Pediatric Oral Health Trauma, Prevention & Management
Presented By

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SMILES!!
THE FIRST THING EVERYONE LOOKS AT
Webinar Learning Objectives:
Introduction

• One of the most common dental problems that you see or your office gets phone calls about, is injury to the dentition (teeth) from a fall, either accidental or purposeful. This can occur inside the school (hallway, gym, etc.) or outside (playground, school trip, etc.), or at home (bathtub, slippery floor, etc.) You, as the child’s pediatrician may be asked to assess the situation and make recommendations according to specific guidelines. My discussion today should help give you a better understanding of dental injuries.
EPIDEMIOLOGY OF TRAUMATIC DENTAL INJURIES

• The oral region comprises 1% of the total body area, yet it accounts for 5% of all bodily injuries. In preschool children, oral injuries make up as much as 17% of all bodily injuries. The incidence of traumatic dental injuries is 1% - 3%, and the prevalence is steady at 20% - 30%. The annual cost of treatment in US $2 - $5 million/ 1 million inhabitants. Etiologic factors vary between countries and with age groups.
OUTLINE

DEFINITION AND CLASSIFICATION OF INJURIES HARD TISSUE INJURIES

- Tooth injuries
- Crown Fractures
- Root Fractures
- Luxation Injuries

ETIOLOGY AND EPIDEMIOLOGY

- Trends
- Cause of Injury
- Occurrence of Injury
- Gender Significance in Injuries
- Type of Injury
- Predetermining Factors

PREVENTION

CONCLUSION
TRAUMA

• Trauma, in general, can be divided into two main categories.

• **NON-INTENTIONAL INJURY**: includes domestic, recreational, sports, work, vehicular related injuries, and other such injuries that are not inflicted on purpose by one’s self or another person.

• **INTENTIONAL INJURY**: includes suicides, homicides, domestic abuse, war, terrorism and other such injuries that are purposely inflicted.
HARD TISSUE INJURIES
Crown Fractures

- Crown Fractures

*Enamel Infraction*

Presents as a crack or craze line in the enamel. It is usually hairline thin and is often only noticeable when light is transilluminated through the crown.
HARD TISSUE INJURIES
Crown Fractures

• **Uncomplicated Crown Fracture**

This is a fracture of the crown that involves only the enamel or the enamel and dentin, with **no**, pulp (nerve) exposure.
SIMPLE
HARD TISSUE INJURIES
Crown Fractures

- COMPLICATED CROWN FRACTURES
  This is a fracture of the crown that involves enamel and dentin, which is deep enough to result in a pulp (nerve) exposure.
HARD TISSUE INJURIES
Root Fractures

• Crown-Root Fractures
  This involves both the crown and the root at the same time.
HARD TOOTH INJURIES
Root Fractures

• Intraalveolar Root Fractures
Involve a fracture of the root that is completely encased within the bone. It may be horizontal, diagonal and typically divides the root into two fragments.
HARD TISSUE INJURIES
Luxation Injuries

LUXATION

• When a traumatic injury to a tooth seems to cause its displacement from the socket, it is termed a luxation injury. The type of luxation injury relates to the direction and severity of the injury.
HARD TISSUE INJURIES

Luxation Injuries

- **Concussion**: when a tooth is traumatized by an impact, but does not change from its normal position
HARD TISSUE INJURIES
Luxation Injuries

- Subluxation: when the tooth sustains an impact that causes slight mobility with no significant displacement from its socket.
HARD TISSUE INJURIES
Luxation Injuries

• **Lateral Luxation:** implies that the tooth has been displaced within its socket in a buccal-lingual (front to back) direction.
HARD TISSUE INJURIES
Luxation Injuries

- **Extrusive Luxation**: when the tooth is displaced from its socket in a coronal (towards the tip of the tooth) direction.
ALVEOLAR FRACTURES

• These are the type of fractures that can occur to the bone secondary to dental injuries. There can be fractures of the alveolar bone, the facial bones, etc. I will not be discussing this area at this point.
HARD TISSUE INJURIES
Luxation Injuries

• **Avulsion (or exarticulation):** when the tooth has been completely dislodged our of its alveolar socket.

• THIS IS THE SITUATION WHERE THE TOOTH IS KNOCKED OUT!
TOTAL AVULSION
What do you do if a child totally avulses a tooth and they come to your office.

- **1.** HAVE YOUR STAFF ASK THE PARENT NOT TO PANIC – FOLLOW PROTOCOL
- **2.** Asses the child medically – any neurological symptoms, fainting issues, etc.
- **3.** Try to stop any hemorrhage and see if the tooth/teeth are still in the mouth or avulsed.
- **4.** Assuming you have the tooth – try to handle it without touching it with your fingers.
- **5.** Wash the tooth with just tap water or better – sterile water.
- **6.** Do not scrub the tooth, but wash as much debris off the tooth as possible.
- **7.** If you are able to, and the child will let you, the most ideal procedure is to put the tooth back into the socket.
- **8.** If the above is not successful, take the tooth that has been washed and put it into the Save-a-Tooth solution
- **9.** If the above is not successful, ask the child to put the tooth inside the lip and the front teeth and hold it.
- **10.** If the child can’t do the above, put the tooth into a cup of cold milk, if available. **GET THE CHILD TO THEIR DENTIST OR HOSPITAL (WITH A DENTAL CLINIC) IMMEDIATELY!** The success of replanting an avulsed tooth is time dependent. The tooth should ideally be replanted within 30 minutes of being knocked out. This may be an unrealistic goal, but try.
11. The success and favorable prognosis for replanting an avulsed tooth has to do with how quickly the tooth can be replanted into the original socket.

12. The accessibility of dental care is critical in this situation.

13. The child’s dentist or dental clinic should know to make this emergency situation predominant in their schedule.

14. In other words, they should stop what they are currently doing, assuming they have the expertise to take care of this type of emergency and start the replantation procedures!!!!

15. When you speak to the parent/s or guardian, advise them to try and have their private pediatric dentist, family dentist or clinic dentist see the child immediately. If they are not able to or not prepared to see and treat the child immediately, keep a list of pediatric dental offices, family dental offices or hospital dental clinics that will see them.

16. Again, the success of a favorable replantation of an avulsed tooth is time dependent!!!!!!
Contains Hank’s Balanced Salt Solution (HBSS)

Save-A-Tooth®

THE EMERGENCY TOOTH PRESERVING SYSTEM

One Sterile System

Protects and nourishes knocked-out teeth for replantation by a dentist
External Resorption after Reimplantation
How do we (Pediatric Dentists) treat luxated and subluxated teeth?

- 1. Medical History and Assessment
- 2. Dental History
- 3. Traumatic Injury History
- 4. Clinical Examination
- 5. Radiographic examination (x-rays)
- 6. Diagnosis, Prognosis and Discussion with parents.
- 7. Treatment as needed
- 8. Short term follow-up treatment and evaluation
- 9. Long-term follow-up treatment and evaluation
How do we handle a tooth that is partially avulsed?

• 1. A similar protocol as for a tooth that is totally avulsed, except you don’t need to reimplant the tooth.

• 2. Have the child hold a gauze or washcloth or towel in the area where the tooth was partially avulsed.

• 3. Obviously, speak to the parent/s or guardian/s, advise them and tell them to try and reach their child’s pediatric dentist/family dentist/hospital dentist, so they can immediately receive care.
Enamel Dysplasia (defect) as a result of trauma to a primary tooth.
HARD TISSUE INJURIES
Luxation Injuries

- **Intrusion**: when the tooth is displaced in an apical direction within the alveolus.
SOFT TISSUE INJURIES

• These are injuries associated with dental injuries that include the facial skin, lips, oral mucosa, gingiva, frenum, hard and soft palate, and the tongue.
TRENDS

• Cause of Injury
  The most common cause of dental injuries is falls (26% to 28%)
  Sports related injuries are generally the second most common cause of dental injuries.
TRENDS

• Occurrence of Injury

Because of where young children tend to spend most of their time, it is not surprising that injuries to primary (baby) teeth tend to happen more at home and at school, whereas injuries to permanent teeth tend to occur most often outside the home. These injuries tend to be from bicycle falls, motor vehicle crashes and fights.
TRENDS

• Gender Significance in Injuries

For older children, boys tend to have more dental injuries than girls. However, in younger children boys and girls seem to be equal in frequency and severity of dental injuries.
TRENDS

• **Type of Injury**

For permanent teeth, *uncomplicated crown fractures* tend to be the most common type of dental injury. The types of injuries of highest frequency for primary (baby) teeth tend to be *lacerations.*
TRENDS

• **Dental Location of Injury**

The most common tooth to become traumatized is the maxillary central incisor (front top middle teeth), followed by the maxillary lateral incisor (front top teeth next to the central incisors)
• **Malocclusion**

Severe overbite (or what dentists call overjet. Usually of the upper central incisors. It has been shown that incompetent lip coverage tends to precipitate more severe injuries to the teeth.
• Orthodontic Appliances

These may create more soft tissue injuries when trauma presents, potentially causing increased injury to the gingiva and lips.
PREDETERMINING FACTORS

• Acute Medical Problems  
  Such as seizures, heart attacks or stroke  
• General anesthetics
PREVENTION

- Traumatic injuries to the teeth are difficult to anticipate. However, helmets, seat belts, and properly fabricated mouthguards have a tremendous impact on diminishing the severity of the dental injuries.
MOUTHGUARDS = PREVENTION!
Tooth Discoloration

• After a traumatic injury, both primary and permanent teeth can change color, shade or translucency.
• Color change, in itself, does not mean that treatment is necessary or even indicated.
• However, color change can indicate that there was a traumatic injury and treatment may be indicated with additional findings.
Can traumatic injuries to the primary teeth affect the permanent teeth?

- Most dental injuries to the primary teeth will have no affect on the development of the permanent teeth.
- HOWEVER, IT CAN OCCUR. This is why it is important to take a radiograph (x-ray) to possibly determine any future problems.
• The Importance of Taking Appropriate Radiographs after a Traumatic Dental Injury.

• The following series of slides indicates to us that radiographs can reveal non-visible issues from traumatic dental injuries.
Relationship of the Primary Root Apices to the Developing Permanent Teeth
If left untreated, can an injury to a primary or permanent tooth result in future problems?

- In many cases, teeth that have had traumatic injuries can develop future problems.
- The dentist and parent needs to be attentive to any injury and follow-up evaluation is critical (exam, radiographs, etc.)
Are all injuries to the face and lips due to dental injuries?

- Not all!
- Although most are as a result of dental trauma
UNCOMMON ORAL INJURIES

• As a pediatrician, you may encounter special situations related to the oral cavity that need to be assessed.

• Some things you can treat easily and some you need to refer to the emergency room, pediatrician or pediatric dentist.
How do you tell if there is an exposure of the nerve of a tooth?

1. If you are able to, clean the area with peroxide or water.
2. Place the child’s head back and gently pull the top or bottom lip or the cheek away and look directly at the tooth.
3. If you see a red or bleeding spot or area, there is a good probability that there is an exposure of the nerve.
4. Get the child to a pediatric dentist or the family dentist immediately.
5. We are able to save many of these teeth from requiring extensive dental treatment if seen soon after the injury.
When a child loses a tooth prematurely, should a replacement tooth/teeth be fabricated?

- There are situations where a child loses one or more primary teeth when they are very young that necessitate some type of fixed replacement. The decision to fabricate, what is called an anterior (front) space maintainer is based on several factors.

- 1. Age of the child – when a child loses a front primary tooth before the age of 4, then the eruption of the permanent tooth will occur later than normal. The normal age for the front tooth to erupt is about 7 years old. Therefore, in this situation the permanent tooth will not erupt until the child is 8 years old or more. This is quite a long time not to have a front tooth. On the other hand, when a child loses a front baby tooth after the age of 4, then the permanent tooth usually erupts earlier than normal. In this case, possibly around 6 years of age or earlier.

- 2. Behavior of the child – some children are unable to handle the dental setting and treatment because they are so young. We should no start treatment until the child is ready.

- 3. Speech issues – will not having the front teeth affect speech development? Unknown.

- 4. Psychological issues - if the child will not have the front teeth for several years, will they be made fun of at school or feel badly about themselves?

- 5. Space maintenance – there are situations, although uncommon, where spaces may close between teeth and therefore does not allow room for the permanent tooth that will replace it.
How do we restore primary and permanent teeth that have been fractured?

- We can restore most fractured teeth using what is called a composite material that is bonded to the tooth.

- This bonding, as it is called, can be very successful and last many years. However, it is dependent on how much wear and tear the bonding is exposed to over time. Some composite bonded restorations can last more than 15-20 years. Some may last not even 1 month, especially if the child is very tough in their eating habits and activity levels.
SPECIAL TRAUMATIC INJURIES

• Throughout the lifetime of any pediatric related practice there are some cases that you will always remember for their seriousness and for the successful and unsuccessful outcomes.

• Here is one of them.
CONCLUSION

• The pediatricians role in handling dental trauma can be extremely important to the long-term prognosis of both the primary and permanent dentition.

• Associate yourself with those pediatric dental offices that are capable and willing to place a significant priority on these cases.

• Common sense prevails.
HELP KEEP GREAT SMILES!
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