



## The Emergence of Digitally Designed Ovate Pontic- A Case Report

Dr. Krishna R. Lahoti<sup>1</sup>, Dr. Manish Shivaji Jadhav<sup>2</sup>, Dr. Amit Jagtap<sup>3</sup>

<sup>1</sup>Department of Prosthodontics, Crown and Bridge and Implantology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India- 411018.

<sup>2</sup>Department of Prosthodontics, Crown and Bridge and Implantology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India- 411018.

<sup>3</sup>Department of Prosthodontics, Crown and Bridge and Implantology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India- 411018.

### Corresponding author

Dr. Krishna R. Lahoti, Department of Prosthodontics, Crown and Bridge and Implantology, Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India- 411018

(Received: 27 October 2023)

Revised: 22 November

Accepted: 26 December)

### KEYWORDS

Digitally designed,  
Ovate, Pontic

### ABSTRACT:

A missing tooth in the buccal segment can lead to diverse consequences like decreased masticatory function, antagonist elongation, and dental tipping. Such a tooth gap can be replaced in partially edentulous patients with a fixed dental prosthesis (FDP). A 29 years old male patient reported to the Department of Prosthodontics, Crown and Bridge and Implantology at Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India with a chief complaint of broken and missing teeth resulting in unpleasant smile in upper front region of jaw from 1 month. The simplest way of producing an ovate pontic is to do so at the time of tooth extraction. This approach, however, does require careful coordination involving the extraction of the tooth and the fabrication of the ovate pontic. It necessitates the cooperation of the surgeon with the restorative dentist, unless one clinician performs both procedures.

### Introduction

A missing tooth in the buccal segment can lead to diverse consequences like decreased masticatory function, antagonist elongation, and dental tipping. Such a tooth gap can be replaced in partially edentulous patients with a fixed dental prosthesis (FDP).

FDPs are a common therapeutic treatment with a large body of clinical evidence showing high success and survival rates.<sup>1-3</sup> There are diverse pontic designs of the FDP, whereby the ovate pontic design results in the most aesthetic soft tissue outcomes for the prosthetic tooth.<sup>4</sup> For the establishment of such an ovate pontic and an aesthetic soft tissue outcome, the use of a provisional FDP for soft tissue conditioning is necessary.<sup>5</sup>

Implant-supported fixed dental prostheses present an aesthetic challenge, especially when an ovate pontic site has been progressively developed during the guided soft-tissue healing process with an interim restoration.<sup>6</sup>

The aesthetic management and preservation of tissue stability in the area surrounding implant abutments have been important topics for investigation and discussion.<sup>7,8</sup> The aesthetics of implants replacing the anterior maxillary teeth are particularly challenging. Patients are very conscious of this area and have high demands, especially for harmony between the implants and the soft tissue.<sup>9-11</sup> Soft tissue management to achieve this has conventionally been performed after implant placement using implant-supported provisional restorations.<sup>12</sup>

### Case report

A 29 years old male patient reported to the Department of Prosthodontics, Crown and Bridge and Implantology at Dr. D. Y. Patil Dental College and Hospital, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India with a chief complaint of broken and missing teeth resulting in unpleasant smile in upper front region of jaw from 1



month. The patient showed no relevant medical and habit history. He got extraction of 21 one month ago.

**Figure 1: pre-operative extra-oral view. (Right lateral, Front and Left lateral view)**



The preoperative right lateral, front and left lateral views of the patient were photographed. Also, preoperative intraoral images were clicked and radiographic investigations were also carried out. The tooth 12 showed root stump. Teeth 16, 21 and 35 were missing. Teeth 24, 25, 26, 36, 37, 38, 46, 47 were carious. Teeth 31, 32, 33, 41, 42, 43 showed attrition whereas teeth 22, 23 showed abrasion. 3-D models of the patient were also fabricated. Tooth preparation was done and designing of

the pontic was carried out. Root pieces were extracted and suturing was done. The relining was done and the patient was called for follow up. The patient's smile was recorded. The final scan was taken after the 2<sup>nd</sup> follow up. CAD-CAM Milled Zirconia Bridge was given to the patient after articulation. In the end, photographs of the patient after the adjustment of final prostheses were taken.

**Figure 2: Preoperative Intra-oral View (Right lateral, Front and Left lateral view)**



**Figure 3: Radiographic Investigation**



Figure 4: maxillary and mandibular occlusal views.



Figure 5: Extraction Of Root Piece And Suturing

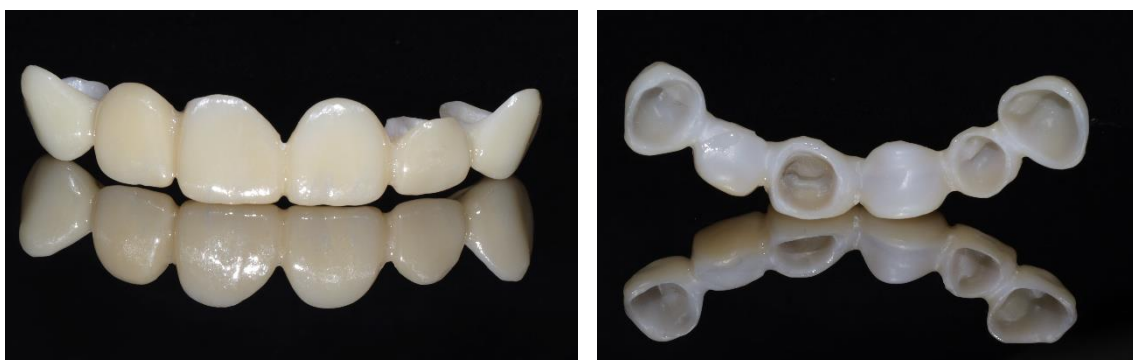


Figure 6: CAD-CAM Milled Zirconia Bridge

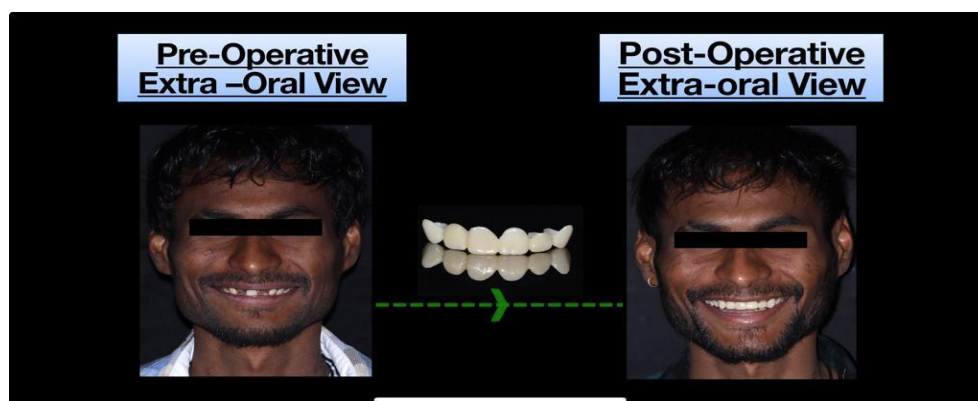


Figure 7: Pre-operative and post-operative extraoral view.





## Discussion

The primary goal of fixed prosthodontics is replacement of missing teeth with a fixed, immovable, hygienically cleansable prosthesis. Prior to the common use of single, standalone implant restorations, a missing tooth or teeth was typically replaced using a conventional fixed partial denture (FPD), commonly referred to as a bridge. But even as the use of implants has become increasingly prevalent in the past 40 years, clinicians and researchers have noted that a tooth-by-tooth replacement is not always necessary and can present difficulties in design, fabrication, hygiene, and cost. In many situations, the use of a fixed partial prosthesis (ie, bridge) supported by implants is not only a more economical way to restore the patient to proper form and function, but may be the more hygienic and comfortable restorative solution for the patient.<sup>13</sup>

As esthetic demands have increased over time, the use of an ovate pontic has become more predominant, especially in critically esthetic areas. The assertion has been made that a properly placed implant and a pontic next to it can yield a more esthetic result than two adjacent implants.<sup>13</sup> Yet the use of an ovate pontic requires proper understanding of prosthodontics, surgery, and laboratory procedure. In addition, the communication between the clinician and laboratory technician regarding the shape and depth of the pontic is crucial, as both parties must be in unison regarding the case.<sup>13</sup> As with any procedure, the greater the complexity, the greater the challenge to perform it.

The simplest way of producing an ovate pontic is to do so at the time of tooth extraction.<sup>14</sup> This approach, however, does require careful coordination involving the extraction of the tooth and the fabrication of the ovate pontic. It necessitates the cooperation of the surgeon with the restorative dentist, unless one clinician performs both procedures.

## References

1. Pjetursson BE, Sailer I, Makarov NA, Zwahlen M, Thoma DS. All-ceramic or metal-ceramic tooth-supported fixed dental prostheses (FDPs)? A systematic review of the survival and complication rates. Part II: Multiple-unit FDPs Dent Mater. 2015;31:624–639.
2. Tan K, Pjetursson BE, Lang NP, Chan ES. A systematic review of the survival and complication rates of fixed partial dentures (FPDs) after an observation period of at least 5 years. Clin Oral Implants Res. 2004;15:654–666.
3. Sailer I, Pjetursson BE, Zwahlen M, Hammerle CH. A systematic review of the survival and complication rates of all-ceramic and metal-ceramic reconstructions after an observation period of at least 3 years Part II Fixed dental prostheses. Clin Oral Implants Res. 2007;18(Suppl 3):86–96.
4. Miller MB. Ovate pontics: the natural tooth replacement. Pract Periodontics Aesthet Dent. 1996;8:140.
5. Krennmair G, Seemann R, Weinländer M, Wegscheider W, Piehslinger E. Implant-prosthodontic rehabilitation of anterior partial edentulism: a clinical review. Int J Oral Maxillofac Implants. 2011;26:1043–1050.
6. Raigrodski AJ, Schwedhelm ER, Chen YW. A simplified technique for recording an implant-supported ovate pontic site in the esthetic zone. J Prosthet Dent. 2014 Feb;111(2):154-8.
7. Peri-implant bone loss of tissue-level and bone-level implants in the esthetic zone with gingival biotype analysis. Wallner G, Rieder D, Wichmann MG, Heckmann SM. Int J Oral Maxillofac Implants. 2018;33:1119–1125.
8. Osseointegration of titanium, titanium alloy and zirconia dental implants: current knowledge and open questions. Bosshardt DD, Chappuis V, Buser D. Periodontol 2000. 2017;73:22–40.
9. Minimum criteria for immediate provisionalization of single-tooth dental implants in extraction sites: a 1-year retrospective study of 100 consecutive cases. Becker CM, Wilson TG Jr, Jensen OT. J Oral Maxillofac Surg. 2011;69:491–497.
10. Esthetic potential of single-implant provisional restorations: selection criteria of available alternatives. Priest G. J Esthet Restor Dent. 2006;18:326–338.
11. Immediate implant placement: treatment planning and surgical steps for successful outcome. Becker W, Goldstein M. Periodontol 2000. 2008;47:79–89.
12. Implant placement in the esthetic area: criteria for positioning single and multiple implants. Testori T, Weinstein T, Scutellà F, Wang HL, Zucchelli G. Periodontol 2000. 2018;77:176–196.
13. Dylina TJ. Contour determination for ovate pontics. JProsthetDent. 1999;82(2):136-142.
14. Bakshi M, Tarnow D, Bittner N. Changes in ridge dimension with pontics immediately placed at extraction sites: a pilot study. Int J Periodontics Restorative Dent. 2018;38(4):541-547.