



MANAGEMENT OF DENTAL INJURIES IN CHILDREN

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ABSTRACT

Aim: To do review regarding management of dental injuries in children.

Objective: To understand the various management of dental injuries in children.

Background: Approximately half of children sustain some type of dental injury. Management of injuries to the anterior teeth of preschool children is directed toward minimizing potential damage to the permanent tooth. Dental injuries could have improved outcomes if the public were aware of first-aid measures and the need to seek immediate treatment.

Reason: This article will summarize a number of issues relative to dental injuries in children's and provide a system for treatment, and to create awareness.

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INTRODUCTION

Traumatic dental injuries occur with great frequency in preschool, school-age children, and young adults comprising 5% of all injuries for which people seek treatment (1). Males exhibit a higher overall incidence of dental trauma than females. (2). Maxillary central incisors are the most commonly injured teeth in both primary and permanent dentitions (3). In the primary dentition, the most common type of injury is displacement of the tooth (4). Crown or root fractures are more frequent in the permanent dentition. (5) Mandibular fractures in children occur most often as condylar fractures (6). The history, circumstances of the injury, pattern of trauma, and behavior of the child and caregiver are important in distinguishing nonabusive injuries from abuse.(7) When teeth and their supporting structures are subjected to impact trauma, the resultant injury manifests either as a separation or a crushing injury or a combination of both.(8)

Traumatic dental injuries might alter facial appearance of children.(9) Cortes with co-authors showed that children with untreated fractured teeth reported 20 times more a negative impact on their daily life than children without traumatic dental injuries (9). Children with dentofacial deviations experienced teasing, embarrassment and lack of social acceptance (10). Traumatic dental injuries present a challenge to clinicians worldwide. Consequently, proper diagnosis, treatment planning and follow up are critical to assure a favourable outcome.

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Types of Dental Injuries

Infraction
Crown fracture–uncomplicated
Crown fracture–complicated
Crown/root fracture
Root fracture
Concussion
Subluxation
Lateral luxation
Intrusion
Extrusion
Avulsion

Infraction

An infraction is a crack or craze line in the surface of the enamel. The tooth appears intact, but crack lines may be visualized by shining a focused source of light, such as the otoscope, onto the crown of the tooth in an axial direction (11). Infraction are more common on permanent tooth, No radiographic abnormalities (12)

Management

In case of marked infraction, etching and sealing with resin to prevent discolouration of the infraction lines; otherwise, no treatment is necessary (12)

Crown fracture-uncomplicated

It is an enamel fracture or an enamel-dentin fracture that does not involve the pulp. (13) Clinical and radiographic findings reveal a loss of tooth structure confined to the enamel or to both the enamel and dentin. (14)

Management

If the fracture of the permanent tooth is contained within the enamel and dentin surfaces without exposure of the pulpal tissues, then the tooth can be restored with tooth-colored dental material. The tooth should be monitored for signs of pulpal necrosis. (11)

Crown Fracture - Complicated

If the fracture of the tooth exposes the pulpal tissue, the injury is classified as a complicated fracture. Crown fractures with exposed pulp are frequently sensitive and introduce an increased risk of infection.(11). Clinical and radiographic findings reveal a loss of tooth structure with pulp exposure.(15)

Management

Fully developed teeth will most likely require a prosthetic crown, thus the patient may wisely choose to have root canal treatment done prior to the restoration. It is, however, acceptable, if a bonded restoration is to be used, to protect the exposed pulp with Calcium hydroxide (16).

Crown/ Root Fracture

A fracture involving enamel, coronal and radicular dentin, and cementum (17). Radiographic findings may reveal a radiolucent oblique line that comprises crown and root in a vertical direction in primary teeth and in a direction usually perpendicular to the central radiographic beam in permanent teeth. (18)

Management

This can be accomplished by gingivectomy if the fracture line is in the sulcus. In more extreme cases, the tooth will have to be extruded with orthodontic forces or surgically repositioned. In the emergency session, if the pulp is exposed, it needs to be protected in the same fashion as complicated crown fractures. If it is not exposed, all accessible exposed dentin areas should be covered for the patient's comfort.Pulpal survival for all these fracture types is generally good; however, endodontic treatment may be indicated later (19).

Root Fracture

A fracture involving radicular dentin, cementum, and the pulp.Root fractures can be further classified according to displacement of the coronal fragment. (17) When the crown segment of an injured primary incisor displays mobility, there is a risk of a root fracture. This can only be verified with an intraoral dental radiograph (11). Clinical findings reveal a mobile coronal fragment attached to the gingiva that may be displaced. Radiographic findings may reveal 1 or more radiolucent lines that separate the tooth fragments in horizontal fractures. (20).

Management

It is recognized that the coronal segment often has been luxated, thus pointing to a treatment approach different from that recommended, which was rigid splinting for long periods of time, that is, 3 months or more (21). Based on current evidence, the treatment should instead be similar to that given luxation injuries: semi-rigid stabilization for a few weeks (3-4 weeks) to allow re-establishment of the damaged PDL (22).

CONCUSSION

An injury to the tooth-supporting structures without abnormal loosening or displacement of the tooth, but with increased reaction to percussion (17) A concussed tooth is tender to touch, but there is no increased mobility or displacement. (11)And radiographic abnormalities are not expected

Management

No immediate treatment is indicated for a dental concussion. Observing the injured tooth for possible future pulpal necrosis is recommended. Pulpal necrosis in a primary tooth may cause the tooth to appear gray in color or to have a parulis on the gingiva adjacent to the root of the affected tooth. If tooth discoloration or a localized parulis forms, then referral to a dentist within a few days is recommended. (11).

Subluxation

An injury to the tooth supporting structures with abnormal loosening, but without displacement of the tooth (17). Clinical findings reveal a mobile tooth without displacement that may or may not have sulcular bleeding. Radiographic abnormalities are not expected (23).

Management

Normally no treatment is needed; however, a flexible splint to stabilize the tooth for patient comfort can be used for up to 2 weeks (12)

Lateral Luxation

Displacement of the tooth in a direction other than axially.This is accompanied by comminution or fracture of the alveolar socket (17). The injured tooth may be mobile or firmly locked into the displaced position. (11) Radiographic findings reveal an increase in periodontal ligament space and displacement of apex toward or through the labial bone plate.(24)

Management

To reposition as soon as possible and then to stabilize the tooth in its anatomically correct position to optimize healing of the periodontal ligament. A displaced tooth may need to be extruded to free itself from the apical lock in the cortical bone plate. Splinting an additional 2 to 4 weeks may be needed with breakdown of marginal bone.(25)

Intrusion

Displacement of the tooth into the alveolar bone. This injury is accompanied by comminution or fracture of the alveolar socket (17). Clinical findings reveal that the tooth appears to be shortened or, in severe cases, it may appear missing. The tooth is not mobile or tender to touch. Radiographic findings reveal that the tooth appears displaced apically and the periodontal ligament space is not continuous.(26)

Management

In cases of mild intrusion, the tooth will typically reerupt gradually on its own. Bleeding from the gingival sulcus is present. If no reeruption is visible after a few weeks, orthodontic or surgical repositioning of the intruded tooth is necessary.(11)

Extraction

Partial displacement of the tooth out of its socket (17) Clinical findings reveal that the tooth appears elongated and is mobile. Radiographic findings reveal an increased periodontal ligament space apically (27)

Management

Reposition the tooth by gently reinserting it into the tooth socket. Stabilize the tooth for 2 weeks using a flexible splint. In mature teeth where pulp necrosis is anticipated or if several signs and symptoms indicate that the pulp of the mature or immature teeth became necrotic, Root canal treatment is indicated. (12)

Avulsion

Complete displacement of the tooth out of its socket (17) Clinical and radiographic findings reveal that the tooth is not present in the socket or the tooth already has been replanted. Radiographic assessment will verify that the tooth is not intruded when the tooth was not found. (28)

Management

An adult tooth that is avulsed should be reimplanted in its socket as soon as possible. If the tooth cannot be reimplanted, it should be placed in a protective solution; it should never be allowed to dry. If the tooth has been dry for a significant period, it should be soaked in the appropriate solution. Some studies suggest that when a tooth has been out of the mouth for longer than 60 minutes, immediate reimplantation is not required, and a root canal of the tooth should be performed with the tooth outside the mouth before it is reimplanted. After reimplantation, any other injuries are repaired.

In children with dental avulsions, primary teeth are never reimplanted, because reimplantation of a deciduous tooth can cause harm to the developing permanent tooth (29).

CONCLUSION

Traumatic dental injuries present difficult challenges for both patients and their dentists. It has progressed in recent years to improve the understanding of the biological considerations involved in both diagnosis and treatment principles. When dental trauma cannot be avoided through the use of preventive measures, it emphasizes the importance of proper diagnosis, treatment planning, and follow-up care conducive to a favorable outcome for an injured tooth in a pediatric patient. This review provides decision-making strategies to assist pediatricians and other primary care physicians in diagnosing and managing children.

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