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CASE REPORT

Restorative treatment of traumatic dental injuries. Report of three clinical cases

Tratamiento restaurador de lesiones dentales traumáticas. Reporte de tres casos clínicos

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ABSTRACT

Traumatic dental injuries (TDI) are very common, they are mainly originated from blows caused by objects or due to falls, sport injuries as well as injuries sustained during leisure activities and car accidents. Most cases involve anterior teeth, of which upper central incisors are more frequently affected. Andreassen's TDI classification, sanctioned by WHO in 1978 in «International disease classification», is described here. When new technologies are incorporated into dental practice, computer-assisted design and computer-assisted manufacture (CAD/CAM) provide the restorative clinician with new treatment options, thus improving design and application of metal-free ceramic restorations, which, along last decade, have haven proven to provide suitable clinical performance. Three patients were treated at the Advanced Restorative Dental Graduate Program clinic. The first one sought treatment within the first 48 hours after TDI, in central and right lateral teeth; two patients exhibited TDI in one central incisor, the first one was a 28 year old male with a five year evolution of the injury and no previous treatment, the second case was a nine year old child who arrived having been subjected to root canal treatment, with a six month evolution.

RESUMEN

Las lesiones dentales traumáticas (LDT) son comunes, siendo las principales causas: golpes por caídas u objetos, traumatismos deportivos, actividades físicas de ocio y accidentes automovilísticos. Casi todos los casos abarcan los dientes anteriores, con mayor frecuencia los incisivos centrales superiores. De las clasificaciones de LDT, se describe la propuesta por Andreassen y aceptada por la OMS en su «Clasificación internacional de las enfermedades» desde 1978. Sumando tecnologías a la práctica odontológica, el diseño asistido por computadora y la fabricación asistida por computadora (CAD/CAM), proporcionan al rehabilitador nuevas modalidades de tratamiento, mejorando el diseño y la aplicación de restauraciones cerámicas libres de metal, que a lo largo de la última década ha demostrado un buen desempeño clínico. Se presentan a la clínica de la Especialidad de Odontología Restauradora Avanzada, tres pacientes, de los cuales el primero se presentó en las primeras 48 horas luego de la LDT en centrales y lateral derecho; dos pacientes presentaban LDT de uno de los incisivos centrales, el primero un adulto de 28 años de edad con una evolución de cinco años y sin ningún tratamiento ejecutado aún; el segundo caso, un niño de nueve años de edad que se presenta con un tratamiento de sistemas de conductos con una evolución de seis meses.

Key words: Traumatic dental injuries (TDI), tooth fracture, dental treatment, restorations.
Palabras clave: Lesión dental traumática (LDT), fractura dental, tratamiento dental, restauraciones.

INTRODUCTION

A literature review carried on from 1995 onwards showed worldwide high prevalence of traumatic dental injuries (TDI) in primary and permanent dentitions. Statistics of most countries reveal that a fourth of all school age children and almost a third of adults have suffered TDI, nevertheless, there are differences in these figures according to different countries. Main TDI causes are blows due to falls, objects, sport, collisions, leisure physical activities and traffic accidents. These incidents are more frequent in the autumn.[1-3]

It is considered that 47% of all TDI receive treatment, nevertheless, this treatment is inadequate

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in 59% of all cases, and only in 4% of these cases are patients treated by a dental specialist.[4] Almost all lesions are located in anterior teeth, mainly upper central incisors; generally, one tooth is affected. Facial pattern is another aspect to be taken into consideration, subjects exhibiting protruded incisors suffer almost twice the possibilities to experience TDI than other subjects with normal horizontal overbite.[5-7]

OBJECTIVE

To achieve description of multi-disciplinary clinical treatment of three patients exhibiting traumatic dental injuries (TDI) who attended the Clinic of Advanced Restorative Dentistry at the Graduate and Research School, School of Dentistry, National Autonomous University of Mexico (UNAM).

Traumatic dental injuries

They can be classified according to involved structures. Although many TDI classifications exist in scientific literature, the present article will use the one described by Andreassen and accepted by WHO in their «International classification of diseases» of 1978.[5,8]

Dental tissue and pulp lesions

- Dental crown infringement: cracks in the enamel without structure loss.
- Crown fractures.
  - Enamel fracture.
  - Enamel and dentin fracture.
  - Compound fracture involving enamel, dentin and pulp.
- Root fracture.
- Crown and root fracture.
  - Non-compound fracture of root and crown without pulp exposition.
  - Compound fracture of root and crown with pulp exposition.

Periodontal ligament lesions

- Concussion: no displacement or mobility are observed, there is pain upon percussion.
- Dental displacement such as intrusion, extrusion, and lateral luxation.
- Subluxation (mobility).
- Avulsion (tooth loss).

Bone lesions

- Alveolar bone fracture.
- Alveolar process fracture.
- Fracture of upper or lower jaw (maxilla or mandible).

When compared to other traumatic lesions, dental lesions are considered less severe. Nevertheless, since teeth exhibit low potential to recover a healthy state after a trauma incident, most of the lesions located in this region require urgent diagnosis and treatment. Although, oftentimes, signs and symptoms are complex, precise treatment depends on accurate diagnosis.[2,5,9,10]

Clinical assessment

Initial observation plays a key role in order to establish suitable diagnosis and design the best therapy to follow.

Extra-oral exploration

When a patient arrives with oral and facial trauma, observation of incised wounds, contusions and abrasions to face and lips must be undertaken. It must be remembered that any type of chin lesion might involve possible fractures of the mandible, which, in children, is frequently located at condylar level. Another element to explore is the possibility of molar fractures, caused by the blunt blow of lower arch on upper arch. Suspicion of the presence of maxillary, malar and mandibular fractures must be taken into account when asymmetries are observed upon asking the patient to open and close his mouth. In cases when in a dental crown fracture there were lacerations of the lips, before suturing, the possibility of fragments included in the muscle mass must be considered.[5]

Intra-oral exploration

To assess tooth mobility in vertical and horizontal directions. An alveolar process fracture must be suspected in those cases when upon moving a tooth, many others move as well.[1,5]

A periodontal ligament lesion must be suspected when pain is elicited upon soft percussion on a tooth. When assessing tooth hypersensitivity or mobility, comparison should be established with the non-affected area. Possibility of pulp exposure must be considered when observing fractured teeth.[3,5]