

Multiple Dentoalveolar Traumatic Lesions: Report of a Case and Proposition of Dental Polytrauma as a New Term

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Abstract

Traumatic injuries to permanent teeth are common, and dramatic episodes can occur during childhood. The aim of this paper is to present a report of severe trauma to the orofacial complex of an 8-year old girl that resulted in multiple injuries. The use of the term “dental polytrauma” (concomitant different dental traumatic injuries) is advocated in this case presentation.

Keywords: Dental traumatology, tooth avulsion, tooth luxation, dentoalveolar fracture, traumatic injury, tooth replantation

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Introduction

Traumatic injuries to permanent teeth are common, and dramatic episodes can occur during childhood. This matter has been the subject of extensive studies by several authors and the etiology, pathogenesis, and principles of treatment are well described.^{1,2} An accepted classification of traumatic injuries of the teeth has been established^{3,4} and is widely used. Cases of dental avulsions and re-implantations, dentoalveolar fractures, luxations in its several forms (lateral, extrusive, and intrusive), concussion, subluxation, gingival lacerations, hard and pulpal dental tissue lesions have been extensively reported. Cases of concomitant injuries are not commonly reported and, to our knowledge, there is not an accepted term to describe the coexistence of two or more traumatic conditions of the dentoalveolar complex. A case of dental “polytrauma” (concomitant different dental traumatic injuries) is reported in this case presentation.

Case History

An 8-year old girl suffered an accident on the border of a swimming pool and sustained a severe traumatic injury to her mouth (1986). After examination by a physician, and found to be in good general health, she was referred for treatment to a dentist trained in the management of orofacial trauma. The parents were instructed to keep all the avulsed teeth in iced saline during the 70 mile journey to the hospital facilities. Seven hours following the accident, the patient was seen at the emergency room of the hospital.

Examination revealed a well nourished girl, in good general health condition, presenting several traumatic dentoalveolar conditions as follows:

1. Avulsion of 41, 42, 21 and 53; (FDI numbering system)
2. Extrusive luxation of 31
3. Subluxation of 32
4. In block dentoalveolar fracture plus extrusion of 11 and 12
5. Lacerations of the gingiva and lips (Figure 1)

Three of the avulsed teeth were found by her parents at the site of the accident (41, 42, and 53). The upper left permanent incisor was missing.

The traumatic injuries are summarized in Table 1.

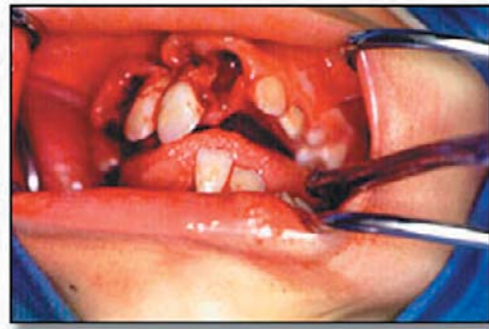


Figure 1. Dentoalveolar fracture and extrusion of 11 and 12; absence of 21, 41, 42, and 53; extrusion of 31; subluxation of 32; and gingival lacerations.

Treatment

Under general anesthesia, the treatment consisted of extra-oral endodontic treatment of tooth numbers 41 and 42 with root-canal fillings using gutta-percha points and treatment of the external root surfaces with a 2.4% NaF solution.⁵ Following endodontic therapy the teeth were replanted (Figures 2 to 4). Reduction of the dentoalveolar fracture and immobilization of the extruded teeth numbers 11 and 12 as well the subluxated tooth 32 was accomplished using arch wires and acrylic resin (Figure 5). The right deciduous cuspid (53) was not replanted. The mucosal lacerations were sutured with 4-0 gut sutures.

The patient recovered well and was seen again in 30 days, when the immobilization splints were removed under local anesthesia. Periapical radiographs of the replanted teeth were taken at 30 days, 6 months, 1 year, and 3 years (Figures 6 to 10). Pulp vitality testing of all involved teeth, with the exception of 41 and 42, was regularly done.

Progressive external resorption of teeth 41 and 42 was observed after the first year. The replanted teeth were missed by the third year since root resorption was almost total (Figures 6 to 10).

The dentoalveolar fracture compromising the upper right incisors (11, 12) healed well and pulpal vitality was preserved (Figure 11). During our last examination, the patient was wearing orthodontic appliances in the maxilla (1989).

Discussion

The decision for reimplantation of the avulsed teeth more than 7 hours after injury proved to be

Table 1. Traumatic injuries at hospital admittance.

(Avulsed: Kept in iced saline.) 53	(Extrusive luxation and dentoalveolar fracture) 12, 11	(Missing: Lost) 21
	42, 41 (Avulsed: Kept in iced saline.)	31 (Extrusive luxation) 32 (Sub-luxated)



Figure 2. The avulsed teeth 41 and 42.



Figure 3. Root-canal fillings.



Figure 4. Replanted 41 and 42.

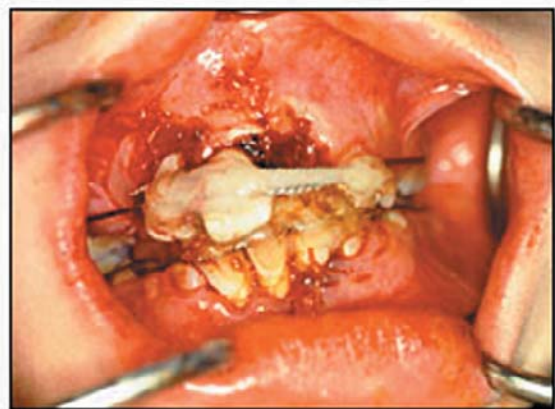


Figure 5. Immobilization and sutures.

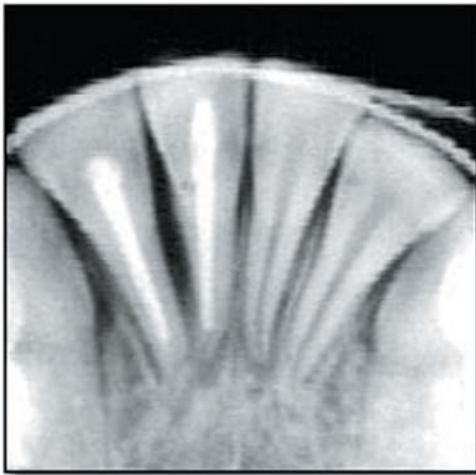


Figure 6. Periapical image after 30 days. Loose interdental septums of 41 and 42 can be observed.



Figure 7. Periapical image after 6 months. Presence of discrete apical external root resorption.



Figure 8. Periapical image after one year. Root resorption is still discrete in the apical regions.

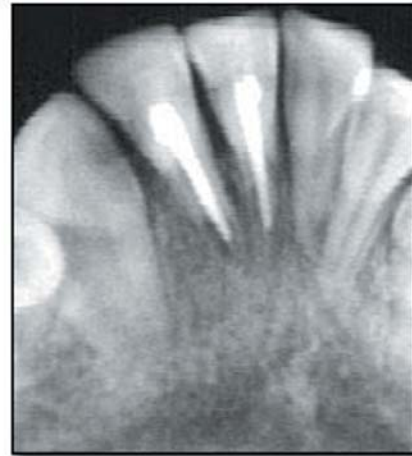


Figure 9. Root resorption is severe, compromising 1/3 of the roots (after two years).



Figure 10. Periapical image after 3 years. Root resorption is complete.



Figure 11. Periapical image of 11 and 12 after 3 years. Pulp vitality was maintained.

satisfactory, in spite of the poor prognosis of the avulsed teeth 11 and 12. The 3-year period of retention of these teeth in the mouth proved to be useful in terms of function, esthetics, and space maintenance of the lower arch.

Preservation of the vitality of teeth 11 and 22 was not surprising since the apical foramens were protected inside the alveolus, in spite of the extrusion. The protection provided by the blood clot is considered a favorable factor related to pulp healing.⁵

Summary

It is reasonable to consider the accepted medical classification of trauma to the dentoalveolar complex.^{3,4} In the present case several types of injuries were found concomitantly as multiple dentoalveolar traumatic lesions. Since the presentation of similar cases is not commonly found in the literature, it seems reasonable to

suggest a more feasible terminology for this dramatic situation.

The term *polytrauma* is widely used in medical cases in reference to a potentially threatening situation where multiple lesions are present in a given anatomical region, or even throughout the entire body before a more accurate diagnosis can be established. Anatomic regional examples might include maxillofacial polytrauma, abdominal polytrauma, thoracic polytrauma, head and neck polytrauma, polytraumatized patient, etc.

It is suggested the term *dental polytrauma* be adopted to classify multiple concomitant traumatic injuries to the dentoalveolar complex, as in the present case, in order to make reference to situations when traumatic lesions of the dentoalveolar complex, comprising teeth, alveolar bone, mucosa, dental hard tissues, and dental pulp occur concomitantly.

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