



Standardized Annual Dental Exams for Athletes

Ronald Goldstein E*

Department of Rehabilitation, Augusta University, USA

Abstract

There are many dental emergencies that can cause pain and missed work. When it comes to an athlete's performance a dental emergency can be crucial to the athlete and especially to his or her team. However, many potential oral problems both preventable and predictable with a standardized annual dental exam.

Introduction

The main goals in sports medicine are prevention and treatment of sports injuries. This article will deal with common dental problems that should be diagnosed and treated prior to the athletes' seasonal performance. The purpose is to avoid potential problems during performance whether it is baseball, football, basketball, boxing, or any other competitive sport. The author found that a standardized annual dental exam can be quite important for athletes and especially sports teams. The reason for establishing a standardized exam is to make sure each athlete is receiving the same quality analysis aimed at preventing potentially serious dental emergencies during a match or game.

Diagnosing Microcracks

As the first team dentist for the Atlanta Braves, in 1966, the author set up annual exams to detect hidden microcracks in teeth that could later result in restoration or tooth fracture or even in tooth loss due to a vertical root fracture. State-of-the-art clinical exams today should consist of using a close-up 20x intra-oral camera on each tooth surface. Documenting hidden microcracks then forecasting the potential for these cracks to widen or even split the root. A good example of the typical microcrack can be seen in (Figure 1A), where a very small amalgam filling is surrounded by three microcracks. This is actually an accident waiting to happen. If this man was to bite into a raspberry or poppy seed into the microcrack, the tooth could split or fracture creating pain and possible tooth loss. If this problem was discovered during a 'video exam' the objective would be to first determine if a restoration is needed, then, second, to treatment plan a proper restoration to prevent the crack from becoming a traumatic episode during sports performance resulting in pain or even an annoying sharp tooth due to enamel fracture. If a restoration fractures, it can leave a sharper edge possibly hampering the athletic performance (Figure 1B).

OPEN ACCESS

*Correspondence:

Ronald Goldstein E, Department of
Rehabilitation, Augusta University, USA,
Tel: 404-255-8639;

E-mail: esthetics@mindspring.com

Received Date: 29 Mar 2017

Accepted Date: 26 Apr 2017

Published Date: 28 Apr 2017

Citation:

Ronald Goldstein E. Standardized
Annual Dental Exams for Athletes.
Sports Med Rehabil J. 2017; 2(2): 1017.

Copyright © 2017 Ronald Goldstein
E. This is an open access article
distributed under the Creative
Commons Attribution License, which
permits unrestricted use, distribution,
and reproduction in any medium,
provided the original work is properly
cited.

One recent research study the author participated in at the University of Tennessee Dental School, concerned amalgam fillings and their potential to contribute to tooth cusp fracture [1]. This study focused on amalgam restorations in the center of posterior teeth. The question was whether or not expansion of the restoration could have undue pressure on the walls of the tooth, resulting in microcracks emitting from the amalgam restoration.

Recognizing that these microcracks could result in catastrophic tooth fracture via clenching, grinding or even biting should lead to a proper tooth restoration to protect the tooth such as a full or partial crown or even a bonded composite or porcelain restoration [2-4]. One problem in chewing can occur if biting down on a crust of bread into the area containing the microcrack leading to tooth fracture. Therefore, finding these potential accidents should lead to a protective restoration preventing a more serious and painful problem.

Importance of X-Rays and Periodontal Probing

The second part of the clinical exam is twofold. First, examining X-rays of the supporting bone around teeth and second, measuring the bone in real time using a periodontal probe (Figure 2A) [5,6]. The importance of the exam is to determine if there are potential areas for a periodontal abscess to occur which could seriously hamper performance during athletic execution. (Figure 2B) shows a serious periodontal problem of 5 mm that needs to be treated. Failure to diagnose the problem could lead to a painful periodontal abscess. The good news is that more conservative treatment is



Figure 1A: Severe microcracks are surrounding this small amalgam restoration.



Figure 1B: This patient fractured her porcelain veneer creating a sharp ledge that cut her lip and was painful.



Figure 2A: This Colorvue Probe (Hu-Friedy) has half millimeter measurements up to 3mm and 1mm up to 13mm.



Figure 2B: The Colorvue Probe measures 5mm showing a periodontal problem that definitely needs treatment.

taking the place of aggressive periodontal surgery. In fact, new lasers also make it possible to actually grow bone in certain periodontal problems.

The goal in analyzing X-Rays is twofold. First, hidden decay and second, to reveal bone loss. Caught early, treatment can be



Figure 3A: Periodontal disease is evident when looking at the inflamed gum tissue around the upper and lower front teeth.

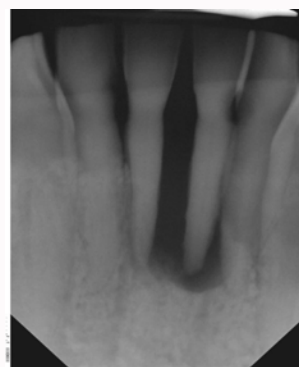


Figure 3B: The X-Ray revealed total bone loss around his lower incisor which could have developed painful periodontal abscesses.

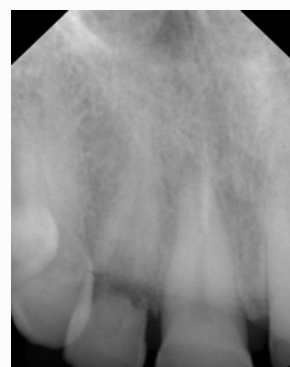


Figure 3C: Undiscovered internal resorption which resulted in tooth extraction and replacement with an implant and porcelain crown.

conservative postponing or even eliminating periodontal surgery. Failure to diagnose periodontal problems can result in inflammation, infection, and pain also due to a periodontal abscess and even tooth loss. (Figure 3A) shows a patient with inflamed gum tissue who was in pain. (Figure 3B) revealed the extent of the bone loss seen when an X-ray was taken of the inflamed gum tissue. Teeth extraction and eventual implants were placed after osseous bone surgery was completed. Had this severe amount of bone loss not been discovered through X-rays, the patient could have had extremely painful periodontal abscesses. Another important finding in taking routine X-rays can be seen in (Figure 3C) where internal resorption was discovered before the tooth fractured. Treatment consisted of tooth removal and replacement with an implant and porcelain full crown.

Damage from Bruxism

The third problem that can be easily found in an annual exam is



Figure 4A: This former college football player was grinding his front teeth.



Figure 4B: Note just how much loss of enamel has occurred on his front teeth which affected his smile.

clenching or grinding (bruxism). The damage from these types of bad habits is possible temporomandibular joint disorder leading to pain and limited jaw opening [7]. The worst part is if the problem is not diagnosed early on, it can become much more severe and involving the adjacent muscles surrounding the temporomandibular joint. The author have seen many patients with pain in their jaws and spasm in the intra oral muscles such as the internal and external pterygoids [8], and radiating into the trapezius and sternocleidomastoid so the back, neck, chest become extremely sore. The pain and muscle involvement can continue to involve additional muscle groups throughout the body.

One major problem is that the condition worsens during day grinding [9]. This is a condition that as many as 85% of the population can be doing without their knowledge. Since most people are totally unaware they are doing it, careful study of enamel wear facets must be studied. Not only can the wear facets determine there is a problem, but also exactly how the habit is taking place [10]. Diagnostic study models can be an important addition to the initial exam to document wear facets.

Stress is the number one cause of bruxism or tooth grinding [11]. Stress is frequently found in people who drive in traffic, parents raising difficult kids; even business people working on desk projects. Few, if any, wear any kind of mouth guard so they clench their teeth which can cause the muscles of the mouth to go into spasm. Many take drugs to relieve the pain which can certainly affect athletes playing performance.

Another side effect of grinding the front teeth is loss of enamel, wearing down the length of the front teeth until they all look like a saw has cut them off. So, esthetically it can ruin a beautiful smile and continue to accelerate the problem. (Figure 4A) shows just how this former college football player was grinding his front teeth. (Figure 4B) illustrates just how his smile was affected with the loss of enamel on his two front teeth.

No doubt an athlete would not be at his or her optimal performance if any of these conditions are present. This is exactly why a standardized yearly exam is necessary to keep team members in top dental shape.

References

1. Danley BT, Hamilton BN, Tantbirojn D, Goldstein RE, Versluis A. Stress in Teeth Caused by Amalgam Expansion. Poster presentation at IADR. 2017.
2. Yahyazadehfar M, Bajaj D, Arola DD. Hidden contributions of the enamel rods on the fracture resistance of human teeth. *Acta Biomater.* 2013;9(1):4806-14.
3. Ferracane JL. Resin composite--state of the art. *Dent Mater.* 2011;27(1):29-38.
4. Yahyazadehfar M, Ivancik J, Majd H, An B, Zhang D, Arola D. On the Mechanics of Fatigue and Fracture in Teeth. *Appl Mech Rev.* 2014;66(3):0308031-3080319.
5. Beck JD, Caplan DJ, Preisser JS, Moss K. Reducing the bias of probing depth and attachment level estimates using random partial-mouth recording. *Community Dent Oral Epidemiol.* 2006;34:1-10.
6. Garnick JJ, Silverstein L. Periodontal probing: probe tip diameter. *J Periodontol.* 2000;71(1):96-103.
7. Okeson JP. Etiology of functional disturbances in the masticatory system. In: Okeson JP, ed. *Management of temporomandibular disorders and occlusion.* 4th ed. St. Louis: Mosby Year Book, 1998;149-79.
8. Lavigne GJ, Khoury S, Abe S, Yamaguchi T, Raphael K. Bruxism physiology and pathology: an overview for clinicians. *J Oral Rehabil.* 2008;35(7):476-94.
9. Carlsson GE, Egermark I, Magnusson T. Predictors of bruxism, other oral parafunctions, and tooth wear over a 20-year follow-up period. *J Orofac Pain.* 2003;17(1):50-7.
10. Glaros AG. Incidence of diurnal and nocturnal bruxism. *J Prosthet Dent.* 1981;45(5):545-9.
11. Glaros AG, Hanson AH, Ryen CC. Headache and oral parafunctional behaviors. *Appl Psychophysiol Biofeedback.* 2014;39(1):59-66.