Traumatic Dental Injury Management and Assessment of Orthodontic Risk Factors

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Background

- Traumatic dental injuries (TDIs) are common occurrences among young children and adolescents, with a global prevalence of 22.7% in the primary dentition and 15.2% in the permanent dentition (Peti et al 2018).
- Management of TDIs pose significant challenges in the dental practice, often requiring a comprehensive approach tailored to the patient's age, medical history, special health care needs, pre-existing dental conditions, and ability to tolerate treatment in the chair.
- Understanding the prevalence of TDIs and orthodontic risk factors can aid clinicians in effectively managing dental injuries and formulating proactive guidance for children and their parents.

Purpose

To assess the prevalence and treatment of TDIs among children and adolescents and explore orthodontic characteristics that may be associated with orofacial trauma.

Methods

- This retrospective chart review included electronic health records of patients, ages 1 to 17 years old, seeking care for TDIs at Columbia University/NewYork-Presbyterian Hospital from January 2020 to October 2023.
- The following data was abstracted and analyzed:

Figure 1. Data Abstracted and Analyzed

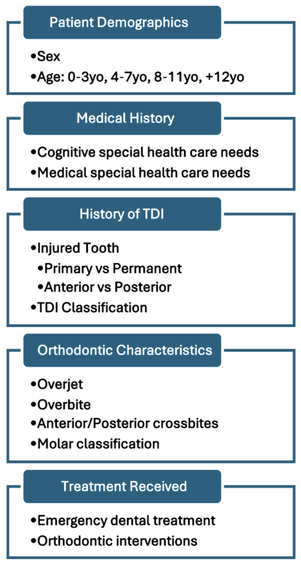
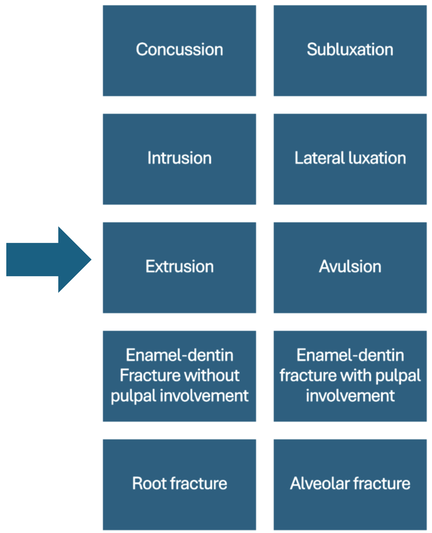


Figure 2. Classification of TDIs



Findings

- The study sample included 94 children (53 male, 41 female) with an age range of 1-17 years (**Figures 3 and 4**).
- Management of 167 traumatized teeth were reviewed, including 76 primary teeth and 92 permanent teeth. Among both dentitions, maxillary central incisors were the most common tooth injured (85.5% of primary tooth injuries, 83.7% of permanent tooth injuries).
- Subluxation injury was the most common TDI type (49%) involving the primary dentition, while fracture of enamel-dentin without pulpal involvement was the most common injury involving the permanent dentition (39%) (**Figures 5 and 6**).
- Forty-eight children (51%) with a history of TDIs received a formal orthodontic consultation and treatment plan.
- Among children with an orthodontic consultation, 67% of permanent incisors had an overjet greater than 3mm, 14% had an excessive overjet greater than 7mm **(Figure 4**).

Figure 3. Sex of Children with TDIs

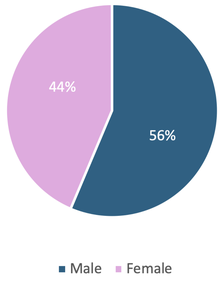


Figure 4. Age of Children at Time of TDI

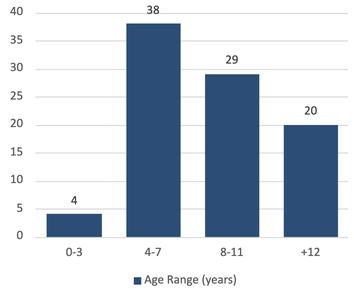
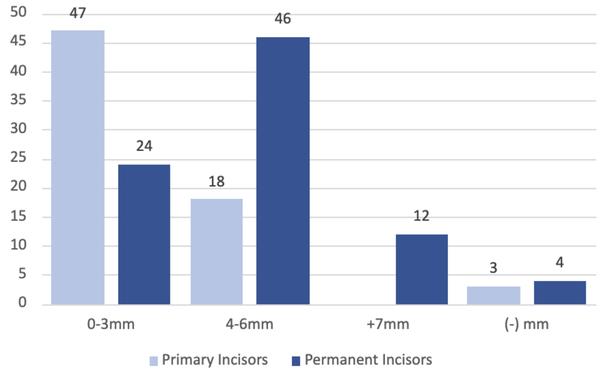


Figure 5. Horizontal Overjet of Children with Orthodontic Consultations



Findings (continued)

Figure 6. Incidence and Management of Primary Teeth TDIs

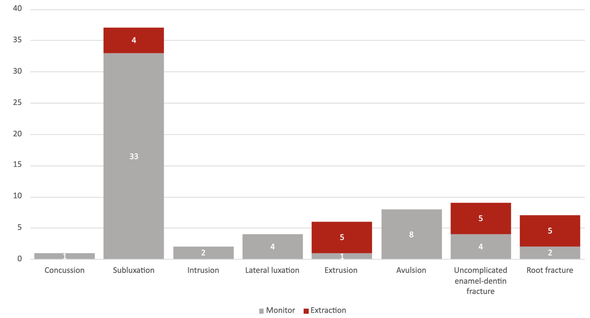
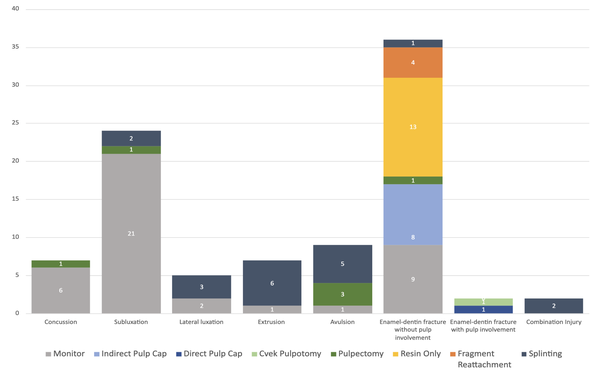


Figure 7. Incidence and Management of Permanent Teeth TDIs



Limitations

- Electronic health record systems, data abstracted could only include the past three years.
- Loss of follow-up after examination and emergency management in the ED consequently smaller sample size.

Conclusions

- Reinforces existing literature, increased incidence involving maxillary central incisors, and recognizing orthodontic risk factors.
- Further research to explore long-term outcomes and their management strategies, as well as the impact on orthodontic treatment outcomes.