

AESTHETIC REHABILITATION OF AVULSED ANTERIOR TOOTH USING NATURAL TOOTH PONTIC AND FIBER REINFORCED COMPOSITE: A CASE REPORT

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ABSTRACT:

Trauma to the teeth is a common reason for emergency room visit among children. Trauma to the teeth may result in emotional distress for both parents and affected children. Thus it is of importance for management of such cases. Management of avulsed tooth with help of reinforced fibre composite provides us with a economical, aesthetically pleasing and fast treatment which does not need lot of laboratory procedures whereas, maintaining adequate mechanical strength.

Key words: Fibre reinforced composite, Natural tooth Pontic, Splinting

INTRODUCTION:

One of the main strategies of the oral health care delivery system is protection and maintenance of healthy teeth throughout life. Dental caries and periodontal disease are leading causes of tooth loss. Apart from this, tooth loss also occurs due to trauma, which may be caused by violence, accidents, falls and sport-related activities (Bastone et al, 2000) ^[1]. The majority of dental injuries involve anterior teeth. In addition to pain and possible infection, consequences of trauma include alteration in physical appearance, speech, restriction in biting, and psychological and emotional impacts ^[2,3]. Epidemiological studies indicate that dental trauma is a significant problem in young people and that in the near future, the incidence of trauma will exceed that of dental caries and periodontal disease in young population ^[4]. Conservation, natural

preservation, minimal invasion, aesthetics, prosthesis biocompatibility and oral hygiene maintenance are primary concerns that must be addressed before replacing a missing tooth in the esthetic zone ^[5]. Solution to this problem is by using the following modalities

- a) Patient's own natural tooth
- b) Removable temporary acrylic prosthesis, an acrylic tooth or composite resin tooth used as a pontic

Use of patient's own avulsed or extracted tooth as a pontic and bonding it to adjacent teeth is more conservative, esthetic and less time consuming, as this is direct chair side procedure in which prosthesis can be placed in single session without involving extensive laboratory procedures. It also adds to a positive psychological effect on the child ^[6].

Fibre reinforced materials have been widely used for a number of years in dentistry the principle of fibre reinforcement are incorporation of thin filaments of a foreign material into a base resin. These filaments impart increased strength by bonding into the structure and preventing crack propagation through the structure [7]. Ribbond is a bondable fibre reinforced material which is made from ultra-high molecular weight polyethylene fibres with a leno-weave orientation. Ribbond has been used for stabilizing traumatized teeth, restoring fractured teeth, for creating a fixed partial denture and for direct-bonded endodontic posts and cores [8,9]. The aim of this paper is to present two case reports in which natural tooth was used as pontic and bonded to the adjacent teeth using FRC material (Ribbond) for anterior tooth space rehabilitation purpose.

CASE DETAIL:

Case I

A twelve-year-old boy reported to department of Pedodontics and preventive dentistry with the complaint of missing tooth in the lower right region of the lower jaw. On taking proper history it was found that that the child suffered from trauma about three months ago, which resulted in the avulsion of the lower central incisor (fig-1). The patient however had his avulsed tooth with him (fig 2)

The treatment of the plan included trimming of the avulsed tooth followed by extirpation of pulp from the root canal

and filling with Glass ionomer cement. Meanwhile a strip of ribbond material (Interlig) was bonded to the surrounding abutment teeth in the patients mouth using acid etching by 37% phosphoric acid (fig 3), wedges were placed to maintain the embrasure area .Dentin bonding agent was applied to etched enamel along with fibre (Fastsplint) and cured for 20 seconds. A layer of hybrid composite (3M ESPE, B2 shade) was placed on the fibre and cured. The tooth was then placed in the gap and assessed for aesthetics and was then trimmed on the mesial and distal side to accommodate in the available space. It was then acid etched and bonded with the strip of ribbond, which had already been bonded to the two adjacent abutment teeth (fig-4). The patient was then assessed after 3 month (fig 5) and continuous follow up were planed.

Case II

A eleven year old boy reported to the department of Pedodontics and preventive dentistry Himachal dental college with a avulsed upper right central incisor (fig 6) . On taking proper history it was assessed that the avulsion had occurred due to trauma one month before. The patient had brought the avulsed tooth along with him (fig 7). As time had passed since the injury occurred the socket and healed.

The treatment of plan included the use of the avulsed tooth as natural tooth pontic by using reinforced splinting. The avulsed tooth was trimmed and the pulp extirpation was done followed by cleaning

of the root canal and finally filling with the glass ionomer cement. The trimmed tooth was then finished and polished using pumice and was then dried. The reinforced fiber of appropriate length was taken (from distal surface of 22 to the distal surface of 13). The abutment teeth were acid etched with phosphoric acid and the dried. Followed by bond of the reinforced fiber to the teeth and subsequent curing using light cure composite. The trimmed avulsed tooth was then placed in the gap and assessed for proper fit and esthetics. It was then bonded to the reinforced fiber following its acid etching and subsequent curing with light cured composite restoration (fig 8). The patient was recalled for monthly follow ups (fig 9).

DISCUSSION:

Injuries to permanent teeth are not only a compromise to dental health, but can also lead to aesthetic, psychological, social and therapeutic problems [2,3]. The lack of treatment modalities or protocol for traumatic avulsion of teeth before growth has ceased also contributes to prognosis of such cases [10]. The evolution of fiber-reinforced composite technology has brought a new material into the domain of metal-free, adhesive dentistry. This technology is very simple, inexpensive and the need for any additional laboratory

procedures is not required [11]. Fiber splint material is aesthetically pleasing and comfortable to the patient [12]. It has highly favorable mechanical properties. An adhesive or resin bonded bridge is a tooth saving construction for the replacement of a lost tooth, especially when the abutment teeth are relatively sound [13]. Apart from significant benefits in terms of mechanical properties, the possibility of direct chair side application and the ability to bond to tooth structure make fiber-reinforced composite an attractive choice for a variety of dental applications. Although reinforced composite materials seem to provide excellent esthetics, some authors do not recommend composite materials for permanent restoration because of unstable esthetics, increased wear and liability to plaque accumulation [14-17].

CONCLUSIONS:

The desire expressed by many patients for cosmetic and metal-free restoration has led to the development of better performance and truly esthetic resin composites. The technique is simple and cost effective which provides for both esthetic and the mechanical properties. The procedure is highly operator dependent and demands appropriate case selection and precise technique

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FIGURES:

Case I



Figure 1 (Pre-Operative)



Figure 2 (Avulsed tooth)



Figure 3 (Fixation with Ribbond)



Figure 4 (Post -Operative)



Figure 5 (Post-Operative)

Case II



Figure 6 (Pre-operative)



Figure 7 (Avulsed tooth)



Figure 8 (Post-operative)

Figure 9 (1 month follow up)