

Paediatric laser dentistry. Part 3: Dental trauma

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ABSTRACT

Dental traumas are frequent and sometimes complex events, and at times real emergencies. There are no well-coded guidelines for laser applications in these clinical events. Laser-assisted therapy can offer new treatment possibilities, simplify dental procedures, reduce post-operative sensitivity and the need for post-operative medications because of the laser-induced biostimulating and anti-inflammatory effects.

Keywords Dental trauma; Laser dentistry; Low level laser therapy; Paediatric dentistry.

Introduction

Approximately 20% of children suffer a traumatic injury to their primary teeth and more than 15% injure their permanent ones [Andreasen et al., 2007; Glendor, 2008; Kramer et al., 2016; Bagattoni, 2017]. Maxillary central incisors (50%) and maxillary lateral incisors (30%) are the teeth most frequently affected,

both in permanent and in primary dentition [Flores, 2002]. The literature shows that boys sustain more traumatic dental injuries than girls [Andreasen, 2007; Bani, 2016].

The revised classification of traumatic dental injuries of the World Health Organization includes injuries to teeth, supporting structures, and gingival and oral mucosa, and it is based on anatomical, therapeutic and prognostic considerations (Table 1) [WHO, 1995; Flores, 2001; Andreasen, 2007].

Careful collection of dental history, a good clinical examination, diagnostic imaging, photographic documentation, pulp testing are required for a complete medicolegal report.

Laser in dental traumatology: hard tissues and pulp

Laser application offers multiple advantages in dental traumatology involving pulp and hard tissues.

- Pulp temperature increases only minimally during erbium laser treatment [Keller and Hibst, 1991; Hibst and Keller, 1996; Dostalova et al., 1997; Ozturk et al., 2004, Khouja, 2017].
- Laser irradiation provides high decontamination of

1. Traumatic injuries to the hard dental tissues and pulp

Crown infraction
Uncomplicated crown fracture
Complicated crown fracture
Uncomplicated crown-root fracture
Complicated crown-root fracture
Root fracture in the apical third
Root fracture in the middle third
Root fracture in the coronal third

2. Traumatic injuries to the periodontal tissues

Concussion
Subluxation
Extrusive luxation
Lateral luxation
Intrusive luxation
Avulsion

3. Injuries to the supporting bone

Comminution of the maxillary alveolar socket
Comminution of the mandibular alveolar socket
Fracture of the maxillary alveolar socket wall
Fracture of the mandibular alveolar socket wall
Fracture of the maxillary alveolar process
Fracture of the mandibular alveolar process
Fracture of the maxilla
Fracture of the mandible

4. Injuries to gingiva or oral mucosa

Laceration of gingival or oral mucosa
Contusion of gingival or oral mucosa

TABLE 1 Classification of traumatic injuries.