

## Redesigning Smile Using an Immediate Ovate Pontic

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### ABSTRACT

Clinical success of fixed prosthodontics is dependent in part upon the type of pontic design. Advances in the field of restorative materials allow a lost tooth to be replaced by an artificial tooth structure that is virtually indiscernible from the original. However, in fixed partial dentures, the standards for the pontic area and the adjacent soft tissue in the maxillary anterior region have increased in particular. The pontic design in this region is primarily influenced by aesthetic and phonetic considerations, thus a valuable solution to provide a natural, aesthetic and immediate restoration is the use an ovate pontic design.

**Key words:** ovate pontic design, redesigning smile, fixed prosthodontics

### INTRODUCTION

When a tooth is lost the structural integrity of the dental arch is disrupted and the dental arch being in a state of dynamic equilibrium, with the teeth supporting each other, undergoes subsequent realignment of teeth until a new state of equilibrium is achieved. [1] On loss of anterior teeth, the esthetics become highly compromised and this situation can be difficult for almost any patient, but replacing it with an implant or a fixed partial denture results in a predictable esthetic outcome unless significant bone and soft tissue were lost with the tooth. [2]

The pontic or an artificial tooth is the main component of a fixed partial denture. Pontics of fixed partial dentures (FPDs) have to fulfill esthetic, mechanical,

functional, and hygienic demands in restorative dentistry. [3]

Tylman defines pontic as “the suspended member of a fixed partial denture that replaces the lost natural tooth, restores function, and occupies the space of the missing tooth.” [4]

Rosenstiel defines pontic as “the artificial teeth of a fixed partial dental prosthesis that replaces the missing natural teeth, restoring function and appearance.” [5]

It is essential for pontics in esthetics zones to mimic the appearance of a natural tooth as such the pontics should appear to emerge from the gingiva and support the buccal/labial soft tissue as well as the adjacent papillae. The ovate pontic was developed by Abrams in 1980, [5] and is used to create the illusion that the tooth is emerging out of the gum. [2] it is of utmost importance to prevent the recession of the interproximal papilla, and the collapse of the buccal bone on extraction of a tooth, implying that the extracted socket must be preserved in the same shape and location. [2,6] Factors to be considered while using the ovate pontic technique are the dimensions of the soft tissues, atraumatic oral surgery and ridge preservation or enhancement techniques. [7]

Smile enhances the acceptance of the individual in the society and the character of the smile influences to a great extent the attractiveness and the personality of the individual. The goal of a clinician should be achieving a pleasing composition

in the smile-to create an arrangement of the various esthetic elements to proper proportion or relation according to known principles. [7] Spear suggested the 'immediate pontic technique' to aesthetically enhance restorations. [6]

### CASE REPORT

A 47-year-old male patient reported to the Department of Prosthodontics with the chief complaint of mobile upper right

central incisor. Patient was partially edentulous in relation to 12 and 16, the overall dental hygiene was poor with generalised recession and cervical abrasion. There was grade IV recession in relation to 11 and there was presence of crown and bridge prostheses in relation to 23, 24, 25, 34, 35 and 36. The patient's main concern was esthetics and he wanted an immediate replacement for 11 which had to undergo extraction.



Figure 1-Intraoral view of the patient.

Figure 2-Patient's front profile showing the unaesthetic appearance of his maxillary anterior teeth on smiling.

The patient was presented with the treatment options of implants, immediate FDP and RPD following the extraction of 11. Option of an immediate FDP was chosen by the patient as a provision for immediate replacement of his damaged teeth as it was also cost-effective.

The formulated treatment plan was intentional RCTs of 21 and 13, followed by

extraction of 11, and the replacement of 11 and 12 with fixed partial denture in relation to 11, 12, 13 and 21 using modified ovate design. Smile correction was to be done since the anterior teeth were malaligned, for this purpose the intentional RCTs of 21 and 13 were required.



Figure 3- wax up of 12 done using modelling wax and acrylic teeth, and modification of the shape of 11 and 21.

Figure 4-extraction socket space scraped on the diagnostic cast.

Diagnostic impressions were made in irreversible hydrocolloid. Wax up of the partially edentulous space of 12 was done using wax and acrylic teeth, the shape of 11 and 21 was modified to improve the esthetics before making the putty index of the wax up, the putty index was to be used to fabricate the temporary 4 unit bridge in tooth coloured acrylic. Arbitrary tooth preparation was done on the obtained cast for 13 and 21. 11 which had to be extracted, was scraped off from the diagnostic cast and then an extracted socket site was prepared on the cast in the region of 11 to accommodate the ovate pontic. The silicone index was used to fabricate the temporary bridge on this cast, the ovate pontic was

modified to fit into the extraction socket prepared on the cast.

Following single sitting RCTs of 13 and 21, the abutment teeth were prepared intraorally, followed by atraumatic extraction of 11. The partially edentulous site of 11 and 21 showed a Siebert's Class III ridge defect, and thus an FP 3 prosthesis was decided upon. Provisional FDP was cemented with temporary luting cement after necessary adjustment. The intaglio surface of the ovate pontic was polished to prevent irritation to the underlying mucosa. Patient was dismissed after thorough oral hygiene instructions. Recall visits were planned on the next day, after one week, and one month later.



Figure 5- Abutment teeth preparation pre extraction.

Figure 6- Post extraction ridge condition.

Figure 7- FP 3 interim prostheses covering the ridge defect with ovate pontic.

Figure 8- Four unit bridge final FP 3 prostheses.

After one and a half months, healing of the site was found to be satisfactory. Modifications were done to the abutment teeth and final impressions made with Addition silicone taking care to record the ovate pontic site. Master casts were poured in die stone and FP 3 prostheses were fabricated. The overall fit of the prostheses was evaluated before being cemented. Oral hygiene instructions were reinforced at each clinical visit.



Figure 9- Patient's front profile following rehabilitation.

## DISCUSSION

William Howard Ueno and Clarence Prui in 1982 gave the standards of pontics design which stated that: Tissue surface of the pontic should be convex for ease of cleaning, pontics should never have positive pressure on the underlying tissue. The pontics and connectors must be of adequate built to withstand occlusal forces and they should restore esthetics. [6]

The commonly used pontic designs are ridge lap pontic, modified ridge lap pontic, sanitary, conical, and ovate pontic. The use of ovate pontics are advantageous in anterior esthetic zones as the interdental papilla and natural gingival contour are preserved, the psychologically disturbing partially edentulous phase is eliminated, they are a hygienic and esthetically pleasing replacement and natural in appearance, thus the dissatisfaction resulting from an unaesthetic ridge lap pontic and the unaesthetic “black triangles” are eliminated. [2]

For immediate replacement using FDP, socket preservation is of utmost importance and should be performed at the time of extraction to create the tissue recess from which the ovate pontic form will emerge. [6]

Patient’s desire for naturally occurring teeth has lead to the development of various techniques to achieve naturally appearing soft tissue contour around pontics and as such the ovate pontics are one of the most versatile ways of obtaining the desired esthetics. [8]

## CONCLUSION

Ovate pontics are an excellent option for the esthetically concerned patients. They help maintain oral health as long as they are properly designed and well maintained. The pontic design is recommended in esthetic zones especially in patients having a high smile line, as they create an illusion of free gingival margin and interdental pailla. They

help to limit loss of soft tissues and the alveolar bone which prevents the aesthetic failure. Thus, they allow for maximum esthetics, are functional and maintain tissue health. Their drawback is that their fabrication is a laborious task and they have a need for multiple appointments before the completion of procedure. However, the oral hygiene practices of the patient have a direct impact on the final success of the prostheses.

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How to cite this article: Khan A, Bhatia V, Khurana PRS et.al. Redesigning smile using an immediate ovate pontic. *International Journal of Science & Healthcare Research*. 2020; 5(1): 238-241.

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