

IMMEDIATE SINGLE VISIT NATURAL TOOTH PONTIC: A CASE REPORT

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ABSTRACT:

Background: When a single tooth is lost from the anterior region, the patient expects immediate esthetic restoration of the edentulous space. Replacing a missing tooth in a single visit can be made possible by utilizing adhesive techniques with resin composites and glass fibers in the form of fibre reinforced conservative bridge using natural tooth pontic. Using the natural tooth as a pontic offers the benefits of being the right size, shape and color. Moreover, the positive psychological value to the patient in using his or her natural tooth is an added benefit.

Aim: A conservative solution for an esthetic challenge in a single visit and a chair side procedure to improve a smile.

Case Description: After radiographic and clinical examinations, the tooth which was to be extracted should be used for the restoration of its own extracted area. The extracted tooth was splinted using Ribbond fiber (Ribbond Inc., Seattle WA) to adjacent teeth with the aid of the surface modifications on extracted tooth and adjacent teeth.

Conclusion: Natural tooth pontic is a simple and cost effective treatment option for the replacement of a tooth, using its own natural coronal portion.

Key words: Esthetics, Ribbond, Conservative bridge, Natural tooth pontic.

INTRODUCTION:

As *Goldstein* said, aesthetic dentistry is the art of dentistry in its purest form. As with many forms of art, conservative aesthetic dentistry provides a means of art is expression that feeds on creativity and imagination.^[1]

When a single tooth is lost from the anterior region, the patient expects immediate esthetic restoration of the edentulous space.^[2] The various Prosthodontic treatment options for a single missing tooth require multiple visits to achieve a desirable results.^[3]

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Conservation, natural preservation, minimal invasion, aesthetics and cost are some of the important factors that are considered when replacing a missing tooth, as well as prosthesis biocompatibility and oral hygiene maintenance.

Alternatively, replacing a missing tooth in a single visit can be made possible by utilizing adhesive techniques with resin composites and glass fibers in the form of fibre reinforced conservative bridge using natural tooth pontic. Apart from right size, shape and color, the positive psychological value to the patient in using his or her natural tooth is an added benefit.

Fibre reinforced conservative bridge with natural tooth pontic is a simple, economical and quick method to improve the esthetics and psychological requirements of patients presenting with avulsed, subluxated or extruded anterior tooth due to trauma.

CASE DETAIL:

A 22 year old female reported to the Department of Conservative Dentistry and Endodontics with a complaint of mobility in the lower front tooth region. Past dental history revealed road accident 2 years back. Clinically, the patient presented with grade II mobility with respect to 41 along with sinus formation. IOPA revealed perforation and coronal restoration along with respect to 41 (**Fig 1, 2**). Thermal test showed no response with 42, and delayed lingering response with 41.



Fig. 1 Preoperative photograph



Fig 2 Preoperative IOPA

Because of time constraints and patient's psychological expectations, extraction of 41 and root canal treatment of 42 was decided and it was planned to use the crown of same extracted tooth as replacement prosthesis. The patient was duly informed about possible limitations and outcomes of the procedure and the consent was taken.

Preoperative analysis: Study cast was made and the tooth 41 was scrapped out and length of the natural tooth pontic needed was determined by taking the adjacent central incisor and location of

gingival margin as reference points (Fig. 3). This length was recorded.



Fig. 3 Study Casts

Clinical procedure: Atraumatic extraction of 41 was performed (Fig. 4).



Fig. 4 Photograph after 41 extraction

The extracted tooth was preserved in normal saline. Root amputation was done using straight fissure diamond point. Following pulp removal, coronal portion of pulp chamber was cleaned with 3% NaOCl from the site of root amputation. The pulp chamber was sealed at the site

of amputation with a micro-filled hybrid composite (FILTEC Z 250,3M ESPE) and ovate pontic shape was designed (Fig.5).



Fig. 5 Pontic design

A retentive groove was made on palatal aspect of pontic to aid in micromechanical retention. Prepared pontic was tried in the edentulous space for proper positioning (Fig.6).



Fig. 6 Prepared pontic tried in edentulous space

Root canal treatment of 42 was performed and tooth was obturated with lateral condensation technique under rubber dam isolation (Fig. 7, 8) and access cavity was left unrestored intentionally.



Fig. 7 Rubber dam isolation



Fig. 8 Obturation IOPA

A Class III cavity with lingual extension was prepared mesially on 31 to aid in retention and stabilization with Ribbond (Ribbond Inc., Seattle WA) (Fig. 9). Two pieces of adjusted length of Ribbond fibre (Ribbond Inc., Seattle WA) were cut and soaked in dentin bonding agent and kept away from light.



Fig. 9 Photograph showing class III cavity on 31 and unrestored access cavity wrt 42. The access cavity on 42 and Conservative class III cavity on 31 along with the pontic tooth 41 were etched with 37% phosphoric acid. After rinsing and drying the bonding agent (Adper-Single Bond 2; 3M ESPE) was applied and light-cured according to the manufacturer's instructions. With the help of sticky wax natural tooth pontic was carried into the desired position and stabilized using Ribbond (Ribbond Inc., Seattle WA) and

passive contacts. A thin layer of flowable composite resin was applied to the lingual surface of the pontic and the adjacent teeth. The Ribbond fibre (Ribbond Inc., Seattle WA) was pressed into the resin with the aid of a composite hand instrument to ensure its close adaptation on to the pontic and adjacent tooth surfaces. The assembly was light-cured from palatal and labial directions. Excess bulk of resin was removed from palatal and embrasure areas and esthetic contouring & polishing of the restoration done (Fig. 10).



Fig.10 Lingual view on pontic

The final steps included adjustment of occlusion and esthetic contouring and polishing of the conservative bridge. The patient was informed about the importance of proper hygiene and was followed up periodically. (Fig. 11)



Fig.11 Postoperative photograph

DISCUSSION:

The restoration of a smile is one of the most appreciating and gratifying services a dentist can render. Removable appliances or fixed prostheses seem to be one suitable treatment option, but patient compliance is generally a major problem.^[4]

This case report describes a simple, economical and quick method to improve the esthetics of patients having perforated anterior tooth with poor prognosis due to trauma. Single-tooth replacement options include conventional fixed partial dentures, a removable partial denture and a single-tooth implant. A resin-bonded fixed partial denture allows for more conservative tooth preparation. Dental implants in the esthetic zone are well documented in the literature, and numerous controlled clinical trials have documented satisfactory overall implant survival and success rates.^[5] Such restorations are sometimes complicated by the cost of the restoration, patient's fear of the surgical procedure, and anatomical limitations. The development of adhesive systems has provided other treatment options with minimally invasive preparations and is often simpler. Replacement of a single tooth with natural tooth pontic and using ribbon was preferred in the current case to immediately restore the esthetics of patient because this chair side technique does not require laboratory procedures.^[6-9] The use of the extracted tooth, aided by the impressive bond strength of dental adhesive materials, provides an option to

treat patients with less invasive tooth preparation, favorable esthetics, and a natural feeling.

The key to Ribbond's success (and what distinguishes Ribbond (Ribbond Inc., Seattle WA) from the other fiber reinforcements is its patented leno weave designed with a lock-stitch feature that effectively transfers forces throughout the weave without stress transfer back into the resin. Ribbond's weave also provides excellent manageability characteristics.^[10-12]

Having virtually no memory, Ribbond (Ribbond Inc., Seattle WA) adapts to the contours of the teeth and dental arch. In addition, unlike loosely braided or bundles of unidirectional fibers, Ribbond does not spread or fall apart when manipulated.

According to a clinical 5-year follow-up pilot study, glass-FRC fixed partial dentures exhibited an overall survival rate of 75% and functional survival rate of 93%.^[6] Previous attempts at chair side tooth replacement involved using various types of pontics, such as the extracted tooth, porcelain denture teeth, and resin composite, acrylic denture teeth (with or without lingual wire reinforcement).^[7,8,9] In this case, patient's own tooth was used as a pontic which was extracted due to extrusion and apical resorption associated with alveolar bone loss.

Bonding of the pontic to adjacent teeth is important for the success of conservative bridges. The predominant location of debonding with resin-bonded fixed partial dentures is between the luting cement

and the framework of the denture. Good adhesion could be managed by adding more fibre to the present fibre frame. The fracture resistance of a three-unit provisional fixed partial denture was found to be increased by adding glass-fibre reinforcement.^[10,11,12] In present case, for better adhesion the access cavity on 42 was intentionally left unrestored initially and a conservative class III cavity with palatal extension was prepared on mesial surface of 31 for obtaining bonding areas. Furthermore, for maximum strength, two Ribbond fibres (Ribbond Inc., Seattle WA) were adapted onto the retentive points made on pontic and prepared cavities on 42 and 31.^[12-15]

With the FRC bridges, the pontic and the abutment teeth require minimal or no preparation. The clinical technique which

has been described here is noninvasive and reversible so that all other restorative options can be evaluated at a later date. Though the success in these cases is good, further studies and long term follow ups are desired to evaluate the success rate of the FRC bridges.

CONCLUSION:

Natural tooth pontic is a simple and cost effective treatment options for the replacement of a tooth, using its own natural coronal portion. It can be considered, a non invasive and long- term provisional treatment, providing superior aesthetics and functions. However, this procedure is highly operator dependent and demands appropriate case selection and precise technique.

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