

Immediate Tooth Replacement by Natural Tooth Pontic after Tooth Avulsion: Our Clinical Experience

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ABSTRACT

The loss of anterior tooth is not only physical trauma but also psychosocial trauma to the patient. In such patients immediate replacement of missing tooth is very challenging due to esthetic demands. Established routine treatment options for replacement are time consuming and expensive. To overcome all these problems, self natural tooth pontic placement is one of the treatment options. The use of self natural tooth as pontic offers the benefits of being of the perfect morphology and color. Moreover the positive psychological value to the patient in using his or her natural tooth is an extra advantage. The present paper reports a case of patient, with avulsion of tooth due to trauma, in which the replantation was not possible due to delay and inappropriate carriage of tooth by patient in which immediate restorative treatment of self natural tooth pontic placement was done.

KEYWORDS: Avulsion, Composite, Esthetic Zone, Natural Tooth Pontic, Splinting

INTRODUCTION

Providing immediate restorative esthetic treatment in esthetic zone is a herculean task for dental surgeon to overcome this situation nowadays immediate implant supported prosthesis is treatment of choice. Previously the removable prosthesis and tooth supported prosthesis was popular as primary treatment options.¹ But all these treatment options are time consuming as well as highly expensive in nature. In developing country like India, time may not be that important factor as compared to treatment cost due to poverty. With special regards to avulsion injuries, replantation of teeth has a doubtful long-term prognosis because of resorption and more than half of the teeth are eventually lost because of ankylosis or inflammatory resorption.² Depending on many clinical and economical factors, a course of treatment is decided by patient and dental surgeon. Advent of tooth colored restorative materials and adhesive techniques have made numerous esthetic treatments possible.³ Esthetic dentistry provides means of artistic expression that feeds on creativity and imagination. Nowadays use of self natural tooth pontic as restoration in esthetic zone is considered as one of the treatment option.⁴ Conservation, natural preservation, minimal invasion, esthetics, cost and oral hygiene maintenance are some of the important factors that are considered and taken care of while placing natural tooth pontic.^{1,4}

Trauma, falls and assaults are the principle causes of anterior tooth loss. After complete tooth avulsion, the tooth can be reimplanted in its position but if prognosis is poor due to severe tissue trauma or delay in replantation or inappropriate carriage of tooth, it cannot be reimplanted. Such a tooth can be reshaped and reinforced with composite resin and splinted with adjacent teeth as a self natural tooth pontic with fairly good prognosis.⁵

This paper, reports a case of eighteen years old, male patient who reported with avulsed right maxillary central incisor due to trauma, which could not be reimplanted, as the tooth was kept out of the storage medium for more than one day. He was treated with a natural tooth pontic with excellent result.

CASE REPORT

A eighteen year old healthy, male, patient was reported to department of Oral and Maxillofacial Surgery, with a chief complaint of upper anterior tooth avulsion two days back. He carried avulsed tooth in a small piece of paper. Patient gave the history of Trauma to the upper anterior jaw due to fall while walking on the road two days back. He did not have any significant medical History and on general examination, he was well oriented to time, place and person, was averagely built. He did not have

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any other history or signs of trauma on the face or elsewhere on the body.

On intraoral examination, the maxillary central incisor was avulsed, there was no other traumatic soft tissue injury seen intraorally (Fig No.1). His oral hygiene and periodontal condition was good. On the basis of patients expectations, regarding esthetic treatment and his financial restraints, we offered him a self natural tooth pontic. Reimplantation of the tooth was not possible as the tooth was avulsed 2 days which could have led to periodontal ligament devitalisation.

Treatment was given in the dental operatory with minimal local infiltration anesthesia. Avulsed tooth was cleaned with normal saline and povidone iodine solution, thereafter apical half of the tooth, was resected with the help of straight fissure carbide bur. A modified ridge lap design was given to the natural tooth pontic (Fig No.2).

Residual pulp tissue was completely removed from the pulp chamber and the root canal through the newly created apical end, so as to prevent any infection or discolouration resulting from decomposition of residual pulpal tissue. The resultant empty pulp chamber and root canal was sealed with light cured composite resin. On the lingual side, at the level of cingulum, a groove was created with same bur to accommodate a 0.001 inch diameter braided stainless steel wire. The wire was incorporated into the groove, embedded and bonded with composite resin. All this preparatory work was done extra orally and the tooth was prepared to be used as a pontic.



Fig. 1 : Pre-Operative Photograph

Intra orally, the operative area was isolated, the pontic was picked carefully and was placed inside the healing socket with the required minimal incisal adjustments. Then the lateral wire arms of the natural tooth pontic were adapted to the cingulum of the adjacent teeth. The adjacent teeth were air dried on lingual side at cingulum, then etched with phosphoric acid etchant for fifteen seconds, rinsed with water and re-dried. A bonding agent was applied on the etched surfaces, bonding of lateral wire arms was done with help of composite resin, and an immediate post operative photograph was taken (Fig 3). After completion of splinting, the close adaptation of lingual wire was rechecked, any excess wire was cut and smoothed, a composite built up was done on the lingual

aspect, it was then finished and polished to prevent any tongue irritation (Fig No.4).

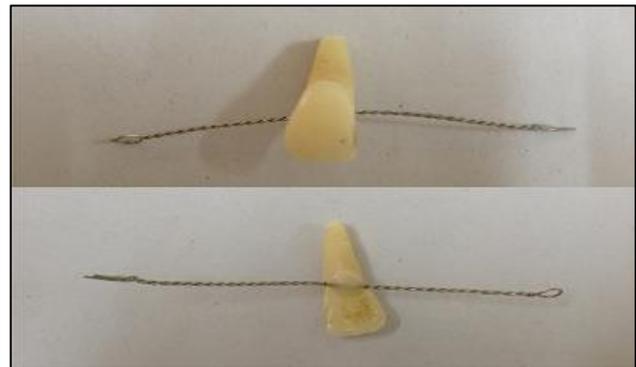


Fig 2: Pontic Design.



Fig 3: Immediate Post Operative Photograph.



Fig 4: Splinted Pontic Intraoral Photograph.

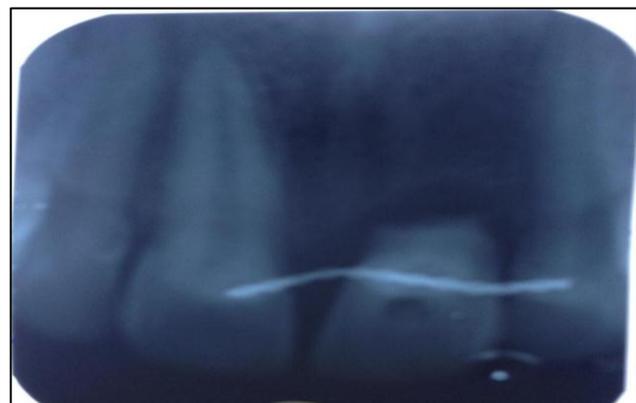


Fig 5: Post Operative IOPA Radiograph.

All the necessary instructions and protocols regarding the care to be taken for the natural tooth pontic was informed to the patient. An immediate post pontic placement radiograph (IOPA) of that region was taken (Fig No.5). Patients was recalled for regular follow ups .First month . Sixth month and one year follow up (Fig No.6) showed absolute function stability even after one year of placement.



Fig 6: 1 year Follow up Photograph.

DISCUSSION

For more than a decade replacement of missing anterior teeth was done by different methods, but still now immediate replacement of missing tooth in aesthetic zone is one of the challenging task for dental surgeons. In the process many different methods are tried and tested but none of them are actually “immediate replacement” methods, because they require some kind of time consuming lab procedures. For people who socialize a lot, replacement of anterior tooth which lies in the anterior esthetic zone ,with a prosthesis becomes difficult due to time constraint ,in such cases replacement of anterior tooth with the help of Immediate self natural tooth pontic serves best results.^{7,8}

Case selection criteria for the proposed treatment of natural tooth are as follows^{2,5,6}:

- As an immediate transient replacement of tooth till permanent replacement is done.
- Patient’s desire for immediate esthetic restoration after tooth loss.
- Patient who are not willing for any kind of invasive procedure such as Implant supported prosthesis.
- Patient who desires for his or her natural tooth back to its position.
- If patient doesn’t want any removable, fixed or Implant supported prosthesis.
- If patient desires cost effective replacement.
- If despite of patients desire, if avulsed tooth is not in good condition for reimplantation.
- The natural tooth pontic must not participate in heavy centric or functional occlusion.
- Teeth which are unsuccessfully reimplanted after avulsion.
- Adequate periodontal support should be available from the adjacent teeth.

- Adequate occlusal clearance should be available for splinting .

Self natural tooth pontic is one of the unique treatment options of its kind with many advantages and very few disadvantages.

Contraindication for the procedure.^{2,5}

- Patients with parafunctional habits.
- Relatively short clinical crown.
- Inadequate occlusal clearance space.
- Advanced periodontal disease.

Although the procedure is highly technique sensitive, the key advantages are:

- High esthetic results.
- Reduces the psychological stress on the patient.
- Avulsed or extracted tooth can be restored at the same single visit.
- Preservation of natural crown structure which is morphologically exact replica of the missing tooth.
- No Laboratory or multi visit procedure required.
- The procedure is easily reversible and the patient can switch over to other modality of treatment at any given point of time required.
- This Procedure can be used as a temporary or a permanent prosthetic replacement for the patient.

Despite of the advantages ,the main limiting factors with this technique are: Patients compliant with maintenance of meticulous oral hygiene, limited functional efficiency, chances of discoloration of pontic over the period of years and also chances of splint fracture. Periodic recall visits for proper evaluation of the functionality of the procedure are therefore essential.

CONCLUSION

Use of Natural tooth pontic as restorative option is one of the innovative treatment method after tooth avulsion. Natural teeth serve as an excellent yet transient treatment option for immediate replacement following extraction in the anterior esthetic zone. The patient satisfaction of continuing to have their natural teeth in the post-extraction period, taking care of his esthetic needs and simultaneously providing him with time to choose from the various final treatment options available . Patient's positive psychological response, cost effectiveness, and achievement of excellent soft tissue contours make this technique very useful. However, appropriate patient selection, plaque control and precision during placement should be kept in mind to achieve the desired objective.⁵

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