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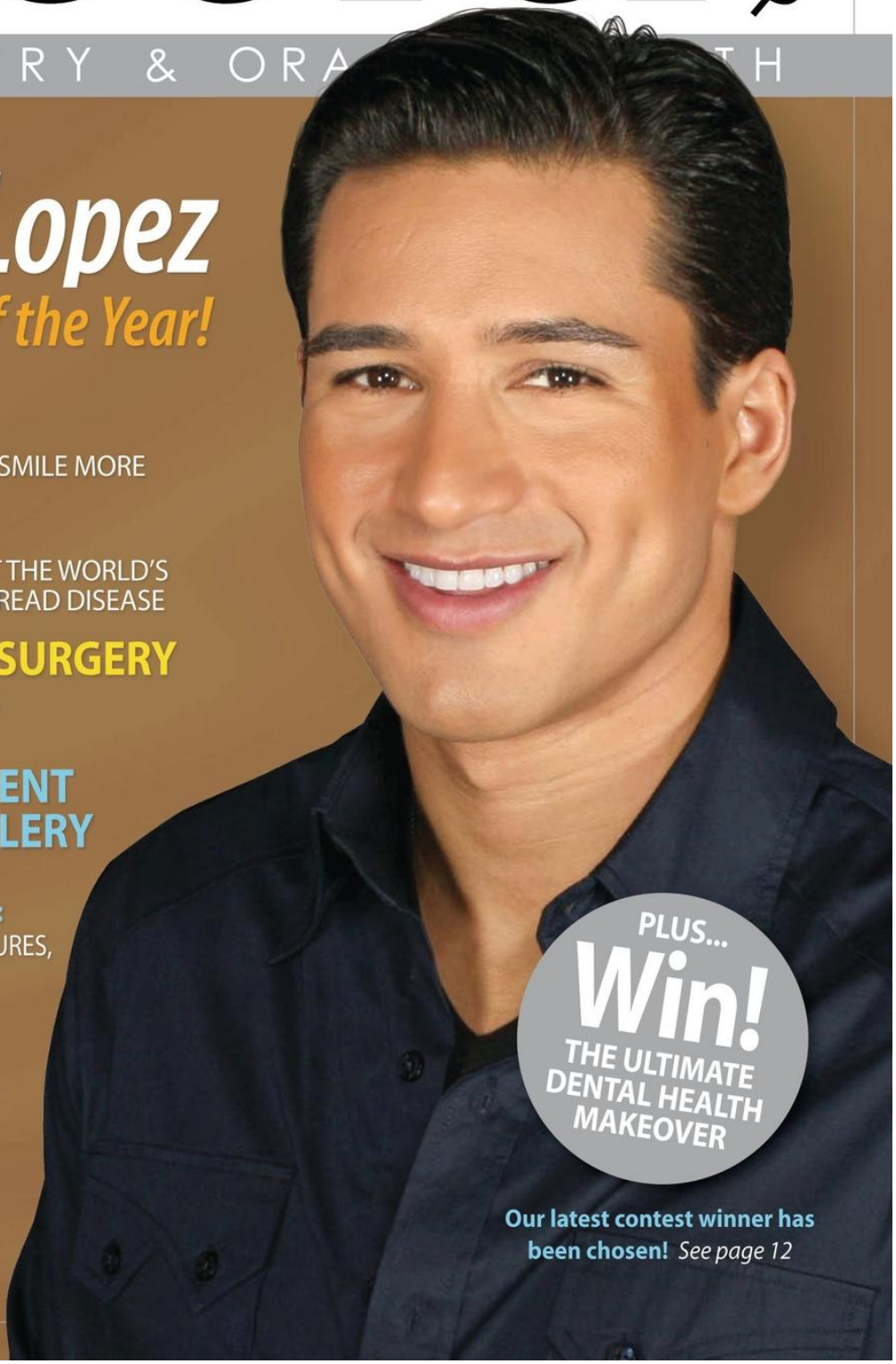
PATIENT EDUCATION MAGAZINE
WRITTEN BY DENTAL PROFESSIONALS

Dear DOCTOR®

DENTISTRY & ORA TH



Mario Lopez
Male Smile of the Year!

NUTRITION
EAT WELL, LIVE HEALTHY, SMILE MORE

TOOTH DECAY
LEARN HOW TO PREVENT THE WORLD'S OLDEST & MOST WIDESPREAD DISEASE

PERIODONTAL SURGERY
PROBING YOUR OPTIONS

NEW! PATIENT CARE GALLERY

PLUS CONSULTATIONS ON:
REMOVABLE PARTIAL DENTURES, JAW PAIN, ROOT PLANING, BONE REGENERATION, MANUAL VS POWERED TOOTHBRUSHES, DENTAL INSURANCE, AND MORE...

PLUS...
Win!
THE ULTIMATE DENTAL HEALTH MAKEOVER

Our latest contest winner has been chosen! *See page 12*

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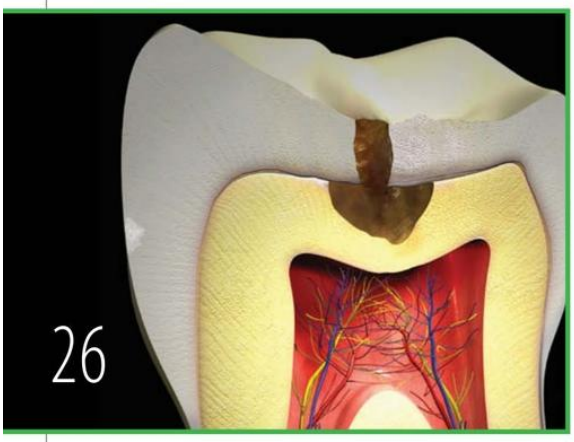
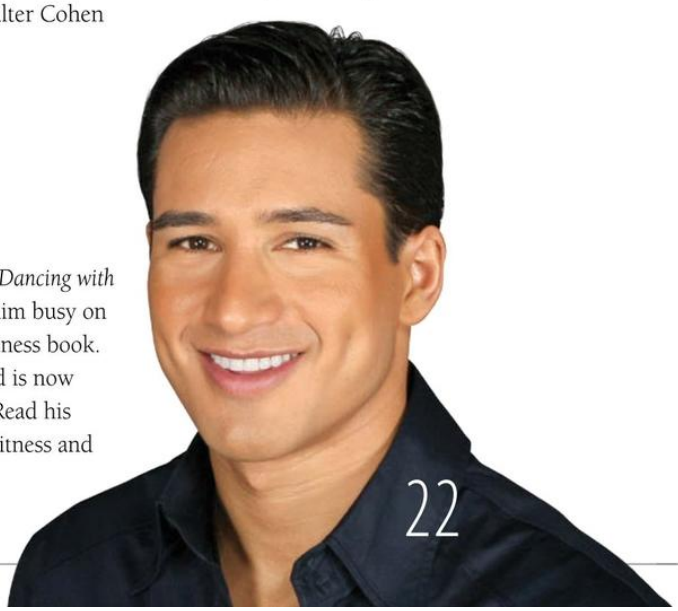


Features

Cover Story

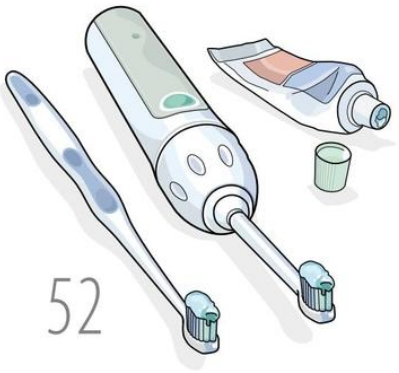


Also in this issue...

Consultations

COSMETIC & RESTORATIVE DENTISTRY

ORAL HEALTH



DENTAL HYGIENE

IMPLANTOLOGY

PERIODONTICS

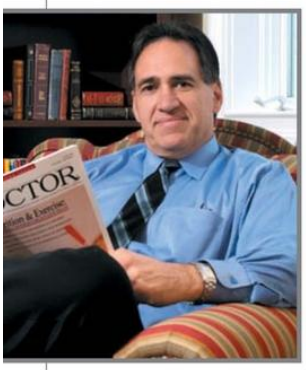
ORAL SURGERY & MEDICINE

Have a Dental Question?
Send an email to consultations@deardoctor.com or submit your question online at www.DearDoctor.com and have your question answered in an upcoming issue!

Makeover Contest Winner

The focus of The Ultimate Dental Health Makeover Contest is to restore people to health, both physically and emotionally. Debra is an excellent example of a person who will truly benefit from the dentistry provided by this contest thanks to our sponsors and the dentists who represent *Dear Doctor*.

Dear Doctor – An Advocate for Your Oral Health



In the last issue we talked about *Dear Doctor's* role in advocating for children, our most important treasures. We have also highlighted some of the other organizations who have taken it upon themselves to improve the lives and dental health of children who are not provided care under any kind of umbrella, to help ensure their health and therefore their futures. But we don't feel that our responsibility ends with the youngest members of society, rather that's just where it begins.

We are receiving an increasing amount of mail regarding the plight of adults and others who are uninsured, underinsured or cannot gain or afford access to dental care.

In this issue we begin to address some of these concerns. In some sense at least, the old adage is true, "God helps those who help themselves". People can begin to take charge of their oral and dental health, by good preventive strategies and practice. Firstly, that means developing good daily oral hygiene habits for the removal of dental (bacterial) plaque. Dental plaque is the primary cause of the two major dental diseases, dental caries – tooth decay, and periodontal (gum) disease. We take our first in depth look at the topic of "Dental Caries - Tooth Decay", one of the most common and destructive diseases known to humankind, and one that is completely preventable.

Secondly, people can empower themselves by addressing their diet and nutrition. Oral health and general health are intimately related; in fact many argue that they are one and the same. In this, the second article in our series on "Nutrition and Oral Health", the very basics of this topic are reviewed in elegant simplicity, to empower you to help yourself, your family and your friends in a way that you may never have considered before.

In addition we have added our first consultation about dental insurance in order to broach this important issue so that individuals can begin to understand what is covered, what isn't and how insurance basically "works".

All these "Self Help" strategies and practices encompass the basics of prevention and health maintenance. For those who are unfortunately struggling to fix broken teeth and smiles, these measures will go along way to halting dental disease progression, and in fact ensuring that dental treatment will last for a long time.

Please continue to read *Dear Doctor* magazine to enlighten yourselves on how to take these important self-help steps. The more you read and empower yourselves with knowledge, the better the treatment decisions you will make together with your health professionals.

"Do not wait for your ship to come in – swim out to it" Unknown

Our profound thanks once again,

Mario A. Vilardi, DMD
President/Publisher

Garry A. Rayant, BDS, DDS, LDSRCS, MS
Editor-in-Chief

VOLUME 2, ISSUE 3

Dear DOCTOR®
DENTISTRY & ORAL HEALTH

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Dear Doctor - Dentistry & Oral Health magazine represents the finest consumer resource for education and information on topics of dentistry and oral health. We invite all health care professionals interested in contributing to this exciting new forum for public well-being, to contact our editorial department at 866-429-8188, email us at editorial@deardoctor.com, or visit our website at www.deardoctor.com/authors.

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"Rarely do we get the opportunity to enter a contest that promotes good health and well-being. All of my life, I have wanted to have nice teeth, and now I will."

Debra's Dreams Are Coming True!

Our 2nd Ultimate Dental Health Makeover Contest Winner

We would like to thank the following contest sponsors for helping us make Debra's dreams come true:

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For more information about these wonderful companies, their products and their services visit www.DearDoctor.com/sponsors

The focus of The Ultimate Dental Health Makeover Contest is restoring people to health, both physically and emotionally. Debra is an excellent example of a person who will truly benefit from the dentistry provided by this contest. Helping us to reach our objective of returning her to oral health will be made possible thanks to our generous sponsors and the dentists who represent *Dear Doctor*. Progress reports of Debra's care will be featured in our future issues so that you will be able to follow her makeover transformation.

Debra's treatment will show how dentistry can accomplish amazing results utilizing the latest technologies available today. Debra has become very self-conscious of her smile and the condition of her teeth. Her care will consist of the following treatments; periodontal therapy including a possible crown lengthening surgical procedure, an extraction of a failing root canal tooth with bone regeneration, orthodontics, two or three implants to replace missing teeth, teeth whitening, new porcelain crowns, porcelain veneers and bridgework.

About Debra's Makeover Dentist

Dr. Jessica Logan graduated from the University of Medicine and Dentistry of New Jersey, where she was granted a scholarship for academic excellence. She is certified in a number of new technologies, such as Diode Laser for periodontal tissue contouring, the Cerec® 3D CAD-CAM system (in-office ceramic restorations) as well as Invisalign® orthodontics. Dr. Logan is an alumnus of the Las Vegas Institute of Advanced Dental Studies having completed the Advanced Functional Aesthetics program. She is a member of The American Dental Association and The American Academy of Cosmetic Dentistry. Visit www.DearDoctor.com/logan to learn more about Dr. Jessica Logan.

Read about Debra's makeover progress in upcoming issues of *Dear Doctor*!

Enter to win at www.DearDoctor.com

bridgework orthodontics veneers crowns implant fillings

Enter to Win a Makeover!

THE ULTIMATE DENTAL HEALTH MAKEOVER!

Our *New* Makeover Contest Has Begun!

Dear Doctor and our advertising contest sponsors want your dreams to come true. Whether you need crowns, implants, veneers, orthodontics, periodontics.... whatever you need, we will provide it. If you win our contest, all of your dental treatment will be paid for. Our goal is to provide you with **The Ultimate Dental Health Makeover**!!! Enter now* by visiting our website at www.DearDoctor.com. Good luck!

Dear DOCTOR®
DENTISTRY & ORAL HEALTH

Visit www.DearDoctor.com and Enter to Win!*

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Brian's Oral Cancer Screening Results!

Our 1st Ultimate Dental Health Makeover Contest Winner

Our first Ultimate Dental Health Makeover Contest winner Brian received the best news from his OralCDx cancer screening test. Brian's OralCDx BrushTest™ results came back negative indicating that Brian's cells were all normal.

Dr. Sutton used the painless OralCDx BrushTest™ to take a sample to determine whether the tiny white spot found under Brian's lip contained any precancerous/cancerous cells.

This quick and painless test is used to detect precancerous cells and Brian was very happy to hear he didn't have to worry about oral cancer. Since he did use smokeless tobacco in the past, it is quite common for people to subconsciously worry about something lurking beneath the surface so to speak. The OralCDx BrushTest™ can provide people piece of mind without having a surgical procedure. We are all very happy that Brian's test came back negative. Congratulations!

Read about Brian's makeover progress, his makeover dentist and our contest sponsors by visiting www.DearDoctor.com!

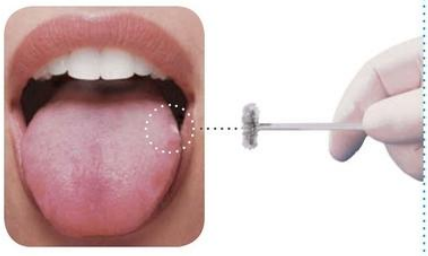
I don't smoke
I don't drink
I'm still at risk for oral cancer

OralCDx®

Choose a dentist that keeps you safe™

Ask your dentist about the BrushTest™

–the painless screening test of "everyday" oral spots that is helping to make oral cancer preventable.



» How common is oral cancer?

Oral cancer kills as many Americans as melanoma (skin cancer), twice as many as cervical cancer, and is now rising among women, young people and non-smokers.

» I've heard of cancers being detected early, but how can oral cancer be prevented?

Everyone has a small spot in their mouth at one time or another. The vast majority of these common spots do not contain any pre-cancerous cells, but a few of them do. Only a lab test can tell them apart. The BrushTest is the only painless way to determine if any of your common oral spots needs to be removed. Thereby preventing oral cancer years before it can start.

» How does the BrushTest work?

The sample from your spot is sent to a BrushTest lab where imaging systems based on missile defense technology are used to help specialized pathologists identify one unhealthy cell among 100,000. Rest assured, if your dentist "BrushTests," you're protected by one of the most accurate tests in medicine.

To find out if your dentist is among the 30,000 dentists routinely screening small oral spots with the BrushTest™ call us at 877.71.BRUSH (877.712.7874)

For more information visit us on the web at www.BrushTest.com

NEW Technology helps your child's teeth stay straight

(left) A small SMART Retainer microsensor is embedded in the retainer gathering information on the amount of time it is being worn.

Thousands of dollars after orthodontic treatment (braces) – they're finally off, the smile beautiful, the bite perfect. All you need to do is wear your retainer to ensure the great result stays that way and make sure the investment pays off. Your child needs to wear his retainer. Short of following your kid around 24 hours a day what can you do? Did they wear it... Didn't they wear it? The answer is the SMART retainer.

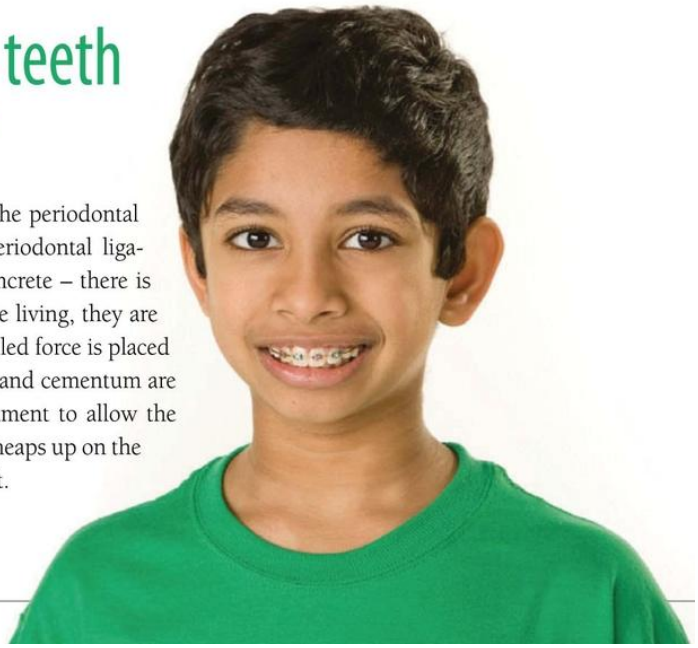
Get SMART

New from "Scientific Compliance" – Microsensor technology embedded in the retainer – frees everyone from judgment and guilt – the device essentially speaks for itself.

There is a direct correlation between keeping teeth straight after the braces are removed and the amount of time retainers are worn. But how can you make sure the retainer is in use enough to give your teeth the best chance for success? How do you know the amount of time the retainer is actually in use? Here's how: A small SMART retainer "microsensor" is embedded in the retainer and used in the same way any other retainer is used - there's no difference.

Do you know how and why teeth move during orthodontics?

The reason the teeth move is due to the magical properties of the periodontal ligament (which attaches the teeth to the bone). Since the periodontal ligament is elastic – teeth are not set in the bone like pillars in concrete – there is micro-movement of the teeth all the time. Since these tissues are living, they are constantly changing and "remodeling". When a light and controlled force is placed on a tooth on the "tension" or pulling side, new bone, ligament and cementum are formed. On the pressure side, cells will remove bone and ligament to allow the tooth to move. It is analogous to moving a stick through sand; it heaps up on the pressure side and fills in on the opposite side where a void is left.



Except - the SMART retainer utilizes medical device technology to gather and store retainer use data. When the user returns to the orthodontist, the SMART retainer is placed on a special reader. The reader uploads the retainer use data and provides an accurate record to a computer. This helps the doctor make the best recommendation for retainer wear. And for the orthodontist or dentist responsible for the treatment, reading it is a snap. The program is easy to use, and most importantly, foolproof - eliminating the age old debate of "did they wear it.... didn't they wear it."

The SMART retainer is a low cost, high-tech solution that is becoming the standard of care for orthodontists, placing the responsibility of compliance of retainer use where it belongs, with the patient.

Dr. Marc Ackerman, Scientific Compliance Chief Scientific Officer, summarizes as follows. "In my opinion, the SMART retainer will revolutionize compliance in orthodontic retention. As a matter of fact, I can't think of any reason why an orthodontist wouldn't want to offer this low-cost, high-tech solution to their patients. It's state of the art technology addressing one of our profession's biggest problems."

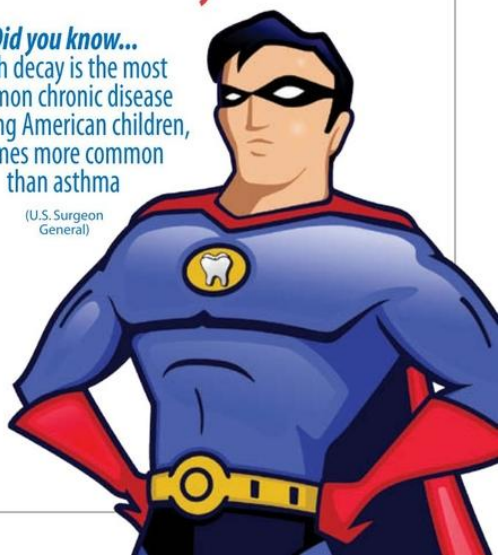
See your orthodontist or general dentist or go to the SMART retainer website at www.scicomply.com for more information.

When the patient returns to the orthodontist, the SMART retainer is placed on a special reader. The reader uploads the retainer use data and provides an accurate record on the computer. This helps the doctor make the best recommendation for retainer wear.

Superhero being developed to fight tooth decay

New research in the "Journal of Clinical Dentistry" (March 2008) demonstrates a new product, called BasicMints. BasicMints contain CaviStat, a new, fluoride-free, tooth decay-fighting product which is dissolved during chewing allowing CaviStat to go into the tooth surfaces. CaviStat acts like saliva by neutralizing harmful plaque acids and promoting the remineralization of the tooth through calcium. In this study, children chewing BasicMints with CaviStat had 62 percent fewer cavities in their molars than did children in a placebo group. Tooth decay (cavities) is the most prevalent disease in children. CaviStat was developed by researchers in the department of oral biology at the State University of New York at Stony Brook. Ortek Therapeutics plans to submit for a investigational new drug application to the U.S. this year. BasicMints are not currently approved for use in the U.S but hopefully coming soon. (The Dental Tribune)

Did you know...
tooth decay is the most common chronic disease affecting American children, 5 times more common than asthma
(U.S. Surgeon General)



We've got mail

Email your dental questions to consultations@deardoctor.com

Clear Orthodontic Aligners

Question emailed by Jennifer from Florida

Question: My dentist has recommended that I straighten my teeth using clear orthodontic aligners over regular braces, but how does it really work?

Answer: The orthodontic treatment using clear aligners consists of a series of aligners that you change about every two weeks over a course of treatment lasting six to eighteen months depending on how much movement is needed. Each aligner is individually manufactured with exact calculations to gradually shift your teeth into place. These clear aligners are custom-made for your teeth and your teeth only, with a plan devised by you and your dentist or orthodontist so that, before you even start, you know you'll end up with a smile that truly fits.

It is important to ask your dentist if they are going to use a system that uses computer generated clear orthodontic aligners. Not all systems are equal and computer generated aligners work much more efficiently. It is also the best way to transform your smile without interfering with your day-to-day life. Your dentist will first take very precise impressions (molds) of your teeth from which models are made and are used to make these computer-generated aligners. Unlike traditional braces, the aligners are removable for eating, drinking, brushing, flossing and social occasions. The aligners are not only clear (essentially invisible), they are comfortable with no rough edges or wires of conventional orthodontics. You can also see the changes in a matter of weeks and months as the teeth move into their new more aesthetic and functional positions. Your dentist or orthodontist will determine if your tooth movement can be accomplished through this technology. This is a great example of how new technology from the 21st century enhances our lives.

Invisalign® aligner, photos courtesy of Align Technology, Inc.

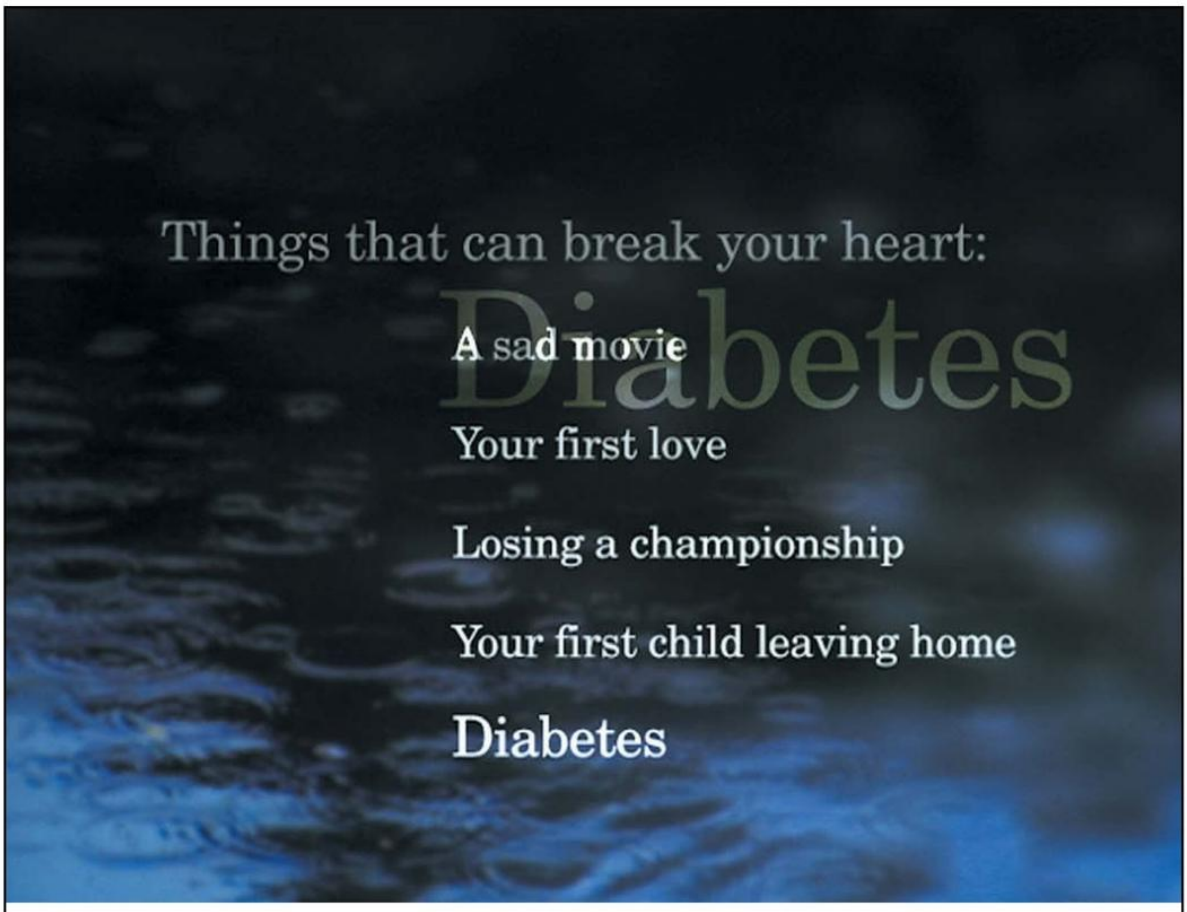
HOLDING BACK IS A THING OF THE PAST.
A NEW SMILE LETS YOU BLOOM.

If you're uncomfortable with your teeth, you could be holding back who you really are. But Invisalign's clear, custom-designed aligners can be an inconspicuous and removable way to get a beautiful new smile. Many complex cases that once required braces can be treated with Invisalign, often in about a year. So check with an experienced Invisalign provider to see if it's right for you. And let the real you bloom with a new smile.

STRAIGHT TEETH ARE WITHIN REACH. Get a free, no-obligation consultation with an experienced Invisalign dentist or orthodontist at www.invisalign.com/doctor3 or 866-417-3889

invisalign

THE CLEAR ALTERNATIVE TO BRACES



The complications of diabetes often go undiagnosed, and are far more serious than you might think. Most people with diabetes also have high blood pressure and cholesterol, which can cause severe heart damage. In fact, 2 out of 3 people with diabetes die from heart disease or stroke.

But it's not too late. You can reduce your risk of heart disease and stroke by lowering your blood sugar, blood pressure and cholesterol. Learn how.

Call 1-800-DIABETES for your free "Diabetes Survival Guide".

Make The Link!
Diabetes Heart Disease and Stroke

American Diabetes Association.
Cure • Care • Commitment

AMERICAN COLLEGE of CARDIOLOGY

www.diabetes.org

Tetracycline Staining

Question emailed by Leah from Ohio

Question: I was given tetracycline as a newborn. Both my baby and permanent teeth were stained. Bleaching hasn't helped. Any suggestions?

Answer: Good news, there are many suggestions and possibilities to improve your situation. Unfortunately, tetracycline is one of the few antibiotics that does cause staining of the teeth which is "intrinsic" or becomes part of the structure of the teeth. Because it gets incorporated into the structure of the developing teeth it leaves bands of stains (almost like tree rings are used in indicating the age of trees) making it possible to determine when the tetracycline was given. Professionally applied or "power bleaching" may help reduce the stain somewhat even if it doesn't eliminate it completely, or it can at least help set the stage for cosmetic procedures to be more effective. The stained enamel can then be removed and replaced with porcelain veneers (or crowns), depending upon the extent of staining and visibility, to give you perfectly natural looking teeth and to allow you to have the smile you want and deserve. Ask your dentist for more details or visit us on the web to review our past articles on the topic of whitening and veneers.

Care of Diabetics

Question emailed by Lois from South Carolina

Question: I am an 80 year-old woman, a diabetic, with coronary artery disease and peripheral vascular disease, but I'm not ready to call it 'quits' just yet. I am wondering if there are dentists who specialize in the care of diabetics who would take a chance on handling my dental work. It's been awhile, can you help?

Answer: Thank you for your question. There is a lot of research being done on the relationship between systemic (general body) disease and dental disease, more specifically periodontal (gum) disease. We know that there is definitely a relationship between diabetes and periodontal disease, and there may also well be a relationship between cardiovascular (heart and blood vessel) disease. As healthcare professionals all dentists are aware of the overlap between dental and general health issues. Our advice is not to delay, but find a dentist in your neighborhood, preferably one you like and can relate to. Let them know about your health issues and concerns. After the dentist has examined you, he or she will let you know what they think is needed, and if necessary refer you to a dental specialist. Don't forget, the healthier your mouth, the healthier your body and vice versa. Good luck.

MARIO LOPEZ

Male Celebrity Smile of the Year

His attention-getting smile gets its shine from a healthy lifestyle.

Mario Lopez has been one busy man since his appearance on *Dancing with the Stars* in 2006. The 34-year old performer delighted audiences with his charismatic presence and incredible footwork – something that surprised him as much as it did his fans. "I knew going into it I had a little rhythm, but I didn't know I could really do some of the routines we did."

It's been virtually non-stop since then – he became a recurring commentator for *HBO Boxing* and starred in two made-for-TV movies. This season he returned as a host on Randy Jackson's *America's Best Dance Crew*, a dance competition show on MTV. And, he recently took on the role of Zach the director in the Broadway revival of *A Chorus Line*, as well as being named the host of the entertainment news shows *Extra* and *Weekend Extra*.

You'd expect someone as busy as Lopez to look just a little fatigued. Quite the contrary – his contagious smile and handsome looks exude vibrancy and good health.

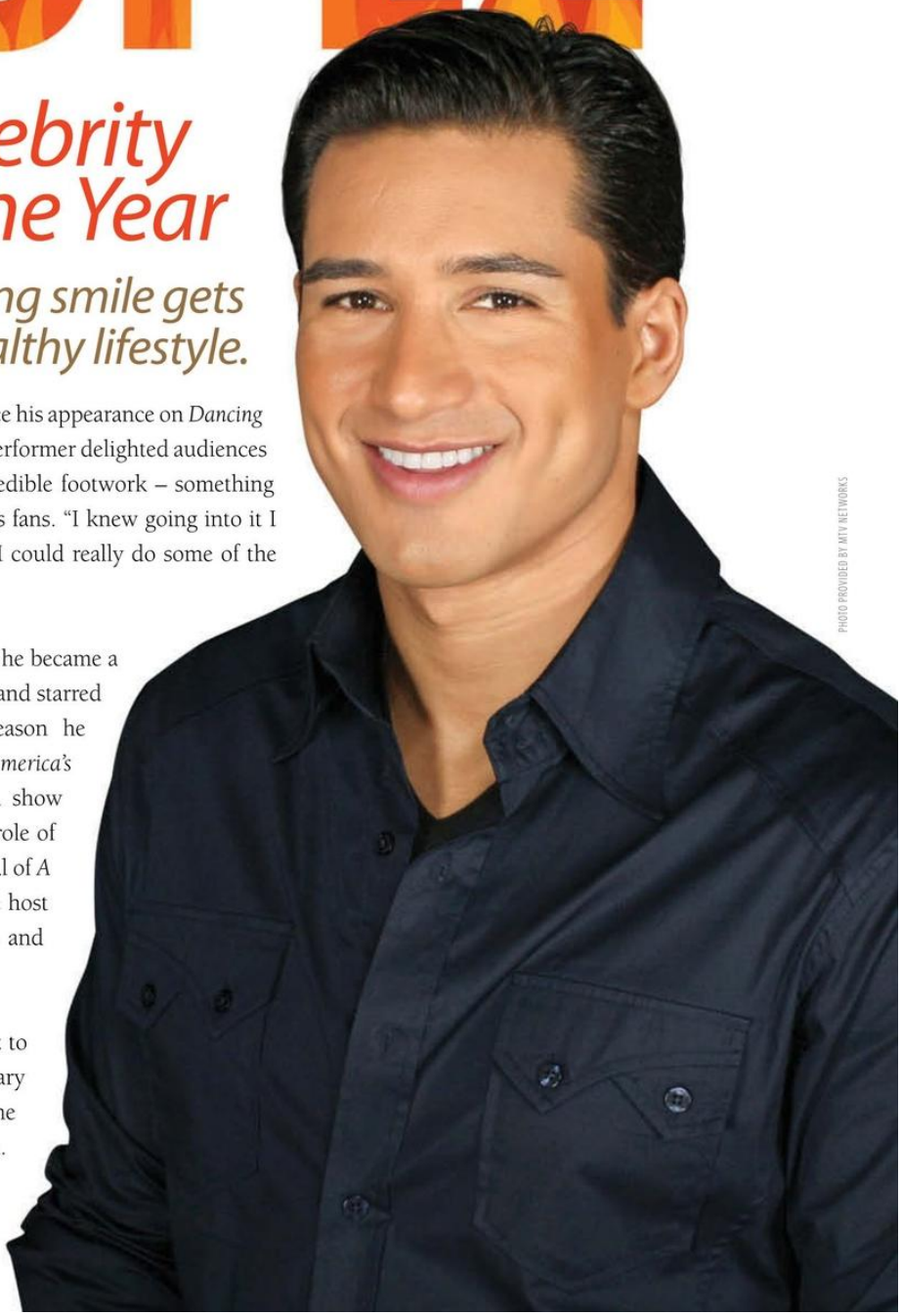


PHOTO PROVIDED BY MTV NETWORKS

Lopez's dazzling smile, one of his most admired assets, he credits to his healthy lifestyle and family history of healthy teeth.

So much so that *People* magazine recently named him their Hottest Bachelor of 2008.

This combination of health and vitality bound up in one of America's brightest smiles has led *Dear Doctor* and our readers to name Mario Lopez as our "2008 Male Celebrity Smile of the Year."

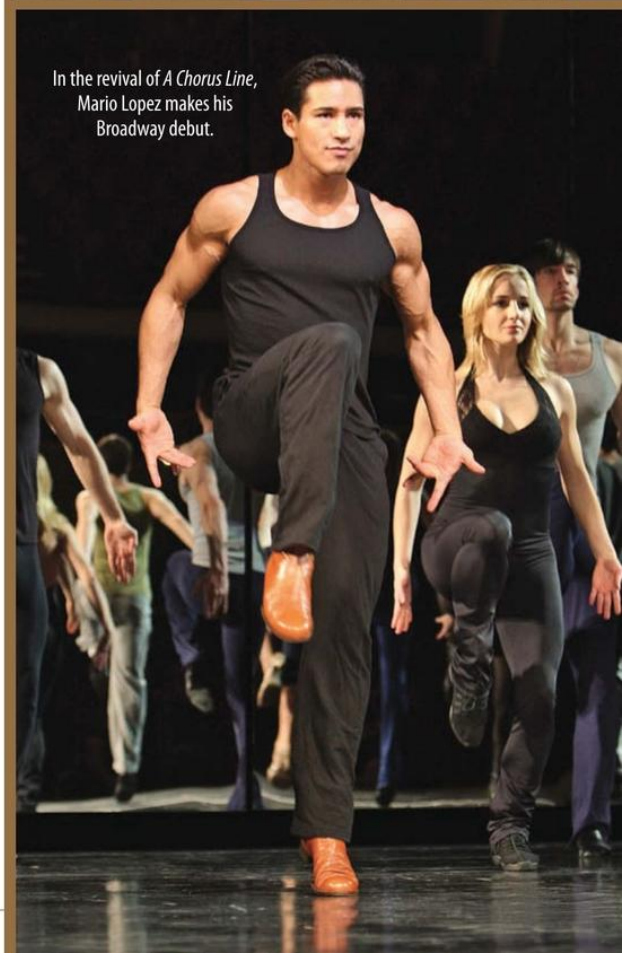
So what really turns up the wattage on Lopez's dazzling smile? He credits his seemingly boundless energy to a dedicated lifestyle of good nutrition and regular exercise. It's also why he took the time in this very hectic year to write and publish *Mario Lopez's Knockout Fitness*, a health and fitness program based on his own experience.

"Exercise and maintaining a healthy lifestyle has always been an important part of my life. People always ask me what I do to stay in shape, so I wanted to share what I've learned," says Lopez. "I really enjoyed putting the book together – and I hope it's the first of many for me."

Born in San Diego, Lopez made his first acting appearance in the ABC comedy a.k.a Pablo in 1985. His big break came when he was cast in 1989 as A.C. Slater in *Saved by the Bell*, a popular sitcom about high school life that ran for five seasons. Since *Saved by the Bell*, Lopez has enjoyed a steady career climb with a variety of hosting and acting jobs to his credit.

His commitment to fitness goes back to his high school days when he competed in wrestling and placed seventh in his state. This led to an interest in boxing and the workout regimens associated with it. The levels of training intensity required by those sports are reflected in his workout program.

Mario Lopez hosts Randy Jackson's *America's Best Dance Crew* seen on MTV.



In the revival of *A Chorus Line*, Mario Lopez makes his Broadway debut.

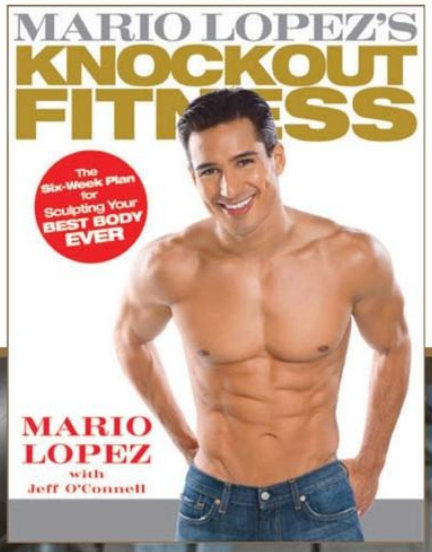
If you're looking for the latest fad or "secret" exercise program in his book, Lopez says you'll be disappointed. His program consists of a variety of traditional fitness activities that have been found to work – and much of it from his own experience.

"This is as much about the mistakes I've made over the years I've trained, and what I learned from them," says Lopez. "My approach is to combine cardiovascular exercise with resistance training – a lot of times people will emphasize one or the other in their workouts. It shouldn't be an either/or, but both."

Lopez also puts the spotlight in his book on healthy eating and getting a good night's sleep, something you might expect to hear from your mother, not from one of the nation's hottest bachelors. But Lopez believes taking care of your body is critical to living life to the fullest.

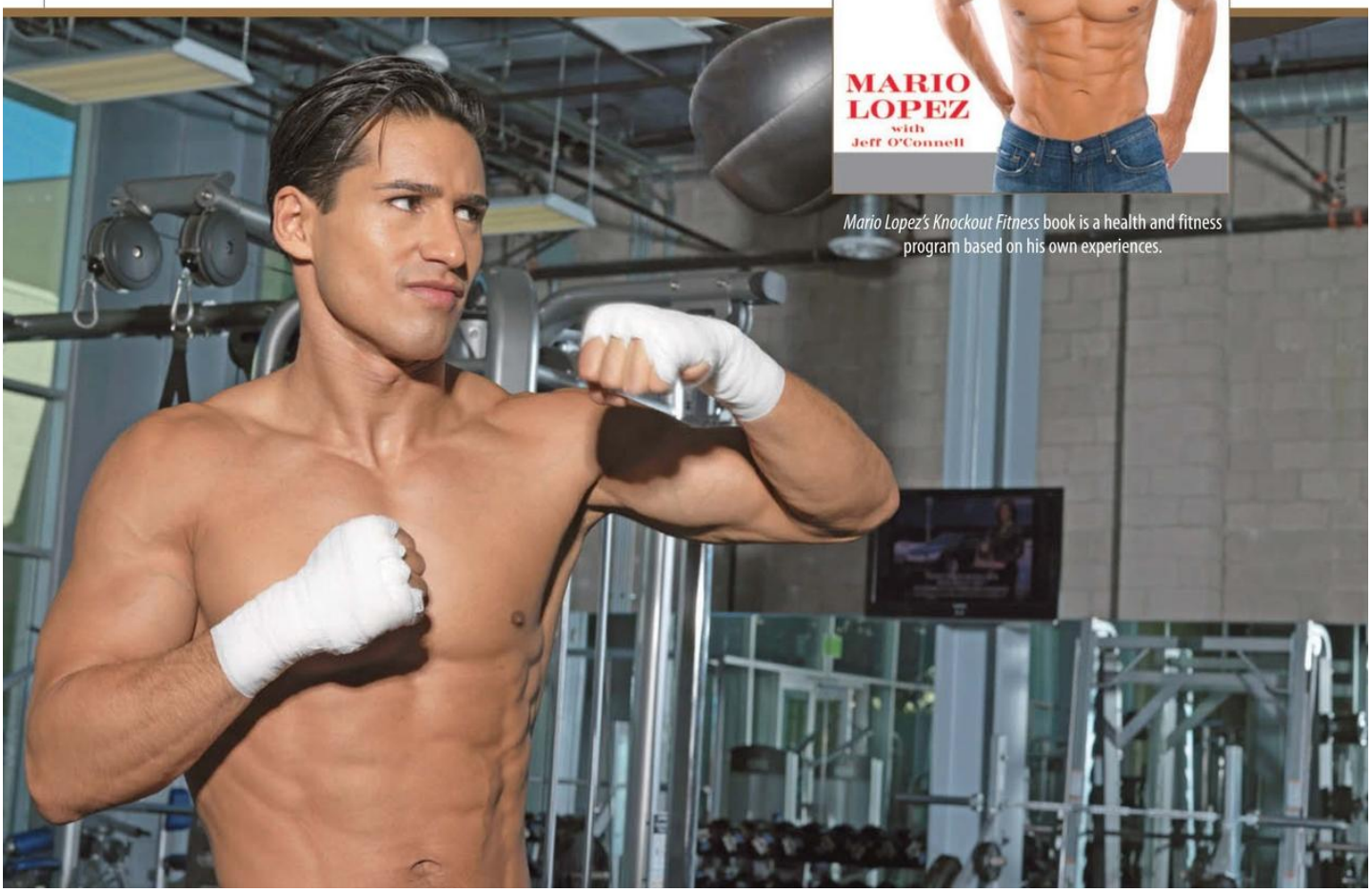
"The only way I can meet the demands of life – including career and family – is to take care of my body," says Lopez.

"This is as much about the mistakes I've made over the years I've trained, and what I learned from them."



Mario Lopez's Knockout Fitness book is a health and fitness program based on his own experiences.

PHOTOS BY JOAN ALLEN
BOOK COVER PROVIDED BY RODALE INC.



He credits his healthy lifestyle – as well as a family history of healthy teeth – with helping him maintain his dazzling smile, one of his most admired assets. While it's definitely part of his persona, he says he really doesn't give it much thought.

"I'm generally a happy guy who is in a good mood most of the time. I think when you naturally express yourself it can be infectious – you get back the vibe you give off."

> "Exercise and maintaining a healthy lifestyle has always been an important part of my life."

According to Lopez that smile is natural – he has never undergone any orthodontic or cosmetic procedures, and has only occasionally used over-the-counter whiteners. That doesn't mean he's cavalier about his smile. He remains disciplined about his oral hygiene as an integral part of his overall health and fitness.

So, if you happen to catch a glimpse of that infectious Mario Lopez "Smile of the Year" – on Broadway, at a dance competition or at a book-signing at your local bookstore – just remember there's a lot of healthy living going on behind it.

TOOTH DECAY

The World's Oldest & Most Widespread Disease

by Douglas A. Young, DDS, MBA

A Look at the Process of Dental Caries – And How to Prevent It

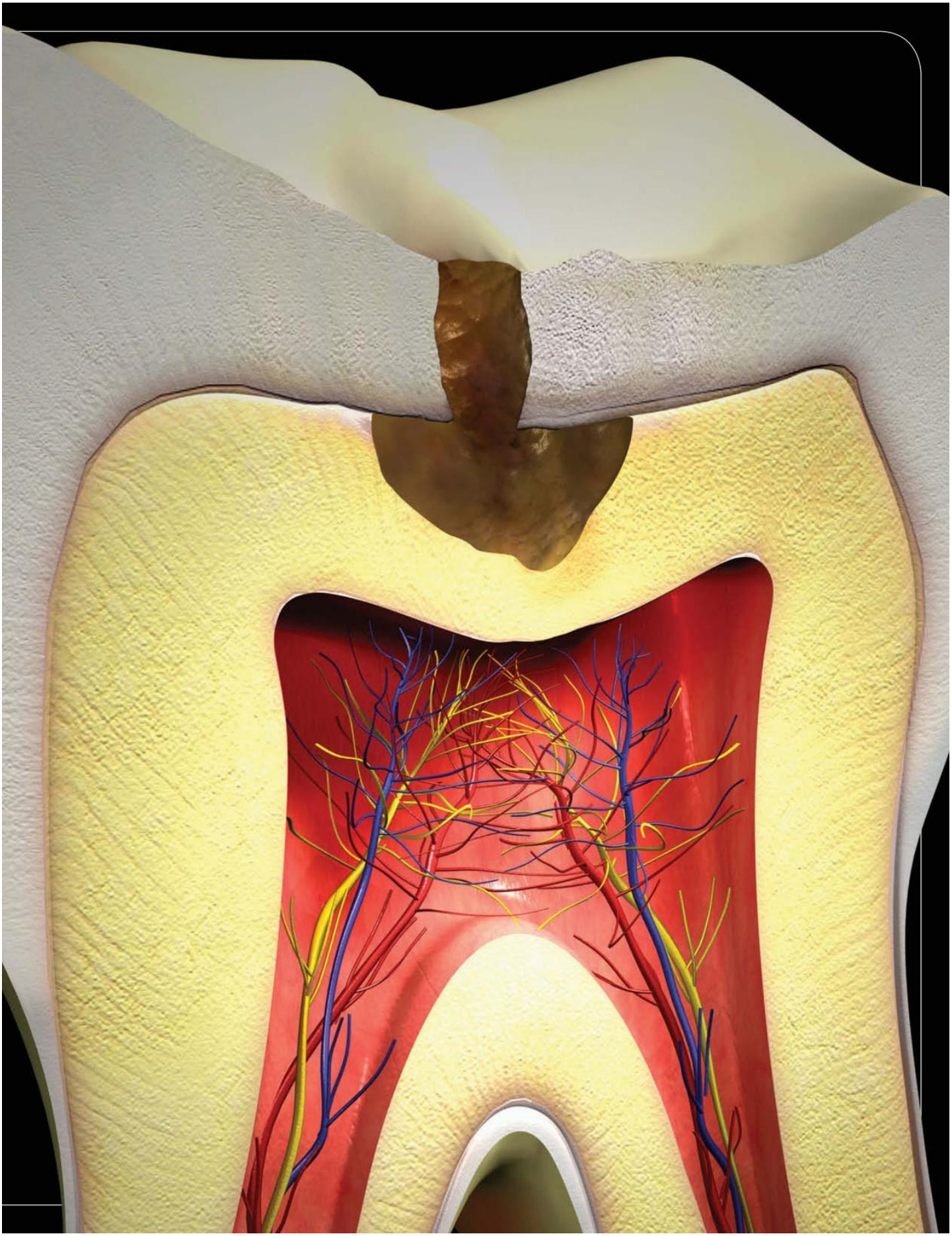
Tooth decay – or dental caries – is an infectious disease process that causes damage to the structure of teeth. Cavities (hollowed out spaces or holes) are the most notable consequences of dental caries.

Left untreated, caries leads to pain, tooth loss – or, in rare cases, death. In this most extreme case, infection can advance to the "cavernous sinus," an air cell behind the eye, from which it can then enter the brain. Tooth decay amounts to more than just the inconvenience of "drilling and filling": it has the power to change a person's diet, speech, quality of life and overall well-being.

This article – the first in a series about one of the world's oldest and most widespread diseases – will explore the most current information about tooth decay. This and subsequent articles will provide you with all the information you need to know about tooth decay, its causes and its relationship to sugars and acids, detection, prevention, treatment and more. In future articles we'll also discuss new diagnostic and detection methods, the role of fluoride in the prevention of dental caries, and the latest in other prevention and treatment options.

DID YOU KNOW?

Tooth Decay is one of the most common of all diseases, second only to the common cold.



DECAY – A WORLD WIDE EPIDEMIC; PAINFUL, COSTLY AND PREVENTABLE

Oral diseases range from cavities to cancer; they cause pain and disability for millions of Americans each year. Even more disturbing – almost all are preventable.

Dental decay is a worldwide epidemic, especially among young children. The disease begins early – tooth decay affects more than one-fourth of U.S. children ages 2 to 5 and half of those ages 12 to 15. Low-income children are hardest hit: about half of those ages 6 to 19 have had decay. In addition to pain and other dysfunction, untreated cavities can cause absence from school and other social interactions, low weight and poor appearance – problems that may greatly reduce a child's capacity to succeed in life.

Tooth decay is also a problem for U.S. adults, affecting more than ninety percent over age forty. A quarter of adults over age sixty have lost all of their teeth primarily because of decay affecting self-esteem and contributing to nutrition problems by limiting the types of foods that can be eaten.

A NEW WAY OF LOOKING AT DENTAL DECAY – A DYNAMIC PROCESS

The mouth is an ecosystem where living organisms continually interact with every other element within their environment. The teeth are composed of an outer covering of non-living enamel (the hardest substance in the human body) and an inner core of living dentin, with a consistency and composition similar to bone. Enamel is highly mineralized and crystalline in structure, composed mainly of calcium and phosphate.

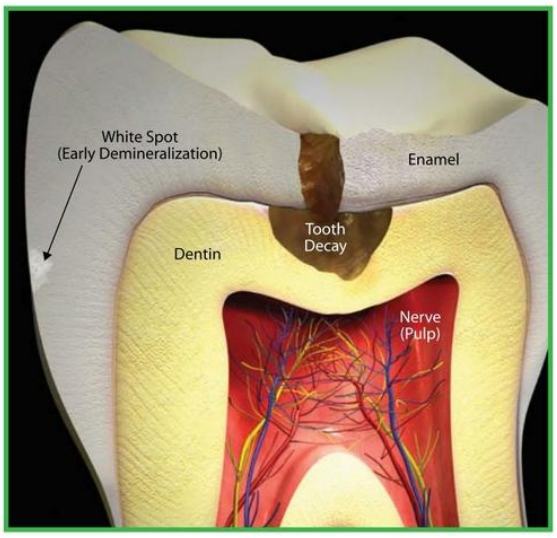
The teeth are bathed in saliva, a most remarkable and seldom discussed fluid. It has many important functions in keeping mouths healthy; one of the most important is its role in maintaining a "neutral" environment – a balance between acids and bases.

(Acidity is measured scientifically by the "pH" scale that runs from 1 – 14. pH 1 is extremely acidic, pH 14 extremely basic. The pH of the mouth is generally 7 – neutral.)

Tooth decay is also a problem for U.S. adults, affecting more than ninety percent over age forty.

The oral environment is also loaded with bacteria. There are more bacteria in a single mouth than there are people who have ever lived on the earth. Certain of these bacteria have the potential to cause decay.

Here's how it works – specific bacteria (mutans streptococci and lactobacilli) attach themselves to dental plaque, the whitish sticky film that collects on teeth in the absence of effective oral hygiene. When sugars or carbohydrates are eaten, these particular bacteria have the ability to break down the sugars to use for their own metabolism. In the process, though, they produce acid as a by-product which in turn drops the saliva pH. At about pH 5.5 the minerals in the enamel just below the surface begin to dissolve in a process known as "de-mineralization," in which more calcium and phosphate leave the tooth surface than enter it. The effects of early de-mineralization in enamel can be seen as a white spot on the tooth.



This illustration shows how decay starts with an early white spot indicating the beginning of tooth decay. The area identified as tooth decay is what happens when decay extends into the dentin.

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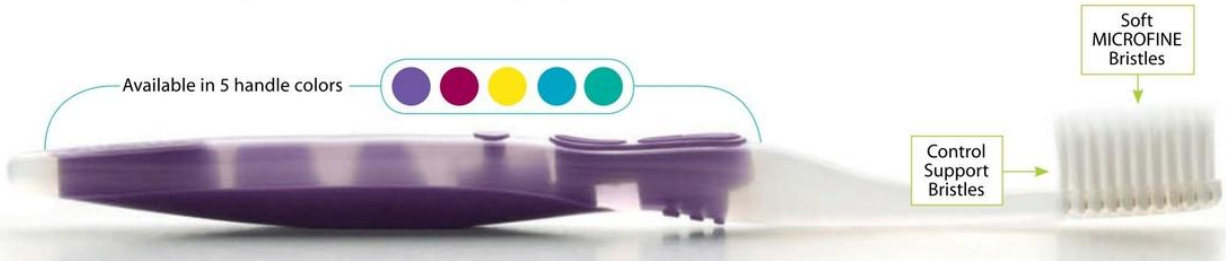

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Dentin and root surfaces have much less mineral than enamel and are much more vulnerable to acid dissolution de-mineralizing at a much higher pH (about 6.0 to 6.5).

Bacterial acid attacks of short duration can be "buffered" (neutralized) in about thirty minutes by adequate amounts of healthy saliva, thereby returning calcium and phosphate into the tooth sub-surface. Saliva contains a lot of calcium and phosphate "ions" (charged moving particles) that continually leave the surface enamel and are replaced from the saliva, and vice versa. This process is chemically the reverse of de-mineralization and is known as "re-mineralization." Although the white spot may not disappear, re-mineralization is nature's way of repairing early damage and returning the tooth surface back to status quo.

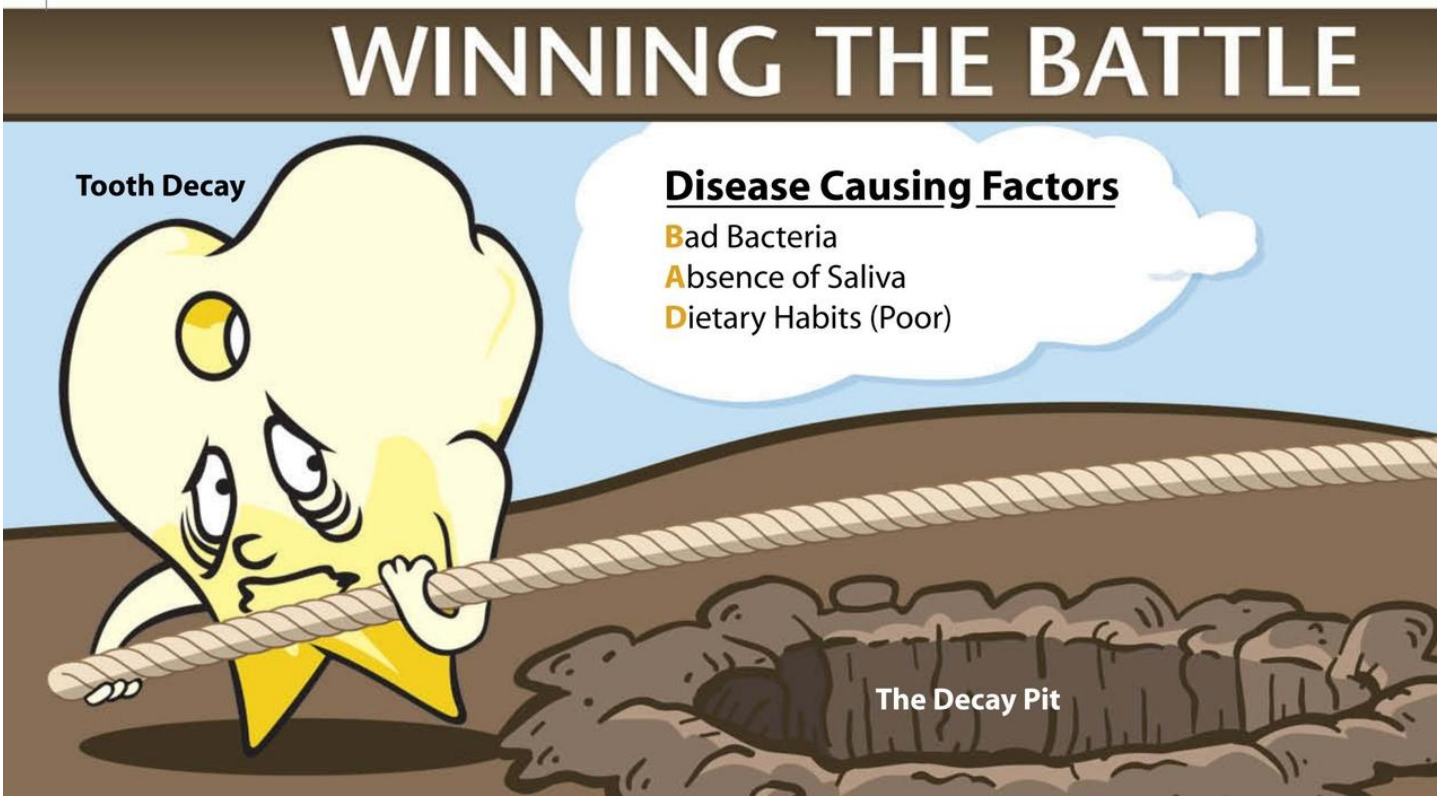
Nothing in nature is static, but instead it is dynamic and therefore changing constantly to maintain a status quo. Primarily composed of mineral, teeth continually swing between "DE-mineralization" from the bacteria on the tooth surface, and "RE-mineralization" from the effects of saliva. This interchange occurs on the microscopic level, but still very important in maintaining the normal balance.

THE CARIES BALANCE

Given similar habits, you might wonder why some people get cavities and others don't. This dilemma can be better understood by picturing a balance between pathogenic (disease-causing) and protective (health promoting) factors. Each individual has his/her own unique balance that dynamically changes as time goes on. The trick is to identify what is out of balance and how to tip it towards health and protection.

Pathogenic factors include the large amounts of specific acid-producing *Bad* bacteria, the *Absence* of healthy salivary function, and poor *Dietary* habits. By contrast, protective factors include healthy *Salivary* function and Sealants (to seal the areas most likely to decay), the use of *Antibacterial* agents, topical *Fluoride*, and a healthy and *Effective* diet.

Given similar habits, you might wonder why some people get cavities and others don't. This dilemma can be better understood by picturing a balance between disease-causing protective factors.



HOW TO ASSESS YOUR RISK

Not everybody has the same level of risk for developing dental caries; this is further complicated by the fact that the risk is dynamic and changes daily, as well as over time. Therefore, assessing the degree of risk is crucial. And let's not forget that prevention includes determining both pathogenic and protective factors – both sides of the balance.

Modern dentistry is moving toward an approach to tooth decay management that is "evidence-based" from years of systematic, accumulated and valid scientific research. In other words, it allows individualized treatment based on current science that is customized to the patient's actual risk that he/she presents with, rather than a "one size fits all approach."

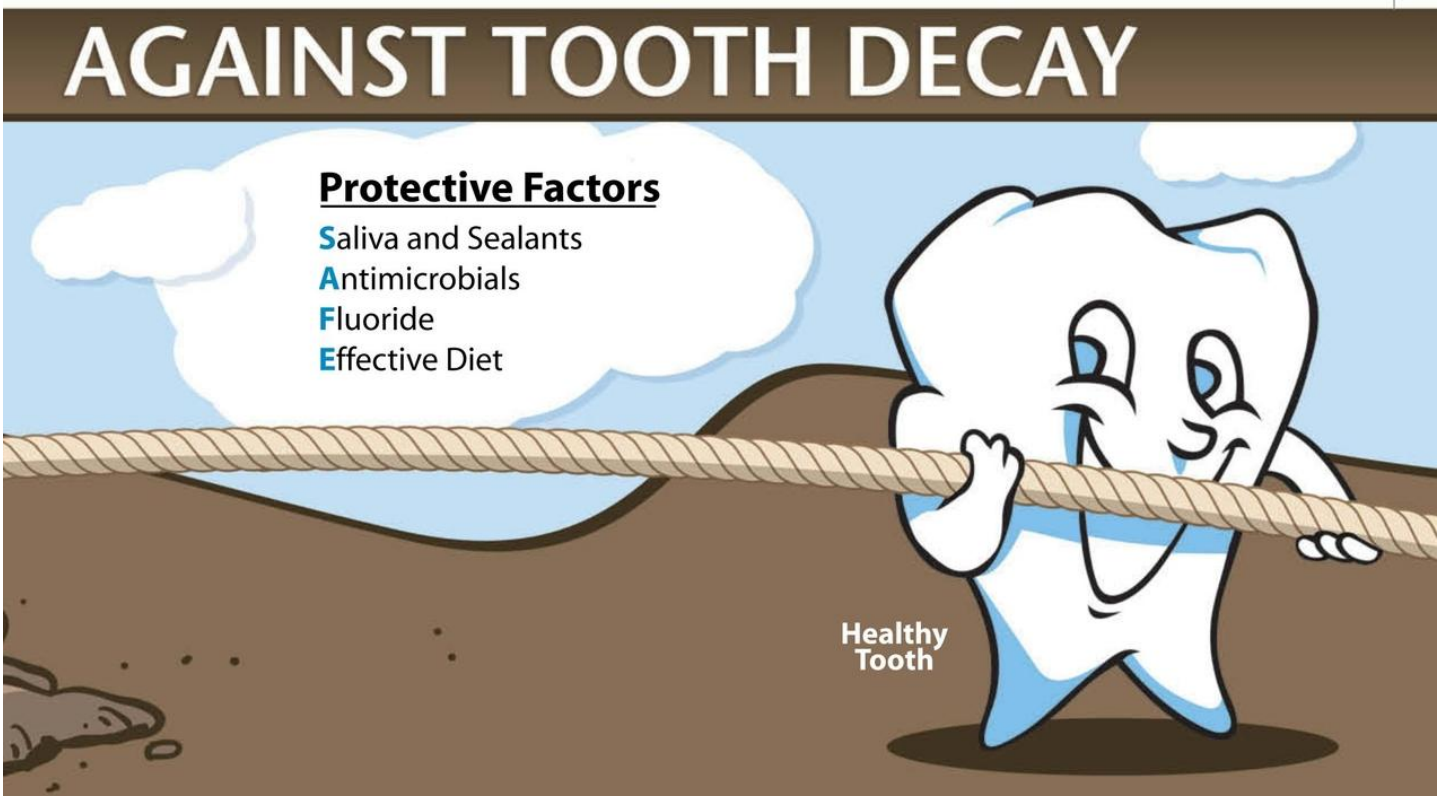
Risk assessment allows preventive and treatment decisions to manage those in greatest jeopardy. This approach allows for "targeted" management appropriate for individuals whether in low, medium, high or extreme risk groups. Protocols have been recently established based on the Age One Visit (for infants and toddlers) as well as for children age 6 through adulthood.

STRATEGIES FOR PREVENTION

You can see now that prevention doesn't simply mean brush and floss and don't eat sugar. It is a complicated topic with many implications. In fact, your dental office may offer some additional steps to measure your caries risk (salivary and bacterial analysis) and then recommend some products that specifically manage your risk level (sealants, antibacterial agents, topical fluoride, calcium and phosphate supplements, pH neutralizers, special toothpaste and rinses, and xylitol gum). These strategies are based on tipping the balance toward health by maximizing the protective side and minimizing or eliminating the pathogenic side. Prevention must be strategic, since it affects planning on an individual and community level.

Facts you should know!

- Tooth Decay is one of the most common of all diseases, second only to the common cold.
- 51,000,000 hours of school are lost each year by children due to dental related problems.
- Americans make over 500 million visits to dentists a year.



TIPPING THE BALANCE – THE RIGHT RECIPE

Simply put, for dental caries (tooth decay) to occur you need the right (or rather wrong) recipe:

- Susceptible teeth (not all teeth get caries),
- Acid producing bacteria,
- Sugars or carbohydrates – the "perfect" food for the acid producing bacteria

Prevention aims to shift the balance in favor of promoting health in three main areas:

- **Protecting the teeth from caries** – this is best accomplished by applying fluoride topically to the crystalline structure just after the teeth erupt into the mouth. The tooth surfaces are dynamic and will allow incorporation of fluoride ions into the surface structure. Many studies show that low doses of fluoride are safe and effective against decay. Sealants are very successful and are a companion treatment to fluoride because they seal the places where decay occurs in the tiny hidden pits and fissures [Figure 1]. Clinical studies using sealants show 99% cavity-free results during six years of clinical testing on over more than 1,100 teeth studied.

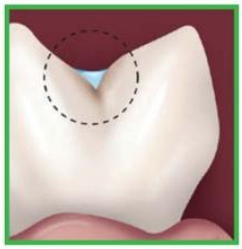


Figure 1: An example of a sealant protecting the groove of a tooth from tooth decay.

- **Identifying and reducing acid-producing bacteria** – these bacteria can be identified by a simple test administered by your dentist. If these bacteria are identified, they can be modified to reduce tooth decay by the use of tooth protective products. We can further modify these harmful bacterial concentrations with the use of antibacterial mouthrinses (such as chlorhexidine) and pH neutralizing agents. It is important to note, infants are not born with the specific decay-causing bacteria but that these bacteria are actually transmitted through saliva from mothers, caregivers, or family members to young children - another reason to practice prevention.

- **Controlling diet** – sugars and other carbohydrates can be fermented by bacteria to produce acids. It's important to reduce refined sugars from the diet or restrict intake to mealtimes. Natural sugars (in raw fruits and vegetables) are better than the free (added) sugars found in juices, sodas, candy and the like. Total sugar intake should be less than fifty grams, about ten teaspoons, per day. Snacking between meals is dangerous because it promotes an acid environment that would take up to thirty minutes for healthy saliva to neutralize. Healthy non-sugary or non-carbohydrate snacks are therefore better, like carrots, vegetables and fresh fruits. Xylitol is an example of an "alcohol sugar" used in some chewing gums and dental products that actually reduces decay-producing bacteria, and is proving useful in decay preventing strategies. One study showed that pregnant mothers who chewed xylitol gum before giving birth reduced the transmission of these strains of bacteria to the child, thus reducing the likelihood of decay.

TODAY'S TREATMENTS CAN REDUCE AND ELIMINATE TOOTH DECAY

We understand that tooth decay, or dental caries as it is known, is a disease process, and we know the causes. As we'll see in future articles, methods of prevention, early detection, protection and treatment have continued to improve. Dentists are using a more preventive strategy – profiling individuals' degree of risk and implementing preventive strategies to keep their teeth decay-free for life.

ABOUT THE AUTHOR

Douglas A. Young, DDS, MBA

Dr Douglas A. Young received an AB in Bacteriology from the University of California, Berkeley; a DDS from the University of California, San Francisco; an MBA from the University of the Pacific; and an MS in Oral Biology from the University of California, San Francisco. He completed a General Practice Residency in 1982 at the VA Hospital in San Francisco. He practiced general dentistry for 15 years before becoming a full-time Associate Professor at the University of the Pacific and the University of California, San Francisco. Dr. Young is a researcher and educator in the field of minimally invasive dentistry, dental materials, and cariology. He has lectured and published nationally and internationally.

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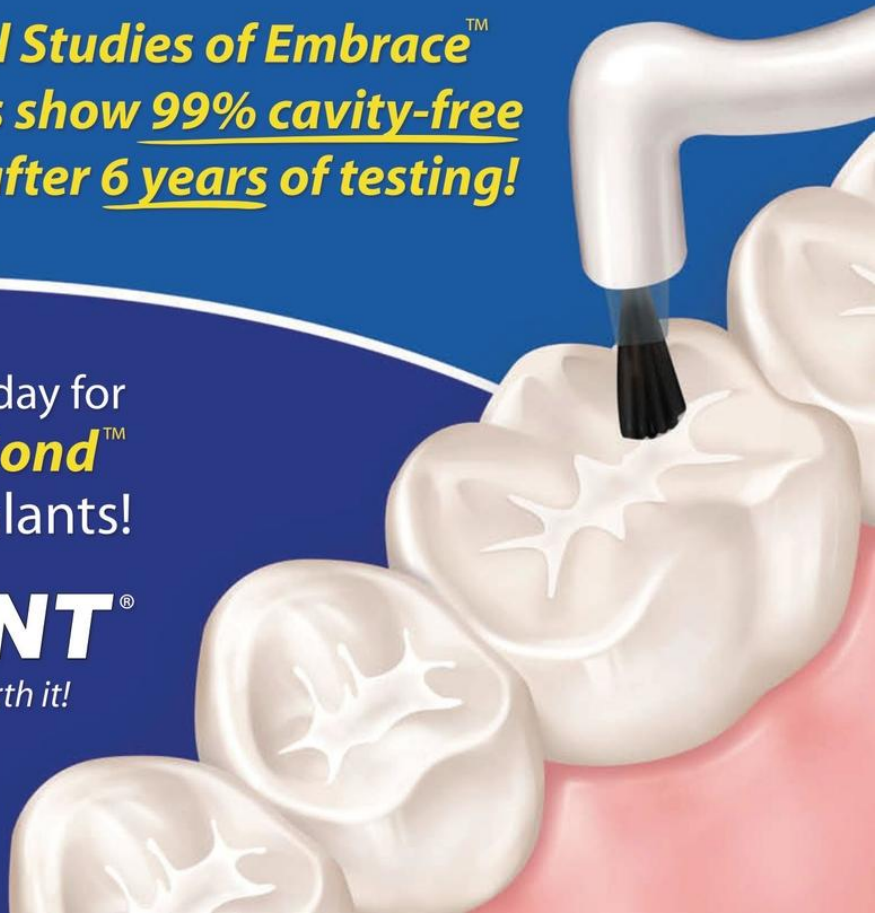

Removable Partial Dentures

With proper care, RPDs can be a "stepping stone" toward permanent tooth replacement

A Consultation with Dr. Lola Giusti

Removable Partial Dentures?

From: John (South Carolina)

To: Consultations@deardoctor.com

Subject: Removable Partial Dentures?

Dear Doctor,
I am fifty-five years old and over the years I have lost several teeth, mostly due to decay. I've been wearing removable partial dentures for the last twenty years, the plastic "flipper type." My dentist tells me that the denture is loose and it's affecting the health of my teeth and gums. Do you have any advice on alternatives?

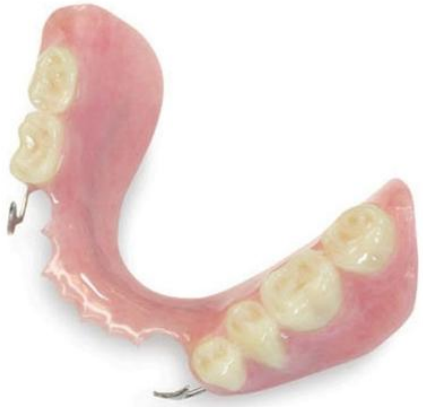

Figure 1: An example of a transitional removable partial denture that is referred to as a "flipper".

Figure 2: An example of a cast vitallium removable partial denture.

Dear John,

While removable partial dentures (RPDs) are certainly an alternative, the plastic type are generally more appropriately named temporary or transitional RPDs and they are certainly not the best design for long term use. The name "flipper" comes from the tongue's ability to flip them out or move them around. About the best use for these transitional appliances is as a temporary measure during healing, periodontal therapy, implant placement or like treatments. Thinking of temporary or transitional RPDs [Figure 1], as their name implies, as a "stepping stone" will help keep in mind that they are best used as short-term appliances.

Research dating back to the 1960s indicates that partial denture wearers [Figure 2] over the years suffer more decay and gum disease than non-partial denture wearers, all other variables being equal. The primary reason is that RPDs attach to the remaining teeth and other structures, the gum ridge areas where teeth once were, and the palate on which they rely for retention (to keep them in your mouth). Their attachment to other teeth can cause more bacterial plaque stagnation than

Thinking of temporary or transitional RPDs as a "stepping stone" will help keep in mind that they are best used as short-term appliances.

Appliances (above) provided by William E. Verlin
Certified Dental Laboratory Technician

usual, which leads to an increased incidence of both gum disease and tooth decay. Because RPDs attach to the remaining teeth they also tend to loosen the attached teeth over time. This occurs more often with temporary or transitional RPDs.

On the contrary and positive side, a well-constructed, accurately fitting thin metal-based removable partial denture, in a clean, plaque-free and healthy mouth, can provide a wonderful aesthetic and functional service. This is a big point that can't be stressed enough - excellent daily oral hygiene (brushing, flossing and the use of fluoride toothpaste, supplemented by mouthrinses), regular dental check ups and scrupulous care of the RPD (leaving it out at night and cleaning it thoroughly) are all pre-requisites for successful RPDs.

RPDs constructed out of a cast vitallium or gold alloy are much lighter weight and less obtrusive than the plastic kind. Tiny little rests and clasps are designed to grip the teeth rigidly and minimize the deflecting forces of the bite. A cast vitallium RPD is a little more expensive than a plastic RPD but much less expensive than implants or bridgework, the fixed, non-removable alternatives. While these latter prostheses (tooth replacements), particularly implants, are currently the treatment of choice, there are still many happy and satisfied RPD wearers around.

We hope this begins to answer your great question – please consult with your dentist for additional information.

Sincerely,
Lola Giusti, DDS

ABOUT THE AUTHOR

Lola Giusti, DDS

Lola Giusti, DDS is Assistant Professor in the Department of Removable Prosthodontics at the University of Pacific, Dugoni School of Dentistry, San Francisco, California. She majored in Human Biology at Stanford University; DDS from University of Southern California; General Practice Residency from Wadsworth VA Hospital, Los Angeles. She has lectured and written extensively in the area of removable prosthodontics.

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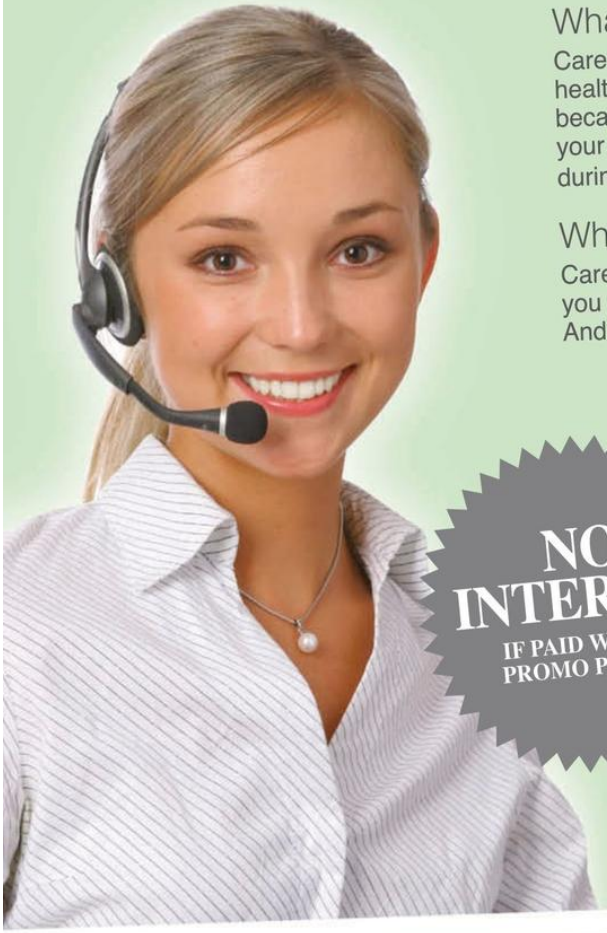

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Care GALLERY

For your enjoyment, we have created a gallery of Patient Care that illustrates how dental care can influence your self-image, confidence and happiness. Read about real life patients whose lives have been changed by outstanding dental professionals.

Gerard 58 year old banker

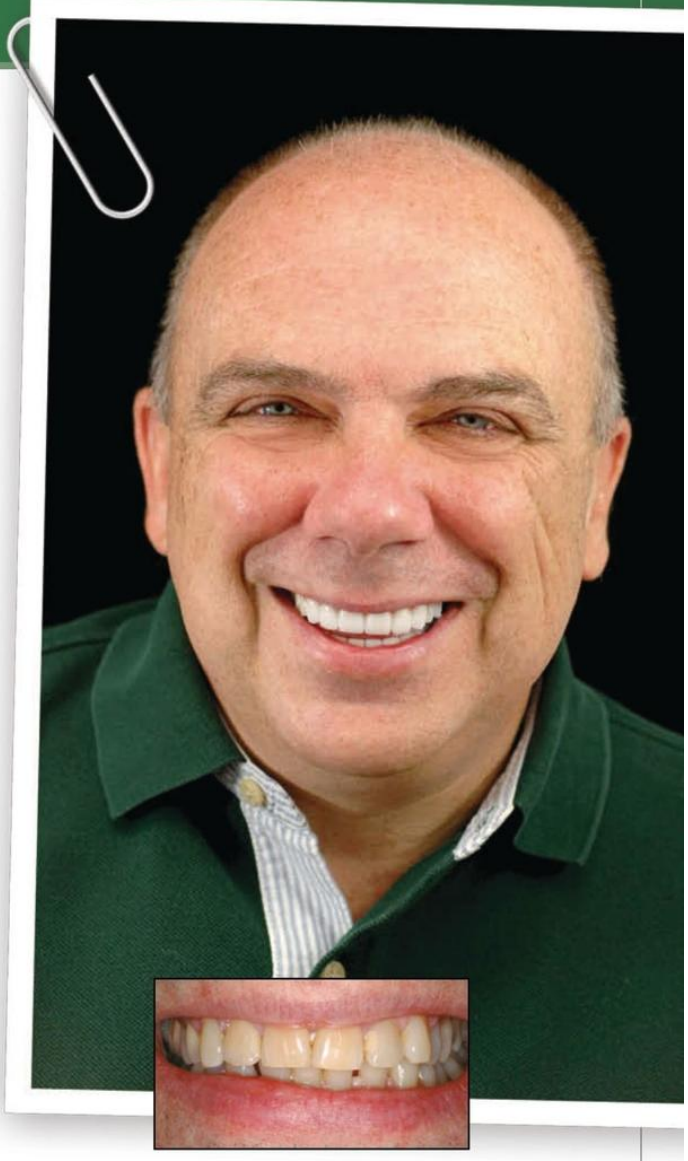
PATIENT CONCERNS

I have always had cosmetic concerns regarding the appearance of my teeth, however, I never had the confidence level to go forward with treatment until I found The Greater Long Island Dental Health Associates. The edges of my teeth had become rough from wear over the years and the length of my teeth made my smile look years older. I was unhappy with the color, spacing and overall appearance of my teeth.

PATIENT CARE *by Dr. James Woltmann*

In order to ensure that we addressed Mr. Jones' cosmetic concerns we completed a thorough comprehensive oral examination and created a cosmetic mock-up from our diagnostic records. In an attempt to create an ideal esthetic result and to correct his bite related problems, we chose to recommend porcelain laminates on both the upper and lower arches. This is a minimally invasive treatment alternative, which can dramatically impact a patient's total appearance. A state-of-the-art pressed porcelain, "Authentic", was chosen to restore the natural beauty that his teeth once possessed years ago. Clearly, he now has a more youthful smile.

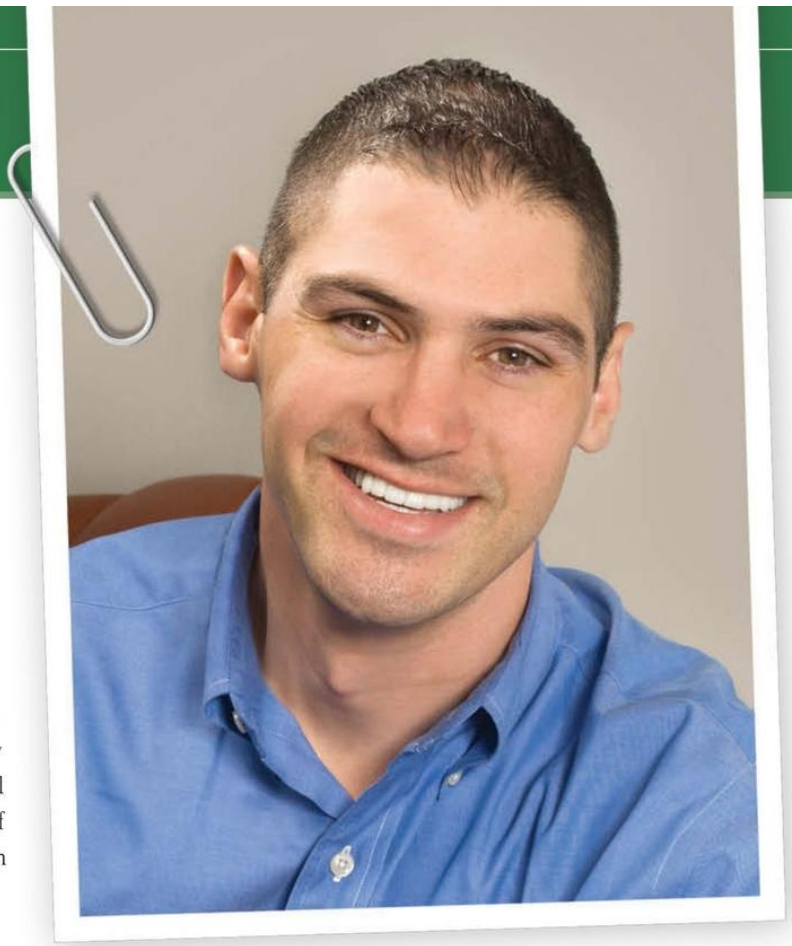
"The change in my smile is dramatic to me, but subtle enough that friends and acquaintances are not exactly sure what has changed."



Notice the aged appearance of the upper and lower teeth and the irregular alignment.

Dentistry provided by:
Dr. James Woltmann
For more information about Dr. James Woltmann visit www.DearDoctor.com/longisland

Dental laboratory work provided by Becden Dental Laboratory, Inc.



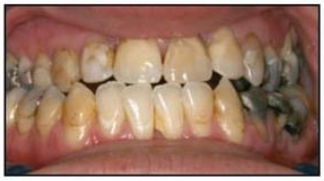
Dave 33 year old athletic director

PATIENT CONCERNS

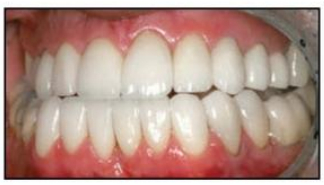
Pain can certainly be a great motivator and I was in pain. I was very apprehensive about having dental care. That's a large part of the reason I procrastinated for such a long time. Dr. Richard Whalen and his team have changed my thinking about dentistry forever. Much of my dentistry was old and had been patched together for years. My bad bite had always made me uncomfortable whenever my teeth came together. I was now emotionally and physically ready to have my dental needs taken care of by Dr. Whalen. He and his staff were very patient and thorough, providing me with an understanding of everything we needed to do.

PATIENT CARE *by Dr. Richard K. Whalen*

Our first objective was to help Dave become pain free. Achieving this goal allowed me to establish a level of patient confidence that made him more comfortable emotionally. Our plan was to restore parts of his mouth one section at a time, providing treatment over a number of months which can complicate the final result from an esthetic point of view. However, this was necessary because of financial consideration. Treatment consisted of a combination of porcelain crowns, porcelain veneers and posterior composite restorations. The end result was a healthier and more attractive smile. Additionally, I was able to restore his bite relationships as well as his comfort and function. Certainly, his appearance has improved as well as his demeanor. He seems to be constantly smiling.



Notice the irregular tooth relationships, discolored teeth and old fillings.



With the use of porcelain veneers and crowns, a beautiful esthetic and functional result was achieved.

PATIENT TESTIMONIAL

Dr. Whalen helped me with my dental fears and was very thorough in correcting my teeth. Now I love to smile and since the makeover, I have more confidence than I ever had. I never realized how insecure I had been because of my teeth, but I now feel like a completely different person. It surprises me to realize what a difference my new smile has made in the way I feel about myself. This investment was one of the most beneficial and successful investments I will ever make.

"This investment was one of the most beneficial and successful investments I will ever make."

Dental laboratory work provided by Aurum Ceramic Dental Laboratories, Inc.

Patient financing provided by CareCredit®

Dentistry provided by:
Dr. Richard K. Whalen
For more information about Dr. Richard Whalen visit www.DearDoctor.com/whalen

Debbie 40 year old mother of 3 children

PATIENT CONCERNS

For years, I was always self-conscious about my smile, in fact, I rarely felt comfortable smiling in public. My upper teeth were discolored with white spots all over the front of my teeth and my lower teeth were not as straight as I would have liked. I felt very comfortable discussing my feelings with Dr. Banks, for he has been our family dentist for many years. In addition, his attention to detail and his skills as a dentist are exceptional. Initially, we discussed orthodontics as an option for the lower, but in addition to having them straight, I wanted them whiter, yet natural looking. I always felt bad about my teeth but the cost and time involved was an issue.

PATIENT CARE *by Dr. Paul M. Banks*

Debbie is a beautiful woman who was uncomfortable smiling because her upper teeth were discolored with areas of hypocalcification and her lower teeth were irregular in alignment. With today's technology and beautiful use of porcelain veneers, Debbie's problems were easy to correct and we created a beautiful smile for her. After our initial consultation with photos and our computer simulation of what her teeth will look like, we were ready to start the treatment. Since we wanted to create the optimal esthetic result, we re-contoured her gums with a laser and then prepared the upper teeth for veneers. After the upper veneers were completed, she came back a few months later to restore the lower teeth. Using porcelain veneers enabled us to create a beautiful smile for both her upper and lower teeth in very few visits.

PATIENT TESTIMONIAL

I was one of those patients who always had a hard time smiling naturally. Now, I smile all the time and I can't believe what a difference a smile makes. Dr. Banks and his incredible staff made the entire experience a win-win for everyone involved.

"I smile all the time and I can't believe what a difference a smile makes."

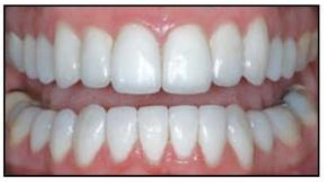
Dentistry provided by:

Dr. Paul M. Banks

For more information about Dr. Paul Banks visit www.DearDoctor.com/bankshoward

Dental laboratory work provided by Frontier Dental Laboratories, Inc.

Notice the number of white spots and irregular alignment of teeth.



Through the use of porcelain veneers, a more natural tooth color and alignment was accomplished.

Nutrition

Its Role in General & Oral Health

by Carole A. Palmer, EdD, RD

Our previous *Dear Doctor* article on nutrition ("Nutrition & Oral Health," Volume 1, Issue 3) discussed how dietary factors affect dental and oral health.

In this article, we go a step further and look at how the basics of nutrition, coupled with diet and exercise, affect life-long general and oral health.

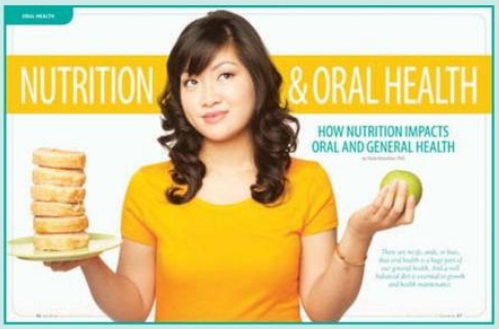
The Surgeon General of the United States has stated emphatically that "You can't be healthy without oral health." And, as our last article explained, you can't have good oral health without good nutrition.

In this issue, we'll expand on the idea that good nutrition is the key to overall health, both general and oral. In other words, what's good for the whole body is good for your teeth, gums and other oral tissues. We need good nutrition and dietary practices throughout life, for the formation, development and continued health of our oral tissues and structures, as well as those in the rest of the body.

CLARIFYING THE TERMS OF NUTRITION

Food is not only our primary source of nourishment – it's also a profound part of our society, culture and community. What we eat critically impacts not only overall health, but also our risks for several of the leading causes of death like coronary artery disease, stroke, diabetes and some types of cancer.

NUTRITION & ORAL HEALTH - VOL. 1, ISSUE 3, PAGE 46



A Look Back: The Impact of Diet on Tooth Decay

In our first article (Vol. 1, Issue 3), we explored the major role diet plays in oral health, especially in regard to tooth decay. Here are some highlights:

1. **Sugars:** The modern diet contains a mix of sugars that bacteria ferment which leads to decay. However, decay is more likely to result from added sugars (refined sugar, corn syrup, etc.) than from sugars derived naturally from fruit, grain, vegetables and dairy products.
2. **Starches:** These can cause tooth decay if the starchy foods (refined flour or rice) are left in the mouth for a long enough time or coupled with sugars (think biscuits, cakes or cereals).
3. **Protective factors in some foods:** Eating cheese after a sugary snack can virtually eliminate an increase in acidity (a necessary ingredient in bacterial growth), stimulates saliva and provides a rich source of calcium. Plant foods, whose fibrous form requires chewing, stimulate saliva in the mouth – also a deterrent to decay formation.

First, a little clarification: even though the terms "nutrition" and "diet" are often used interchangeably, they aren't synonymous. ***Nutrition*** is the end effect of food in the body; ***diet*** is an individual's eating habits or food choices. Both play important roles in health.

Foods are the substances we eat that provide the essential components of life – the ***nutrients***.

Nutrients can be classified into six major categories:

- Carbohydrates (sugars, starches, and fibers)
- Proteins (from animal and vegetable sources)
- Fats (preferably from vegetable sources in liquid form)
- Vitamins
- Minerals
- Water

Together, all these types of nutrients perform three basic functions in the body: provide fuel (energy); regulate body processes; and contribute to building body structures.

In fact, very few foods are composed of a single nutrient (refined table sugar, exclusively carbohydrate, is one of those rarities). Most contain a combination of nutrients plus other components. For example, milk contains carbohydrate, protein, fat, water and a variety of vitamins and minerals.

Calorie is another term that is often misunderstood. Calories and nutrients are not the same: ***calories*** are a measure of the energy available to the body from foods. Only carbohydrates, proteins, and fats provide calories. One gram of dietary protein provides four calories, one gram of carbohydrate provides four calories, and one gram of fat provides nine calories to the body. So, gram for gram, fats provide about twice the calories of proteins or carbohydrates. Alcohol has seven calories per gram, but is not considered a nutrient!!!

Nutrients also serve other important functions. For example, proteins provide the building blocks for tissues, while fats provide insulation and cushioning for the body. High fiber carbohydrates provide fiber for intestinal health. Calcium, vitamin D, folic acid and magnesium are needed for maintaining healthy bones.

Some foods are high in nutrients and low in calories, like salad greens. Other foods may be high in calories but low in nutritional value. For example, the only nutrient a soda contains is carbohydrate in the form of sugar. Vitamins and minerals do not provide any calories but they serve other essential functions in the body.

When foods are eaten, the nutrients are absorbed through the small intestine and go through the blood to the liver, and then to the body tissues and structures that need them. Depending upon the nutrient, excesses are either unabsorbed and pass out of the body, or stored in the body. Excess carbohydrates, proteins and fats are ultimately stored as body fats. Excess vitamins A and D are also stored and can be harmful if consumed in greater than recommended amounts. All nutrients are undergoing active metabolism – even "stored" nutrients are constantly being used up and replenished.

WHAT IS A HEALTHY DIET?

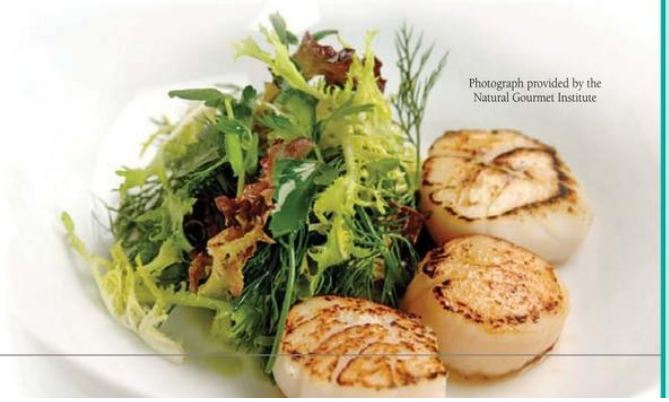
A healthy diet is one that includes all the essential nutrients in appropriate amounts to promote health and prevent disease. A healthy diet is based on the concepts of *variety*, *balance*, and *moderation*.

Variety: To gain variety in one's diet, it's important to choose a number of different foods – no single food can meet all of the daily nutrient requirements. Variety also makes meals more interesting while ensuring the diet contains sufficient nutrients.

Balance: We achieve a balanced diet by eating appropriate amounts of food from the recommended food categories on a daily basis. Using some form of guide (such as *MyPyramid*) can aid in balanced food selections.

Moderation: It's important to choose foods and beverages in serving sizes that are appropriate to meet energy needs while controlling calories, total fat, cholesterol, sodium, sugars and, if consumed, alcoholic beverages. Moderation is vital to maintaining a healthy weight; it also may help protect against certain chronic diseases such as heart disease or cancer.

There are several tools available to help people achieve a healthy diet. These range from the detailed scientific information about human nutrition requirements found in the *Dietary Reference Intakes* (DRIs), to practical applications such as the *Nutrition Facts label* (required food labels on processed foods detailing their nutritional value) and the *Dietary Guidelines for Americans*. Another great tool is an online, user-friendly tool called *MyPyramid*.



Photograph provided by the Natural Gourmet Institute

MyPyramid.gov

STEPS TO A HEALTHIER YOU

MyPyramid is an online, user-friendly tool that helps consumers see how foods are grouped into categories based upon their nutrient composition (fruits, vegetables, grains, dairy, proteins, fats), and what foods are in each category. The guide also details the number of recommended daily servings of each food group based upon one's own calorie requirements, so consumers can evaluate their own personal diets for nutrients and calories.

Consumers can type in their daily food intake and receive a summary of their nutrient and calorie intake in comparison to the recommendations of the DRIs and the ***MyPyramid*** guidelines through user-friendly charts and icons.

To get started with your personal plan,
go to **www.mypyramid.gov**.

ORAL HEALTH & NUTRITION THROUGH THE LIFE CYCLE

DID YOU KNOW?

Approximately 127 million adults in the U.S. are overweight, 60 million are obese and 9 million are extremely obese.

Pregnancy

Good maternal nutrition is essential for the development of a baby's oral health during pregnancy. Children's primary (baby) teeth begin forming at about the sixth week of pregnancy, and begin mineralizing at around the third to fourth month of pregnancy; the mother's diet must be adequate in all nutrients, especially calcium, phosphorous, and protein to facilitate this process.

Other guidelines for a healthy pregnancy diet include:

- Liberal intake of all food groups: whole grains, fruits, vegetables, protein sources and dairy products;
- Possible iron supplement (upon doctor's recommendation) to offset iron deficiency common in pregnancy;
- Sufficient folic acid (from fortified bread, green leafy vegetables and /or supplements) all during a woman's childbearing years to help prevent birth defects.

Nutritional deficits can cause defects in tooth development, and salivary flow and composition. Deficiencies in protein and calories, Vitamins A, C, D, and iodine, and excesses in fluoride and Vitamin D, have all been shown to affect the development of human teeth.

Children and Teenagers

Children's teeth continue to develop and mineralize from before birth (primary teeth) through the early teens (permanent third molars – wisdom teeth). In addition, the other tissues in the body are constantly recycling, and are in constant need of nutrients to support new growth and development.

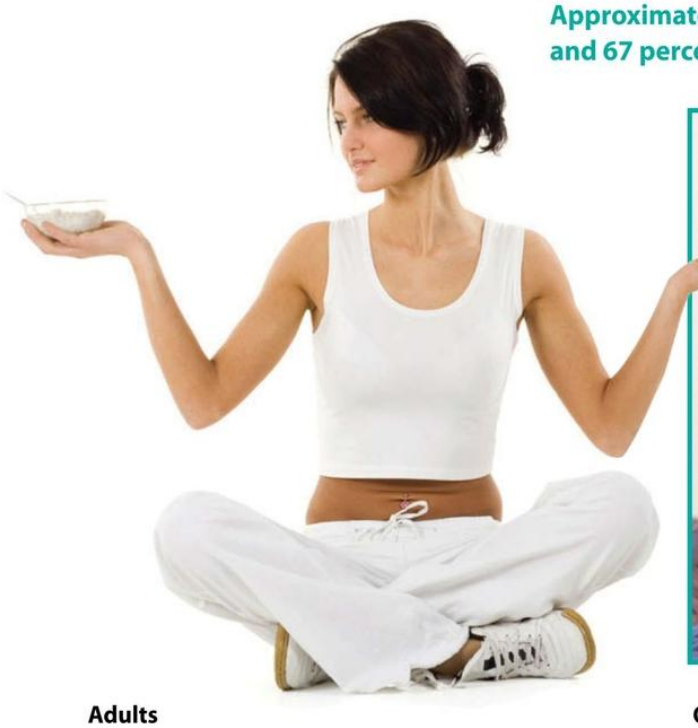
A healthy diet will ensure proper mineralization and tissue growth of teeth and bones. In addition, the erupted teeth are susceptible to dental caries initiated by frequent consumption of simple sugars in the diet.

Once teeth erupt into the mouth, surface mineralization will continue to be affected by saliva, food, fluids, dentifrices and fluoride rinses.

In childhood, major dietary risks tend to be the constant oral contact from natural or added-sugar-containing foods in bottles or "sippy" cups. In the teen years, major contributing factors are the constant availability and use of sweetened beverages such as sodas, flavored waters or sports drinks.

DID YOU KNOW?

Approximately 62 percent of American females and 67 percent of males are considered overweight.



Adults

Adults still need an adequate diet for maintenance of body structure and tissue integrity, especially skin, connective tissues and bones. Adults are also at risk for developing dental decay and periodontal (gum) disease.

Nutritional deficiencies can reduce resistance to disease and the ability to fight infection. The signs of advanced nutrient deficiencies are usually first seen in the oral cavity. B-complex vitamin deficiency (thiamine, riboflavin, niacin) can cause cracks in the corners of the mouth and changes of the tongue. Iron deficiency can result in pale color of the tongue.

Dry mouth from medications can also increase the decay-promoting risk of the diet.

DID YOU KNOW?

An estimated 400,000 deaths per year may be attributable to poor diet and low physical activity.

Older Adults

Senior citizens face a variety of challenges that can affect their oral and nutritional health, and are at particular risk for nutritional deficiencies.

Aging affects our ability to digest and absorb nutrients. As the mouth dries due to lack of salivary flow or medications, older individuals are more prone to decay. Appetite and the sense of taste and smell may decline as well. Dehydration is a common concern.

Common social issues such as lack of money, lack of ability to get and prepare foods and loneliness can undermine people's ability and desire to obtain a healthy diet. Lack of teeth or dentures can make matters worse by making it difficult to chew foods that are part of a healthy diet.

Older people should not overlook the importance of nutrition to health and well-being in the face of these other more pressing concerns.

EXERCISE: A KEY COMPONENT TO GOOD HEALTH

A healthy diet contains the proper nutrients in the right amounts that your body needs. But that's not the end of it - the next step involves balancing the distribution and use of those nutrients within the body. A good exercise plan is crucial to that balance.

First, the body needs calories for daily functions such as digestion, breathing and daily activities. You are constantly burning calories, even when sleeping. You have *energy balance* when the calories consumed are equal to the calories used by the body. *Energy imbalance* occurs when more (or fewer) calories are consumed than used up. The excess calories are then stored and weight gain occurs. Too few calories results in weight loss.

Regular physical exercise plays an important role in offsetting energy imbalance by using up extra calories consumed. Exercise is important for cardiovascular (heart and blood vessel) health. It can also help reduce high blood pressure, regulate diabetes (adult onset type 2), contribute to weight loss in overweight individuals, reduce triglycerides, lower LDL (the "bad" cholesterol) and raise HDL (the "good" cholesterol).

Millions of Americans suffer from illnesses that can be prevented or improved through regular physical activity. They're also missing out on other benefits: the development of healthy bones, muscles and joints; reduction in feelings of depression and anxiety; and improvement in mood and a sense of well-being. And, active people have a reduced risk for stroke and colon cancer.

MAKING THE RIGHT NUTRITIONAL CHOICES FOR BETTER ORAL AND GENERAL HEALTH

When it comes to diet and nutrition, it's all about the right choices. Remember these simple guidelines in your pursuit of good nutrition:

- Follow a guide, such as *MyPyramid*, for your age, gender, exercise, and calorie needs;
- Eat sufficient amounts of whole grains, fruits, vegetables, protein foods and calcium/phosphorous sources every day;
- Maintain variety, balance, and moderation in your food choices;
- Drink plenty of water;
- Restrict sweets to meals and dessert – avoid sugary snacks between meals;
- Limit your total sugar intake to no more than 10 teaspoon equivalents per day;
- Snack on fresh fruits and vegetables, low fat cheeses, whole wheat crackers or low-fat dairy products;
- Exercise regularly and moderately.

Good nutrition goes hand in hand with good general and oral health. In fact, taking care of your whole body through good diet and nutrition practices will help ensure a healthy, radiant smile. Bon Appetit!

SOME MISCONCEPTIONS ABOUT NUTRITION

Here are a few popular "myths" about good nutrition and dietary practices, along with the facts:

MYTH: Children have "baby fat" but they'll lose the fat as they get older.

FACT: Currently, an estimated 65.2 percent of U.S. adults, age 20 years and older, and 15 percent of children and adolescents are overweight – and 30.5 percent are obese.

MYTH: Genetics cause obesity.

FACT: Although 25-70 percent of the difference in weight between individuals may be related to genetics, genetic factors only predispose an individual to obesity - they do not cause obesity.

MYTH: Americans don't get enough protein.

FACT: Most people get more protein than they actually need. Too much protein can actually be harmful by putting stress on the kidneys.

MYTH: Being fat won't kill you.

FACT: Obesity is the second leading cause of preventable death in the U.S. As many as 47 million Americans may exhibit a cluster of medical conditions (a "metabolic syndrome" or "Syndrome X") characterized by insulin resistance and obesity, excessive abdominal fat, high blood sugar and triglycerides, high blood pressure and high cholesterol.

MYTH: Fat is bad and should be eliminated from the diet.

FACT: The body needs some fat. However, it's the total amount of fat and the type of fat that's important. There's a strong relationship between dietary "saturated fats" (largely animal fats) and trans fats (found in many processed foods) in coronary heart disease. The most effective replacement for saturated fatty acids (and trans-fats) is with poly-unsaturated vegetable oils (like olive oil) and Omega 3 fats found in fatty fish like salmon and sardines. Omega 6 fats are also important and are found in nuts, naturally grown eggs and poultry. These lower coronary heart disease risk and increase high density lipoprotein (HDL), the good cholesterol.

MYTH: Sweets can't make you fat.

FACT: Any foods that provide calories can be stored as body fat and contribute to weight gain if consumed in quantities greater than the body can use up.

MYTH: Sugars are bad for your teeth, not your health.

FACT: Americans consumed more than 142 pounds of sugar per capita in 2003 (equivalent to 37 teaspoons a day). The maximum recommended a day is 10 teaspoons (one can of soda contain 6). Any excess sugar consumed is converted to fat.

ABOUT THE AUTHOR

Carole A. Palmer, EdD, RD

Dr. Carole Palmer received her Bachelors of Science degree in nutrition at Simmons College, Masters' degree/Dietetic Internship at Tufts University and the New England Medical Center Hospital, Doctorate in Educational Policy, Planning, and Administration at Boston University. She is Professor and Head of the Division of Nutrition and Oral Health Promotion, Dept. of Public Health & Community Service, School of Dental Medicine; Professor, School of Nutrition, Adjunct Professor School of Medicine - at Tufts University. Primary research emphasis: study of relationships between diet/nutrition on oral conditions. A leader in developing and implementing nutrition care in clinical dental settings. Known internationally for innovative nutrition-related video training programs developed for national research studies and government agencies. She has written extensively and is the editor of "Diet and Nutrition in Oral Health" now in its 2nd edition in paperback.

Enjoying Better Nutrition *in Gourmet Style*

There's a common belief that a change to a more nutritious diet spells the end of one's love affair with food. In other words, if you want to eat in a more healthy way, you have to sacrifice taste.

Annemarie Colbin's life mission is to dispel that belief, and to spread the message that you can eat a diet that's rich in good nutrition and satisfying to the palate. Unfortunately, it hasn't always been easy finding recipes or instruction on preparing wholesome, healthy food – something she discovered over thirty years ago.

> Knowing how to prepare your food is just as important as knowing what to prepare

The information "famine" Colbin encountered about wholesome food preparation led her to found the Natural Gourmet Institute for Health & Culinary Arts (formerly the Natural Cookery School) in 1977. Based in New York City, the institute's educational philosophy, according to Colbin, is based on "the well-established belief that the food we eat significantly affects our physical, mental and spiritual well-being."

"When I first began learning about wholesome foods, I wanted to share this information with others – so I started teaching people in my apartment kitchen how to cook nice meals with whole grains and beans, lots of fresh vegetables and desserts without sugar or dairy," says Colbin. "In those days we were known as 'health nuts.' Today, though, the principles we were teaching then have begun to enter the mainstream – people are more aware of what's wholesome and what's not."

What began as small cooking classes in Colbin's kitchen (with a few celebrity "students" dropping by along the way – John Lennon, Peter Boyle and Christine Ebersole among them) has become an accredited training program for professional chefs.

The institute graduates about 160 students a year with a curriculum that's mostly vegetarian, although with some included instruction for preparing organic chicken and fish. The institute offers coursework similar to conventional culinary schools, like knife skills, preparation techniques and cuisine styles. What's different, though, is their underlying dependence on "whole" foods.

"We recommend only the use and preparation of natural foods," says Jenny Mathau, director and president of the institute and a huge contributor to its curriculum. "These would include organic legumes, fruits and vegetables, and whole grains seasoned with herbs, spices, sea salt and natural sweeteners. We also teach our students what to avoid, such as refined sugar and flours, and other processed foods."

Many of the institute's graduates have gone on to successful careers as chefs and authors. Institute graduate Eric Tucker is currently the head chef for Millennium Restaurant, an upscale vegetarian restaurant in San Francisco. Alex Jamieson is the author of The Great American Detox Diet and co-star of the award-winning documentary, Super Size Me. And, Bethenny Frankel is the owner and founder of Bethennybakes, a company that produces wheat, egg and dairy-free baking products and custom dietary services for clients.

Training professional chefs, though, isn't the sole focus of the institute. An affiliate school, the Natural Gourmet Institute for Food & Health offers classes to the general public that teaches many of the basics taught to the professionals. The institute also sponsors "Friday Night Dinner at The Natural Gourmet." Every Friday night, patrons pay a set price for a four-course gourmet vegetarian dinner, prepared by the institute's students, alumni and faculty. The Friday night dinners give students a chance to practice what they've been learning, and promote the therapeutic – and delectability – of wholesome cuisine.

Which, for Colbin and her staff, is a key message they wish to convey through the Natural Gourmet Institutes – food that is good for the body should also be celebrated and enjoyed.

For more information on the institute, visit www.naturalgourmetschool.com

NATURAL GOURMET INSTITUTE

Guidelines Toward More Healthy Eating Habits

Jenny Mathau of the Natural Gourmet Institutes has seven dietary guidelines that can help you enjoy better health and nutrition:

1. Eat an abundance of fresh vegetables and fruits – an essential source of vitamins, minerals, antioxidants and fiber

2. Choose high quality organic protein – like beans, cold-water fish or free-range chicken
3. Consume a variety of whole grains, beans, nuts and seeds – abundant sources of vitamins, minerals, antioxidants and phytochemicals
4. Eat foods that provide a proper balance of omega-3 and omega-6 fatty acids – aim for a ratio of one to four parts omega-6 foods (like sunflower, flax or pecans) to one part omega-3 foods (cold-water fish, hemp seeds or walnuts)
5. Eat high quality, organic fats – extra-virgin olive oil, butter (from drug-free animals) or unrefined, unhydrogenated coconut oil are good choices
6. Eat at least fifty percent of your food raw – helps to regain beneficial substances like vitamin C or certain enzymes destroyed through cooking (be sure you don't have a medical condition that might preclude this guideline)
7. Using the other guidelines, choose only food that is visually appealing, delicious and agreeable to your system – start with simple, small meals, then pay attention to how you feel several hours after you eat

Adapted from "Seven Guidelines for Healthy Eating," by Jenny Mathau, The Well Being Journal , Vol. 15, No. 5, pp. 22-23.

Dental Insurance Coverage

You must read the fine print and your explanation of benefits

A Consultation with Tom Limoli, Jr.

Dental Insurance Coverage?

From: Erin (New York)

To: Consultations@deardoctor.com

Subject: Dental Insurance Coverage?

Dear Doctor,
I can't have a replacement crown because my insurance won't cover it but my dentist says I need it – why isn't it covered?

Dear Erin,

Your dentist's insurance coordinator probably submitted a claim or estimate of benefits to your dental insurance company. The first thing you need to do is look closely at the EOB (Explanation of Benefits) that your insurance company sent back to you and your dentist to determine exactly why the replacement crown is not covered.

Nearly all dental benefit plans have what is referred to as an "Exclusionary Period" or time frame in which replacements are not reimbursable by a dental insurance plan. This period of "non-benefit" depends on the specific plan that you have with your insurance company. It is not uncommon for crowns and bridges to have an exclusionary period of seven to ten years. Single and multi-surface restorations (fillings) traditionally have exclusionary periods of three to five years.

The plan may also not provide benefits if the doctor's office has not shown evidence that the existing crown was unserviceable and simply could not be repaired. Often times a photograph of the tooth will show conditions not easily seen on traditional radiographs (x-rays) which could be important to the decision makers from your benefit plan.

Another reason for "non-coverage" may be that you have already used the available benefit dollars for the current contract year. Most plans will pay a maximum of $1,000 a year.

Either way, your insurance company is simply stating, on the EOB, why they will not help you to offset the cost of a replacement crown, at this time.

You are fortunate that your dentist found the problem early enough to prevent further damage to the tooth and your dental health before something else happened, or worse you lost the tooth. Often, cases like this go untreated and deteriorate beyond simple crown replacement.

Talk to your doctor's treatment coordinator about alternative payment plans that may help make a necessary crown affordable.

Sincerely,
Tom Limoli, Jr., BS

ABOUT THE AUTHOR

Tom Limoli, Jr., BS

Tom Limoli, Jr. is the prevailing expert on proper coding and administration of dental insurance benefit claims. Mr. Limoli received his Bachelor of Science in Criminal Justice from Valdosta State University. Mr. Limoli has actively investigated fraudulent claims for the insurance industry, as well as numerous other third-party fiduciaries. He is a member of the National Health Care Anti-Fraud Assoc., the National Speakers Assoc., and a past president of the Academy of Dental Management Consultants. He serves as president of Limoli and Associates/Atlanta Dental Consultants, Inc.

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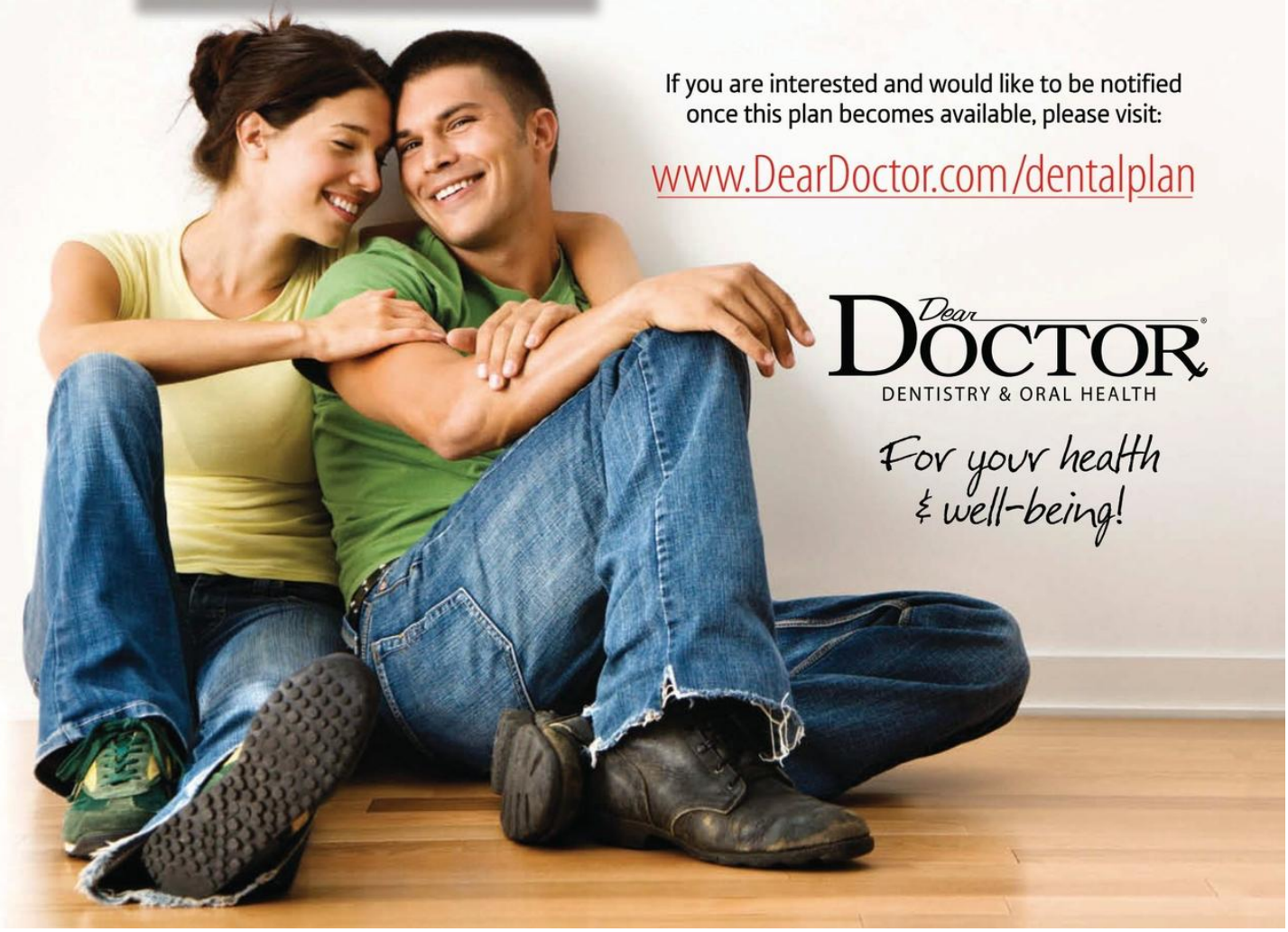


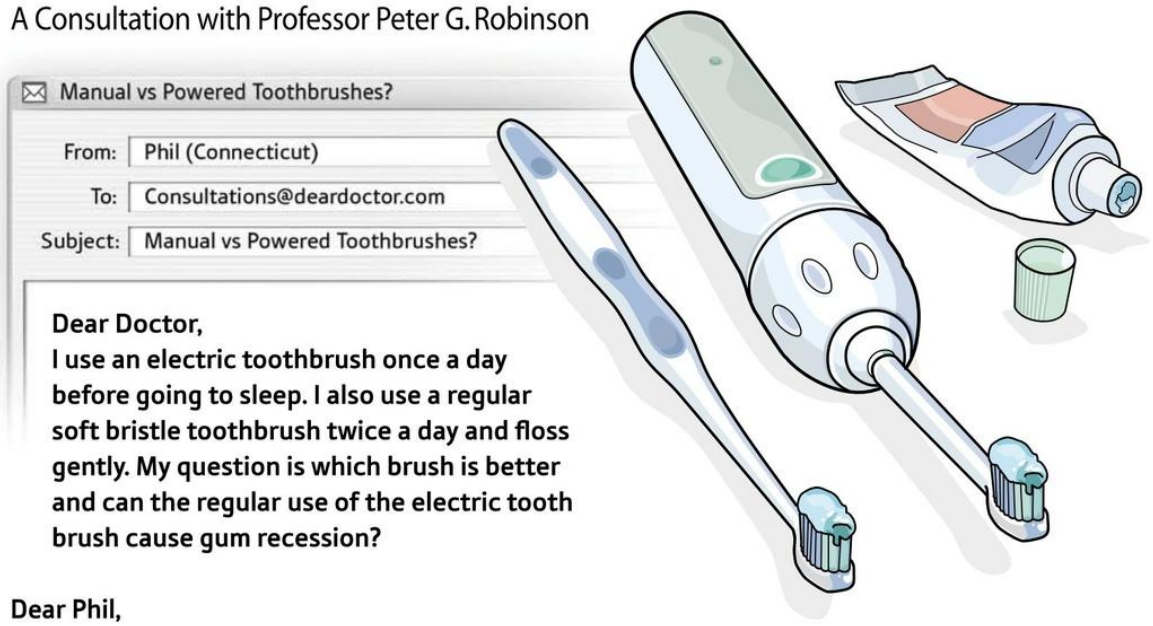
Dear DOCTOR®
DENTISTRY & ORAL HEALTH

For your health & well-being!

Manual vs Powered Toothbrushes

An important consideration is how you use the toothbrush

A Consultation with Professor Peter G. Robinson



Dear Phil,

Thank you for asking this interesting and important question. Electric toothbrushes have been widely touted. In fact in one survey Lemelson-MIT Invention Index Survey conducted in 2003 it was clear that toothbrushes were rated more important than automobiles, personal computers, cell phones and even microwave ovens.

The Cochrane Collaboration, an independent nonprofit organization dedicated to providing evidence-based reporting of accurate scientific studies, evaluated randomized studies of toothbrushes. The authors of the Cochrane review evaluated over 300 studies. They categorized the powered toothbrushes from these studies according to their mode of action. The researchers grouped the clinical results from all six toothbrush categories according to trial time: short term (one month through three months) and long term (more than three months). The reviews are updated every few years.

The Cochrane Oral Health Group review of powered toothbrushes was noteworthy for four reasons. First, an international team used international standards to identify, evaluate, compile, analyze and report the data. Second, using these rules-based standards, the review team systematically examined more than 30 years of published studies. Third – and surprisingly – the review indicated that only one type of electric toothbrush demonstrated a statistically significant clinical benefit over manual toothbrushes. Fourth, battery-powered toothbrushes were excluded, because no studies of these brushes met the inclusion criterion of lasting 28 days or longer. Their conclusion was that some powered toothbrushes with a rotation-oscillation action achieve a statistically signifi-

cant, but modest, reduction in plaque and gingivitis compared with manual toothbrushes.

As some dentists will tell you, "it's not the brush so much as the hand that holds it". Certainly there may be less effort needed to use a powered brush, but most importantly any brush whether manual or powered requires professional demonstration and training so that you know how to remove plaque correctly. The key to maintaining healthy gums and teeth is effective daily plaque removal which requires both brushing and importantly some means of removing plaque from between the teeth, generally flossing.

That leads to the second part of your question. Any brush used too vigorously has the potential to cause gum damage, possibly in the form of recession. Since it usually takes between twelve and twenty four hours for plaque to form on the teeth, brushing and flossing efficiently once or twice in a twenty four hour period should be enough to maintain health. Be gentle when using either an electric or manual brush because with either kind it does not take force to remove plaque.

Consider bringing your toothbrush to your next dental visit so your dentist can examine it. While you're at it, demonstrate your brushing technique, so your dentist or hygienist can make sure you are brushing correctly.

Sincerely,
Professor Peter G. Robinson

ABOUT THE AUTHOR

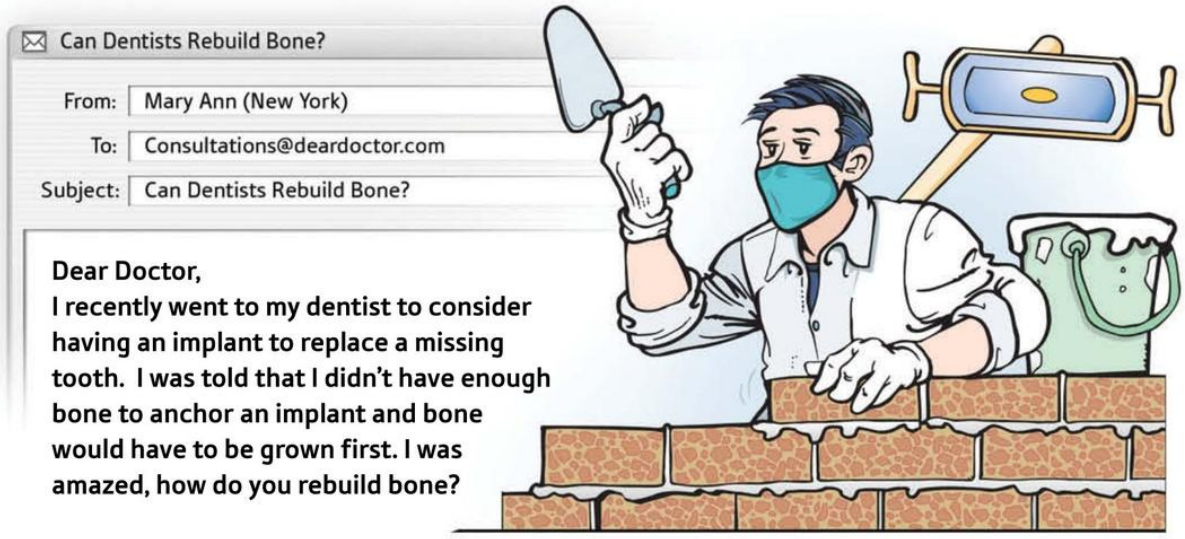
Professor Peter G. Robinson

Professor Peter G. Robinson is Deputy Dean of the School of Clinical Dentistry at the University of Sheffield, England. He provided dental care for people with disabilities for 17 years before specializing in Public Health Dentistry. One of his research interests is in the evaluation of health care and he was an author of the Cochrane review of powered toothbrushes.

Can Dentists Rebuild Bone?

New technology allows for predictable bone regeneration

A Consultation with Dr. Richard L. Elias



Dear Mary Ann,

Your dentist is right. It is very important today to maintain "bone volume" following removal of a tooth. This helps to ensure that future implants can be placed in the best possible position. Today, most dentists are in agreement that when considering an implant after the removal of a tooth, a bone graft should be placed into the extraction site to prevent the very problem you are now encountering. Sufficient bone volume for implant placement (the part that replaces the tooth root) is vitally important to proper crown placement (the part that attaches to the implant and that you see in the mouth), resulting in the most natural looking and properly functioning tooth.

> Bone regeneration for implant dentistry is a usual and routine procedure in periodontal and oral surgery.

Modern dentistry and oral surgery have come a long way. Understanding the principles of wound healing now allows for regeneration of bone to occur using a variety of techniques. Most include opening the gingival (gum) tissues to expose the bone and then augmenting the existing or remaining bone by adding bone grafting materials to it. Healing of the grafted material can be enhanced by the utilization of "guided bone regeneration" membranes which cover the grafts and act like little subterranean band-aids, along with other biologically active molecules (found normally in the body) which also promote and enhance healing.

An important consideration in regenerating bone is how much bone is actually needed. For a "one tooth" implant site the amount of bone grafting material needed is relatively small so that it can be taken from a variety of sources. Your dentist or surgeon (periodontist or oral and maxillofacial surgeon) can select from a variety of bone grafting materials. He can select an area of your own jaw bone referred

GEM 21S® Growth-factor Enhanced Matrix

Caution: Federal Law restricts this device to sale by or on the order of a dentist or physician.

GEM 21S® is composed of two sterile components:
- synthetic beta-tricalcium phosphate (ß-TCP) [Ca3 (PO4)] is a highly porous, resorbable osteoconductive scaffold or matrix that provides a framework for bone ingrowth, aids in preventing the collapse of the soft tissues and promotes stabilization of the blood clot. Pore diameters of the scaffold are specifically designed for bone ingrowth and range from 1 to 500 µm. The particle size ranges from 0.25 to 1.0 mm and
- highly purified, recombinant human platelet-derived growth factor-BB (rhPDGF-BB). PDGF is a native protein constituent of blood platelets. It is a tissue growth factor that is released at sites of injury during blood clotting. Extensive *in vitro* and animal studies have demonstrated its potent mitogenic (proliferative) and chemotactic (directed cell migration) effects on bone and periodontal ligament derived cells. Animal studies have shown PDGF to promote the regeneration of periodontal tissues including bone, cementum, and periodontal ligament (PDL).

The contents of the cup of ß-TCP are supplied sterile by gamma irradiation. Sterile rhPDGF-BB is aseptically processed and filled into the syringe in which it is supplied. All of these components are for single use only.

INDICATIONS:
GEM 21S® is indicated to treat the following periodontally related defects:
- Intrabony periodontal defects;
- Furcation periodontal defects; and
- Gingival recession associated with periodontal defects.

CONTRAINDICATIONS:
As with any periodontal procedure where bone grafting material is used, *GEM 21S*® is CONTRAINDICATED in the presence of one or more of the following clinical situations:
- Untreated acute infections at the surgical site;
- Untreated malignant neoplasm(s) at the surgical site;
- Patients with a known hypersensitivity to any product component (ß-TCP or rhPDGF-BB);
- Intraoperative soft tissue coverage is required for a given surgical procedure but such coverage is not possible; or
- Conditions in which general bone grafting is not advisable.

WARNINGS:
The exterior of the cup and syringe are NOT sterile. See directions for use. It is not known if *GEM 21S*® interacts with other medications. The use of *GEM 21S*® with other drugs has not been studied. Carcinogenesis and reproductive toxicity studies have not been conducted. The safety and effectiveness of *GEM 21S*® has not been established:
- In other non-periodontal bony locations, including other tissues of the oral and craniofacial region such as bone graft sites, tooth extraction sites, bone cavities after cystectomy, and bone defects resulting from traumatic or pathological origin. *GEM 21S*® has also not been studied in situations where it would be augmenting autogenous bone and other bone grafting materials.
- In pregnant and nursing women. It is not known whether rhPDGF-BB is excreted in the milk of nursing women.
- In pediatric patients below the age of 18 years.
- In patients with teeth exhibiting mobility of greater than Grade II or a Class III furcation.
- In patients with frequent or excessive use of tobacco products.

Careful consideration should be given to alternative therapies prior to performing bone grafting in patients:
- Who have severe endocrine-induced bone diseases (e.g. hyperparathyroidism);
- Who are receiving immunosuppressive therapy; or
- Who have known conditions that may lead to bleeding complications (e.g. hemophilia).

The *GEM 21S*® grafting material is intended to be placed into periodontally related defects. It must not be injected systemically.

The radiopacity of *GEM 21S*® is comparable to that of bone and diminishes as *GEM 21S*® is resorbed. The radiopacity of *GEM 21S*® must be considered when evaluating radiographs as it may mask underlying pathological conditions.

PRECAUTIONS:
GEM 21S® is intended for use by clinicians familiar with periodontal surgical grafting techniques. *GEM 21S*® is supplied in a single use kit. Any unopened unused material must be discarded and components of this system should not be used separately.

ADVERSE EVENTS:
Although no serious adverse reactions attributable to *GEM 21S*® were reported in a 180 patient clinical trial, patients being treated with *GEM 21S*® may experience any of the following adverse events that have been reported in the literature with regard to periodontal surgical grafting procedures: swelling; pain; bleeding; hematoma; dizziness; fainting; difficulty breathing, eating, or speaking; sinusitis; headaches; increased tooth mobility; superficial or deep wound infection; cellulitis; wound dehiscence; neuralgia and loss of sensation locally and peripherally; and, anaphylaxis.

Occurrence of one or more of these conditions may require an additional surgical procedure and may also require removal of the grafting material.

STORAGE CONDITIONS:
The *GEM 21S*® kit must be refrigerated at 2°-8o C (36°-46o F). Do not freeze. The individual rhPDGF-BB component must be refrigerated at 2°-8o C (36°-46o F). The ß-TCP cup can be stored at room temperature, up to 30o C (86o F). The rhPDGF-BB component must be protected from light prior to use; do not remove from outer covering prior to use. Do not use after the expiration date.

Manufactured By:
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to as an autograft (auto-self, graft-tissue transplant). As a living source of bone cells, autografts have certain advantages that can help regenerate new bone and because it is already a part of your body it offers patients piece of mind. The disadvantages of autografts include creating a second surgical site and, though the stimulation for bone tissue regeneration is present, it is limited. There are also a variety of processed grafting materials including: an allograft using tissue from the same species, i.e. another person; a xenograft from another species, i.e. animals or from synthetic or man-made materials. All of these grafting materials have been processed so that they are safe for human use. Your dentist will recommend which grafting material he would like to use and which material he/she has used with success. Most bone grafting materials are utilized by your body as a "scaffold" for bone regeneration, allowing your body to replace the graft material with its own bone.

Sometimes an implant can be placed with a bone graft at the same time allowing new bone to be regenerated simultaneously, provided there is enough of your own natural bone to at least stabilize the implant when it is placed.

Questions to ask your dentist

- What are the options to replace my tooth?
- Am I a candidate to replace this tooth with an implant?
- Will I need a bone augmentation prior to an implant placement?

Most of these surgical bone regeneration procedures are carried out with local anesthesia (numbing shots) to the area, or with the aid of oral or intravenous (conscious) sedation, which put you in a conscious but twilight sleep or relaxed state. Usually antibiotics are needed to prevent infection together with minor anti-inflammatory and pain control medication.

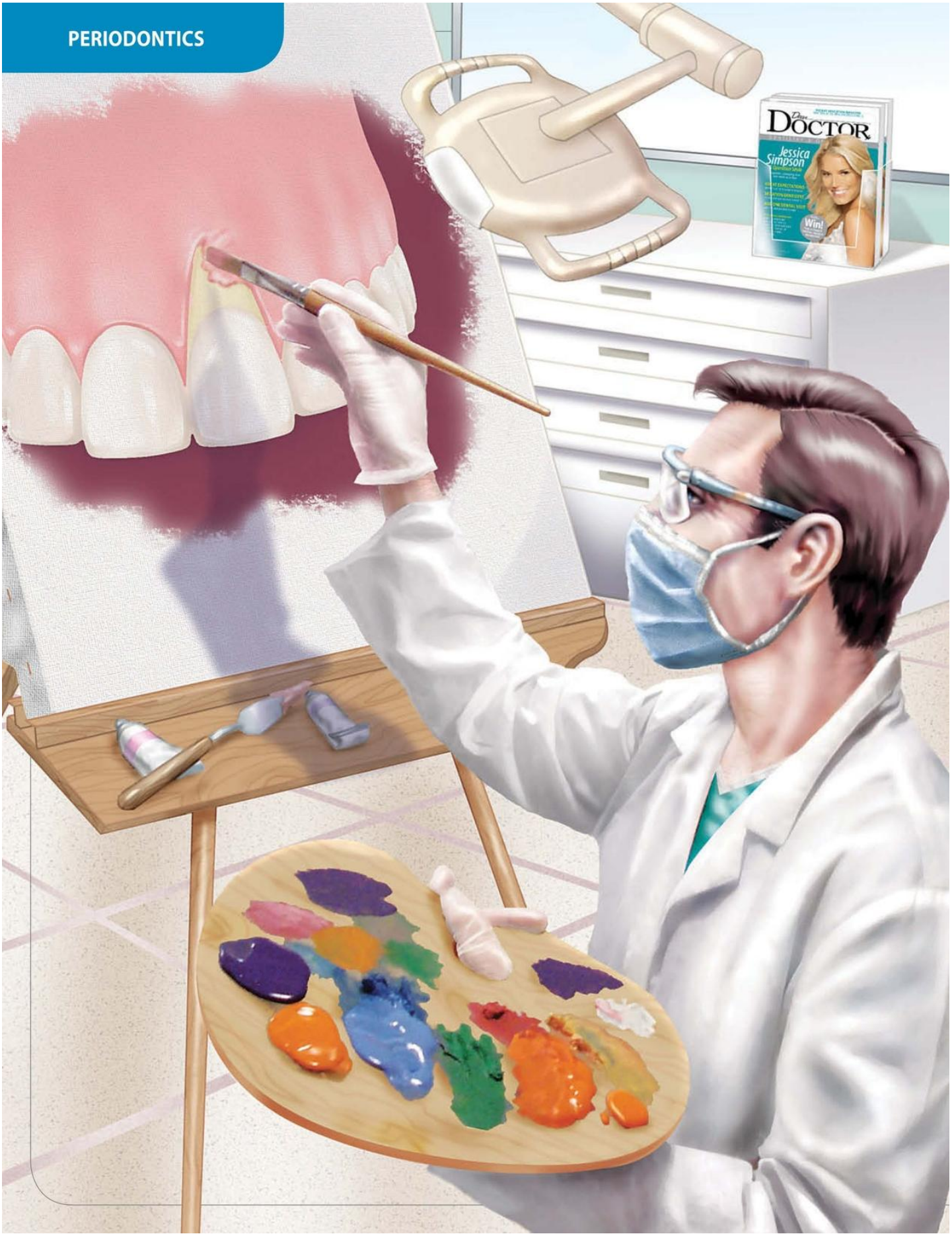
Bone regeneration for implant dentistry is a usual and routine procedure in periodontal (supporting tooth structures) and oral surgery. The scope of the surgery to build new bone will depend upon many factors beyond the scope of this short consultation. Speak to your dentist, a periodontist or an oral and maxillofacial surgeon who can properly assess your individual situation and tell you exactly what is needed, together with all the appropriate risks, benefits and treatment alternatives.

Sincerely,
Richard L. Elias, DMD, MD

ABOUT THE AUTHOR

Richard L. Elias, DMD, MD

Richard L. Elias, DMD, MD, is a graduate of both Harvard School of Dental Medicine and Harvard Medical School. He completed a residency in Oral and Maxillofacial Surgery at Massachusetts General Hospital in Boston. His private practice incorporates the full scope of Oral and Maxillofacial Surgery: placement of implants, bone grafting, facial reconstruction and microsurgical nerve repair. He is also on the Medical Advisory Board of the Little Baby Face Foundation, which treats facial growth deformities in children from around the world.


Dear
DOCTOR
Jessica
Simpson
Win!

Periodontal Surgery

Where Art Meets Science

by D. Walter Cohen, DDS

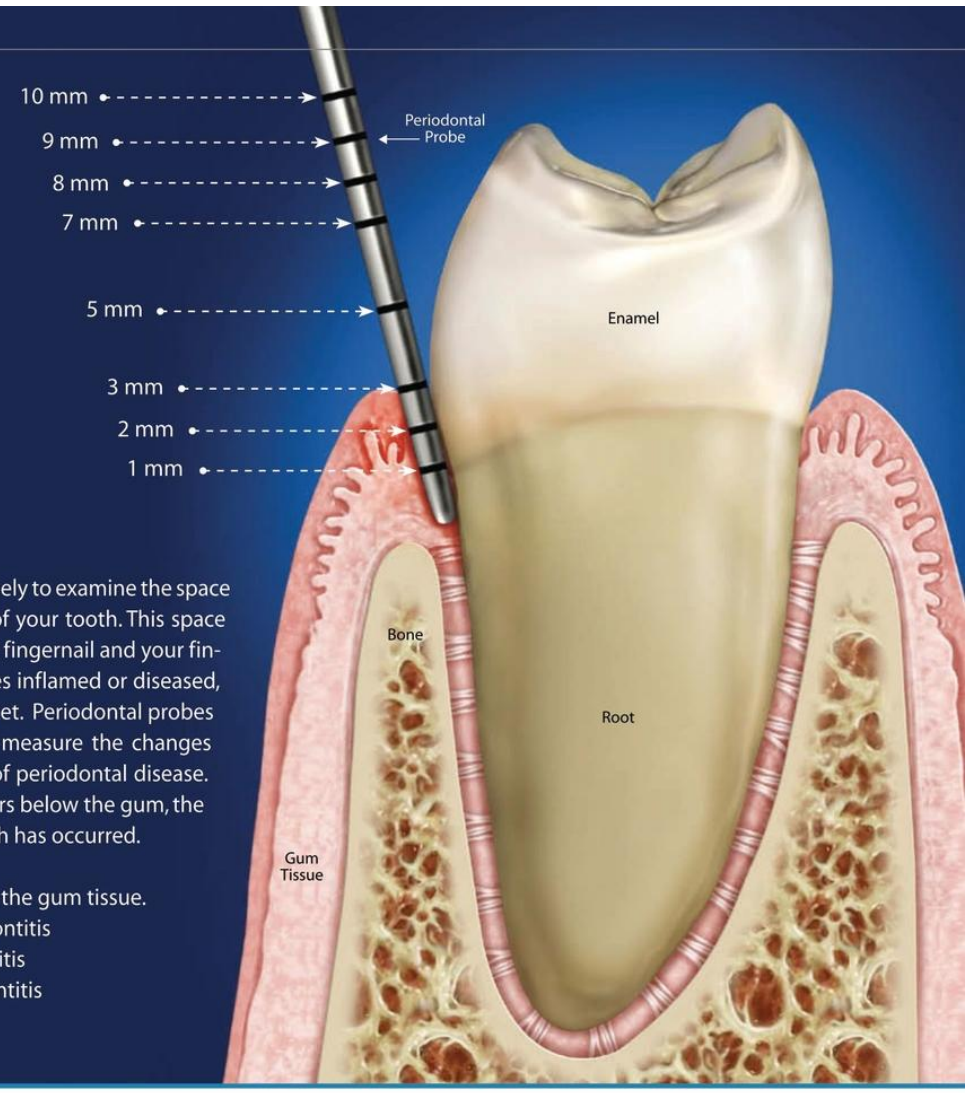
THE ART OF PERIODONTAL SURGERY

Periodontal surgery is a plastic (reshaping) surgical procedure designed to restore and regenerate normal form and function to lost and damaged periodontal structures which support the teeth (the gum tissue, periodontal ligament and bone). This article is an overview of what a candidate for periodontal surgery can expect and a primer for further information and discussion. It follows an article entitled Understanding Gum (Periodontal) Disease in a previous issue of *Dear Doctor*. A review of individual techniques will follow in subsequent issues.

PERIODONTAL SURGERY IN PERSPECTIVE – WHAT MAKES IT WORK

An understanding of what periodontal surgery is designed to do, what makes it successful and what sustains the results over time is critical to successful treatment of periodontal disease. Periodontal surgery is not a cure, but rather an adjunct to making long-term treatment outcomes more favorable. Unlike surgery to take out an inflamed appendix, which removes the disease with it, the potential for the recurrence of periodontal disease still remains in susceptible individuals. The long-term goal of periodontal surgery is to increase the life expectancy of the teeth.

Over a lifetime, the treatment for periodontal disease is primarily aimed at controlling its cause, microbial dental plaque. The purpose of periodontal surgery therefore is to treat deformities and tissue loss created by the disease process. This is accomplished by eliminating "pockets" of diseased tissue; regenerating and reconstructing gum and periodontal tissue attachment to the teeth and generally to provide an environment more conducive to daily oral hygiene and professional maintenance care.



PERIODONTAL PROBE

The periodontal probe is used routinely to examine the space below the gum tissue along sides of your tooth. This space is similar to the space between your fingernail and your finger. When your gum tissue becomes inflamed or diseased, dentists refer to this space as a pocket. Periodontal probes have calibrations in millimeters to measure the changes that occur during the progression of periodontal disease. The higher the number of millimeters below the gum, the more loss of attachment to the tooth has occurred.

- **1-3 mm** is normal space below the gum tissue.
- **3-5 mm** is early or mild periodontitis
- **5-7 mm** is moderate periodontitis
- **7- 10 mm** is advanced periodontitis

THE CONSEQUENCE OF PERIODONTAL INFECTION

The end results of periodontal disease include loss of the tight attachment of the gum and periodontal tissues to the teeth. Just as one can put a hand in a pocket, a space by the side of clothing, pockets can also form around the teeth, into which fine probing instruments can be inserted to measure the degree of vertical tissue detachment [see illustration above]. This detachment, results from chronic inflammation as described above. Breakdown ultimately causes bone and periodontal tissue destruction giving rise to different patterns and shapes of bony defects which surgical treatment aims to regenerate and repair. For the most part the detached gum tissues either recede or remain as a detached curtain around the teeth.

"When is the patient ready for periodontal surgery? When the tissues look like they don't need it"

Gerald Kramer, DDS

INITIAL PREPARATION SETS THE STAGE FOR SURGERY

Behavior Change: Consistent behavior change is the most important element in maintaining long-term periodontal health, since daily plaque removal in large part will set the stage for sustained, successful surgical treatment. For many people this involves forming new oral hygiene habits, along with cessation of smoking and other lifestyle changes.

Calculus (Tartar) Removal: Your dentist will also see that your teeth receive a thorough cleaning to remove the deposits of calcified plaque called calculus or tartar and other bacterial toxins which become ingrained into the root surfaces. This process of mechanical cleaning is generally known as scaling and root planing, using hand scaling, ultrasonic or laser instruments and will sometimes require local anesthesia.

Occlusal Bite Therapy: Generally, attention to the bite or bite disorders are treated during or after initial therapy once an inflammation free environment has been established. It is important to stabilize loose teeth prior to surgery, because this in itself encourages healing of the periodontal structures and bone.

RE-EVALUATION FOLLOWING INITIAL THERAPY:

After three or four weeks your dentist/periodontist will evaluate the response of your periodontal tissues to the initial therapy which is being used to control the inflammation and infection induced by dental plaque. This includes oral hygiene instruction, scaling and root planing (deep cleaning) among other possible treatments. In cases where pockets are deep, 5 mm and above, the chances of successfully removing all the bacterial deposits from the root surfaces diminish, which means that they may only be removed at surgery when they can be visualized. This also applies to areas that are impossible to clean adequately because of their shapes, like "furcations," the areas of bone loss between roots of "multi-rooted" teeth, which may only be accessed surgically.

Superficial gum tissue health in response to plaque control is critical to surgical success. If the gum tissues have not responded adequately then bacteriological testing may be indicated to ensure removal of pathogenic (disease causing) strains of bacteria by either local (applied at the site) or systemic (bodily) antibiotic treatment, or review of the diagnosis for medical conditions that may be limiting the response to initial treatment.

DIAGNOSIS

"There may be many ways to treat a case, but there is only one correct diagnosis"

Morton Amsterdam, DDS

Periodontal disease is detected when your dentist physically and visually evaluates the gingival (gum) tissues, probes to determine whether the attachment levels to the teeth are normal or abnormal, and evaluates bone changes through dental radiographs (x-rays). Depending on these findings, along with your general health status and health history, your dentist may also refer you to a periodontist, a dentist specializing in the diagnosis and treatment of periodontal diseases.

The diagnosis of the specific type of periodontal disease that may require surgical treatment is important, because it will have a direct bearing on the techniques used and long-term outcome of treatment.

Diagnosis may also include risk assessment, to aid in determining long term outcomes, known as prognosis. Both personal and professional assessments of individual risk are available (American Academy of Periodontology www.perio.org).

DID YOU KNOW?

Along with poor plaque control, smoking may be responsible for more than half of the cases of periodontal disease among adults in this country.

(American Academy of Periodontology)

SURGICAL THERAPY

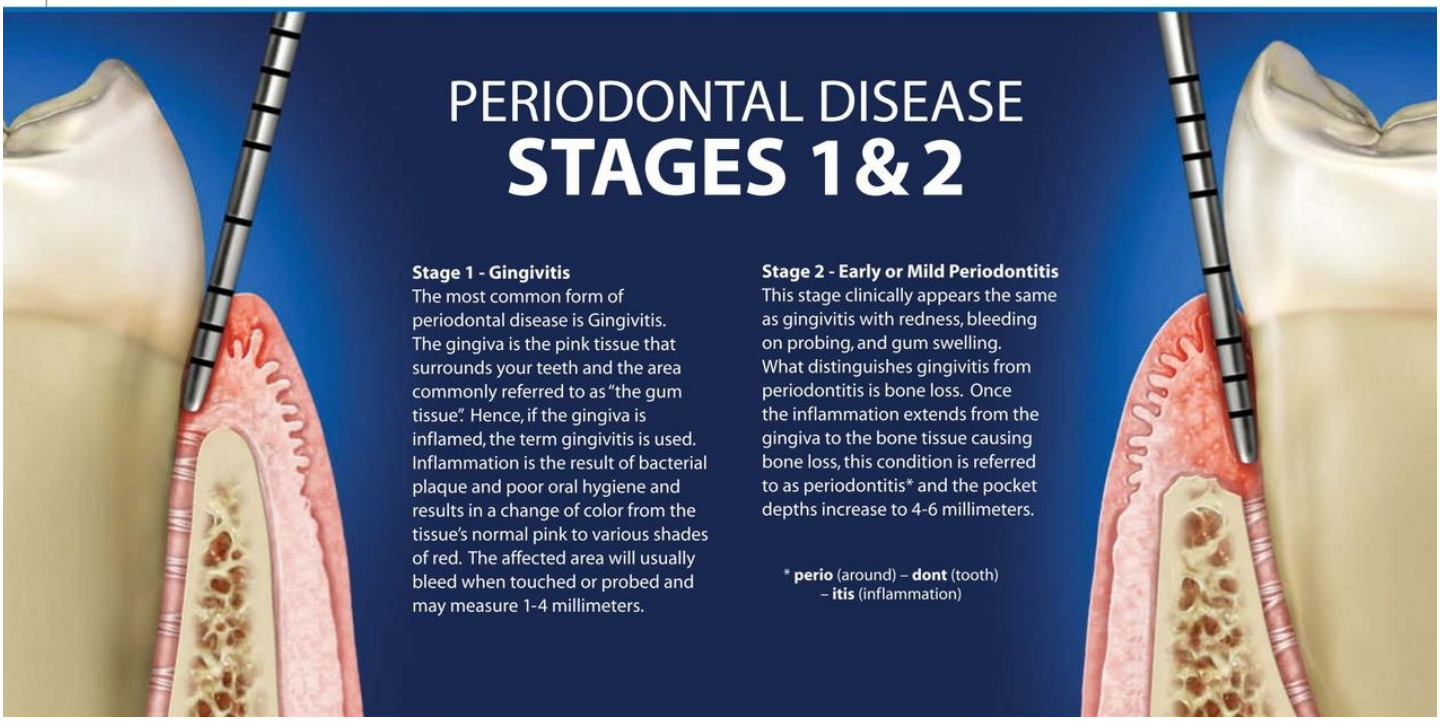
Periodontal surgical treatment today encompasses a variety of sophisticated plastic surgical procedures. These include techniques to repair and regenerate soft (gingival) [Figure 1 and 2] and hard (bony) tissues and replacement of missing teeth with dental implants. Procedures are usually performed by a periodontal specialist trained in these techniques and in some cases general dentists who have taken advanced training in periodontal surgery. Most procedures are performed with local anesthesia (numbing of the gum/periodontal tissues and teeth), sometimes with the additional use of oral anti-anxiety/sedation medication or intravenous conscious sedation (twilight sleep).

The objective of surgery is generally to eliminate pockets, regenerate attachment and to create more normal periodontal form, function and esthetics. The goal is to provide an environment more conducive to oral hygiene and maintenance care so that teeth can be kept for a longer period.

The objective of surgery is generally to eliminate pockets, regenerate attachment and to create more normal periodontal form, function and esthetics.

Figure 1: An example of bone loss and gum recession with root exposure on three teeth with a high lip line that was a cosmetic problem when she smiled.

Figure 2: A very nice cosmetic result with gum tissue covering the root surfaces as a result of a periodontal plastic surgical procedure.



RISKS, BENEFITS AND ALTERNATIVES

It is important to have a discussion with your periodontist or general dentist to educate yourself regarding the risks, benefits and alternatives before undergoing treatment:

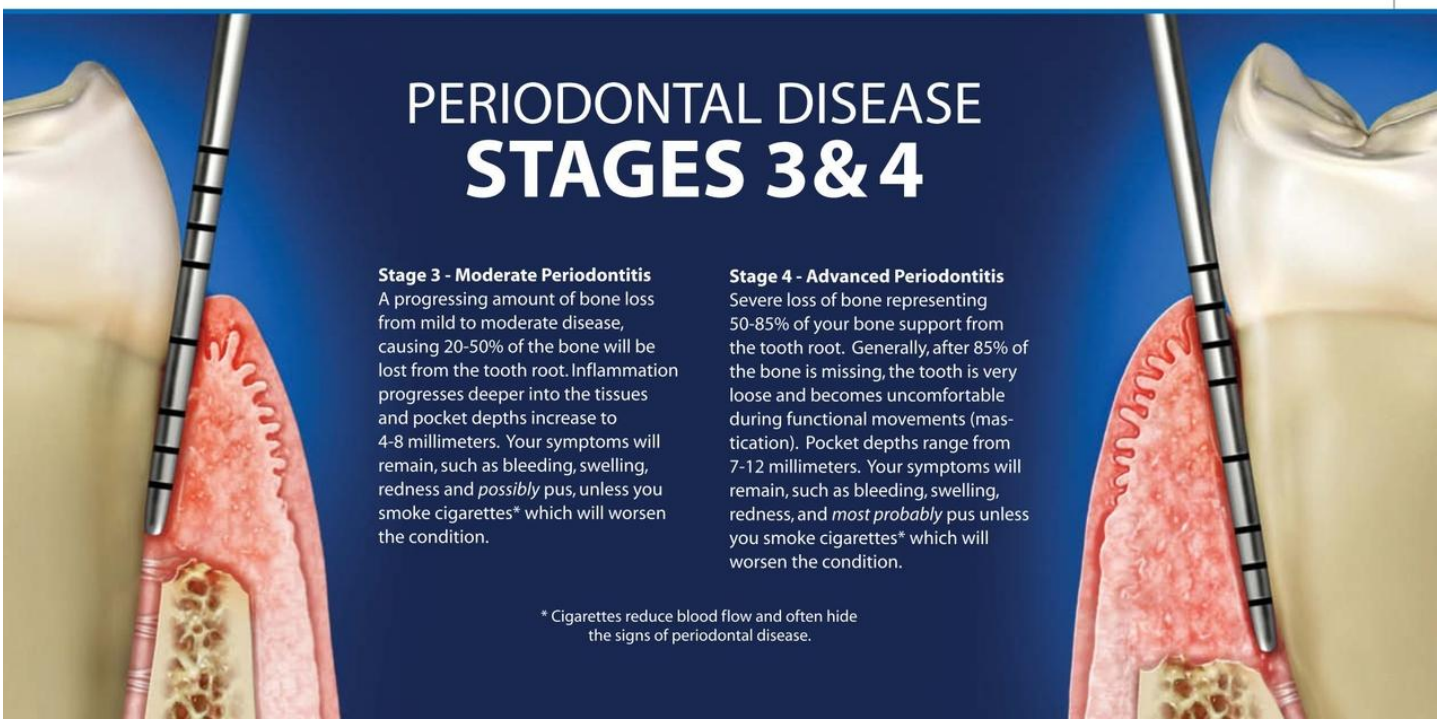
- The specific procedure you need should be discussed so you can understand what is involved. It should include what to expect after the surgery; generally mild to moderate discomfort for a day or two, usually managed by non-steroidal anti-inflammatory and analgesic medication of the Ibuprofen or Celebrex family, antibiotics and antibacterial rinses. No vigorous activity should be undertaken for the first few days to ensure that bleeding does not occur. It is also likely that the teeth will be somewhat more sensitive to cold which will disappear over time, particularly with the application of fluoride varnishes.
- What are the benefits and likely outcomes of treatment including a determination of prognosis – what results to expect and how long they will last;
- What are the alternatives to surgical treatment; this will depend upon the type and the extent of periodontal disease you have and the procedure that is recommended.

These issues will differ somewhat depending upon the type of periodontal surgical procedures. This process is called an informed consent, and you will probably be asked to acknowledge this process in writing.

CONTRA-INDICATIONS

It is important for people undergoing surgery to be in general good health and not overly stressed. It is also important to give your dentist/periodontist a full medical history with all current conditions and medications you are taking, including those to which you are allergic. Situations exist medically where it is not advisable for individuals to undergo surgical treatment. These mainly fall into the following categories:

- Uncontrolled periodontal disease
- Smoking and alcohol– can not only make periodontal disease worse, but will delay healing following surgery
- Systemic (bodily) or medical conditions which are uncontrolled, e.g. diabetes, HIV (AIDS), immunocompromised patients (in whom resistance to disease is diminished), cardiovascular (heart and blood vessel) disease, to name a few.
- Medications that can affect periodontal disease or surgery, e.g. aspirin, coumadin which may cause bleeding that is difficult to stop; medications that cause gum overgrowth, e.g. calcium channel blocking drugs used to control cardiovascular disease, other medications used to control transplant rejection, and more.



CURRENT TECHNIQUES

Current techniques are based on a sound understanding of wound healing and therefore enhance and maximize the body's healing potential. For descriptive purposes, a rather broad distinction can be drawn between periodontal surgical techniques used to treat:

1. Periodontal disease that has resulted in loss of periodontal attachment with pocket formation [Figure 3]
2. Aesthetic techniques to re-contour or graft new tissue in cosmetic areas (like the upper front teeth) where there is excessive tissue, or to cover exposed roots where gum tissue has been lost [Figure 4]
3. Bone and gum tissue regeneration to develop sites for future implant placement following tooth loss or other prosthetic (false) teeth replacement
4. Implant placement to replace missing teeth [Figure 5 and 6]

Surgical techniques to treat periodontal disease have been documented as far back as 1862 when Robicsek in Hungary developed the "gingivectomy" (gingiva-gum, ectomy-removal) to treat gum overgrowth, a technique still in limited use today, in a modified form. He is also credited with early "flap procedures," which are still the "work horse" basis of many periodontal surgical procedures today.

Flap surgery is the most conservative and versatile of procedures and consists of making an internal opening allowing a "flap" to be raised, much like opening the flap of an envelope. This allows the surgeon to work within the periodontal tissues to:

- Remove inner diseased and detached tissue lining of pockets
- Gain access to further clean and treat root surfaces
- Repair and regenerate bone, periodontal ligament tissue complex
- Close the tissues completely leaving no open wounds for rapid and comfortable healing
- Tiny suture placement to retain the gum tissues in place. Sutures either self-dissolve or are removed after a week or so. In some cases an unobtrusive dressing is applied to protect tissues while healing ensues.

Figures 3 and 4 provided by Dr. James W. Davis

Figure 3: This photograph shows the significant tartar accumulation and gum recession. There is also a lack of attached gum tissue.

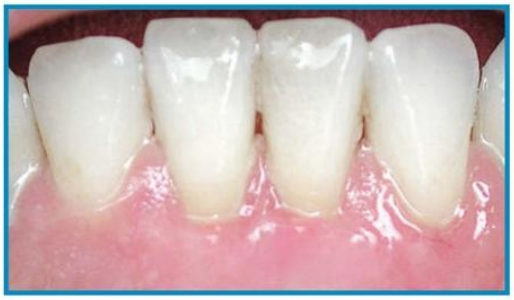


Figure 4: This photograph shows the healing which has occured after tartar was removed and a periodontal plastic surgical procedure repaired the area.

Figure 5: This photograph shows a healing abutment that is attached to an implant during the healing phase.

Figure 6: This photograph shows the implant permanent crown that was placed onto the implant after the healing abutment was removed.

Figures 5 and 6 - Implant crown was completed by Dr. Donald Stammer

INNOVATIONS IN REGENERATION

The last two decades have seen an explosion of knowledge and new techniques to regenerate periodontal tissues. Up until the 1980's most surgery was "resective" in nature - removing diseased tissue. From the 1960s to the 1980s soft tissue gingival (gum) grafting techniques to increase gum tissue were predictably successful. Regeneration techniques were already understood from wound healing studies and knowledge of the cell types that "coded" for new gingival, gum tissue. However techniques were less predictable when attempting to regenerate lost alveolar (tooth supporting bone) and the adjacent periodontal ligament.

REGENERATING PERIODONTAL TISSUES

The periodontal ligament is a thin, fibrous ligament that connects the tooth root to the bony socket. Normally, teeth do not contact the bone directly; a tooth is suspended in its bony socket by the periodontal ligament which is attached to the tooth root via cementum.

Without new periodontal ligament formation, new attachment and bone regeneration is impossible. In the past, the difficulty had been stopping gum tissue cells growing down the freshly cleaned roots before the new periodontal ligament cells had a chance to grow and reattach to the root surface cementum. Stopping the gum tissue cells from advancing was the race that science needed to win in order to regenerate new periodontal attachment.

GUIDED TISSUE REGENERATION

Periodontal tissue regeneration was ingeniously solved with the advent of sub-gingival (sub-under, gingival-gum) "barrier membranes," sort of minute subterranean band-aids. These barriers stop the growth of gum tissue cells and allows regeneration of new periodontal ligament by guiding cell growth. This technique is known as "Guided Tissue Regeneration". Membrane technology has now advanced to the point where membranes will last exactly the appropriate amount of time needed for healing and then dissolve so that they don't have to be removed.

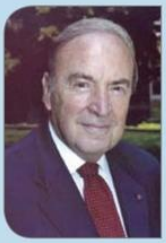
GROWTH FACTORS - MAGIC MOLECULES

Most recently, basic science has further demystified wound healing with an understanding of growth factors. The process of inflammation, the body's response to injury and infection causes the attraction of particular cells and liberation of their components, so-called growth factors – "magic molecules" which initiate and promote wound healing. The ability to isolate these substances, determine their roles and then to be able to manufacture them has allowed periodontal and other surgical specialists to use growth factors to regenerate tissues, making results more predictable and healing uneventful.

SUMMARY

Today's highly sophisticated and meticulous surgical techniques allow the periodontal surgeon to regenerate and reconstruct lost and missing tissues. Modern procedures are kinder to the patients; are carried out with local anesthesia (numbing the area/s) in combination with either oral (anti-anxiety) sedation or intravenous conscious sedation (twilight sleep). There are minimal post surgical issues, minimal discomfort and little bleeding, either during or after surgery. Periodontal surgery includes elements of art, experience and a great deal of scientific knowledge of techniques and wound healing to prolong the life of your teeth with greater predictability than ever before.

ABOUT THE AUTHOR



D. Walter Cohen, DDS

Dr. Cohen is a world renowned expert in the field of dentistry. He has served as the Dean of the U of PA., School of Dental Medicine, and Chancellor at MCP Hahnemann University of Health Sciences in Phila., PA. He is a Diplomate of the American Board of Periodontology (AAP) and maintains a private practice in periodontics. He has authored numerous textbooks and articles and has received numerous awards from all over the world. He has honorary degrees from Boston U, the Hebrew U of Jerusalem, the U of Athens, the Louis Pasteur U in Strasbourg, the U of Detroit and Carol Davilla U in Romania. He received the Gold Medal from the AAP and was only the third American to earn honorary membership in the British Society of Periodontology. The French government bestowed its Legion of Merit Award in recognition of his significant contributions to dental education in France. In 1997, the Hebrew U of Jerusalem dedicated the D. Walter Cohen, D.D.S. Middle East Center for Dental Education in Israel. He currently serves as Chancellor Emeritus at Drexel U College of Medicine.

Root Planing

Conservative treatment to eliminate the need for gum surgery

A Consultation with Dr. Mario Canal & Dr. Ben Calem

Root Planing?

From: Harold (New Jersey)

To: Consultations@deardoctor.com

Subject: Root Planing?

Dear Doctor,
I went to my dentist recently after an absence of about three years. I was told I had early periodontal disease with pockets of 5 to 6mm around my back teeth and that I needed root planing. Can you tell me what root planing is and what it does?

The top photograph shows gum tissue inflammation and the presence of tartar below the gum tissue. In the bottom photograph the tartar has been removed by scaling and root planing returning the gum tissue to health.

Dear Harold,

Deep cleaning or root planing is a very routine dental procedure for the preliminary treatment of periodontal (peri-around, odont-tooth) disease.

A little background will be helpful in understanding what this common procedure is and does. Of the different forms of periodontal disease, most are caused by biofilms of dental (bacterial) plaque sticking and adhering to the teeth around the gum line in the absence of good oral hygiene. If left unremoved, the bacteria in the plaque can cause inflammation of the gums, and further progression (in some people) will cause loss of attachment of the gum tissues to the teeth resulting in pocket formation. This is just like a pocket in your clothing into which you can insert your hand, except your dentist will measure the degree of vertical detachment with a periodontal probe generally marked in millimeters. Once bacterial plaque penetrates into these pockets they become pathogenic (disease causing), and further inflammation and infection can lead to bone loss, tooth loosening, abscess formation and ultimately tooth loss.

Bacteria and their breakdown products damage the fine structure of the root surfaces by becoming ingrained into them so that a preliminary phase of treatment must include removal of these products and toxins. Bacterial products on the root surfaces also calcify and stick to them; these hard deposits commonly known as tartar or calculus are just like the ones which most commonly form behind the lower front teeth.

Basic treatment of almost all types of periodontal disease includes both oral hygiene education and training to ensure that you can remove plaque daily as it rebuilds, and before it progresses into the pockets. Removal of bacteria from diseased root surfaces will allow the gum tissues to begin to heal. This is where root planing comes in. In addition to scaling (removal of the more superficial collections of calculus), root planing as the name implies actually involves physically planing the roots. This procedure removes subgingival (sub-beneath, ginigival-gums) calculus, bacteria, and toxins ingrained into the root surfaces allowing the periodontal (gum) tissues to heal.

Root planing procedures are generally best carried out with local anesthesia (numbing the teeth and surrounding soft tissues) to allow the hygienist, dentist or periodontist to meticulously clean the root surfaces in an efficient and comfortable manner. Local anesthesia is a really good idea, since as we say in dentistry, "the most important piece of calculus is the last piece," usually deep at the base of the pockets, and gum tissues are sensitive. It is rather common for the dental professional who is doing the cleaning to first use an ultrasonic device, generally an instrument that cleans by vibrating particles off the root surfaces and simultaneously flushes the pockets out with water. The root planing is then finished with delicate small hand instruments known as curettes. It is not uncommon to further irrigate the pockets with an antibacterial medication like iodine, chlorhexidene or in some specific cases, antibiotics.

Root planing is indeed a delicate procedure which requires experience and finesse depending largely upon tactile (feeling) ability of the clinician, since without surgery one cannot see within the pockets. An experienced clinician will know when a properly cleaned root surface has been achieved, not only by feel, but also by an ability to "read the gum tissues" which will change color ever so slightly when all the deposits have been removed.

Pocket or probing depth is important and can be used as a guideline to success in this endeavor. Multiple studies over the years have shown that at pocket depths up to 3-5mm successful cleaning is quite predictable, from 5-7 mm the chances are about 50/50 and greater than 7mm the chances of leaving deposits remain. This is an over simplification since many other factors are involved like the degree of gum swelling and infection, as well as the difficulty imposed by the shapes and configurations of the roots.

It is important to know that it is sometimes not possible to remove all the deposits at one sitting for the above mentioned reasons, so that coming back to the same area a few weeks later may allow for some refinement in removing remaining deposits. The outcome of root planing will be affected by the degree of daily plaque control, the better the daily plaque removal the better the gum tissue healing response and the easier to remove deposits. As the gum tissues heal there is less inflammation and bleeding so that subsequent removal of root surface deposits becomes easier.

The response to root planing or "initial" periodontal therapy as it is known is usually evaluated three to four weeks following the procedure when gum tissue healing is reviewed and probing measurements are retaken. It is not uncommon for inflamed tissues to heal by 1-3 mm, sometimes returning the tissues to complete health with root planing alone.

After root planing, patients may experience some tooth sensitivity to hot and cold, particularly if there is pre-existing gum tissue recession. This is usually treated with the application of fluoride to the root surfaces. Some minor sensitivity of the gum tissues themselves is also common, but can usually be managed by minor non-steroidal analgesic (pain) and anti-inflammatory medication like tylenol, aspirin or ibuprofen.

Sincerely,
Mario J. Canal, DMD, PC and Ben B. Calem, DMD

ABOUT THE AUTHORS

Mario J. Canal, DMD, PC

Dr. Canal is a graduate of Temple Univ. School of Dentistry and has maintained a specialty practice in periodontics since 1990 while teaching and lecturing at the Medical College of Penn. Dental Care Center. He is past President of the Southern Dental Society of New Jersey and currently serves as a Trustee of the New Jersey Dental Assoc. He is also a member of the American Academy of Periodontology, American Dental Assoc. and the Academy of Osseointegration.

Ben B. Calem, DMD

Dr. Calem is a graduate of UMDNJ - New Jersey Dental School. He received his certificate in Periodontics after completing the three year residency program in 2003. Dr. Calem is currently Clinical Assistant Professor, Department of Postgraduate Periodontics, University of Pennsylvania. He is a delegate on the Southern Dental Society of New Jersey, a member of the American Academy of Periodontology, the Northeast Society of Periodontists, and the American Dental Association. Dr. Calem is also director of the Pinnacle Dental Study Club, a branch of the prestigious Seattle Study Club, for South Jersey.

Jaw Pain – What's the Cause?

You'll never know without a proper evaluation

A Consultation with Dr. David Ettinger

Jaw pain – what's the cause?

From: Jeremy (North Carolina)

To: Consultations@deardoctor.com

Subject: Jaw pain – what's the cause?

Dear Doctor,
A week ago I was horsing around with my brother when I fell on the right side of my chin. It didn't seem so bad at the time and the emergency room sent me home. My left jaw joint still really hurts, I can barely move my jaw and I can't quite seem to get my teeth to fit together. What should I do?

Dear Jeremy,

Well, first off you really should see your dentist without delay. He/she will need to do a proper examination in order to access the situation directly. If necessary he/she will then send you to an oral and maxillofacial surgeon (a dentist who specializes in the diagnosis and treatment of disorders and diseases of the jaws), to make a more definitive determination or what we call diagnosis, which in turn will allow for proper treatment. If your symptoms are not going away, don't delay because you don't want to do irreversible damage.

It's not possible to know the exact extent of your injury without examination, but here are a few general pointers:

The most likely possibilities are that:

1. You displaced a tooth or teeth that are causing the problem.
2. You indirectly traumatized or injured the jaw joint (TMJ – temporo-mandibular joint). This trauma will cause swelling in the joint space and the ball or head of the joint known as the "condyle" will not fully seat into the joint space. If this is the case it is likely that your back teeth on that side will not touch. Over time, about one week, the swelling should subside and the teeth will fit together normally.
3. You may indeed have a minor fracture of your lower jaw. The most common is a "sub-condylar" fracture (just below the head of the joint) which will persist in symptoms and are usually more severe than just bruising described above.
4. You may also have dislocated or "subluxed" the joint in which case the condyle or joint head has been moved out of the joint space.

All these injuries can cause muscle spasm, which means that as a result of the inflammation due to the injury, the muscles on either side of the jaw lock the jaw in position stopping further movement and damage. They act like nature's splint to immobilize the jaw.

In any event, a physical examination checking to see if everything is functioning normally, along with a radiological (x-ray) examination will reveal the extent of the injury, whether it's soft tissue and/or boney.

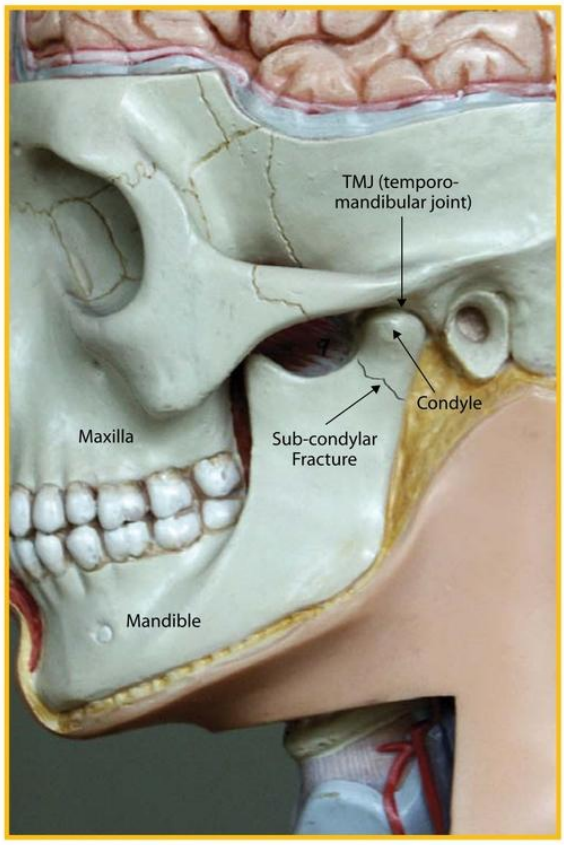
Minimally, anti-inflammatory and muscle relaxant medication would be helpful. Treatment of damaged teeth can be taken care of by your dentist. If the jaw is dislocated, immediate inability to close the jaw will be evident, in which case it may need gentle manipulation to place it back into correct position. Supportive therapy just mentioned will also be needed.

In the worst case scenario, you may have a minor fracture that may involve either the jaw joint or the body of the jaw itself. The treatment for fractures generally is to reposition the broken parts and immobilize (splint) them to keep them still, so that they can heal. Treatment may be as minimal as joining the upper and lower teeth together (external fixation) for several weeks to immobilize the jaw to let it heal; or full surgical treatment with "internal fixation" of the jawbone itself, to accomplish the same result. All procedures are usually performed under conscious sedation (twilight sleep), or full general anesthesia.

To reiterate, don't delay, seek immediate treatment from your dentist or local oral and maxillofacial surgeon. Most patients' symptoms resolve in 2-4 weeks unless a more complicated fracture is present.

Sincerely,
David Ettinger, DMD, MD

If your symptoms are not going away, don't delay because you don't want to do irreversible damage.



An illustration of the lower half of a person's head, identifying the maxilla, the mandible and the TMJ (temporo-mandibular joint). Also identified is where the TMJ injury occurs and where the sub-condylar fracture is commonly located.

ABOUT THE AUTHOR

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Dr. David Ettinger is a board certified Oral & Maxillofacial Surgeon. He holds a BA from Binghamton University; DMD, MD from the University of Pennsylvania. He completed an internship in General Surgery and a residency in both Oral Maxillofacial Surgery and Anesthesia at the Hospital of the University of Pennsylvania and has been practicing since 1993. His areas of expertise include osseointegrated implants in combination with bone grafting, micro-neurosurgery, orthognathic surgery, and the full range of dentoalveolar surgery. He is a Fellow to the American Association of Oral and Maxillofacial Surgeons.

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