

Severe Periodontitis and Multiples Root Surface Decays caused by a Neglected Erich Arch Bars: A Case Report

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Abstract

Case Report

Alveolodental trauma is frequent, especially in children, and a quick and precise diagnosis associated with an adequate management is the guarantee of good outcomes. The treatment of alveolodental trauma must comply with the guidelines; this treatment is based on reduction, immobilization and monitoring, immobilization can be achieved by rigid or flexible means. Rigid means lead to more complications, on the healing and on the dental and periodontal structures, flexible means allow a physiological movement of the teeth what favors the healing, here we presented a case of severe damage caused by an Erich arch bars neglected for 11 years, and which was set up initially in a 7 years old child under local anesthesia, as a means of rigid immobilization of a maxillary and mandibular alveolodental fracture. The latest publications emphasize the psychological impact of these traumas on children and their families, and the need for support and reassurance. The latest guidelines of the international association of dental trauma recommend flexible splints for all types of alveolar trauma including alveolar fractures.

Keywords: Case report, arch bars splints, root decay, periodontitis.

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INTRODUCTION

Alveolar fractures are very common [1], and represent fractures of the bone surrounding the teeth with a possibility of extension to the mandibular or maxillary bone [2], they usually involve trauma to the teeth, alveolar bone and soft tissue [3], In the young population between 8-12 years old, the frequency of these fractures is increasing in relation to the use of motor vehicles. Early diagnosis and adequate treatment play an essential role in preventing dental and bone loss [1, 4].

Treatment in general follows the rule: reduce, contain and monitor [2]. Treatment is best performed under local anesthesia; reduction should be done gently using the index finger and thumb. Contention techniques may consist of wire ligature splints, arch bars splints, composite and wire splint or composite and fishing line splint, these techniques are classified as rigid and flexible [5].

Rigid immobilization of alveolodental fractures seems to be abandoned in the latest publications and guidelines, and replaced by more flexible and less traumatic means [2, 5].

We report the observation of dental and periodontal damage caused by a neglected Erich arch for a period of 11 years, initially placed to stabilize an alveolodental fracture.

OBSERVATION

A young woman of 19 years old, presented to the maxillofacial and oral surgery department of the CHU Mohamed VI of Marrakech in Morocco; brought by her family, for a control of an alveolodental fracture, this fracture was initially contained using a dental arch.

The anamnesis revealed that the trauma and fracture occurred 11 years ago, and that the patient had been wearing her dental arch since then (the arch remained in place for 11 years).

The anamnesis also revealed that the patient at the time of the trauma was 7 years old, and the placement of the dental arch was done under local anesthesia.

The family reports that the patient categorically refused medical monitoring and follow-up.

The clinical examination found the patient to be in good health, calm and cooperative; the endobuccal examination found two ERICH dental arch bars in place, maxillary and mandibular. The maxillary arch was attached to the teeth from 12 to 27, it was mobile

and remains attached only by 2 ligatures; the mandibular arch was attached from 36 to 46, it was also mobile, attached by 8 ligatures. No tooth was mobile (figure 1).



Figure 1

The removal of the two arch bars was easily performed with anatomical forceps and cutting forceps, under local anesthesia. The dental examination after the removal of the arches showed: poor oral hygiene, tartar plaques on the buccal surfaces of the teeth, in particular

the lower incisor block; a Miller class IV gingival recession was objectified on all the teeth, even on teeth 13, 14, 15, 16, 17 and 18, which were not interested by the contention (figure 2).



Figure 2

Caries was also noted in the root surfaces of teeth 12, 11, 21, 22, 23 and 24 in the maxillary arch,

and 33, 34, 45 and 46 in the mandibular arch (figure 3 and 4).



Figure 3

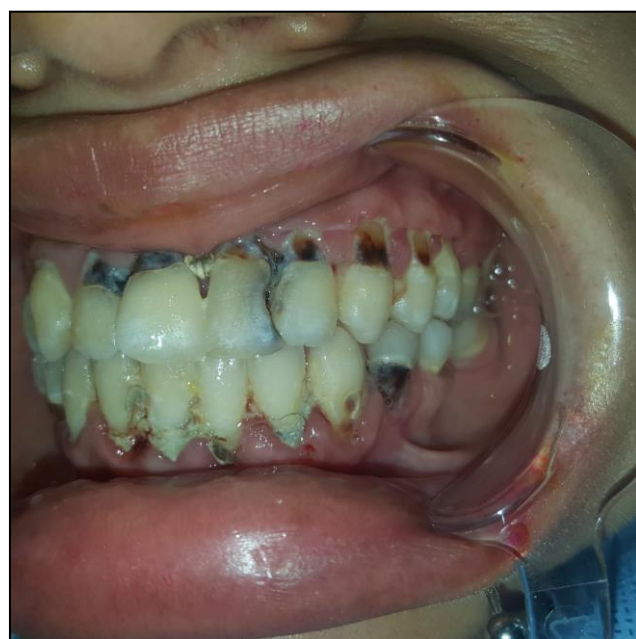


Figure 4

The patient was referred to the dental department for complementary treatment.

DISCUSSION

An alveolar fracture is defined according to the international association of dental trauma (IADT) as a fracture of the alveolar bone that can extend to the adjacent bones, it is a complete fracture, and extends from the buccal surface to the palatal surface in the maxilla, and from the buccal surface to the lingual surface in the mandible [2].

Clinically, an alveolar fracture can be manifested by a displacement and a mobility in block of

several teeth, this displacement can be responsible for disturbances of the dental occlusion [2].

The IADT in its 2020 guidelines recommends -for good therapeutic planning- to perform four radiographs: one parallel periapical, two radiographs of the tooth with vertical and/or horizontal angulations, and one occlusal radiograph. An orthopantomogram and/or a CBCT should be performed if these radiographs are insufficient to determine the location, extension and direction of the fracture [1, 2, 6, 7].

CBCT can be used as a follow-up examination, as it gives a good visualization of resorptive defects [1, 6].

The management of these injuries must be rapid, and guided by the latest guidelines, in order to guarantee satisfactory results for patients and physicians [1, 8]. The psychological effect of alveolar trauma is real and significant, and patients must be managed with delicacy and great reassurance [1]; these traumas, when they occur in children, they have a negative impact on their quality of life, their self-image and their social interactions, and even affect their families causing conflicts [9, 10].

The anamnesis and clinical examination should investigate the circumstances of the trauma, the presence of associated diseases, allergies, antititanus vaccination, and particularly other more urgent associated lesions that may endanger the vital prognosis. Always reassuring the patient, hemostasis is done by positive pressure or by suture of the gingival lacerations, and analgesics are administered [1].

The means of immobilization of alveolodental fractures are classified into rigid and flexible means; according to the latest publications, dental arch bars splints, wire ligatures splints, composite with wires exceeding 0.4 mm in diameter, or too long wires, are considered as rigid means of immobilization, limiting the physiological movements of teeth. On the other hand, composite splint with a steel wire <0.4 mm in diameter, titanium trauma splints, nylon fishing line splint, are considered as flexible [5, 11].

It seems that the flexible splint, allow a physiological dental movement, and thus promoting healing, unlike the rigid splints that promote ankylosis, pulp necrosis and external root resorption [5, 12–15].

The latest guidelines 2020 of the international association of dental trauma, recommends flexible splinting for all types of alveolar and dental trauma, with a new recommendation for alveolar fractures [2], whose type of splinting was not specified in the version of 2012 [8].

It seems that the ideal means to immobilize an alveolodental fracture, is the one that allows a physiological and functional movement of the teeth, and is atraumatic at the time of its placement and its removal; the dental arch bars splints, the wire ligature splints and even the composite splints are difficult to remove, requiring aggressive maneuvers and thus traumatizing for the tooth and the periodontium[5]. authors are proposing new materials that are atraumatic to place and to remove, such as the studies by Jun-Yi Hu at the University of Abelaide [16].

In addition, dental arch bars -the means by which our patient was treated- have many disadvantages, their installation is long and laborious, the risk of operator piquure by the steel wire associated with a risk of viral contamination [17, 18], the need for general anesthesia, but also the trauma of the dental organ and the periodontium [19, 20]. From a dental and periodontal point of view, the placement of dental arch bars can cause plaque accumulation, periodontal damage and tooth mobility [5, 21].

In our patient, the dental and periodontal damage was more severe than that described in the literature, and this is explained by the long duration of wearing.

The short duration of immobilization is defended by the latest publications in the literature, this duration depends on the type of trauma, it is 4 weeks for alveolar fractures according to IADT. Periodic clinical and radiological follow-up is mandatory to monitor the progress of the treatment and to detect complications as early as possible in order to treat them correctly [2, 5].

Because of the shock, traumatized people and their relatives often forget details about their treatment plan, especially if it is complicated [1]; which motivated some authors to suggest that a summary should be prepared for them [22, 23].

Children must be treated with the utmost delicacy and caution, the treatment given to this population must not be traumatic or painful, and preferably under general anesthesia, otherwise it will constitute a second added trauma, which may cause psychological repercussions with non-adherence to the therapeutic plan, as in the case of our patient.

CONCLUSION

In conclusion, we think that this case is interesting, because it reminds us of the seriousness of alveolar traumas, the psychological impact that accompanies them, especially in children, the importance of communication and reassurance of the patients, and also the aggressiveness of certain means of splinting - the dental arch bars in this case - which are unfortunately still used especially in poor countries and whose damage on the teeth and the periodontium are sometimes serious and irreversible.

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