

**EMANUELA CARLA DOS SANTOS
(ORGANIZADORA)**



ODONTOLOGIA: SERVIÇOS DISPONÍVEIS E ACESSO 3

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APRESENTAÇÃO

Observando a história da Odontologia é possível notar grandes evoluções na utilização e criação de recursos, materiais e técnicas, associados à tecnologia para melhorar os processos dentro da área. A odontologia tradicional foi aperfeiçoada e continua em processo de lapidação.

Sendo o questionamento a chave para o desenvolvimento, a melhoria nos serviços odontológicos disponíveis à população é reflexo da busca incessante por respostas na área científica.

Este E-book intitulado Odontologia: Serviços Disponíveis e Acesso 3 mostra mais um capítulo das recentes descobertas e reflexões que enriquecem o campo Odontológico.

Espero que a leitura deste rico acervo seja transformada em matéria prima para construção de seu caminho profissional.

Ótima leitura!

Profa. Ms. Emanuela C. dos Santos

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AESTHETIC, FUNCTIONAL AND ACTIVE SPACE MAINTAINER USING AVULSED PERMANENT TOOTH

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ABSTRACT: In dental avulsion the tooth moves entirely out of alveolus, so that a service to perform reimplantation should be sought, preferably within the first 20-30 minutes for a better prognosis, if the tooth has been kept in a favorable condition. Thus, the purpose of this article is to report the case of a dental avulsion of a permanent upper left central incisor of a patient due to trauma, which could not be reimplanted for having exceeded the recommended time, service was sought 12 days after the trauma, and by the form of storage, in a dry cloth. The treatment adopted was the use of an esthetic device that follows the same principles of removable partial prosthesis, with the advantage of having used the patient's own tooth.

KEYWORDS: Dental prosthesis, esthetic, mouth rehabilitation, tooth avulsion, tooth reimplatation.

1 | INTRODUCTION

Tooth avulsion is defined as a dento-

alveolar trauma in which the tooth has had a complete dislocation of the alveolus (ADNAN et al, 2018). These injuries commonly occurs by falls, sports activities, traffic accidents and bicycle drop and the most frequently affected tooth is the upper central incisor (MESQUITA et al, 2017; GIL, COBAS, 2014; PRABHAKAR et al, 2009; ROCHA, CARDOSO, 2001).

Avulsion is considered one of the most serious dental lesions because it directly implicates in the quality of life of individuals, and may cause esthetic, functional and psychological complaints, so they are classified as a public health problem (MESQUITA et al, 2017; DE LA TEJA-ÁNGELES, 2016). The incidence of this trauma corresponds to 7.6% of the total traumatized permanent teeth, being more frequent in children from 7 to 9 years (ADNAN et al, 2018; GIL, COBAS, 2014; ROCHA, CARDOSO, 2001). Orthodontics is a specialty that is generally involved in the management of these patients due to malocclusions caused after elemental loss, such as midline displacement, anterior crossbite caused by space loss (SABRI, 2006).

In general, studies indicate dental reimplantation as the first treatment option for cases of permanent avulsed tooth, however it is not always possible, since the reimplantation prognosis depends mainly on the time that the tooth has passed out of alveolus, the storage condition and the stage of root development (GIL, COBAS, 2014; MOSTAFA et al, 2018). An appropriate advice to the public about first aid for avulsed tooth is to keep the patient calm, find the tooth and pick it up by crown, wash under cold running water and reposition it or place the tooth in a suitable storage (FLORES et al, 2007).

In this context, the aim of this report is to present the case of an of an 8-year-old patient with an accidental avulsion of central left upper incisor (unit 21). The patiente was attended 12 days after the trauma. Thus, the case describes an alternative form of treatment performed using an esthetic device made with avulsed permanent tooth, in order to recover the esthetics and functionality, performing the interception of maxilar left lateral incisor (unit 22) correction by means of the digital spring present in the space holding device.

2 | CASE REPORT

A male patient, 8-year-old, attended Municipal Emergency Room by a maxillofacial surgeon, two hours after the trauma. According to the patient, he suffered bicycle trauma in the face with avulsion of the central left upper incisor - unit 21. The replantation was not performed due to the time elapsed from the trauma and the incorrect storage of the tooth, which was transported on a dry cloth. Twelve days after the trauma, the patient attended the pediatric dentistry service of

a dental teaching institution of Brazil, with a chief complaint “I hit my mouth on the pole and my tooth fell out”. In the anamnesis it was verified absence of systemic diseases and vaccination card was updated. The patient also reported that he was suffering bullying at school due to lack of the anterior tooth. Clinical and radiographic examination revealed laceration of the upper lip, satisfactory hygiene, avulsion of unit 21, fracture of enamel and dentin of unit 22, anterior crossbite between 22 and 32 (figure 1 A and B) and absence of foreign bodies in soft tissue, besides the presence of mixed dentition, absence of caries activity and occlusion in molar key. Furthermore, the purpose of the treatment was to uncross the bite and maintain the avulsed tooth space to rehabilitate the patient as soon as he was old enough to proceed treatment, using an implant. In addition to maintaining the functional aspects, avoiding negative psychological and social aspects as they are completely linked to the patient’s quality of life and reintegration into society. The patient was initially submitted to the anti-tetanus, for prevention, once the object was dirty and because the patient is close to perform the reinforcement of it (every 10 years). Then, in order to obtain models for a better planning of the clinical case and study of the size/width of the crown, intra and extraoral photographs were performed, as the molding, using alginate, concluding so that the patient lost 1.5 mm after the trauma due to physiological movement. At the subsequently consultation, a molding was performed to make the new working model. In addition the bite was register in wax nº 7 and later sent to the prosthetist, who confectioned an esthetic space maintainer, made with avulsed tooth and a digital spring for uncrossing the anterior bite, measuring the tooth (9.8mm) and space (10mm). After three days of the installation, the anterior bite was uncrossed (figure 1 C and D). The treatment relied on the cooperation of the patient who maintained a good hygiene. After total orthodontic movement, a standard technique of class IV restoration (DVIP) of unit 22, using the relative insulation, followed by the attack with 37% phosphoric acid and by the application of the adhesive system, ending with restoration in composite resin (Z350® 3M ESPE colors B2 and TO 1). In the following month was performed prophylaxis on the whole mouth, the device and the final photographs of the case was taken. The patient was satisfied with the result and the case is being monitored and preserved for a year (figure 1 E and F).

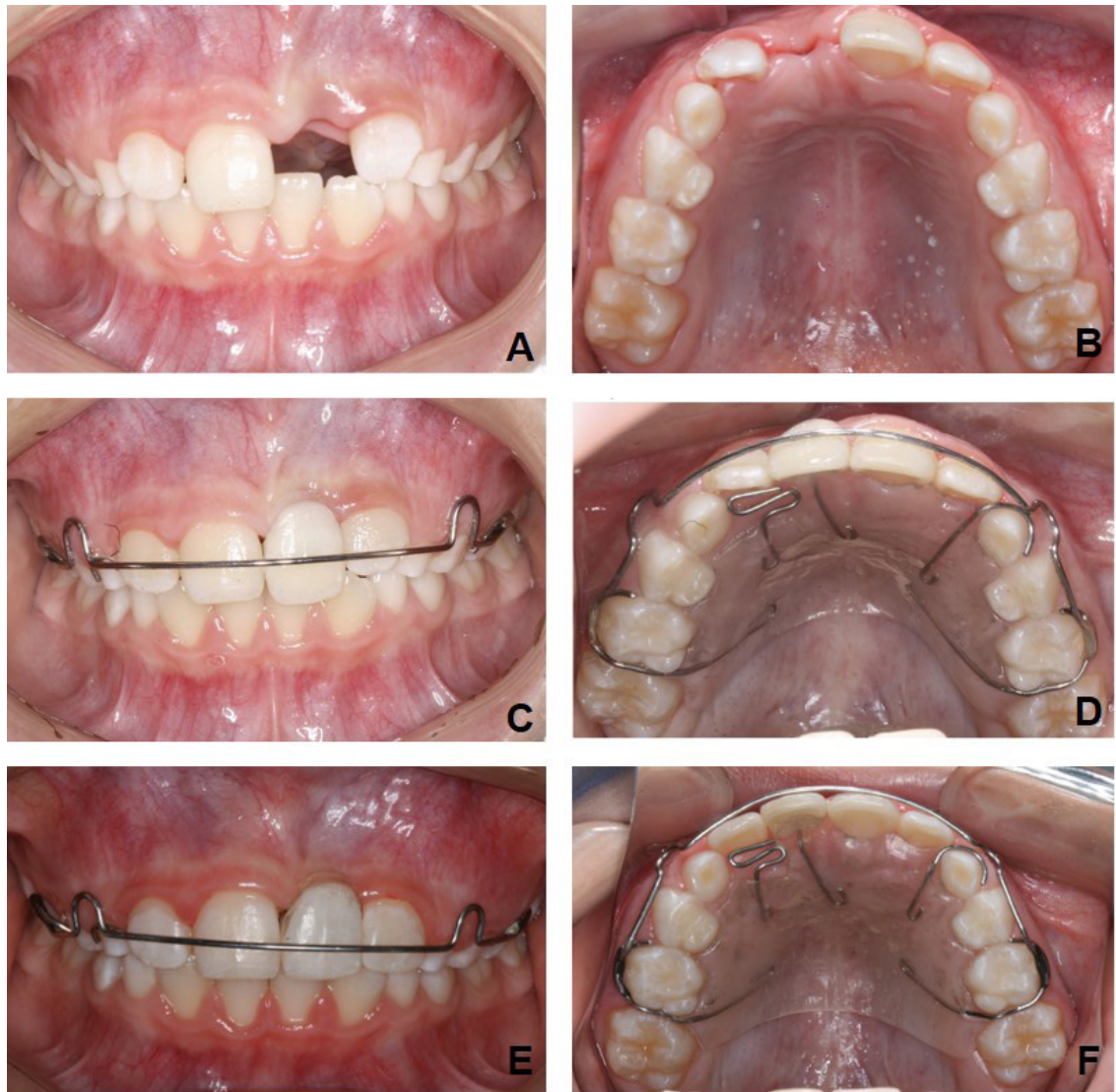


Figure 1 – Patient's frontal and occlusal view: 12 days after tooth avulsion (A and B); right after installing the aesthetic device (C and D) and; 7 dias after device installation showing anterior crossbite correction (E and F).

3 | DISCUSSION

The study of traumatic injuries, like dental avulsion, becomes essential for a greater and better development of treatment methods. When possible, reimplantation is indicated as the first treatment option, thus the traumatized tooth should be placed in the socket immediately after the event, and the long-term success of the procedure resulting from the extra-oral period of the tooth, where the best results are less than 20-30 minutes (ADNAN et al, 2018; GIL, COBAS, 2014; TEZEL, ATALAYIN, KAYRAK, 2013). When these procedures cannot be performed, the tooth should be kept in Hank's saline solution, saliva, saline, or milk until the reimplantation performed by a health professional. It is also necessary to use semi-rigid containment, in the period from 7 to 10 days. It can be extended depending on the situation (VITAR et al, 2014). In this case report, the reimplantation could not be performed due to the delay in seeking for service (12 days after the event). As described in the literature, there

was a poor prognosis because it exceeded the recommended time and in addition the tooth was transported and stored improperly.

The traumatic extraction resulted by the bicycle drop caused injuries to the tissues and structures surrounding the teeth that immediately suffer from ischemic injury, causing dehydration of the pulp cells and, consequently, loss of vitality of the tooth (TEZEL, ATALAYIN, KAYRAK, 2013; SAVI et al, 2012; BENDORAITIENE, ZEMGULYTE, BORISOVAITE, 2017). Therefore, the endodontic treatment of avulsed teeth will depend on the degree of root development and time outside the alveolus. If the apex is divergent and the tooth is out of the socket at most for two hours, it will be reimplanted and the patient will be monitored monthly. In case of loss of vitality, the pulp is removed, the canal cleaned and later filled with calcium hydroxide. When the apex is open and the tooth has remained out of the cavity for more than two hours, the pulp tissue should be removed, the canal cleaned, and finally filled with calcium hydroxide. And the patient monitoring will be every six weeks to assess progression and replace calcium hydroxide, in case it has been reabsorbed. In situations of a tooth with a closed apex and time outside the mouth greater than two hours, intra- or extra-oral endodontics can be performed (GIL, COBAS, 2014).

Besides following the entire protocol in relation to time and inventory form of the affected tooth, the prognosis of the reimplantation is still questioned in the long term, thus, it is estimated that more than half of the teeth are lost due to reabsorption, ankylosis and inflammation caused after reinsertion (Prabhakar et al, 2009; BENDORAITIENE, ZEMGULYTE, BORISOVAITE, 2017). If there is ankylosis, and this is done before the final growth of the mandible, this tooth will be in an occlusion position (SAVI et al, 2012; BENDORAITIENE, ZEMGULYTE, BORISOVAITE, 2017). It demonstrates that in some situations the reimplantation is not successful and reinforces the need to follow a reimplanted tooth to ensure the success of the procedure.

When it is not possible to perform the dental reimplantation it is necessary to use alternative forms of treatment. Dental implants are used on a large scale, but there are still some limitations, such as its high cost, which is not accessible by the entire population. In addition, insertion of implants is not indicated before the growth of the bones of the face is completed, which happens around the age of 18 years (PRABHAKAR et al, 2009). In the case reported, due to the age of the patient the dental implants was impracticable, so an esthetic device was used, which followed the same principles of the removable partial prosthesis. However it had the advantage of having used the patient's natural tooth, conferring a favorable esthetic and, consequently, increasing the patient's self-esteem.

Performing esthetic restorative treatment on anterior teeth is a challenge in dentistry, especially in young patients, who have incomplete growth of the

mandible. In this way, the work of an interdisciplinary team is necessary, so that the orthodontist can create better esthetic conditions in prosthetic rehabilitation, besides the periodontal treatment, which is of great value if the orthodontia has caused any damage to the supporting tissues (DRUMMOND et al, 2011; AHMAD et al, 2017). Since the service was searched 12 days after the trauma occurred, in the measurement of the edentulous space, 8.5 mm was measured, different from the measurement of the tooth, which measured in its width 10 mm, concluding the dental movement in this course of time. For this, adaptations were made in the esthetic device, in which a small spring was placed by palatine to move the upper left lateral incisive. Thus, the device is not only esthetic but also functional and the natural tooth still served the space maintainer which, according to the study by Laing et al. (2009), they are used, as the name suggests, to preserve spaces of prematurely lost teeth, as in the proposed case, avoiding arch shortening and a future complex orthodontic treatment.

Dental esthetics have been defined as “the science of copying, harmonizing and working with the natural, evidencing our imperceptible art”, but up to this day, there is no material that completely replaces the natural tooth (BARATIERI, 2004). In this clinical case, the use of the natural tooth allowed greater gain in the esthetics of the patient and consequently improvement in their quality of life. In contemporary society, regardless of age, beauty is a matter that favors social integration, strongly influencing interpersonal relations and often acting as a facilitating agent for the socialization of the individual in the community in which he lives (GARCIA LOPES, 2014).

After the esthetic commitment, the patient’s self-esteem was low due to bullying practiced by his school friends. The patient’s main complaint about being bullying frequent at school portrays the importance of esthetics for the child’s psychological development and social life. According to Guedes Pinto (2016), there are masticatory, esthetic, phonetic and emotional reasons to indicate a removable partial denture (RPD) for children. After the device was installed, the person responsible for the patient reported improvement in self-esteem and relationships with schoolmates, because the motive for the jokes had been eliminated.

In the maintenance and follow-up visits, the presence of possible occlusal changes, device integrity, oral hygiene quality, and health of soft tissues and adjacent structures should be evaluated (OTA et al, 2014). In the present report, the adaptation and hygiene of the device, consequently the soft tissues and adjacent structures presented a health condition and the patient’s oral hygiene was satisfactory. This is also due to the fact that the patient is constantly motivated and believes in the treatment, so it is essential that the professional always shows the importance of each stage of treatment and also the importance of oral hygiene as a whole.

4 | CONCLUSION

The therapeutic option reported can be considered a great alternative for cases of oral rehabilitation because it meets the requirements of functionality and esthetics and consequently the psychological factor, in addition to having the most affordable price compared to implants. In the case in question, the establishment of the esthetic device made it possible for the child to be reinserted into society and for the recovery of functions, and to prevent the establishment of harmful habits. The use of the child's natural tooth provided a favorable esthetic result and easy acceptance by the patient. The proposal presented will only be feasible on a large scale after general awareness of both professionals and patients, to advise not to discard avulsed teeth, even if stored under conditions or means unsuitable for a reimplantation.

DECLARATION OF CONFLICTING INTERESTS

The authors declare that there is no conflict of interest.

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 **Atena**
Editora

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