TRAUMATIC DENTAL INJURIES

Colgate Dental Education Programs
Special Topic No. 19

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For diagnosis, radiographic examination is important in the primary and permanent dentitions of young people are Falls and sporting activities, respectively, with falls also being cited as the main cause for TDIs among older people.\(^4,7\) Incidents which result in impact such as collisions, traffic accidents, fights, assaults including domestic violence and child abuse, and sport and active life related behaviours (drinking, drug use) are other associated factors with TDIs.\(^1,7\)

**Management of TDIs**

International Association of Dental Traumatology (IADT) developed evidence-based guidelines for the management of TDIs in 2001, which were updated in 2007 and revised in 2012.\(^4,7\) These are the currently available best evidence and practice-based guidelines, developed by a group of experts from relevant fields for the management of TDIs and endorsed by the American Association of Endodontists. The IADT acknowledges that appraisal of a given clinical scenario, will include patient characteristics and clinicians’ judgement which play a significant role in the application of these guidelines. The IADT believes that their application can enhance, but not guarantee, the probability of a favourable outcome.

Combined guidelines for the management of different subtypes of TDIs as well as their long-term follow-up for both the primary and permanent dentitions are available at the website.\(^4,7\) Specific subtypes of TDIs may be used to manage TDIs in detail elsewhere and can be freely accessed.\(^4,7\) Following such clinical guidelines, where the guidelines is beyond the scope of this information sheet. While reiterating that the final decision in regards to patient care remains primarily with the clinician, some general recommendations and considerations for long-term follow-up are summarised below. The primary and permanent dentitions are briefly discussed below.

**Type of teeth and injuries involved in TDIs**

Anterior teeth of both the primary and permanent dentitions are involved in the majority of dental trauma with the maxillary central and lateral incisors being the most commonly injured.\(^1,3,14\) TDIs affecting a single tooth occur more frequently, however, multiple teeth are more likely to be involved in episodes like road traffic accidents, sports and violence.\(^1,3,14\)

Fractures of teeth and alveolar bone, laceration injuries (displacement/dilaceration of teeth) and avulsion of teeth (complete dislodgement of teeth) are the three main types of injuries involved in TDIs (Figure 1), although several subtypes come under each main type.\(^1,3,14\)

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Due to the resilient nature of the supporting structures, trauma-induced pulp exposure is more common than fractures in the primary dentition.\(^4,7\) Avulsion of teeth is one of the most serious dental injuries. It is likely that there may also evidence of radiographic changes or presence of radiographic symptoms at the time of avulsion and therefore it is emphasised that all these tests including radiographic examination are required at regular follow ups to confirm a pulp diagnosis.

Given that immature permanent teeth (with open apices) have a substantial capacity to heal after root fractures, laceration injury and avulsion, even if severe, there is no evidence to preserve their pulp vitality by resorting to emergency treatment options such as partial pulpotomy and thereby facilitating root development.

Partial canal obliteration (PCO), which indicates ongoing pulp vitality, may commonly happens with severe luxation injuries of teeth with open apices as well as root-fractured teeth and less frequently with crown-fractured teeth.\(^4,7\)

For optimal healing and to prevent further injury after TDIs, patient compliance with follow-up visits and home care play a significant role. Information should be provided to both the patients and the carers of young patients regarding post-injury care of teeth (and replanted avulsed teeth) as follows:

- Avoid participation in contact sports until completely recovered from TDI
- Having in mind that some of the tooth injuries may be challenging for the children and carers, we are encouraging to encoded the tooth
- Use 0.1 % chlorhexidine gluconate alcohol free mouthwash for 1-2 weeks
- It is preferable to use special storage media are available
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The IADT expert group has suggested further research on management of TDIs, particularly involving avulsed permanent teeth. Given the overall low quality of existing evidence a recent systematic review has also recommended further studies to ascertain the effectiveness of interventions for managing avulsed permanent teeth.  

Prevention of TDIs

The importance of preventing TDIs is underpinned by their ubiquitous occurrence, psycho-social consequences and impact on quality of life, as well as the time consuming and expensive nature of their treatment options. Below are some preventive strategies that can be followed.  

- Timely intervention of oral factors such as excessive overt/jprotrusion of maxillary anterior teeth that contribute to TDIs
- Avoid/minimise exposure to environmental factors such as unsafe playgrounds and human factors including risk-taking behaviours
- A wide range of policies and programmes, not limited to but including below, can be introduced at school and community level to prevent TDIs:
  - Anti-bullying and violence policies with improved supervision in school yards
  - Sports policies to influence attitudes towards and promote use of intra-oral mouthguard protection as well as wearing other protective equipment and to provide such equipment, particularly in contact sports
  - Sports policies should also ensure that design, development and maintenance of sport and recreational facilities and equipment meet safety standards while enforcing that playing rules pertaining to skills and fitness are adhered to by the participants
  - School health policies involving life skills, healthy setting for living, learning and working
  - Mutual support among community groups enabling them to improve their physical and social living environment
  - Wearing seat belts as well as using appropriate child restraints in motor vehicles and wearing proper bicycle helmets help minimize TDIs during traffic accidents.

References:


Summary

- Over one billion people are affected with TDIs placing it as the fifth most prevalent condition worldwide.
- TDIs can be regarded as an important public health issue given their ubiquitous occurrence, impact on quality of life, expensive and time intensive treatment choices.
- A range of oral, environmental and human factors can cause TDIs while falls and sporting activities contribute most to the TDIs in the primary and permanent dentitions.
- Anterior teeth, in particular maxillary incisors, are the most common teeth affected by TDIs. Fractures involving teeth and alveolar bone, luxation and avulsion of teeth are the three main types of injuries involved.
- IADT has developed comprehensive evidence based practice guidelines that assist dental practitioners, patients and carers to manage TDIs.
- Timely intervention of oral factors, minimising exposure to human as well as environmental factors and implementing a wide range of school and community based policies can help prevent TDIs.
- TDIs warrant further studies, particularly in Australia since TDI-related information is currently not available at a national level, to ascertain the effectiveness of TDI management strategies.