacing missing anterior teeth, this article presents a rationale for selection of modified ovate pontic. A technique to replicate pontic site contour as per the one scored on the model has also been described in this article. Pontic site preparation can be done in many ways which includes use of a football shaped bur,laser, conventional gingivectomy using BP blade etc. Among these, a method of fabricating the pontic site using electrocautery has been demonstrated in the present case report. The benefits it offers includes cost effectiveness, ease in accessibility for contouring as the electrode cuts on the sides as well as at the tip and can be bent, rapid cutting, less time consuming, nearly painless and enhanced healing post treatment.[5,6]

For a satisfactory marginal fit of the final restoration, careful attention to the provisional restoration is required. Final impressions for the fixed partial denture must be taken as soon as the temporary restoration is removed; otherwise, tissue may "rebound" and produce an ovate pontic space that is significantly shallower than the temporary pontic.[7]As a result, the relationship between the pontic and tissue surface may not be correct.

A passive ridge contact for pontics is recommended in many sources.[8]Active interaction may be preferable, according to recent evidence and experience. Along with the occlusal forces, active contact stimulation may improve tissue tone and health. Inflammation, however, is inevitable if the hyperpressure regions are not flossed.[8,9]

Pontics for fixed partial dentures must meet aesthetic, practical, and hygienic standards.Although saddle or ridge lap pontic provided better esthetics hygiene maintenance was found to be poor with it.Modified ridge lap pontic was easier to clean but it could not provide adequate air seal causing difficulty in phonetics as well as discomfort to tongue.Ovate pontic was found to be better at providing adequate air seal which aided in phonetics ,intimate and broad tissue contact could provide good emergence profile giving more appealing esthetics but its indication was restricted to ridges with thick keratinized biotype and adequate faciolingual width.Hygiene remained compromised as flosing was a problem. Hence, modified ovate pontic becomes more popular as a pontic of choice for anterior tooth replacement.

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The benefits of a modified ovate pontic are as follows[10]:

1. outstanding aesthetics due to the accurate emerging profile produced;
2. met functional needs;
3. improved cleaning simplicity when compared to the ovate pontic;
4. an efficient air seal that stops air or saliva escape;
5. removal or reduction of the "black triangle" between the teeth;
6. appearance of a free gingival border and interdental papilla;
7. little to no ridge augmentation needed prior to the final restoration

In contrast to other pontic kinds, Liu[11] observed that with the modified ovate pontic, dental floss may be easily used to push the labial gingival border away and clean the tissue surface, which returns after the dental floss is removed.

The best tissue health can be achieved with daily, meticulous cleaning using dental floss to provide consistent, moderate pressure against the apex of the pontic.

SUMMARY:

For fixed dental prosthesis, the modified ovate pontic is advocated as a way to meet the aesthetic, functional, and hygienic requirements.When compared to the ovate pontic,it essentially yeilds the same emergence profile.The prosthesis mimics the natural tooth by maintaining the interdental papillae and creates life like appearance by simulating the presence of free marginal gingiva. The patient's new, self-assured smile serves as evidence that the treatment approach presented in this case study was successful.

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