ACADEMY FOR SPORTS DENTISTRY

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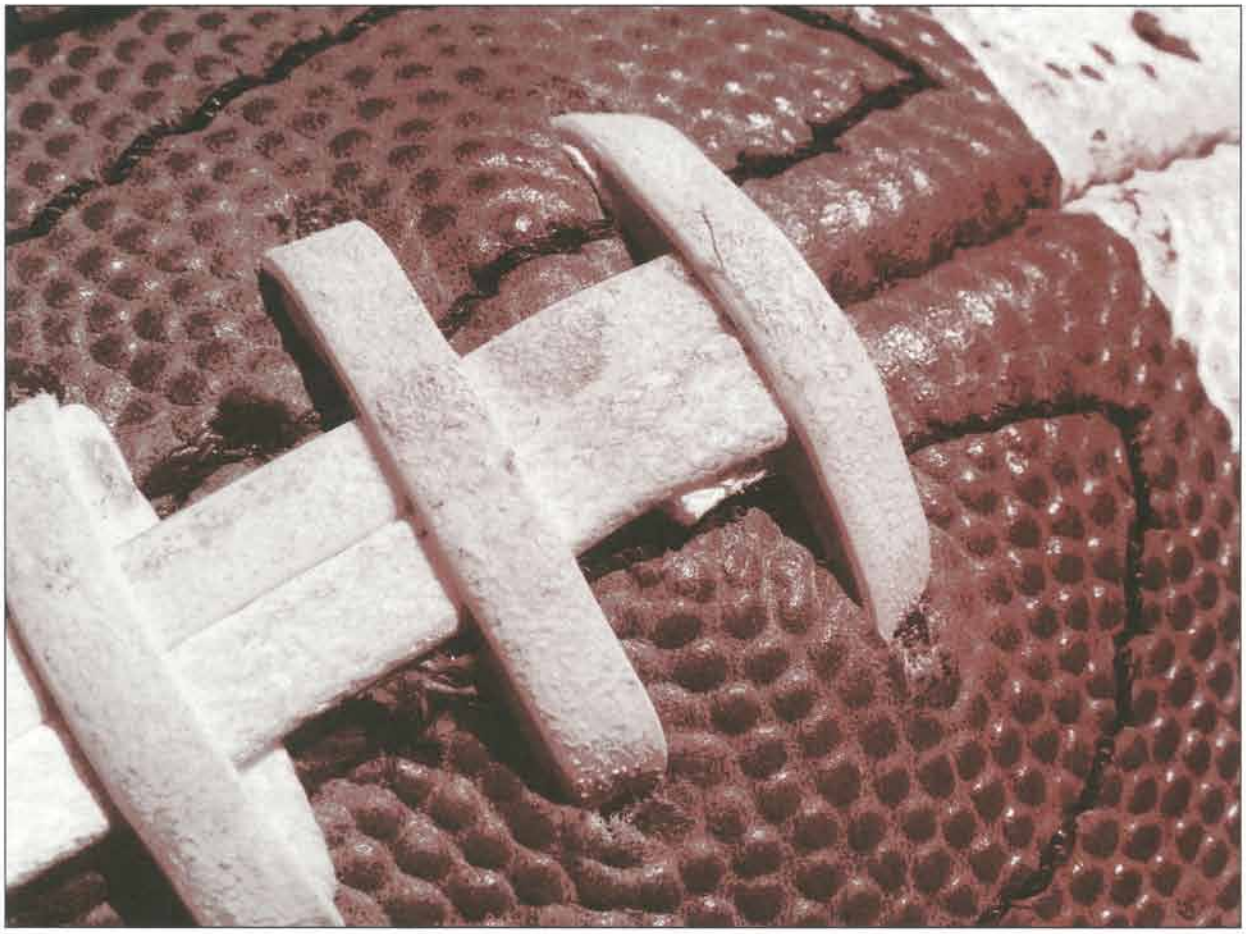

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FALL TWO THOUSAND AND FIVE

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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. Mark Roettger, Editor.

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The Team Dentist

Dr. Brett Dorney BDS, FRACDS, FASD

The first Team Dentist course was held at the Academy for Sports Dentistry 2002 Symposium, in San Antonio, Texas, June 2002. This program was an outstanding success with 100 people attending, confirming demand for this type of course.

The Academy for Sports Dentistry's 2003 Symposium, in San Juan, Puerto Rico and the 2004 Symposium in Cincinnati, Ohio, both featured the Team Dentist course. Next year at the Academy for Sports Dentistry's annual symposium in Santa Monica, California, the Team Dentist course will be part of the main program and will also be available as a stand-alone course on the Saturday of this 3-day meeting. There will be an impressive list of speakers and many of them are involved with professional sporting teams. This should be the finest Team Dentist course held with other experts in the fields of dental traumatology, athletic training protocol, getting started, drug interactions, diet, and the latest materials, to make this a unique must-attend event for June 2006.

A Team Dentist has significant responsibility as part of the sports medicine team. The Team Dentist requires sports-specific knowledge and should have special training to fulfill his/her role in either amateur or professional sporting events. The responsibility of the Team Dentist may include:

1. Organizing dental care for a team, either amateur or professional.

2. Delivering dental care to the athletes:
   a) Pre-season dental screening
   b) Developing a mouthguard program
   c) Providing dental coverage for at-risk competitions
   d) Having the latest knowledge to diagnose and treat dental sporting injuries
   e) Educating the athletes, parents and community groups.

The Academy for Sports Dentistry Team Dentist course provides the education to cover all these areas. It is important the Team Dentist understands the sport and identifies specific situations or problems that may be encountered in that sport. The principles of prevention of dental injuries and the ability to design and manufacture a properly fitted pressure laminated mouthguard are absolutely essential. Evidence-based treatment of traumatic dental injuries must be followed. A new area that Team Dentists will be able to play a role is identifying, diagnosing and treating dental problems seen in athletes due to excessive consumption of sports drinks, dehydration, and unusual dietary habits.

An unfortunate occurrence in dental practice is seeing a sporting injury which should have been prevented. These injuries illustrate the need for dentists to play a more active role in educating the sporting community. Certain sports will place athletes at greater risk and certain age groups will also be at greater risk. Team sports have a greater number of injuries while individual sports have more severe injuries. Recent reviews of the literature including a six-year ongoing study into dental injury patterns within the community of the north side of Sydney have indicated that 60% of all dental injuries will occur under the age of 14, another 30% will occur between 14 and 21 and 10% after the age of 21. Of these injuries, a third will have occurred in sports with age group 14 to 21 recording the highest percentage of injuries. One third of all injuries will involve multiple teeth. With this information, it is reasonable to develop a program to ensure that people within these high risk age groups are properly provided with mouthguards.

If the role of the Team Dentist involves being at the sporting event, it is essential that you provide a dental first aid kit. The items required are listed in the handout from the Team Dentist course. It is also important that the medical personnel who control all aspects of medical care for the team are aware of your involvement and expertise. The diagnosis of a fractured mandible is an area that only a dentist seems to have the ability to diagnose. This is becoming a much more common injury as sports develop a more aggressive approach. There is no doubt that players in today's contact sports are bigger, stronger, fitter, faster, have high levels of skill and are focused on aggressive defense and attack! There is a dramatic reduction in mandibular fractures when the custom built mouthguard is properly designed, has been constructed with a balanced occlusion, and has occlusal coverage extending distally over the upper second molars.

Standards Australia and the Australian Dental Association has produced a document detailing the care, fabrication and maintenance of custom-built athletic mouthguards. This document advises mouthguards must be checked on a regular basis to ensure that fit has not been compromised, the resilience of the material is still correct, and there has not been dramatic thinning in the critical areas of the upper anterior teeth or posterior occlusal surface.

Essential dental first aid equipment for all sporting events is some type of transport and storage medium for avulsed teeth. The research by Andreasen and other co-authors has led to a strict protocol for treating an avulsed tooth. The key areas to determine treatment and prognosis are the stage of development of the tooth, how long the tooth has been out of the mouth, and whether the tooth has been in some type of transport or storage medium. Research has indicated Hanks Balanced Salt Solution, a pathology solution, is an ideal storage medium. Also cold fresh milk can be used allowing the cells in the periodontal membrane to be stored adequately for up to 6 hours. Water is a poor choice with cell death rapidly occurring. There is no need for panic when a tooth is knocked out. The tooth can be stored and the patient transported to a dental clinic where decisions can be made to re-implant that tooth and provide appropriate splinting.

Dentine /enamel fragment reattachment after trauma is now a common part of dental practice. It is important the fragment(s) are stored in water prior to re-attachment to retain moisture content. Fragments that have dried out and then are reattached never appear to regain their correct moisture content and the aesthetic result of this wonderful restorative option is often compromised.

Mouthguards have been a part of contact sports since development in American Football made the use of mouthguards compulsory in the 1970s. Australia has led the development in building a much better, more protective mouthguard with the introduction of pressure lamination and design concepts. The most important question a clinician can ask his or her patients during a routine checkup is, *What sport do you play?* followed by *Are you wearing a mouthguard, and would it be possible to assess this mouthguard for its protective ability?* These questions often lead to the production of the most unusual mouthguards in various states of dilapidation. Research has indicated that in contact sports you have a one-in-two chance per career of sustaining a dental injury and one-in- ten chance per season of suffering a dental injury. The key to being a successful sports dentist is to involve yourself early in the athlete's career. It is essential the athletes understand mouthguards fit, are comfortable, and are part of their sporting equipment. If this happens when they begin their sporting careers, they will continue this behavior through to the completion of their sporting careers.

When it comes to managing dental/ facial trauma on the sporting field, it is restricted to common sense first aid and diagnosis. If there are multiple fractures of teeth, alveolar fractures, soft tissue injuries, and/or the correct place to treat these injuries is at a dental office. It is essential the athlete is removed from the playing area to allow calm appraisal of the situation and correct treatment under sterile conditions.

Of great concern are the new areas of dental destruction that are affecting our young athletes. Numerous surveys had shown a drop in decay rate in our communities but an increase in traumatic dental injuries. Today, not only are traumatic dental injuries increasing, but also decay rates and the destructive patterns of erosion, attrition and abrasion are being seen more and more in our younger generations. Our role as a team dentist is to prevent dental disease in the athletes where there is a diminished potential of saliva to protect teeth. This occurs when there is often a lowering of the saliva Ph which alters the balance of remineralization and demineralization leading to softening of the external tooth surfaces with increased occlusal, incisal and labial wear on teeth. As well, an acidic environment favors the proliferation of more aciduric and acidogenic bacteria leading to increased dental decay. In my experience working with elite sporting teams, the caries rate is often extreme. There is some awareness of the destructive potential of high sugar drinks but most sports people are unaware of the problems of erosion, attrition and abrasion. A new and exciting area is opening up to help treat erosion, attrition and abrasion in athletes. The first point is to recognize that this is occurring and evaluate the salivary parameters. This area is called "Saliva Testing," with a range of saliva testing products and topical dental gels to repair these destructive mechanisms. It is important that a risk assessment is done for these young people which may involve change in habits, lifestyle, diet and prescription drugs, with many medications known to affect saliva flow.

The key to success in repairing these problems is casein phosphopeptide (CPP), which becomes an important source of calcium and phosphate for the tooth. Supplementing poor saliva with fluoride is useful but its effectiveness is diminished by lack of available calcium and phosphate. The ideal strategy is to provide calcium and phosphate together with elevated levels of fluoride, which will occur with a CPP strategy.

The Team Dentist can play a significant role as part of the sports medicine team and assume the responsibility for the dental athletic problems. There is also a role for the Team Dentist in education and promoting Dental health.The Team Dentist must have the knowledge and training to fulfill these capacities. All this information is available at the Academy for Sports Dentistry's Team Dentist course, so mark your books for June 22-24, 2006, Santa Monica, California.

OPINIONS ABOUT
Mouthguards/Oral Appliances

Every month *Dentaltown Magazine* conducts an online poll at www.dentaltown.com. This poll was conducted November 6–December 6, 2004.

Do you routinely recommend the use of a mouthguard for patients who participate in sports?

78%
Yes

22%
No

849 total votes

Do you fabricate mouthguards in your office?

61%
Yes

39%
No

474 total votes

If you recommend mouthguards, what type of mouthguard do you use most often?

2%
Stock

11%
Boil and Bite

62%
Custom Vacuum

26%
Pressure Laminate

453 total votes

If you currently fabricate pressure laminate mouthguards, which machine do you use?

7%
Drufomat

10%
Erkopress

23%
Biostar

60%
Other

167 total votes

When a patient receives veneers, which of the following statements is most accurate:

34%
I will use a hard nightguard on a case-by-case basis

12%
I will use a hard nightguard for all veneer cases

41%
I will use a soft, custom mouthguard on a case-by-case basis

13%
I will use a soft, custom mouthguard for all veneer cases

419 total votes

Did you know most dental injuries occur in sports, such as soccer and basketball, where wearing a mouthguard is voluntary, and not football and hockey where mouthguards are mandated?

67%
Yes

33%
No

465 total votes

Are you currently involved in any community outreach program where mouthguards are provided for free for athletes in the area?

12%
Yes

88%
No

464 total votes

How many sports related oral injuries do you treat each year that could have been prevented by a mouthguard?

61%
1-3 injuries

25%
4-6 injuries

6%
7-9 injuries

8%
10+ injuries

457 total votes

What fee do you charge for a custom-fabricated mouthguard for sports use (not TMD treatment)?

48%
$50-100

38%
$101-150

14%
$151-200+

435 total votes

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- ABSTRACT -

Head and Neck Cancer Incidence Trends in Young Americans, 1973-1997, With a Special Analysis for Tongue Cancer

Stimson P. Schantz, MD; Guo-Pei Yu, MD

Arch Otolaryngol Head Neck Surg. 2002;128:268-274.

Objective To examine the temporal changes in head and neck cancer in young adults in the United States.

Methods Using the cancer surveillance database from the National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) Program, we calculated age-adjusted incidence rates for head and neck cancers. Using the joinpoint regression model, we described tongue cancer incidence trends and established the statistical significance of temporal changes. We also compared changes in 5-year survival rates for tongue cancer.

Results From 1973 to 1997, there were 63,409 patients with head and neck cancer in the 9 SEER registries. Of these, 3339 patients were younger than 40 years. The incidence of head and neck cancer remained stable in groups older than 40 years comparing the 1973-1984 and 1985-1997 data. In contrast, tongue cancer in adults younger than 40 years increased approximately 60% during the same period. We detected a significant increase until 1985, the estimated annual percentage change being 6.7% (95% confidence interval, 2.7%-10.8%; $P<.001$). After 1985, incidence rates stopped rising but remained steadily high. The change in tongue cancer incidence rates for young adults was related to birth cohorts between 1938 and 1948. The absolute increase in 5-year survival for tongue cancer ranged from 11.7% (<40 years old) to 6.6% (40-64 years old) between 1973-1984 and 1985-1997, with the most significant improvement occurring in young Americans with regional or distant disease (27% and 21%, respectively).

Conclusions A sharp increasing trend in tongue cancer in young Americans may be attributed to persons born after 1938. The reason for the increase is uncertain. Improved survival rates in young patients suggest the emergence of a distinct disease process that is apparent in white but not black populations.

From the Department of Otolaryngology (Drs Schantz and Yu) and the Biostatistics and Epidemiology Service (Dr Yu), The New York Eye and Ear Infirmary, New York Medical College; and the Strang Cancer Prevention Center (Dr Schantz), New York, NY.

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These poster presentations were given at the 2005 ASD Annual Symposium in Miami, Florida.

Oral and Maxillofacial Trauma and Mouthguard use During Sport Activities in High Schools in Turkey.

TOZOGLU S*, CAGLAROGLU M, TOZOGLU U (Ataturk University, Erzurum, Turkey)

Purpose: To evaluate the occurrence of oral and maxillofacial trauma and awareness and use of mouthguards in young athletes from different regions of Turkey.

Methods: A convenience sample of athletes was surveyed. A questionnaire was administered regarding the type of sport activity practiced and history of sport related oral and maxillofacial injuries, and the use and awareness of the mouthguards.

Results: A total of 194 young high school athletes participated in the survey. Most of them practiced soccer (40%), followed by basketball (28%), taekwondo (14%), ski (6%), volleyball (5%), and other sports (7%). The total number of oral and maxillofacial injuries experienced during all sport activities was 70, affecting 36% of the participants. The majority of the participants who had history of at least one oro-facial injury suffered from soft tissue laceration (39%), followed by dental fractures (19%), nasal fractures (17%), alveolar fractures (13%), mandibular fractures (7%) and others (5%). The injuries mostly resulted from soccer (47%), followed by basketball (23%), taekwondo (10%), volleyball (10%), ski (6%), and the other sports (4%). The highest incidence was in the 13-19 year age group with male propensity. Only 20% of the participants were aware of the mouthguard.

Conclusions: These results show that there is a high risk of potential oral and maxillofacial injury during sport activities. The knowledge of the reasons and awareness for protective devices use such as mouthguard were not high. It must be intensified.

Pressure Formed Verses Vacuum Formed EVA Mouthguards: Protection, Fit Deformation

D.G Smith, R.L. Moore, M. Hill, University of Louisville school of Dentistry, KY, USA

Athletic mouth guards have been around for five decades. Improvements have been mostly in custom fabricated types. Until recently vacuum formed machines represented state of the art method: pressure form machines are gaining in popularity and may be superior in several ways.

Objectives: this study compared vacuum form (V) verses pressure form (P) mouth guards (mgs) for the following features: 1) retained material thickness over the incisal edges, 2) closeness of fit, and 3) distortion with simulated intraoral use. Methods: Ethylene Vinyl Acetate (EVA) mgs made with vacuum (Omnivac by S.S.White) and pressure (Biostar by Buffalo Dental) machines were compared by testing incisal edge thickness, fit and distortion. For each variable tested 4 mgs were made from each machine. The mgs constructed by vacuum used one 4mm layer of stock EVA, and the pressure mgs were made with two layers of 2mm stock EVA.

Results: Average thickness over incisal edge for V and P was 0.925 and 1.950 millimeters respectively. Thus, P had 68% more thickness over incisal edge compared to V (tstat=26.84). In testing closeness of fit, light body impression materaial was applied to fill the residual internal space while applying constant outer pressure. The average weight in grams of imression material for V was 163.06 and for P was 140.21, resulting in an average of 22.84 less grams for P (tstat=4.96). Therefore, V mgs contained 14% more internal volume of material than P mgs. Total distortion changes based on the original master cast were measured from incisal cusp tips of the canines. The average distortion for V was 0.01 mm in an outward direction, and there was no distortion for P. Conclusions: Pressure formed mgs are superior in respect to thickness over incisal edge and in fit; no appreciable difference was seen in distortion from the simulated wear.

ORAL PRESENTATION

This oral presentation was given at the 2005 ASD Annual Symposium in Miami, Florida.

Introducing Sports Dentistry to the Community.

Coreno, Thomas,* Brett, Daniel, Lalumandier, James

Purpose: Develop a method that can be replicated to introduce sports dentistry to dental students and the general communities.

Methods: Establish presentations and courses to first year dental students and dental residency programs at Case School of Dental Medicine. Educate the dental community about sports dentistry and provide properly fitted custom made mouth guards to athletes at selected high school programs in the Cleveland City Schools.

Results: Established an annual course on sports dentistry including a hands-on portion on fabricating pressure laminated mouth guards to first year dental students at Case School of Dental Medicine beginning with Fall 2003 semester. Established annual presentations on the subject of sports dentistry including a hands-on portion on fabricating pressure laminated mouth guards to the AGD, pediatric residency, and graduate orthodontic programs at Case School of Dental Medicine. Applied for and received funding from the Cleveland Browns Foundation to purchase materials to further expand the educational experience for dental students and dental residents at Case School of Dental Medicine and fund the program to provide custom made, properly fitted mouth guards to athletes at East Tech High School in 2003 and 2004, and Rhodes High School in 2004. Expose said athletes to educational opportunities in health careers.

Conclusions: Continue the courses and presentations with first year dental students and resident programs at Case School of Dental Medicine. Expand the courses and presentations to other resident programs in Greater Cleveland. Continue and expand the program to provide custom made, properly fitted mouth guards to athletes by securing funding through charitable sports oriented organizations.

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June 22-24, 2006

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