Dental Trauma Guidelines

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Abstract

Guidelines have been developed for management of numerous medical and dental conditions. If carefully developed and based on best available evidence, they serve a very useful purpose in giving information in dealing with health problems to health care providers as well as patients. The history of trauma guidelines is quite limited, but the American Association of Endodontists has been involved since the 1980s. In recent years, the International Association of Dental Traumatology has developed guidelines for management of traumatic dental injuries, with input from specialists in all relevant disciplines of dentistry. These guidelines, first developed and published in 2001 and updated twice since then, have been accepted as reliable recommendations for the urgent care of traumatic dental injuries; the most recent trauma guidelines were completed by the International Association of Dental Traumatology and published in 2012. The application of these guidelines is to provide both patients and practitioners with the best available information about management of such injuries. As with most guidelines, there are limitations that are primarily related to the level of evidence available, which is low. However, they are useful and, when followed, can lead to better outcomes than when no guidelines are used. (J Endod 2013;39:S6–S8)

Key Words
Dental trauma, guidelines, replantation, tooth avulsion, trauma guidelines

Guidelines are extensively used in medicine and dentistry and are recognized as important components for both diagnosis and treatment; the United States Department of Health and Human Services provides a website (http://guideline.gov) containing a number of guidelines. In terms of traumatic dental injuries, various disciplines have published guidelines, including the American Association of Endodontists (AAE), the American Academy of Pediatric Dentistry (AAPD), and the American Association of Oral and Maxillofacial Surgery (AAOMS).

The AAE began developing guidelines for avulsed teeth in the 1980s and has published several trauma guidelines since then, as will be described later.

The AAPD (1) has recently addressed management of acute dental trauma in children on the basis of a literature search and expert consensus resulting in new recommendations. Although the introduction states that they are congruent with the 2007 International Association of Dental Traumatology (IADT) guidelines, one major difference with the IADT guidelines is the AAPD’s concern for replanting avulsed teeth in children because of the possible future chance of ankylosis. This was a concern for Barrett and Kenny (2) as well, and it will be addressed later.

The AAOMS provides recommendations through their website (http://www. aaoms.org/facial_injury.php). One recommendation is for the use of mouth guards (3). Otherwise, specific recommendations for various dental injuries are primarily related to prevention of injuries and the role of surgeons in treating facial trauma.

Guidelines are of global interest. For example, in the United Kingdom, national clinical guidelines for treatment of traumatically injured teeth have been developed (4). They are quite similar to the IADT guidelines, with some minor variations such as recommending against replantation of teeth in young patients if ankylosis is expected. There is worldwide interest in good information about the best treatment for such injuries, which demands that the best available evidence be used in the development of guidelines.

The IADT has been very actively involved in developing and updating guidelines for the management of traumatic dental injuries for many years. Recently, the guidelines, first published in 2001 (5) and subsequently updated in 2007 (6), have been updated again with incorporation of current information from the literature. They have been published both online (www.iadt-dentaltrauma.org) as well as in Dental Traumatology (7–9). The updating of these IADT dental trauma guidelines (IADT-DTGs) was completed by 3 multidisciplinary international committees (Fractures and Luxations, Avulsions, and Primary Teeth), with practitioners from pediatric dentistry, endodontics, oral and maxillofacial surgery, and general dentistry participating in the committees. The global representation and broad range of expertise ensured a comprehensive approach to the problem of traumatic dental injuries. The IADT-DTGs are readily available online at no cost and are a great source of information for both professionals and patients. The usefulness and application of the guidelines are quite evident and will be emphasized in this presentation.

History of Dental Trauma Guidelines

The earliest trauma guidelines produced by the AAE go back to 1982 when a committee appointed by Dr Noah Chivian, then AAE president, developed a set of guidelines for the treatment of avulsed teeth (10). It was subsequently submitted as a letter to the editor of the Journal of the American Dental Association by the committee chair, Dr Joe Camp (11). It is interesting to note that the committee members agreed that the guidelines would be a “working document” that would be modified as new information became available. Milk was already recognized as a suitable transport medium, and attempts to “revitalize the pulp” in teeth with open apices were...
recommended. Another interesting aspect of these guidelines was that antibiotics were not recommended “unless medically indicated or in cases of contaminated avulsion.”

In the 1990s another ad hoc committee was appointed by then AAE President Dick Burns to revise the guidelines for the avulsed tooth. A controversial issue arose concerning the length of time that calcium hydroxide (CH) should remain in the root canal system before canal obturation. Initially, it was suggested that the canal could be filled after 7–14 days of CH. Later, a recommendation was made to leave it in for 6–24 months before obturation. The basis for the revision was the then current literature and expert opinion; the latter may be the reason that the committee initially recommended that root canals of replanted teeth could be obturated after 7–14 days of CH treatment rather than the longer time period recommended before. The committee consisted of American members only, and in their experience, short periods of CH treatment appeared to work satisfactorily (12). The short CH treatment time was questioned by a number of members on the basis of their experience. A subcommittee of the original ad hoc committee was appointed and asked to evaluate the Scandinavian claim and to modify, if appropriate, the guidelines for avulsed teeth. The 1995 revised version contained the Scandinavian suggestion to treat with CH for 6–12 months before obturation (13).

In 2002, another AAE ad hoc committee was appointed and charged with the task of developing a set of guidelines for all traumatic dental injuries and not just avulsions. The AAE committee recognized that the IADT had already produced a set of such guidelines (5). The IADT committee that had produced these guidelines consisted of international specialists from several disciplines including endodontics. The AAE ad hoc committee studied the IADT guidelines and came to the conclusion that they would serve the AAE well, so in February 2003 the committee recommended that the AAE adopt the IADT guidelines as published in the Journal of Dental Traumatology (5). They were adopted by the AAE in 2004 (14) and are the currently available trauma guidelines on the AAE website.

Application of Guidelines

The purpose of guidelines is to give health care providers convenient access to current recommendations for treatment that are based on the best evidence available. The recently published (7–9) IADT-DTGs meet the criteria for being based on the best evidence. In addition, the broad-based background of the committee members ensures that the various experts’ points of view were considered and extensively discussed before adopting guidelines consensus.

Guidelines may be focused narrowly, as the IADT-DTGs are, to stress the urgent care approach of managing traumatic dental injuries. The purpose for that is to avoid confusion and reduce the amount of information needed to stabilize trauma situations. Properly focused initial treatment allows subsequent follow-up and evaluation of teeth that may be lost if not initially managed optimally. Andreasen et al (15) addressed concerns about initial treatment delay and its effect on the pulpal and periodontal ligament recovery. Stewart et al (16) pointed out that following guidelines with respect to pulp management favored a better outcome. This was further supported by Hinckfuss and Messer (17), who reported that the timing of pulp extirpation after replantation (recommended to be done within 10–14 days) was important in the reduction of the incidence of infection-related (inflammatory) root resorption.

A recent report by Bücker et al (18) further illustrates the value of using the IADT-DTGs in the management of dental trauma. The authors reported that when trauma patients were treated according to the IADT-DTGs that were valid at the time (the ones published in 2001 [5] and 2007 [6]), they had lower rates of post-trauma complications than those in patients who were managed without the use of the guidelines. The authors emphasized the importance of regular follow-ups to treat complications in a timely manner. Endodontists are specifically trained to manage many of the complications such as pulpal problems and root resorption. It is troubling that currently best evidence, as exemplified by updated guidelines, is not routinely applied by all dentists managing patients with traumatic dental injuries.

The IADT-DTGs recommend a biological approach to the urgent care of dental injuries:

1. Stabilize the injury by carefully repositioning displaced entities and suturing soft tissue lacerations.
2. Eliminate or reduce the complications from bacterial contamination by rinsing and flushing with available liquids and use of chlorhexidine when possible.
3. Promote the opportunity for healing by replanting avulsed teeth and repositioning displaced teeth.
4. Make every effort to allow continued development of alveolar ridges in children.

The latter issue became a concern for pediatric dentists and others and led to the recommendation to avoid replantation if there is a risk of ankylosis preventing continued alveolar ridge development (1, 2). However, the introduction of decoronation, a procedure to be used early when ankylosis is observed in a developing child, allows replantation, even when ankylosis is expected. This procedure has been shown to provide improved long-term treatment options in cases of ankylosis of replanted teeth (19, 20).

Expanding the guidelines can be accomplished by interested dental disciplines; for instance, the AAOMS includes in its recommendations information about protective mouth guards (5), and the pediatric dentistry guidelines (1) provide information about orthodontic movement of teeth after trauma. Possibly the AAE may want to broaden the focus of the guidelines by including recommendations for the management of young, developing teeth with necrotic pulps with description of procedures for pulp replacement. Furthermore, orthodontists could recommend techniques for closing dental spaces after traumatic tooth loss in young children. However, it seems reasonable to keep the focus for general guidelines narrowly focused on the urgent care management of traumatic dental injuries.

A companion website to the IADT-DTGs has been the Andreasen Dental Trauma Guide, www.dentaltraumaguide.org. This interactive guide parallels the IADT-DTGs in its trauma description and recommendations but provides more extensive information and description of procedures. Dr Jens Ove Andreasen has been the primary force behind the development of the Guide. The basis for the information is, first, from the increasing amount of dental literature devoted to dental traumatology and, second, from the extensive clinical data and records from thousands of patients with all types of dental injuries treated at the University Hospital in Copenhagen, Denmark. The combination of the IADT-DTGs and the Andreasen Dental Trauma Guide provides both dentists and patients with up-to-date and readily accessible information.

Limitations

Although it has been shown that following published guidelines for dental trauma management has resulted in better outcomes than when guidelines are not followed (15–18), one should probably not assume that guidelines are established standards of care; the judgment of the clinician in each individual clinical situation is
an essential component of treatment recommendations. The following disclaimer is prudently included in the publication of the IADT-DTG:

Disclaimer: These guidelines are intended to provide information for health care providers caring for patients with dental injuries. They represent the current best evidence based on literature research and professional opinion. As is true for all guidelines, the health care provider must apply clinical judgment dictated by the conditions present in the given traumatic situation. The IADT does not guarantee favorable outcomes from following the Guidelines, but using the recommended procedures can maximize the chances of success. (7–9)

Following guidelines where applicable, however, would lend support for having performed recommended procedures if a legal complication should arise. As pointed out by Niederman et al (21) with regard to evidence-based dentistry, adhering to evidence-based dentistry may protect one from unjust criticism from peers and patients, but it is no guarantee against possible legal complaints.

Recommendations

The current IADT Guidelines are readily available to anyone, dentists and patients alike, online (www.iadt-dentaltrauma.org) and in print (7–9). Many patients are aware of the Guidelines, and endodontists, who are frequently the specialist involved in dental trauma management, will benefit from being able to discuss specific treatment with patients and/or their parents. The value of following guidelines that are based on best evidence is clearly evident in terms of convenience in finding specific procedures to follow as well as expectations of a reliable outcome.

Summary

Guidelines have been developed for management of numerous medical and dental conditions. The AAE recognized the need for developing guidelines for avulsed teeth in the early 1980s and updated these guidelines in the 1990s. When subsequently it was recognized that such guidelines needed to be expanded to include additional dental injuries, the AAE adopted guidelines developed by the IADT in 2001. The IADT committee that worked on the expanded guidelines included endodontists as well as specialists from other dental disciplines. These guidelines are used by both patients and health care providers to manage traumatic dental injuries, and they have become available worldwide through the Internet. As with most guidelines, there are limitations that are primarily related to the level of evidence available, which is low. However, they are useful, and when followed, they can lead to better outcomes than when no guidelines are used.

Acknowledgments

The author denies any conflicts of interest related to this study.

References