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Aesthetic Rehabilitation of the Anterior Maxilla Utilizing Ovate Pontic Design: A Clinical Case Report

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Abstract

The prosthetic rehabilitation of missing anterior teeth constitutes a complex clinical challenge, particularly within the maxillary aesthetic zone where alveolar ridge resorption, papillary loss, and buccal plate collapse following extraction frequently compromise peri-gingival architecture and esthetic integration. Although implant-supported crowns are considered the gold standard for single-tooth replacement owing to their osseointegration, high survival rates, and alveolar bone preservation, their indication is limited in cases of inadequate bone volume, proximity to vital anatomical structures, systemic contraindications, or financial constraints. Conventional pontic configurations, including ridge-lap and modified ridge-lap designs, provide only partial esthetic restitution and often fail to maintain interdental papillae or establish a harmonious emergence profile, thereby limiting biological compatibility. The present case report aimed to assess the clinical efficacy of an ovate pontic design as a biologically driven and esthetically predictable alternative. A 56-year-old female presenting with a grossly carious maxillary lateral incisor was managed via atraumatic extraction, immediate provisionalization with a polymethyl methacrylate ovate pontic, and sequential modification of the provisional restoration to condition peri-gingival tissues. After a three-month healing interval, a definitive 5Y-TZP zirconia prosthesis incorporating an ovate pontic was fabricated and luted with resin-modified glass ionomer cement. Clinical evaluation demonstrated preservation of papillary height, maturation of peri-gingival contours, and establishment of a natural emergence profile, culminating in high patient satisfaction. Within the limitation of a single case, this report substantiates the ovate pontic as a scientifically validated, biologically favorable, and cost-effective alternative to implant therapy in the anterior maxilla, though long-term multicenter trials remain necessary to confirm its predictability.

Keywords: Ovate pontic, anterior esthetics, zirconia fixed partial denture, gingival architecture, prosthodontic rehabilitation.

Introduction

The rehabilitation of missing anterior teeth represents a major challenge in prosthodontics, where esthetic requirements are as critical as restoring function. The anterior maxilla, regarded as the "aesthetic zone," is highly susceptible to ridge resorption, papillary loss, and buccal plate collapse following extraction, leading to compromised smile esthetics and patient dissatisfaction. While implant-supported crowns are considered the gold standard for single-tooth replacement due to their long-term predictability and bone-preserving effect, their application may be restricted by anatomical limitations, systemic contraindications, or financial constraints. Conventional pontic designs, such as ridge-lap and modified ridge-lap, provide acceptable esthetics but often fail to support interdental papillae or ensure cleansability. Abrams [1] introduced the ovate pontic, which offers superior soft tissue adaptation and a natural emergence profile, findings later corroborated by Zitzmann *et al.* [2] and Spear *et al.* [3]. However, published evidence describing structured clinical protocols and long-term biological outcomes of ovate pontic–guided provisionalization remains limited. The objective of this report is to present a clinical case demonstrating the biological and esthetic potential of ovate pontic design as a predictable alternative in anterior maxillary rehabilitation. Although restricted to a single case and therefore limited in generalizability, this study underscores the clinical relevance of ovate pontic prostheses and highlights their scope as a cost-effective, biologically favorable substitute in scenarios where implants are not feasible.

Materials and Methods

This section details the clinical protocol, including comprehensive patient evaluation, atraumatic extraction of the maxillary lateral incisor, diagnostic impression making, and cast modification to simulate the extraction socket. A provisional fixed partial denture incorporating an ovate pontic was fabricated using polymethyl methacrylate and employed for soft tissue conditioning. After a healing period of three

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months, definitive impressions were obtained, and a monolithic 5Y-TZP zirconia prosthesis was fabricated and cemented with resin-modified glass ionomer cement.

Results and Discussion

The clinical outcome revealed stable peri-gingival tissues, preserved papillae, and an esthetically harmonious emergence profile. The patient expressed high satisfaction with esthetics, phonetics, and function. The discussion integrates current literature, highlighting histological evidence of favorable soft tissue adaptation to ovate pontics, the biological role of provisionalization in tissue maturation, and comparison with implant-supported restorations. The ovate pontic design is validated as a predictable, biologically sound, and cost-effective alternative where implants are not indicated.

(a) **(b)**

Fig 1(a, b): Intraoral pictures

Fig 2: Orthopantomogram radiograph

(a) **(b)**

Fig 3(a, b): Tooth preparation and soft tissue retraction done with 11 and 13 done prior extraction

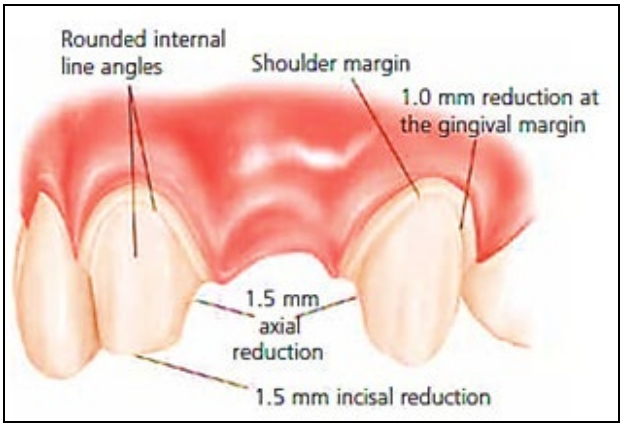

Fig 4: Ideal tooth preparation

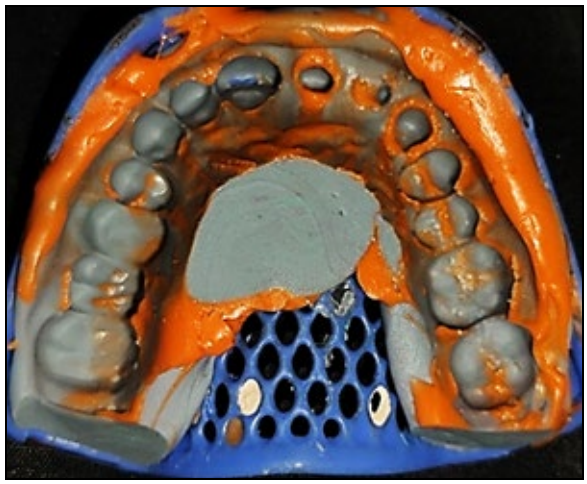

Fig 5: Elastomeric impression taken with light body for provisional restoration preparation

Fig 6: Tooth (12) to be extracted is scored out on the maxillary cast and a depression of 2-3 mm depth was created simulating the post-extraction socket

Fig 7: View of tissue surface of ovate pontic in provisional fixed partial denture before the adjustment

Fig 8: Atraumatic extraction of grossly carious tooth

Fig 9: Provisional fixed partial denture made with self-cure acrylic resin in situ with tissue surface of the pontic 2-3 mm inside the socket

Fig 10: Intra oral view of the extraction socket after 3 months of healing period

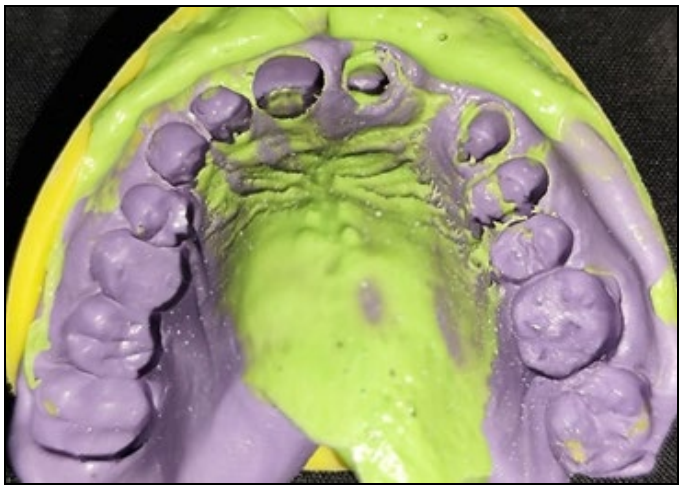

Fig 11: Final impression after tissue healed under provisional restoration

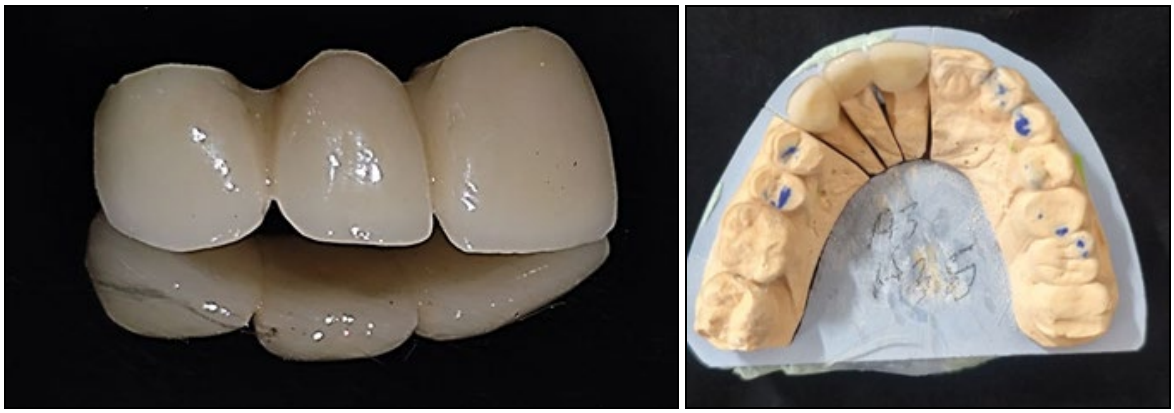

Fig 12(a, b): Definitive prosthesis

(a) **(b)**

(c)

Fig 13(a, b, c): Final results

Fig 14(a): Pre-treatment **Fig 14(b):** Post-treatment

Conclusion

The case concludes that ovate pontic–assisted prosthetic rehabilitation in the anterior maxilla offers predictable esthetic and functional outcomes, with significant preservation of gingival architecture. Success depends on adherence to atraumatic extraction protocols, meticulous tooth preparation, accurate impression techniques, and stringent oral hygiene maintenance. This reinforces the scientific relevance of ovate pontic design as a viable alternative to implants in selected clinical scenarios.

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