

# Interim Esthetic Rehabilitation of Two Anterior Teeth Using Natural Tooth Pontic: A Case Report

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## ABSTRACT

Tooth loss, especially in anterior region, precipitates psychological distress to the affected individual. Providing an immediate definitive restoration is sometimes not possible and, in some specific clinical situations, a delay of few months may even be desirable before providing a final restoration. Natural tooth pontic is a simple and time-saving alternative for interim rehabilitation in anterior tooth region which restores the esthetics to near normal in a single appointment. This article discusses two cases where it was not possible to place an implant or any other definitive prosthetic restoration in immediate future. Excellent esthetic results were obtained with natural tooth pontic used as an interim restoration in these cases.

**Keywords:** Interim restoration, Natural tooth pontic, Ribbond, Trauma

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## INTRODUCTION

**T**raumatic injuries to the dentition constitute a significant proportion of the cases presenting in a dental clinic. Many of these injuries lead to permanent loss of tooth. It has been estimated that approximately 5 million teeth are avulsed every year (1). Loss of anterior tooth is not merely a problem affecting masticatory functions; for an individual, it causes a lot of psychological distress as well. In many cases, providing a final restoration may not be possible at the time of loss of tooth and providing an interim restoration becomes indispensable for both esthetic and functional requirements. Notwithstanding all the advances in science of prosthetics, restoring the esthetics and functions to normality still remains an elusive goal. Removable partial denture or acrylic denture teeth splinted to adjacent teeth have been the customary solutions, but attaining a perfect shade and life like appearance may not be possible in acrylic teeth,

leaving the patient with no options but to manage with an artificial outlook. As an interim therapy, till the time oral health status becomes conducive to receiving prosthetic restorations, replacing patient's own tooth crown at the site of tooth loss could be the most acceptable treatment option for the patient. It dilutes the psychological effect the trauma has caused to the patient. For long, orthodontic wire splints have been used to bond the natural tooth crown to adjacent teeth. However, fiber reinforced composites provide a new alternative which is simple to use, with greater compliance and biocompatibility and esthetic acceptability (2). This article discusses two cases in which immediate restoration of esthetics was provided to patients following loss of anterior teeth subsequent to trauma.

## CASE 1

A 30 year old male reported with chief complaint of mobility in upper front

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tooth and gave the history of road side accident 4 months ago. Patient had undergone intermaxillary fixation treatment for the fracture in mandible. On clinical examination, all maxillary anterior teeth had gingival recession (Figure 1a) and exhibited grade I mobility except tooth #21 which had a greater mobility of grade III degree (Figure 1b). Radiographic examination revealed horizontal root fracture in #12 and #21, along with generalized bone loss in the anterior maxillary segment (Figure 1c).

Owing to the limited amount of bone support coronal to fracture line in #21, it was decided to remove this tooth. For immediate restoration of esthetics and to help in splinting of adjacent teeth, however, it was decided to replace the crown of extracted tooth as natural tooth pontic.

Involved tooth was extracted (Figure 1d,e) and stored in normal saline, till the time blood clot formed in extraction socket. The height of clinical crown of #11 was measured and the

crown of the extracted tooth was sectioned at same height with a diamond disc under continuous water cooling. Cervical aspect was then modified with the help of an air rotorhand piece to create an esthetic emergence profile (Figure 1f,1g).The pulp chamber was cleaned from apical end and slightly enlarged; and then it was filled with flowable composite (Figure 1h).A groove with undercuts was cut on the palatal surface of extracted tooth pontic to accommodate the ribbon framework (Figure 1i).



Figure 1. Clinical technique of interim restoration with natural tooth pontic in case 1. (a). Preoperative clinical view showing recession in all maxillary anterior teeth. (b). Tooth #21 showing grade III mobility. (c). IOPA radiograph showing comminuted root fracture i.r.t. #21 and bone loss coronal to fracture line on distal aspect of this tooth. (d) Extracted tooth. (e) Clinical view after extraction of #21. (f) Crown sliced at CEJ and recontoured to get a shape similar to natural tooth crown. (g) Pulp chamber opened and cleaned. (h) Pulp chamber filled with flowable composite. (i) Groove prepared on palatal aspect to accommodate ribbon strip. (j) Framework prepared to accept the pontic. (k) Pontic bonded to the framework. (l) Postoperative palatal view. (m) Postoperative radiograph. (n) Six months follow up.

It was decided to bond the fiber reinforced composite strip (Ribbond, Seattle, WA, USA) from #13 to #23 as a measure of splinting for mobile teeth. Length of ribbond strip required for the bridge was measured with aluminum foil strip. All the teeth surfaces were cleaned with pumice and the surfaces to be bonded were roughened with a bur. After acid etching and bonding agent (Adper Single Bond 2, 3M, ESPE, St. Paul, MN, USA) application, a thin layer of a soft composite was applied over the palatal surface of tooth #13 to #23 to serve as a receptacle for ribbond strip. Care was taken to extend the bonding area past the contact areas of proximal surfaces of abutments.

The ribbond strip was dipped in an unfilled resin and thereafter embedded into the composite previously placed extending from palatal surface of #13, #12, half of proximal surface of #11, stretching across edentulous region, to reach proximal midpoint of #22 and palatal surface of tooth #23 (Figure 1j). Care was taken to minimize the thick-

ness of composite between ribbond strip and tooth. Excess composite was removed and the framework was polymerized. Another piece of ribbond strip measuring in length equal to mesiodistal length of extraction space was cut and wet in unfilled resin and placed on the lingual side of the ribbond in the edentulous area, with a thin layer of soft composite between them. It was again polymerized.

The internal surfaces of the groove which was prepared on the palatal surface of pontic were etched and bonded to the ribbond framework with the help of light cure composite (Figure 1k). The ribbond in the groove was covered with composite and polymerized (Figure 1l). The ribbond exposed in interproximal regions was covered with flowable composite to make the prosthesis smooth and comfortable to the patient. The bridge was checked and adjusted for high points and a radiograph was taken for evaluation (Figure 1m). Patient was instructed to avoid biting hard foods with this tooth. Clinical appearance and functional

performance was satisfactory at six months follow up (Figure 1n).

**CASE 2**

A 12 year old girl reported to the clinic with intrusion in #21, #22 and avulsed #23 (Figure 2a). The adjacent teeth were, however, unaffected. Treatment plan was surgical extrusion of #21 and #22 and an attempt to replant the avulsed tooth. Tooth no #23 was replanted (Figure 2b) following the standard guidelines of replantation and composite wire splinting was done extending from #11 to #24.

Follow up examination revealed absence of mobility and root resorption in #21 and #22, however, there was severe bone loss around #23 (Figure 2c). So the tooth had to be extracted (Figure 2d) and immediate replacement with extracted tooth crown was planned. The tooth was sliced at CEJ level and crown contoured to adapt the extraction site (Figure 2e). A groove was prepared on palatal surface of crown, and ribbond framework was prepared extending from #22 to #24 using the

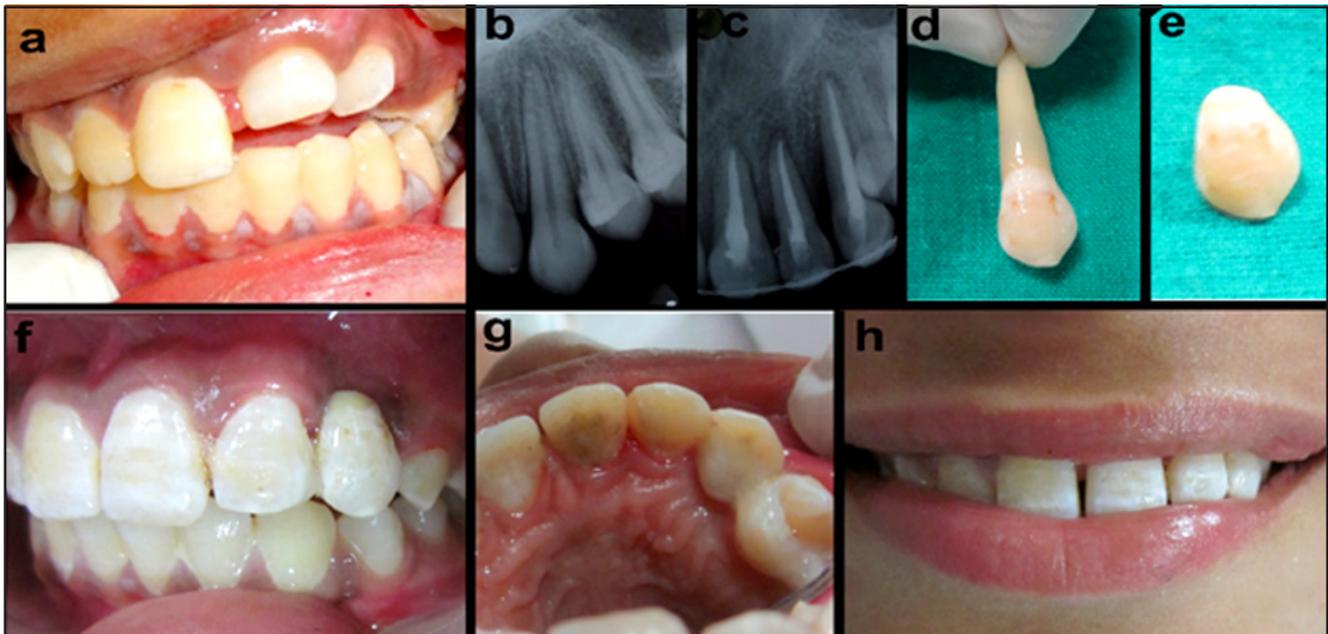


Figure 2. Case 2. (a) Preoperative clinical view showing intrusion of #21, #22 and avulsed #23. (b) IOPA radiograph taken to check the fit of avulsed tooth in the socket for reimplantation. (c) One month followup radiograph: severe periradicular bone loss. (d) Extracted tooth. (e) Crown ready to be used as natural tooth pontic. (f) Natural tooth pontic bonded using fiber reinforced splint. (g) Postoperative palatal view. (h) A pleasing smile is attained.

technique described in above mentioned case. The pontic was bonded to ribbon framework (Figure 1f, 1g). Occlusal clearance was provided to avoid heavy functional loading on the tooth. A pleasing smile was attained (Figure 1h).

## DISCUSSION

In many clinical scenarios, providing a definitive prosthetic treatment at a certain time may not be feasible. In those cases, interim therapy which best matches the patient's expectations of esthetics, while providing a modicum of functional needs should be considered. Such cases constitute good indications for natural tooth pontic utilizing extracted tooth of the same patient.

In the first case of the report, patient had not only horizontal root fracture in one tooth, adjacent teeth were also having a grade I mobility. Since definitive prosthetic treatment to meet functional and esthetic needs could not be given at the time as it was contingent upon the healing pattern #12 would show in future, in the interim period, restoration of esthetics was the prime concern. Fractured #12 and mobile #11, #21 required splinting as well. Hence, it was decided to place natural tooth pontic with simultaneous splinting from tooth #13 to #23. Thus a single fiber reinforced composite served dual purpose in this case.

In the second case, patient was only 12 years old. Potential of further jaw growth precluded the placement of implants. Alternative treatment option of removable partial denture was not acceptable to patient. Being a school going child, an immediate restoration of esthetics was her utmost concern, and hence, the natural tooth pontic was

considered the best option available.

Natural tooth pontic presents a simple, cost-effective and esthetic option for managing anterior tooth loss. Quirynen et al. (3) have done a long term prospective study using natural teeth and acrylic resin teeth as pontics following loss of lower anterior teeth due to periodontal breakdown, and have reported favorable long term results.

Other indications for this procedure include patients wanting tooth replacement with a minimally invasive procedure, where adjacent teeth also require splinting (4). This procedure may also be used for maintenance of esthetics during orthodontic treatment after tooth extraction for orthodontic reasons. The pontic may be replaced immediately after extraction and then can be sliced proximally in subsequent appointments to provide space for orthodontic movement of teeth. This reduces the psychological stress of orthodontic extraction and makes it more acceptable for the patient.

Some pre-requisites for this procedure are that the extracted tooth crown and abutments must be in reasonably good condition, and the tooth pontic must not participate in heavy centric or functional occlusion. That's why this procedure is better indicated in low stress areas like lower anteriors or upper anteriors specifically lateral incisors (5). It is usually not indicated for maxillary canine replacement because of heavy occlusal loading because of canine guidance in natural dentition. However in the above mentioned case, it was placed in canine region owing to definitive indications. Care was taken to keep the pontic out of occlusion

during all centric and eccentric movements.

This treatment options has the major limitation of being only an interim therapy. In a study by Bhandari & Chaturvedi (6) it was reported that out of 15 patients, hundred percent of patients were happy with the esthetics, however, 60% of them were dissatisfied with the function that it provided. The primary problem is apprehension of splint fracture and difficulty while incising. To make this treatment a success for a longer duration, key points like appropriate case selection, precise technique and patient motivation for excellent plaque control must be very strictly observed.

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