Aesthetic Triad: Maryland Bridge, Ovate Pontic and Loop Connector: A Case Report

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Abstract: The provision of fixed prosthetic restorations that meets the patient's functional and aesthetic demands can be challenging, especially in the anterior maxilla. A fixed partial denture should follow the biological, mechanical and aesthetic considerations of the design. The procedure becomes more complicated when the patient demands aesthetics along with more conservative and less invasive procedures. In such situation a resin-bonded fixed partial denture (RBFPD) such as Maryland bridge fulfils all the requirements of an ideal restoration. The pontic design in anterior region is primarily influenced by aesthetic and phonetics. Local defects of the alveolar ridge often complicate restorative measures. Treatment methods proposed to solve this problem involve modification of the pontic design. A valuable solution to provide a natural, aesthetic and immediate restoration is the use an ovate pontic design. This article describes a case report in which a Maryland bridge with ovate pontic design and loop connectors was used to meet the aesthetic needs of the patient without compromising overall function and health.

Key Words: Maryland bridge, Ovate pontic, Loop connector, Aesthetics, Anterior maxilla.

INTRODUCTION

The loss of an anterior tooth is a severe emotional trauma to the patient and if the replacement does not simulate the natural tooth, the effect is multifold. The prosthetic restoration of edentulous spans poses a dilemma when the adjacent teeth do not require crowns. It is difficult to justify extensive reduction of the adjacent teeth to support a conventional fixed partial denture. A single-tooth implant is an alternative for patients with adequate bone dimensions and who are willing to undergo a minor surgical procedure. However, oral implants are not the treatment of choice for many patients and the resin-bonded fixed partial denture (RBFPD) offers a possible solution especially for missing maxillary anterior teeth. A pontic should be designed to provide functional and aesthetic replacement for a missing tooth or teeth. The location of the missing tooth, particularly anterior, will determine which of these factors has the greater emphasis in an individual situation. The emergence profile of the pontic especially in cases with localized alveolar ridge defect becomes important if the bridge is planned in the anterior maxilla. The ovate pontic is a design which creates the illusion of the tooth growing out of the gum and thereby, provides with the best aesthetic outcome in such situations. Drifting of teeth into the edentulous area may reduce the available pontic space; whereas a diastema existing before extraction may result in excessive mesio-distal width to the pontic space. In these situations, the simplest approach would be to maintain the existing diastemas using loop connectors. These connectors consists of a loop on the lingual aspect of the prosthesis that connects adjacent retainers and/or pontics.

CASE REPORT

A patient aged 38 years reported to the department of prosthodontics, with chief complaint of missing teeth in upper left front region of jaw since 6 months. On clinical examination left maxillary central incisor was missing with a localized defect in the residual alveolar ridge (Fig 1). The labial and lingual cortical plates of the alveolus were intact and no loss of interdental papilla was present in this region. A large amount of space was present between maxillary right central incisor and left lateral incisor for replacement
of maxillary left central incisor (Fig2).

Diagnostic impressions were made with irreversible hydrocolloid. The treatment options explained to the patient was single tooth implant with bone grafting, fixed partial denture with bone augmentation procedure. The patient was not ready for any surgical procedure. The alternate treatment plan opted by the patient was resin bonded fixed partial denture with ovate pontic design and loop connectors.

Tooth preparation for both 11 and 22 was done following the standard technique for RBFPD. Lingual preparation ended 1.5 to 2 mm from the incisal edge and a light chamfer finish line was prepared 1 mm supragingivally. Proximally wraparound design was used by slightly extending the preparation to facioproximal line angle and placing a proximal groove at the facial most extension of the reduction. A polyvinyl siloxane impression was made using the putty reline technique. Provisional restorations were fabricated with a tooth colored self-cure acrylic resin and cemented. Two sets of cast were poured, one for laboratory procedures and one for mounting respectively. Wax patterns for lingual retainers with ovate pontic were fabricated using blue inlay wax on the working casts and were checked on the mounted cast. Two loops of 2 mm thickness, round in cross-section were fabricated and joined to the retainers 11, 22 and the pontic 21 on the palatal aspect. A 0.2 mm relief was provided in the region of the loop connectors. The wax patterns were cast and copings were finished (Fig3). After verifying the fit of the copings (Fig4), ceramic build up was completed and the bridge was cemented using resin based luting cement (Fig 5, 6 & 7).

DISCUSSION

Resin bonded fixed partial denture or Maryland bridge follows the principles of tooth conservation and aesthetics. The advantages include good periodontal health because of supra gingival margins of the restoration, no anesthesia, reduced cost and also rebonding is possible. Patients with small edentulous spans bounded by sound teeth are good candidates for RBFPDs. The potential abutment teeth should be healthy, unrestored or minimally restored, free of caries and periodontal disease, and have an adequate crown height and width. A non mobile tooth with an adequate surface area of enamel provides an ideal abutment. Although the young are more likely to have sound teeth, debond rates are higher among people under 30 years of age. The ovate pontic design and gingival ceramic used to compensate for the alveolar bone defect. The ovate pontic is the most aesthetic of all pontic designs because it most closely resembles the emergence profile of natural teeth. It is also more desirable from the phonetic view because it does not allow the passage of air and saliva like other, more hygienic designs. Furthermore, patients also prefer the lingual contours of the ovate pontic because of their close resemblance to natural contours. In the above case, the loop connector solved the problem of excessive mesio-distal width pontic space, and it is also easy to clean and maintain. In a loop connector fixed partial denture, the connector consists of a loop on the lingual aspect of the prosthesis. The loop may be cast from sprue wax that is circular in cross section or shaped from platinum-gold palladium (Pt-Au-Pd) alloy wire. Metabolic design is important to ensure that plaque control is not impeded. The connectors should not be very thick and should have an intimate contact with the underlying mucosa; otherwise, there are chances that the patient may develop the annoying habit of pushing the tip of the tongue into the gap between the loop and the mucosa.

CONCLUSION

The main objective of aesthetics was achieved and the patient was very pleased with the outcome. The final restoration exhibited excellent form, function and aesthetics giving a natural appearance to the patient.

REFERENCES


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LIST OF PHOTOGRAPHS

Fig 1: Pre operative intra oral view
Fig 2: Localized defect of alveolar ridge

Fig 3: RBFPD retainer and Loop Connector
Fig 4: Metal coping trial

Fig 5: Definitive prosthesis
Fig 6: Definitive prosthesis: Intraoral view

Fig 7: Extra oral view of definitive prosthesis