

## TREATMENT ALTERNATIVES TO PERMANENT ANTERIOR TOOTH LOSS (TWO CASE REPORTS)

### ÖN BÖLGE ERKEN SÜREKLİ DİŞ KAYIPLARINDA TEDAVİ ALTERNATİFLERİ (İKİ OLGU SUNUMU)

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#### ABSTRACT

Delayed replantation of avulsed tooth causes ankylosis-related replacement resorption, potentially resulting in tooth loss within years. Taking compliance and aesthetic requirements, the patient can be treated with modified Nance arch appliance or fiber reinforced composite bridge. Each approach has distinct advantages as well as disadvantages. In this clinical report, modified Nance arch appliance and fiber reinforced composite bridge were used with the crowns' of the avulsed teeth with root resorption in two cases.

**Key-Words:** Dentoalveolar trauma, root resorption, tooth avulsion, tooth replantation

#### ÖZ

Avulse dişlerin gecikmiş reimplantasyonu ankilozla bağlantılı replasman rezorbsiyonuna neden olmaktadır ve birkaç yıl sonra diş kaybıyla sonuçlanabilmektedir. Hastanın şikayetleri ve estetik ihtiyaçlar göz önüne alındığında modifiye edilmiş Nance apareyleri veya fiberle güçlendirilmiş kompozit köprüler kullanılarak tedavi edilebilmektedir. Her iki tedavi yaklaşımının farklı avantaj ve dezavantajları bulunmaktadır. Bu olgu sunumunda; avülsiyon sonrası kök rezorpsiyonu gözlenen dişlerin çekildikten sonra kuronlarından yararlanılarak modifiye nance arkı ve fiberle güçlendirilmiş kompozit köprü kullanılarak tedavi edildiği iki vaka takdim edilmektedir.

**Anahtar Kelimeler:** Dentoalveolar travma, kök rezorbsiyonu, avulse dişler, diş reimplantasyonu

#### INTRODUCTION

Tooth avulsion is the complete displacement of the tooth from the alveolar socket with a prevalence of 1% and 16% in dental traumas.<sup>1</sup> Delayed replantation of avulsed tooth may result in infra-occlusion, preventing alveolar process growth, and tooth loss which may end in aesthetic problems.<sup>2</sup> Although, treatment options to resolve aesthetic problems resulting from tooth loss are limited for young patients, their treatment should be applied immediately to avoid the psychological problems.<sup>3</sup> This case report presents clinical and radiological findings and treatment options for using natural teeth in two young patients with replacement resorption.

#### CASE REPORTS

##### CASE 1

Eight years old male patient presented with a history of falling down from slide in playground and avulsion and replantation of upper left and right central incisors two years before the initial visit. The affected teeth were stored under non-physiological dry condition for three hours (Fig. 1a).

Primarily, necrotic soft tissue on the surface of the teeth was removed and the teeth were immersed in a 2% solution of sodium fluoride for five minutes. Alveolar sockets were irrigated with saline. Normal positions of the teeth, which were replanted with light finger pressure, were verified both clinically and radiographically (Fig. 1b). Fiber splint was applied for

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up to four weeks. Then, root canal treatment completed with calcium hydroxide paste in the first following week. Routine controls were made after four weeks and also three months. The patient referred to us with complaints of the gingival inflammation and mobility in central incisors, after two years. Radiographically, complete root resorption of the teeth was determined (Fig. 1c).

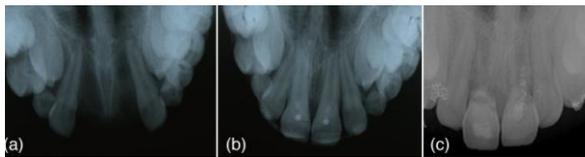


Figure 1. Radiographic view of the 8-years-old male patient a) Avulsion of upper central incisors b) Replanted incisors stabilized with fiber splint c) Complete root resorption of the central incisor after 2 years

### Treatment

Pulpal remnants of the affected teeth were removed and the teeth were disinfected by %0.2 chlorhexidine (Fig. 2a). One week was given for the healing of the extracted socket (Fig. 2b). Modified Nance arc appliance fabricated by using patient's own natural teeth was determined as treatment plan. First, direct composite restorations were performed in the lateral incisors and canines with enamel defects. Intra-coronal bleaching was applied on the extracted teeth, and shapes of the teeth were corrected with composite restorations to improve aesthetics. Mechanical undercuts were made on the palatal surface of the extracted teeth with composite resin (Fig. 2c). First-week follow up revealed no problem and the patient was really satisfied with the results. Routine clinical controls were made (Fig. 2d) and the patient was informed about prosthetic treatment and renewal of the appliance in the future.

### CASE 2

An 11-year old female patient presented with a history of falling from the ladder in apartment, and avulsion and replantation of upper right central incisor, and lateral luxation on upper left central incisor, two years before the initial visit.

The avulsed tooth was stored under non-physiological dry condition for five hours. Similar treatment procedure in the first case was applied to avulsed tooth. The tooth with lateral luxation was

repositioned with finger pressure (Fig 3a). Fiber splint was applied for four weeks and root canal treatment was completed (Fig. 3b).

Patient referred to us with complaints of the gingival inflammation and mobility in upper right central incisor after two years (Fig. 4a). Complete root resorption of the tooth was determined radiographically (Fig. 3c).



Figure 2. a) Intra-coronal bleaching performed on extracted teeth b) Intra-oral view of the extracted socket c) Intra-oral view of the modified Nance arch appliance d) Facial view after 3 months

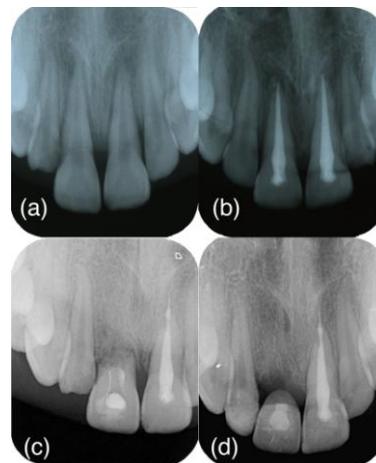


Figure 3. Radiographic view of the 11-years-old female patient a) Replantation of the avulsed upper right central incisor b) Endodontic treatment completed c) Complete root resorption of upper right central incisor after 2 years d) Fiber reinforced resin composite bridge

### Treatment

It was determined to use a fiber reinforced composite bridge. Initially, the tooth was extracted and stored in saline. The healing of the extracted socket was waited during the first week (Fig. 4b). Alveolar surface of the extracted tooth was removed

until cemento-enamel junction and its borders were rounded. Pulp chamber was cleaned and sealed with resin composite. Palatal surfaces of the adjacent and avulsed teeth were covered with the fiber splints (Constract, KERR, Switzerland) (Fig. 4c,d). Postoperative occlusion was checked and it was advised not to bite with front teeth. The patient was reminded of follow-up with three and six month intervals. Also, she was informed about the prosthetic treatment in the future (Fig. 3d).



Figure 4. a) Intraoral view showing gingival inflammation in upper right central incisor b) Intra-oral view of the extracted socket c) Fiber reinforced resin composite bridge with naturally extracted tooth d) Palatal view of the fiber reinforced resin composite bridge

## DISCUSSION

Avulsion is a serious damage that affects pulp, gingiva, periodontal ligament and alveolar bone. Prognosis of the replanted tooth is determined by the duration of extra oral storage, storage medium, initiation of endodontic treatment and duration of the splinting period.<sup>4</sup> Replacement resorption seen after late replantation (more than 15 minutes) can cause complete root resorption and loss of the teeth.<sup>5,6</sup>

Immediate treatment of anterior tooth loss is important for providing aesthetics, phonetics and psychological situation.<sup>7-10</sup> In first case, modified Nance arc appliance was used due to the fact that patient has lost all upper central incisors and deep overbite occlusion. The advantage of modified Nance arc appliance is not only its usage when patient has more than one anterior tooth loss, but also the ability to immediately perform it without waiting for the complete healing of extract socket, low cost, and quick fabrication. However, there is a need for appliance

renewal because it restricts inter-canine arch dimensions in a growing child.

Other advantages of fiber reinforced composite bridges with an overall survival rate of % 75 after about five years are single visit, cost effective and minimally invasive fixed solution.<sup>11, 12</sup> However, as a disadvantage, it is difficult to obtain an optimum hygiene with these bridges.

If the natural tooth is available and its crown is in good condition, using natural tooth is preferable because of its right size, shape and color, along with producing good aesthetics and functional results. One major priority of using natural tooth as pontic is that the patient can better tolerate the side effects of the tooth loss.<sup>8</sup> The natural tooth pontic used in these cases, were affective, both psychologically and aesthetically, and patients were highly satisfied with the final result.

As a conclusion, anterior tooth loss is traumatic for young patients and treatment options to therapy are not so obvious. Patients' own natural tooth used in treatment has positive results in terms of function and aesthetics. However, further studies and longer follow-up period in younger patients are needed and recommended.

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