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THE EDITOR'S CORNER

Mouthguards and Orthodontics

Like most other practicing orthodontists, I have seen some rather frightening injuries to my patients who have participated in sports while undergoing orthodontic treatment. Football, hockey, and the martial arts, including boxing, have rules at all levels of competition dictating that mouthguards must be worn. Living in Southern California, I don't believe I have had any hockey players as patients, but I have never seen oral or dental injuries to any of my patients who have been football players or martial artists. I doubt that this is a coincidence—they wear their mouthguards. The two most horrific injuries to patient-athletes I've seen have been to a beautiful young lady cyclist who was thrown from her bike in a collision, essentially macerating her lips while fracturing two incisors, and to a basketball player who caught his braces on the net while performing a slam dunk; several of his anterior teeth were luxated, but his appliances kept them from being totally avulsed.

As the ADA points out on its website (www.ada.org): “Numerous surveys of sports-related dental injuries have documented that participants of all ages, genders, and skill levels are at risk of sustaining dental injuries in sporting activities, including organized and unorganized sports at both recreational and competitive levels.¹⁻³ While collision and contact sports, such as boxing, have inherent injury risks, dental injuries are also prevalent in non-contact activities and exercises, such as gymnastics and skating.^{1,3,4}”

The ADA goes on to say that “mouthguards provide a resilient, protective surface to distribute and dissipate forces on impact, thereby minimizing the severity of traumatic injury to the hard or soft tissues. According to a 2007 meta-analysis of studies evaluating the effectiveness of mouthguards in reducing injuries, the overall injury risk was found to be 1.6-1.9 times greater when a mouthguard was not worn, relative to when mouthguards were used during athletic activity.²”

Looking for more information on sports-related dental injuries, I found the following on a consumer-interest

website run by Colgate (www.colgate.com): It is estimated that between 13% and 39% of dental injuries occur while playing sports. . . . The front teeth suffer the most. About 80% of all dental injuries affect one or more of the front teeth. Soft tissue damage—from biting the tongue or cheek, for example—also is common. . . . The use of mouth guards among football players, for example, is believed to prevent about 200,000 oral injuries a year.”

Two things are obvious: first, injuries to the face, mouth, jaws, and dentition can occur in any sport, and second, mouthguards prevent oral and dental injuries. We need to be more adamant in insisting that our patients wear mouthguards while engaging in any sport.

With this in mind, I was happy to see an item entitled “Football Great Emmitt Smith Joins AAO in Promoting Mouth Guards” in the Jan. 15, 2010, *AAO Bulletin*. The item read, “To get the message out that sports gear such as mouth guards can make a big difference in reducing or preventing sports injuries, the AAO will launch a Sport Safety Education Campaign the first week of February.” It went on to point out that “sports-related injuries are the leading cause of emergency room visits in 12- to 17-year-olds, according to the Centers for Disease Control. By teaming up with Emmitt Smith and the National Association of Youth Sports (NAYS) to promote facial protection and sport safety, the AAO hopes that ‘play it safe’ will become a mantra for youth sports.”

Whenever a history taken at an initial exam reveals that a patient is participating in athletics, the orthodontist should encourage mouthguards to be worn during all practices and competitions and, further, should offer practical options. Various ready-to-wear, U-shaped mouthguards made from rubber or vinyl are available to purchase over the counter in many sporting-goods stores. Unfortunately, these generally do not fit well and, as a result, do not evenly distribute the force of an impact. “Boil-and-bite” mouthguards, also sold in many sporting-goods stores, are made from a type of plastic that softens in boiling water; the patient bites down on it, molding the

softened plastic around the teeth using the fingers, lips, and tongue. The patient needs to be careful to avoid scalding when removing the mouthguard from the boiling water, and to make sure it isn’t too hot to put into the mouth. If the mouthguard doesn’t fit precisely on the first attempt, it can be reheated and remolded.

As reported by the ADA, a “study of collegiate basketball teams found that athletes wearing custom-made mouthguards sustained significantly fewer dental injuries than those who did not.”⁵ Where I work, at the University of Southern California, the football team uses custom mouthguards fabricated out of a thermoplastic rubber that is vacuum-formed over study casts of each individual athlete.

An orthodontic patient needs a further level of protection—for the appliances as well as the dentition. In this issue of *JCO*, Drs. Gustavo Pacheco, Miguel Pais Clemente, Mário Vasconcelos, and Afonso P. Ferreira present a device they call the Orthodontic Sports Protection Appliance (OSPA). Because this custom-made mouthguard is designed specifically to fit over orthodontic brackets, it offers significant advantages over store-bought boil-and-bite mouthguards. As both a public service and a practice-building measure, orthodontists might consider offering custom mouthguards to their local schools and athletic teams. The OSPA developed by Dr. Pacheco and colleagues would be an excellent choice. RGK

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