ACADEMY FOR SPORTS DENTISTRY

NEWSLETTER

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Academy for Sports Dentistry 33rd Annual Symposium

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2014-2015

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The Academy for Sports Dentistry Newsletter is published tri-annually for its members. Comments and suggestions regarding the newsletter should be directed to Dr. Hans Stasiuk, Editor.

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Symposium

W. Robert Howarth, DDS

2014 has been a successful year for the Academy for Sports Dentistry. In June we had a good turnout for the symposium in San Diego. The Team Dentist Course was outstanding and was followed by excellent presentations at the symposium. The mouthguard fabrication and suturing workshops were well done. A special thank you to Andrew Arriola and his staff for organizing a great meeting. The tour of the Olympic training facility at Chula Vista was great. The president's reception and the auction were well attended. The Padres baseball game was fun. A special thanks to Shelly Lott, our Executive Secretary, for all she did to provide a tremendous event.

This year the symposium was recorded and ASD members can access the lectures to review. Those not in attendance can order lectures and earn continuing education credits. See our website for more details and a link to the Learning Center.

White House Sports Summit

Rick Knowlton, our past president and AGD member, attended the White House Sports Concussion Summit on May 29. He provided copies of the May/June 2014 issue of *General Dentistry*, which included the study, "Role of Mouthguard in Reducing Mild Traumatic Brain Injury: Concussion incidence in High School Football Athletes," by Jack Winters. Rick submitted a statement that included a call for more research about mouthguards and concussions. He also requested support from the ASD in obtaining a mandate for use of a properly fitted mouthguard in all collision and contact sports.

Several new studies are being conducted under the guidance of chairperson Danette McNew and her research and education committee.

AGD-ASD Coordination

Rick Knowlton coordinated with the Academy of General Dentistry to allow ASD to provide research articles for a special sports dentistry issue of AGD *General Dentistry* in 2015. The exposure for ASD will be unbelievable.

The August 2014, Vol 42, No. A issue of AGD-Impact by Claire Altshuller on mouthguards was outstanding. I have personally shared copies with my local high school as well as Rutgers University. This article gives excellent information for parents, coaches, trainers, dentists, physicians and athletes.

Membership

Wayne Nakamura and his membership committee are coordinating our mentor program. From my experience, mentoring is one of the most rewarding things that I do.

On a personal note, my son Lt. Timothy Howarth is a navy dentist currently serving in Japan. He first met Tomo Takeda and his sports dentistry team at the Philadelphia Symposium. He may now have the opportunity to be mentored by them during his two year tour. (Just a proud Dad talking!)

ASD-NATA

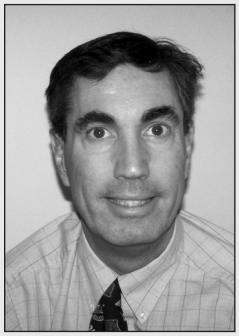
Through the hard work of Paul Nativi and Bob Ogar, who is the first athletic trainer to achieve fellow status, ASD has established a NATA referral program on our website. There are thoughts about having an ASD/NATA meeting coincide in the future.

ASD-USOC

As approved providers for the Olympic athletes we are able to donate dental care and mouthguards. ASD is in the process of creating informational brochures to help athletes with homecare and mouthguards.

So far 2014 has been exciting. Help tell others about who we are and what we do!

Sincerely, W. Robert Howarth, DDS



Editor's Message

Reflections

Hans Stasiuk, DMD

As I reflect back on my first year as editor I must say that it has been very enjoyable. I would like to thank all those who have contributed articles and who have made my job a lot easier. I would especially like to thank our Executive Director, Ms. Shelly Lott and our Managing Editor, Ms. Mary Byers. This is Mary's last issue with us after fifteen years. In addition to serving as managing editor, she keeps a busy schedule as an author and professional speaker and is leaving us in order to be able to concentrate more fully on these activities. Mary has been invaluable to both the Academy and myself. The Academy wishes you all the best with your future endeavors. I speak on behalf of the ASD Board and all our members when I say, "THANK YOU SO MUCH, MARY. WE WILL MISS YOU!"

I have asked Dr. Mike Pelke, who is the team Dentist for the Minnesota Wild, to write an article about his experiences as a Team Dentist. He is also the president of the NHL Team Dentists.

Dr. Brett Dorney wrote a very interesting article on Sports Trauma which was published in the April 2013 edition of *News Bulletin* of the Australian Dental Association. We have permission to reprint it in this newsletter.

In 2015 ASD has the good fortune of returning to Chicago for our annual Symposium. I live in Canada, but I must say that Chicago is one of my favorite cities to visit in North America. I first went there in 1987 for a triathlon and I immediately fell in love with the city. To start with, the people are very friendly and I find downtown Chicago very safe. I have been there over twenty-five times and I have never felt scared (except when I thought that the Cubs might lose!).

There is so much to see and do that I recommend you bring your whole family and come ahead of time or stay for a few days after the Symposium. The weather is great at the end of June. There are lots of outdoor activities to take advantage of, starting with running along Lake Michigan. There will be a Fun Run again. I am giving you seven months' notice to start preparing for a 3-4 mile run.

Other activities include boat rides in the Chicago River and Lake Michigan, open air tour buses, nice beaches (which are within 5 minutes of downtown) and the Ferris Wheel at Navy Pier.

Make sure to take in a Chicago Cubs baseball game at Wrigley Field. The Cubs will be playing at home from June 22-25. I highly recommend to sit in the Bleachers because it is a lot of fun there. Also, a behind the scenes tour of Wrigley Field is a must. The ballpark turned 100 years old this year. (The White Sox will be out of town while we are in Chicago.)

Chicago has a number of outstanding museums, galleries, and attractions including the Museum of Science and Industry, the Field Museum, the Shedd Aquarium, the Adler Planetarium, the Art Institute of Chicago, Navy Pier, and the Second City Comedy Club.

Chicago is a food lover's dream. Some of my favorites eating establishments are Gino's Pizza (on Superior) for deep dish pizza, Lawry's for prime rib, Al's for Italian beef on a bun, Frontera Grill for upscale Mexican food, Carsons for barbecue food--and don't forget the caramel popcorn at Garrett Popcorn!

There will be more information on the 2015 Symposium in the next ASD newsletter. I look forward to seeing you there!

Team Dentist Profile

Dr. Mike Pelke

Minnesota Wild (National Hockey League)

I am often asked what it is like to be a team dentist of a prolific NHL team. My response is usually short: "It's fun, I enjoy it." I try not to go into too much detail that many lay people wouldn't understand. Many of the procedures I do on a regular basis with the team are similar to the things I do every day in private practice. Most outside the dental industry see this position as a glamorous and lucrative. Some think it is the only thing I do! The truth is, while it does occupy a good deal of my free time during the season, it does not prohibit me from working a full time private practice. It is not glamorous and, yes, the perks are nice, but no one is going to get rich as a team dentist.

How I became a team dentist for the Minnesota Wild is also a story that involves location, timing, ability, and a little bit of luck. The team was going through the process of replacing one of their two current dentists. They had one current team dentist, Dr. Michael Nanne, but due to the lengthy season and difficulty for one dentist to be present at all of the home games, they needed another. Dr. Kyle Edlund and I were approached by the Wild to interview for the position based on some positive recommendations. It helped that a couple of players and team support staff lived in close proximity, and had already been patients. Woodbury is only about seven miles from the Xcel Energy Center, and that was important for the team to have quick access in case of emergency. There were also already a good number of players and team executives that lived in the community.

Furthermore, the office had already been active in the community with youth sports, i.e. making mouth guards and visiting schools during dental health month. We also had done a large amount of continuing education related to dental trauma and sports dentistry. I personally believe that it is so important to be proficient in treating dental trauma regardless of whether you work with a team or not. So we were offered an interview. We were asked about qualifications and given scenarios to solve. The time commitment and on-call ability was also very important to the team. The team needed to ascertain if we would be available on a Friday night, Sunday morning, or whenever they needed us. It did certainly help that we are both avid sports fans! A general understanding of professional sports and the team are important. We must have answered their questions correctly because after a series of interviews with trainers and the team GM, we were offered the position. There was no contract to sign, no monetary guarantee, and no signing bonus, just a handshake agreement that we would provide services for the team when they needed us. Whenever they needed us!

Since then we have done hundreds of hours of CE related to dental trauma and sports dentistry. I have lectured regarding dental trauma to the local dental societies and at the University of Minnesota. We continue to be very active in the local youth sports scene.

Being a team dentist for an NHL team is great, but it is only a small part of my practice. Sports dentistry makes the profession more interesting and exciting. I have learned so much through the Academy that I thought I already knew. It makes me a better clinician to my patients when dental trauma occurs or when a child loses their mouth guard for the third time.

Being a team dentist is all about being present for the patient, whether they are a highly compensated professional athlete or the eight-year-old who fell off his skateboard.

ORAL HEALTH

SPORTS TRAUMA

By Brett Dorney, DDS

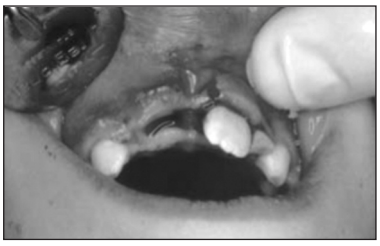


Fig 1. A 7-year old boy avulsed an upper central incisor after falling out of a tree

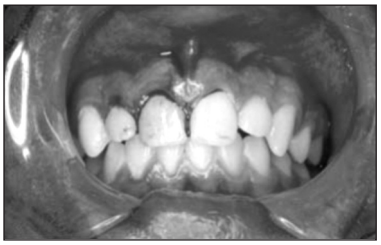


Fig 2. A 16-year old boy, rugby accident with a lateral luxation injury.

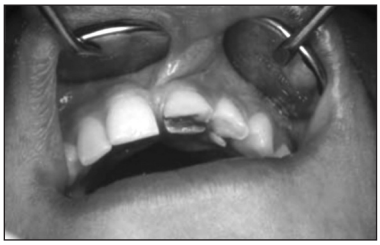


Fig 3. Wicket keeper injured in a cricket accident, hit by the ball.

Dental sporting injuries are often a complex challenge for the clinician faced with the task of rehabilitation. For the family involved, a dental injury, which is almost always to the upper front teeth, is devastating. In dental injuries the complexity of many tissues being injured requires a careful assessment of which tissues are injured. Whether the injury is simple or complicated, the healing events, repositioning and splinting of teeth, and use of antibiotics will strongly relate to the type of injury which has occurred. If the injury can be reduced by wearing a mouthguard there is a much better chance of a long-term satisfactory outcome.

The majority of dental injuries are caused by falls (Fig 1) and is true for all age groups. The next most common cause of dental injury is violence, followed by motor traffic accidents and then sporting injuries.[1] Recently, there has been a substantial increase in injuries from bicycle riding. In the primary dentition the incidence of injury peaks at age 2 to 3 when motor coordination is developing and children are starting to move around on their own. Sport plays little part in traumatic dental injuries for the primary dentition.[2] The increasing occurrence of dental injuries for boys seems to begin around 8 to 9 years of age and continues through the teenage years. Playing contact sports during the mid-teen years seems to be a peak for traumatic dental sporting injuries. The dental profession continues to promote the use of custom-built pressure laminated mouthguards in this at-risk age group.

FACTORS INFLUENCING DENTAL INJURIES

In contact or collision sports it is easy to understand why there is a regular occurrence of dental injuries (Fig 2). However, there are other sports and factors that can influence how dental injuries occur. These factors include:[3]

- athletes in the mixed dentition stage
- recreational sports men or women
- athletes where a helmet and possibly a face guard forms part of the protective equipment
- sports where hard objects such as bats and/or balls are used
- athletes involved in boxing or martial arts
- elite athletes with specific needs
- athletes with dental implants, crown and bridgework or other previous indications of dental injuries.

Provision of custom-built mouthguards to prevent traumatic dental injuries is strongly supported by the Australian and American Dental Associations. Today, it appears many sports previously regarded as non-contact sports are now seeing a significant number of dental injuries. Foremost amongst these sports is basketball where aggression and full body contact results in many injuries including dental. Other sports where dental injuries have been identified are softball and even T-ball. Dental injuries also occur in cricket where the batsman is most likely to be injured followed by the wicket keeper (Fig 3). In contact sports each athlete has a one in ten chance of a dental injury per season and a one in three chance in their career. As well an athlete is 60 times more liable to sustain dental damage when not wearing a protective mouthguard.

The pattern of dental injury depends on three factors:[4]

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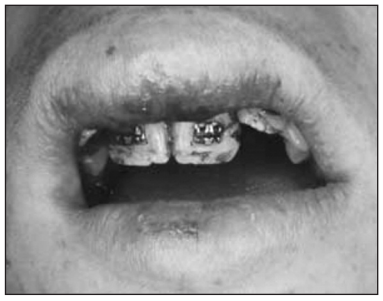

Fig 4. Wicket keeper hit by the ball resulting in an alveolar fracture.

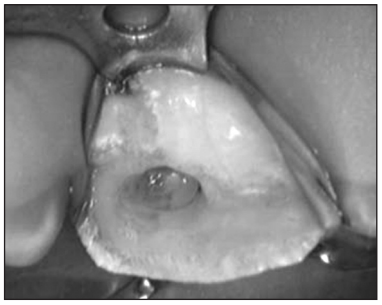

Fig 5. Cvek pulpotomy using rubber dam, Stage 1.

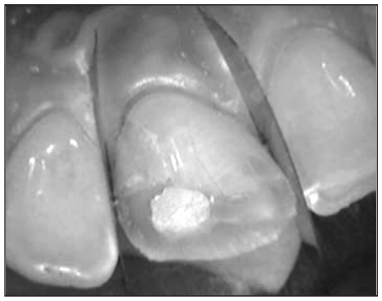

Fig 6. Cvek pulpotomy completed.

- the energy of the impact
- the direction and the location of the impact
- the resilience of the periodontal structures

Until recently a custom-built mouthguard made on a plaster cast of the athlete's teeth was regarded as acceptable even though there were no specifications of thickness, material, or design for the athlete's sports. The introduction of thermoforming, which is the use of high heat and high pressure, and the classification of custom-built mouthguards specific to sports have laid down a standard for care.

For many years it was thought all dental injuries should be treated on an emergency basis.[5] Certainly this has logic for the parents and injured patients. Immediate treatment will make them more comfortable and may reduce healing complications. However, for practical and even economic reasons a new approach is required. The clinician should assess whether the injury is classified as acute, requiring immediate treatment, subacute, treatment in the first 24 hours or delayed with treatment initiated after 24 hours. Dental injuries involving a tooth being avulsed, an extrusive luxation or an alveolar fracture are definitely acute treatment priority. When a tooth is avulsed the injury is classified as a separation injury, with cells remaining vital in the periodontal ligament and also in the alveolar socket. If the tooth can be repositioned within five minutes there will be a very acceptable outcome. The outcome of tooth avulsion depends on how long the tooth has been out of the mouth, the age of the individual and whether some storage medium has been used to preserve the cells on the outside of the tooth.

ACUTE REQUIRING IMMEDIATE TREATMENT

An injury requiring acute priority is alveolar fracture (Fig 4). Clinical studies have found a significant relationship between the incidence of pulp necrosis and treatment delays of more than three hours. Unfortunately, there have been few studies into the effect of dental trauma on pulp health. One of the studies to look at luxation (displacement) injuries to teeth indicated there was a significant difference to healing following treatment delays of five hours. Unless new research indicates otherwise, lateral luxation and root fracture should also be included in the acute category for treatment.

SUBACUTE TREATMENT

A subacute approach, which is treatment within a few hours of the trauma, can be utilized for the following types of injuries. Intrusive luxation, the forceful apical positioning of the tooth, has been studied and it appears immediate surgical repositioning or delayed orthodontic repositioning had similar results. It seems reasonable to use a subacute approach for this traumatic injury. Other injuries which can be included in this subacute approach are minor luxation injuries, teeth with simple enamel/dentine fractures and teeth which have crown fractures with pulp exposure. Recent studies have shown that crown fractures with pulp exposure had the same long-term prognosis whether treated acute, subacute or delayed. However, due to discomfort of an exposed pulp it is reasonable to try for a subacute treatment approach if possible.

Primary teeth can be treated with a subacute or delayed strategy unless there is occlusal interference to the displacement indicating an acute approach should be taken. Clinical experience has shown the most common injury is an enamel/dentine fracture and the modern approach is to find the fragment, store it in water to keep hydrated then re-attach it with a flowable composite using a total etch and bond system. If there is pulp exposure, it is critical the clinician understands this is a traumatic injury and there is only minor infection of the top few millimetres of the exposed pulp. If treated on a delayed basis the outcome will be the same as acute or subacute treatment options. The preferred treatment of the pulp exposure, providing it is an immature pulp is a Cveck or minimal pulpotomy using either calcium hydroxide or MTA (mineral trioxide aggregate) as the dressing material (Fig 5).

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The Cvek pulpotomy has a 98% success rate (Fig 6).

Severe injuries including some crown root fractures and multiple fractures of teeth with displacement cannot be treated and will have to be extracted. The modern approach in dental trauma treatment is to consider future options and whether there will be enough bone remaining to allow implant prosthetics to occur. Losing teeth at a young age is not a very good outcome with implant placement only possible after the age of 21 when the athlete will have stopped growing.

It is important for the clinician to understand all the sequale of traumatic dental injuries and takes a long-term approach to the treatment and also the prevention of any other future injuries. Research has indicated if someone has been injured there is a one in three chance they will be injured again (Fig 7).

The clinician should also inform the athlete and maybe the parents that the initial injury viewed is not the total injury. Over time, other teeth adjacent to the injury site may undergo degeneration. This can include pulp necrosis, fracture or inflammatory resorption. It is critical parents are provided this information as there is often substantial cost involved in treating dental injuries and they have to be monitored over a long-term. A conservative approach is always best. This conservative approach may involve a team of the general dentist, orthodontist, periodontist and an endodontist to obtain the best result for the injured athlete.

Sporting bodies are endeavoring to make their sports more attractive by looking at reducing injuries. Government bodies and health providers are also looking at the cost of sporting injuries. It is apparent to all there are enormous benefits by recommending throughout the community the use of custom-built mouthguardsfor participants in at risk sports.[6] The weight of scientific evidence and long-term clinical experience with sporting teams establishes the cost benefits of custom-built mouthguards.

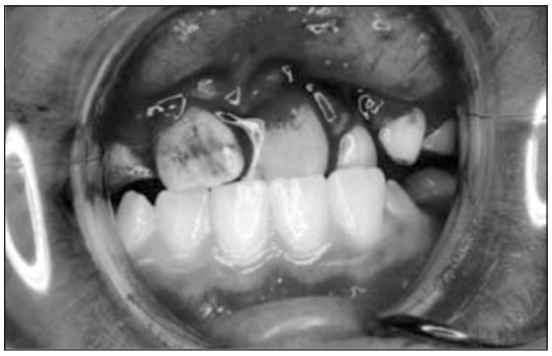

Fig 7. A 9-year old girl playing softball hit by the bat.

FUTURE DESIGNS

In the future new designs and better combinations of materials will increase protection for athletes playing different sports where risk factors vary. New research from Japan indicates there will be an even greater reduction of injury in sport if the mouthguard is balanced to the lower occlusion. Today's pressure laminating techniques will ensure the mouthguard fits accurately. New mouthguard designs using materials of different thickness and Shore hardness may also incorporate air spaces to minimize the transfer of energy.[7]

The treatment of traumatic dental injuries requires knowledge, experience and decisive implementation of current research. An understanding of pulpal, periapical and periodontal pathology resulting from injury is critical. Inappropriate initial treatment will increase the chances of long-term complications, lessen the chance of teeth remaining vital and result in unnecessary pain, distress and cost.

REFERENCES

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