



Creating Natural Emergence Profile In Maxillary FPD

¹Priyabrata Mandal, ²Debarati Bhowmick, ^{3*}Vineet Nair

^{1,2}Assistant Professor, ³Associate Professor,

¹Burdwan Dental College and Hospital, Burdwan, India

^{2,3}Dr. R. Ahmed Dental College & Hospital, Kolkata

***Corresponding Author:**

Dr. Vineet Nair

Mrittika Apartment, 255, UB Road, Kolkata-700060, WB, India

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Restoration of aesthetic along with maintenance of healthy gingival tissue is of utmost importance when treating the maxillary anterior region. Resorption of residual alveolar ridge or irregularities in soft tissue often complicate favourable relationship with the pontic, compromising the final aesthetic outcome. Various techniques can be used to overcome this problem. Esthetic emergence profile was achieved in final prosthesis of following cases without any adverse consequences on a long term follow up. Apart from esthetics, clinically healthy, functional, and hygienic conditions can be established at ovate pontic sites if appropriate plaque control is performed.

Keywords: Aesthetics, ovate pontic, receptor site, provisional restoration, emergence profile.

Introduction

Design of pontic and pontic site is the most important factor in determining the success of the restoration. If the patient is unable to effectively clean and maintain the tissue surface of the pontic the restoration will be unsuccessful. Without suitable mechanical and biologic design of the connectors, the outcome of the fixed prosthesis treatment will be compromised. Mechanical requirements include strength, smoothness 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 appears that a tooth is literally emerging from the tooth socket of the missing area. However, meticulous oral hygiene maintenance is necessary to prevent tissue inflammation.²

Case Report:

Case 1

A 27 year old female patient came to the department of prosthodontics with missing 21. (Fig 1) Option of

implant therapy was explained to the patient but due to her poor financial condition this option was ruled out. A conventional fixed partial denture was planned using right central and lateral incisor and left lateral incisor as abutments.

Procedure:

1. After endodontic evaluation of 11, 12 and 22 a proper ***ovate pontic receptor site*** was prepared in the diagnostic model using slow speed round burs and hand instruments. (Fig 2)
2. Using previously made putty index (inside the patient's mouth) a provisional four unit FPD with a typical ovate pontic was fabricated in the model. (Fig 3)
3. Surgically (round bur and BP blade) ovate pontic receptor site was prepared in the patient's mouth (Fig 4).
4. On the same day after abutments preparation, provisional with highly polished ovate pontic was cemented (Fig: 5).

5. A periodic 4 to 6 weeks of follow up was done for recontouring of the tissue surface of the pontic to get a proper gingival architecture which can create a natural emergence profile for the final prosthesis (Fig: 6).
6. After creating a proper ovate pontic receptor site, final impressions were made and then a final prosthesis with excellent emergence profile was cemented. (Figs: 7, 8).

Case 2

A 29 year old female patient came to the department of prosthodontics with missing 12. Option of implant therapy was explained to the patient but due to her poor financial condition, this option was ruled out. A conventional fixed partial denture was planned using right canine and right central incisor as abutments.

Procedure:

All the procedures were same as case 1

Fig: 1



Fig: 2



Fig: 3



Fig: 4



Fig: 5



Fig: 6



Fig: 7



Fig: 8



Fig: 9



Fig: 10



Fig: 11



Fig: 12



Discussion

An artificial looking maxillary anterior fixed partial denture can have a disastrous and distressing effect on a person's self confidence and ability to interact with others.^{3, 4} Nowadays patients demand more natural looking teeth replacements. The ovate pontic is the most esthetic of all pontic designs because it most closely resembles the emergence profile of natural teeth. It is also more desirable from the phonetics point of view because it does not allow the passage of air and saliva like other more hygienic designs do. Furthermore, patients also prefer the lingual contours of the ovate pontic because of their close resemblance to natural contours. Although the ovate pontic design is not new,⁵ it had been in almost complete disuse until the 1980s when the cosmetic revolution pushed dentists to reevaluate the ovate pontic.⁶ The ovate pontic became unpopular because dentists considered it a non-hygienic pontic design, believing that it would lead to chronic gingival inflammation due to its lack of cleansability. Recent research done by Zitzmann and colleagues to assess the amount of chronic inflammation caused by an ovate pontic showed that "ovate pontics supported with adequate oral hygiene measures is not associated with overt clinical signs of inflammation".⁷ Tripodakis et al also found that the tissue pressure caused by ovate pontics does not introduce inflammation to adjacent tissues.⁸ The ovate pontic design and execution is considerably more involved than a regular pontic procedure and requires more time, preparation and clinical skills.

The ovate pontic was developed to fulfil 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 overcome this problem. This pontic is less convex and often requires little or no ridge augmentation.⁹

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 with changes in the composition of the connective tissue component. 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.¹⁰

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 unfavourable tissue change. Absolute passive contact (around 0.25 mm. of cast scraping) produced no tissue change. When the cast scraping was increased to 1 mm. tissue changes were seen like mild to moderate inflammation.¹¹

Conclusion

Apart from esthetics, clinically healthy, functional, and hygienic conditions can be established at ovate pontic sites if appropriate plaque control is performed.

References

1. Tylman's Theory Fixed Prosthodontics, 8th edition.
2. Contemporary fixed prosthodontics, Stephen F. Rosenstiel, 6th edition.
3. Ruiz JL. The Psychology of a Smile. The Journal of Cosmetic Dentistry 2003; 19(1): 58-9.
4. Das S, Biswas M, Pal N, Nair V. Creating esthetics in anterior teeth with custom cast post and core. Journal of Case Reports in Medical Science 2017;3(4):81-84
5. Dewey KW, Zugsmith R. An experimental study of tissue reaction about porcelain roots. Journal of Dental Research 1933; 13: 459-72.
6. Garber DA, Rosemberg ES. The edentulous ridge in fix prosthodontics. Compendium of Continuing Education in Dentistry 1981; 2: 212-224.
7. Zitzmann NU, Marinello CP, Berglundl T. The Ovate Pontic Design: A histologic observation in

- humans. The Journal of Prosthetic Dentistry 2002; 88(4): 375-80.
8. Tripodakis AP, Costantinides A. Tissue response under hyperpressure from convex pontics. International Journal of Periodontics Restorative Dentistry 1990; 10: 408-14.
 9. Liu CL. Use of modified ovate pontic in areas of ridge defects: A report of two Cases. J Esthet Restor Dent 2004; 16:273-81.
 10. Arlon G. Podshadley, .I. Prosthet. Dent. 1968; 19:51-57.
 11. Cavazos E. Tissue response to fixed partial pontics. J Prosthet Dent 1968; 20: 143-153.