What do Batman and orthodontic braces have in common?

By Shirley Gutkowski, RDH, BSDH, FACE

March 2009

The most stomach-wrenching thing dentists see is an oral cancer lesion; for hygienists, it’s the melted enamel under and around orthodontic brackets and bands. The hot pink tissue seems to pulse with a life of its own. It covers the gingival third of the tooth, hiding a calculus biofilm that percolates acids reminiscent of the vats Batman hung over, strung up by the Riddler. The chemistry under there has killed to third-year dental and dental hygiene students. What to do with melted enamel?

**Solutions: appliances and chemical ones**

One option is to use the more advanced appliances that discourage biofilm accumulation. The phrase “living better through chemistry” is another answer to this problem. Today’s oral care products, over-the-counter and professional, have the potential to eliminate that stomach-wrenching moment. Even without relying on patient compliance, change can occur to save the teeth.

Brackets New passive self-ligating brackets (Damon) are a great way to go. They discourage biofilm formation. The design of the bracket allows the low-force memory wire to move the teeth with less chance for bacteria to accumulate because they don’t require ligatures. Elastic ligatures greatly increase the number of microorganisms attached to the apparatus during treatment. This increased level of biofilm activity increases the incidence of decalcification during treatment.

**Fluoride** Applying fluoride varnish biannually may decrease unsightly white spot infections. Some of the elastomerics ligatures come in fluoride-releasing types that cut down on biofilm too. The fluoride release is temporary,lasting only about two weeks; one study stated it shouldn’t be counted on for decreasing enamel breakdown.

Bonding cement The cement for bonding the brackets onto the teeth can make a huge difference. An ortho cement containing amorphous calcium phosphate (ACP) (Bosworth Ageis) contains the components to rebuild enamel. Without relying on a teenager to remove biofilm, the cement changes properties during an acid challenge to release the ACP, thus eliminating the consequences of teenage hormone surges that put self-care on the back burner.

The Ageis cement is a compliance-free way to go. The hygiene department can have more say in treatment modalities if it affects the oral hygiene of the patient. Stopping therapy by removing the brackets is not always a good option, although it should work its way to the top of the option list if by six months the patient’s oral hygiene hasn’t improved.

**Pastes** Along with the enamel replacement trend, there are newer pastes that do more than just provide fluoride. The list is long, starting with Colgate Total with Triclosan, and advancing to products containing NovaMin and Recaldent, and the new one, Tricalcium Phosphate (TCP). Having these products on hand to give orthodontic patients can set the stage for a premiere cosmetic outcome, along with a great orthodontic outcome.

**Prophy paste** Deciding on a prophy paste is also a worthwhile exercise. It seems as if new polishing pastes are brought to the market almost every day. The newest, Nupro, contains NovaMin. New prophy cups and brushes can never resist breaking apart around brackets or wires. An air slurry polisher is important to use on patients with brackets and bands. Ricarbonate has many healing properties and can reduce biofilm on its own, working with the sodium pump in the cell wall of the bacteria to upset the equilibrium, thus killing the bacteria. Calcium carbonate in Prophy Pearls (KaVo) is also helpful to the tissue, although not as dramatically.

**Home care Customizing the home-care regimen** is very important for people wearing orthodontic appliances. Many hygienists go to the cosmetic end and talk about halitosis or gummy food hanging from the brackets or wires, making the patient unappealing to the opposite sex. The problem is, though, the patients don’t respond well to this scare tactic. If they want to, they’ll find someone to get close to.

Really looking at the array of toothbrushes available for ortho patients is important. So is finding out if they’ll use a Waterpik. The benefits of pulsing water for removing biofilm and creating ghost cells of the bacteria in the biofilm is substantiated in the literature. Water is the only thing necessary for outstanding results.

**Resin modified glass ionomer (RMGI)** On occasion, things get out of the clinician’s hands and enamel breaks down. Something new on the market can be used as a temporary bandage over a white spot infection that has started anywhere on the tooth. It’s a resin modified glass ionomer called Vanish XT Varnish. The dispenser is new to the hygiene world in that it uses double-barrel dispensing. Like epoxy cement, two components are squeezed out onto a mixing pad, mixed chairside and applied with a microbrush or other similar device, and then the material is light cured. It is tooth colored as long as the tooth is white. It releases fluoride to the area and recharges when fluoride is around.

**Sociological & psychological considerations**

The sociological and psychological needs of the teenage patient also need to be addressed. Remove all judgment; the situation you are looking at with each patient is what it is. With teenage patients, it’s very tempting to belittle or use a condescending.

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**Genetic discovery could lead to advances in dental treatment**

By David Stauth
Science Writer, Oregon State University

Corvallis, Ore. — Researchers have identified the gene that ultimately controls the production of tooth enamel, a significant advance that could someday lead to the repair of damaged enamel, a new concept in cavity prevention and restoration or even the production of replacement teeth.

The gene, called Ctip2, is a “transcription factor” that was already known to have several functions — in immune response and the development of skin and the nervous system. Scientists can now add tooth development to that list.

The findings were just published in the Proceedings of the National Academy of Science.

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Dear Reader,

In this issue, you will learn about alternative treatment modalities for orthodontic patients. While these treatments may have been introduced to some practitioners, the information will be completely new to others. How is it possible that some hygienists are actually using new products for various dental hygiene applications and others have never even heard of such things?

This is truly reflective of the amount of interest a clinician takes in keeping up to date with the world of dental hygiene. Many hygienists are content doing the things they always have and do not seek out new, potentially better ways to treat patients. The question I pose to hygienists is this: “Do you want your patients to receive the latest and best oral care possible? And while the parents may not expect dental professionals to deliver the best treatment option at that particular time if the patient is not ready to receive it.

Shouldering the burden

Our professional responsibility is to take as much of the burden from the chair as we can. We must learn basic and advanced self-care during those turbulent teenage years, it behooves us to do everything within our power so he or she suffers the fewest consequences. Doing so will lessen tissue overgrowth, thus eliminating the caustic

is not only do you want your medical professional to be up to date, you expect it!

Well, guess what? Dental patients expect dental professionals to deliver the latest and best oral care possible. At this point in time, hygienists are fortunate to have a variety of places in which to gain education. Learning about new developments and different ways of doing things used to require time away from the office, travel and sitting in a meeting room all day. Now hygienists can learn 24/7 without even leaving the living room, if that is what we choose.

Hygiene journals and magazines are full of information, and they can be accessed online. Yes, even Hygiene Tribune can be read via the Web. Live as well as taped Webinars are gaining popularity. Online hygiene groups and study clubs are wonderful information resources. So take some time to peruse the Web, and especially our new www.DTS- tudyClub.com Web site as well. It is a fascinating place in which to gain new knowledge to allow us to practice dental hygiene the way it is meant to be practiced in 2009!

Best Regards,

Angie Stone, RDH, BS
Editor in Chief

About the author

Shirley Gutkowski, RDH, BS, DPH, FACE, is a clinical dental hygienist from Sun Prairie, Wis. She is the 2008 recipient of the Leadership Award from the World Congress of Minimally Invasive Dentistry. She is an award-winning author and is co-author of the best seller, “The Purple Guide: Developing Your Clinical Dental Hygiene Career.” Her new book, “The Purple Guide: Carties Management for Difficult Case Presentations,” will be published in summer 2009. Please visit www.reddumpurpleguide.com for more information. You may contact Gutkowski at crosslinkpressent@aol.com.

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Hygiene Tribune | March 2009
acid even Batman doesn’t want to tangle with. By using products from the professional end and suggesting less difficult home care regimens, we can really produce the kinds of smiles we hoped to create.

More info
An orthodontic patient and dental hygienist, Gutkowski has some insights into hygiene with braces.

You’re wearing the Damon braces now. Are you excited about the difference in oral hygiene you’re able to achieve wearing them?

Yes. Because of the way the brackets are designed, I find that oral hygiene is much easier for me. I see much more accumulated plaque biofilm in a patient with the traditional brackets-and-bands setup than the patient with Damon braces.

Can you tell us what makes them so different?

It’s not the materials; they’re similar to traditional equipment. Light wires are used to move the teeth with little pressure. This allows for the facial muscles and tongue to help the process along. The other oral hygiene friendly aspect of this system is the self-ligating brackets. The wires go into the brackets, and there’s no need for those little elastic bands to hold the tooth against the wire. Less elastic, less plaque biofilm, better oral hygiene.

Crosstex introduces non-latex dam

A non-latex dam, excellent tear resistance, great color contrast with teeth, lavender and in medium gauge. Crosstex Dental Dams isolate procedures from blood and saliva and tongue and cheek interference while reducing contaminated aerosols and the risk of patients swallowing/aspirating foreign bodies. Also available are: powder-free, low-protein latex dental dams. Both products drastically reduce the risk of allergic latex reactions. Crosstex, once again, leads the dental industry in safety and efficiency!

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Embraces first transcription factor ever found to control the formation and maturation of ameloblasts, which are the cells that secrete enamel.”

The researchers used a laboratory mouse model in this study in which this gene has been “knocked out” and its protein is missing. Such mice lack basic biological systems and cannot live after birth, but allow scientists to study what is there and what’s missing. In this case, the mice had rudimentary teeth ready to erupt, but they lacked a proper enamel coating and never would have been functional.

“Enamel is one of the hardest coatings found in nature; it evolved to give carnivores the tough and long-lasting teeth they needed to survive,” Kioussi said.

With an understanding of its genetic underpinning, Kioussi said, it may be possible to use tooth stem cells to stimulate the growth of new enamel. Some research groups are already having success growing the inner portions of teeth in laboratory animal experiments, but those teeth have no hard coatings — the scientists lacked the genetic material that makes enamel.

“A lot of work would still be needed to bring this to human applications, but it should work,” Kioussi said. “It could be really cool, a whole new approach to dental health.”

Many people have problems with eroded tooth enamel, including people who smoke, drink and especially some who use illegal drugs such as methamphetamine. And most cavities start as a hole in tooth enamel that allows decay to begin.

This research was supported by the National Institutes of Health and the OSU College of Pharmacy. The study was a collaboration of scientists from the OSU College of Pharmacy, College of Science and College of Engineering and the Institut de Genetique et de Biologie Moleculaire et Celullaire in France.

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