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Aesthetic Management of Immediate Anterior Tooth Replacement with Ovate Pontic: A Case Report

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ABSTRACT

Introduction: An immediate tooth replacement using ovate pontic not only eliminates the psychologically disturbing partially edentulous phase but also results in a much more aesthetically pleasing replacement of tooth that is both hygienic and natural in appearance.
Case Presentation: This article presents a case of 28 year old male reported to the department of prosthodontics with fractured central incisor. Ovate pontic was considered as the best treatment option. After atraumatic extraction of central incisor, soft tissue was conditioned with provisional restoration followed by final prosthesis.
Discussion: This treatment method benefitted a patient in whom fractured anterior teeth were proposed for extraction and who have high aesthetic demand for a maxillary anterior bridge because it can achieve the most aesthetic and natural appearances of the gingiva and final restorations. This case demonstrated the important clinical and laboratory procedure involved in the fabrication of ovate pontic for an anterior bridge.

Keywords: Ovate pontic, emergence profile, aesthetic, interdental papilla, provisional restoration

1. INTRODUCTION

In today's world every individual is extremely conscious about their looks and the loss of a single anterior tooth can be difficult for almost any patient. It can have an impact on a person's self-image and self-confidence in today's society.

There are numerous treatment modalities for the aesthetic and functional replacement of a traumatically missing anterior tooth which incorporates implant supported single crown, FPD, Resin Bonded FPD (RBFPD) or RPD. Implant supported prosthesis is contraindicated due to anatomical variations. [1] When a maxillary anterior tooth must be extracted and replaced, the time between extraction and healing after loss of tooth in the anterior aesthetic zone can be aesthetically and psychologically devastating on the part of the patient. Most of the treatment approaches are performed only after healing is completed. Therefore immediate tooth replacement with an ovate pontic on a provisional bridge is a good option as It combines excellent aesthetics with emergence profile. It is important that atraumatic extraction be done and fill the extraction site with the provisional pontic as soon as possible. [2] During a tooth extraction, the recession of the interproximal papilla, and the collapse of the buccal bone must be prevented and this means that the extracted socket must be preserved in the same shape and location. It is highly important to preserve papilla during the extraction procedure. The ovate pontic which mimics a natural tooth gives the foremost appropriate emergence profile. [3]

This paper aims to present a case with restoration of traumatized anterior tooth using ovate pontic design in a young patient for a predictable aesthetic outcome.

2. CASE PRESENTATION

A 28-year healthy male patient presented for restoring his traumatized upper front teeth at the Department of prosthodontics, Crown & Bridge, Aesthetic Dentistry and Implantology. His medical history was non-contributory. The dental history was significant as he accidentally fractured his maxillary right central incisor one day before while having hard food. Maxillary right central incisor was root canal treated followed by porcelain fused crown placement done 5 years back. Complete history of the patient along with intraoral periapical radiograph, CBCT, and preoperative photographs were taken. Intraoral and radiographic examination showed that the maxillary right central incisor was fractured at the cervical region of a crown but is intact [fig 1, 2, 3]. Following a detailed clinical examination and careful evaluation of the objective parameters of the patient's age, profession, smile, aesthetic and functional demands and to boost his confidence, it was found that fixed partial denture with an ovate pontic design was best suited.

Fig 1: pre-op photos –intraoral view

Fig 2: frontal view

Fig 3: fracture at cervical region in IOPA and CBCT

Fig 4: crown preparation and removal of fractured portion

2.1. PROCEDURE

Before the extraction of fractures tooth, the shade selection was done using the vita shade guide. Crown preparation on adjacent teeth i.e. 21 and 12 was done [fig 4]. The preparation for a metal-ceramic crown, firstly depth-orientation grooves were placed on the labial and incisal surfaces with a coarse-grit flat-end tapered diamond. [4] The facial surface must be prepared in two planes that correspond

roughly to the two geometric planes present on the facial surface of an uncut tooth [5] with uniform reduction of 1.2 mm. The lingual surface (incisal to the cingulum) was reduced with a coarse-grit football-shaped diamond to obtain a minimum of 0.7 mm of clearance with the opposing teeth and incisal reduction that parallels the inclination of the unprepared incisal edge, inadequate reduction results in poor translucency. The lingual and proximal axial surfaces are smoothed with the fine-grit tapered torpedo diamond, accentuating the chamfer on the lingual and proximal surfaces and Radial shoulder finish line on labial surface. [6] Fixed provisional restoration with an ovate pontic extending 3 mm subgingival was fabricated. The fractured teeth were extracted atraumatically and care was taken to preserve papilla [fig 5]. The provisional bridge was tried and cemented with temporary luting cement (Zinc oxide eugenol, DPI products, India). This interim restoration was used as a stent during tissue and bone healing while providing aesthetics and the tissue surface was modified and polished at subsequent appointment as per the soft tissue changes. A highly polished ovate pontic can act as a matrix for the formation of stratified squamous epithelium. [7] Recall visits were planned the next day, after one week and three weeks. After one month, healing of the site was found to be satisfactory. Modifications were done to the abutment teeth if requires and final impressions made with Addition silicone [fig 6]. The Definitive prosthesis was cemented with type I glass ionomer cement [fig 7, 8] (Fuji1, GC, USA). Oral hygiene instructions were reinforced at each clinical visit.

Fig 5: atraumatic extraction

Fig 6: final impression after tissue healed under provisional restoration

Fig 7: final prosthesis with ovate pontic

Fig 8: post-op photos

3. DISCUSSION

The ovate pontic was first described by Abrams [8] in 1980.Fixed partial denture with ovate pontic was considered ideal in this case as the patient was conscious about his appearance and demand immediate restorations as do not want to stay without teeth during the healing period after extraction of a fractured tooth.

Implant placement was not feasible due to the size and location of the nasopalatine canal, as well as the amount of bone buccal to the canal.

Conventional fixed partial dentures with sanitary (hygienic), ridge lap (full ridge lap, total ridge lap),modified ridge lap pontic not indicated as patient desires for immediate restoration and these pontics can be placed only after healing of socket is completed.

Advantages of the use of ovate pontic in anterior aesthetic zone: Eliminates the psychologically disturbing partially edentulous phase, Hygienic and aesthetically pleasing replacement natural in appearance, Preservation of the interdental papilla and natural gingival contour, Rules out the dissatisfaction resulting from an anaesthetic ridge lap pontic, Eliminates anaesthetic black triangles near gum and between teeth, [9] forms more effective air seal for speech.

The convex surface of ovate pontic results in development of correct emergence profile. [10] Limitations -ovate pontic cannot be used in a patient with great bone resorption and thin gingival tissue. It requires a sufficient faciolingual width and apicocoronal thickness to house the ovate pontic within the edentulous ridge. If the faciolingual and apicoincisal dimensions are deficient, a surgical augmentation procedure is usually indicated. Additional appointments for evaluations are generally required to achieve an aesthetic outcome.

The Silness et al [11] study demonstrated that the design of the pontic alone did not prevent inflammation of tissues but plaque and calculus removal with fastidious oral hygiene ensured healthy issue responses. Use of the ovate pontic must be combined with effective oral hygiene procedures so that the mucosal contact and minimal tissue pressure do not become a cause for concern. [12] This ovate pontic design offers the most advantageous result in the anterior maxilla, in a motivated patient with a high smile line.

4. CONCLUSION

The technique is simple to use and is readily applied to the practice setting. For a successful aesthetic outcome, good communication between the clinician and technician is required and, in the long term, a good standard of oral hygiene is essential from the patient. Daily, meticulous cleaning with dental floss to provide continuous moderate pressure against the apex of the pontic and abutment connectors will ensure optimal tissue health. The case proved to be a success owing to the coordinated teamwork of a maxillofacial surgeon, and a prosthodontist. Placement of provisional ovate pontics may be advantageous for the reparative processes of the underlying tissues.

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