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WRITTEN BY DENTAL PROFESSIONALS

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DENTISTRY & ORAL HEALTH

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HEALTHY TEETH FOR LIFE

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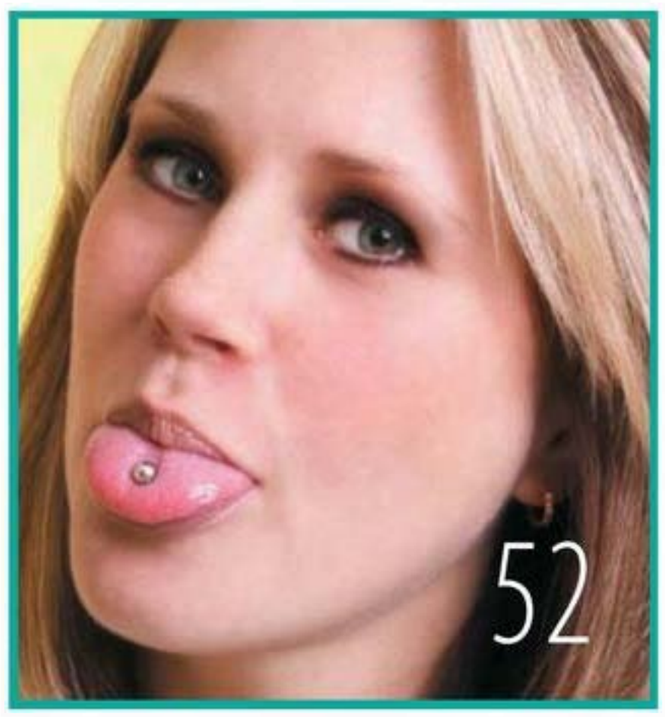

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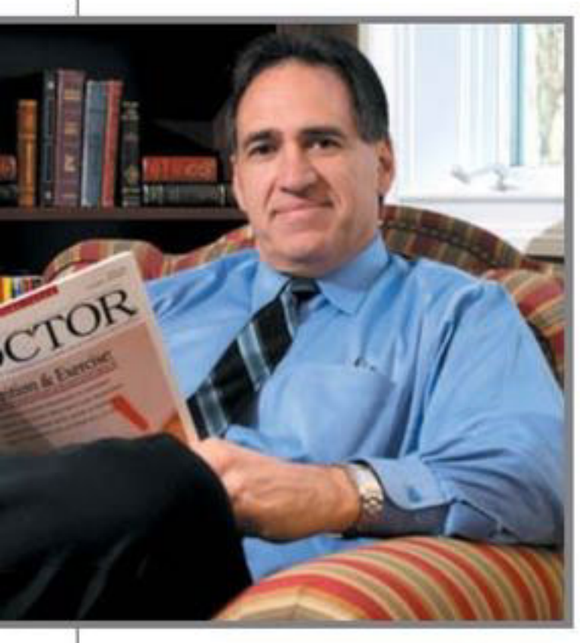
"If you have knowledge, let others light their candles with it."

Winston Churchill (1874-1965) British Politician

Dear Doctor is the realization of a dream to empower you, our patients, with knowledge that will help you become better partners with your health care professionals in making informed health care decisions.



In our combined sixty years of experience treating patients and teaching students in both clinical and university settings, we have sought a way to bring more information to the public in an innovative, informative and engaging way. Over these many years we have found that the best patients are those who are full partners in the clinical decision-making process.

However, the clinical setting, by design, imposes limits on our ability to educate you, our patients, to the best of our ability and to fully answer your many relevant and important questions. Our answer to this dilemma is contained in the pages of the magazine you now hold in your hands. *Dear Doctor* is designed to bridge that gap by providing a way to facilitate your understanding of current topics in all specialties of dentistry and oral health.

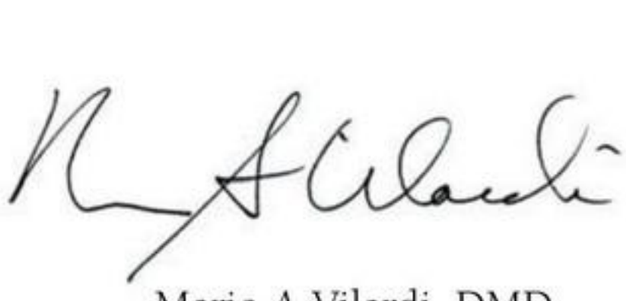
The following pages contain feature articles on current topics, as well as consultations and treatment planning cases illustrated by real patients presented from both the doctor and patient perspectives. All the feature articles are written by experts in their fields using lay terminology that is easy to comprehend.

We have purposely designed our magazine to be interactive. Each article has a selection of anticipated questions along with answers. Your feedback is important and we need to hear from you so that we can answer more of your questions and concerns. As dental health care professionals we hope to use this new vehicle as a forum to continue our efforts to advocate for your health care needs. Please email us or go to our website (www.deardoctor.com).

A final note, as with all new efforts we realize that the culmination of this dream of *Dear Doctor* does not come from us alone. We dedicate this first issue to our many mentors who have given of their great knowledge, skill, time and understanding in such an unselfish and loving way.

"For those who went before us, we stand on your shoulders."

Sincerely,
Your students,



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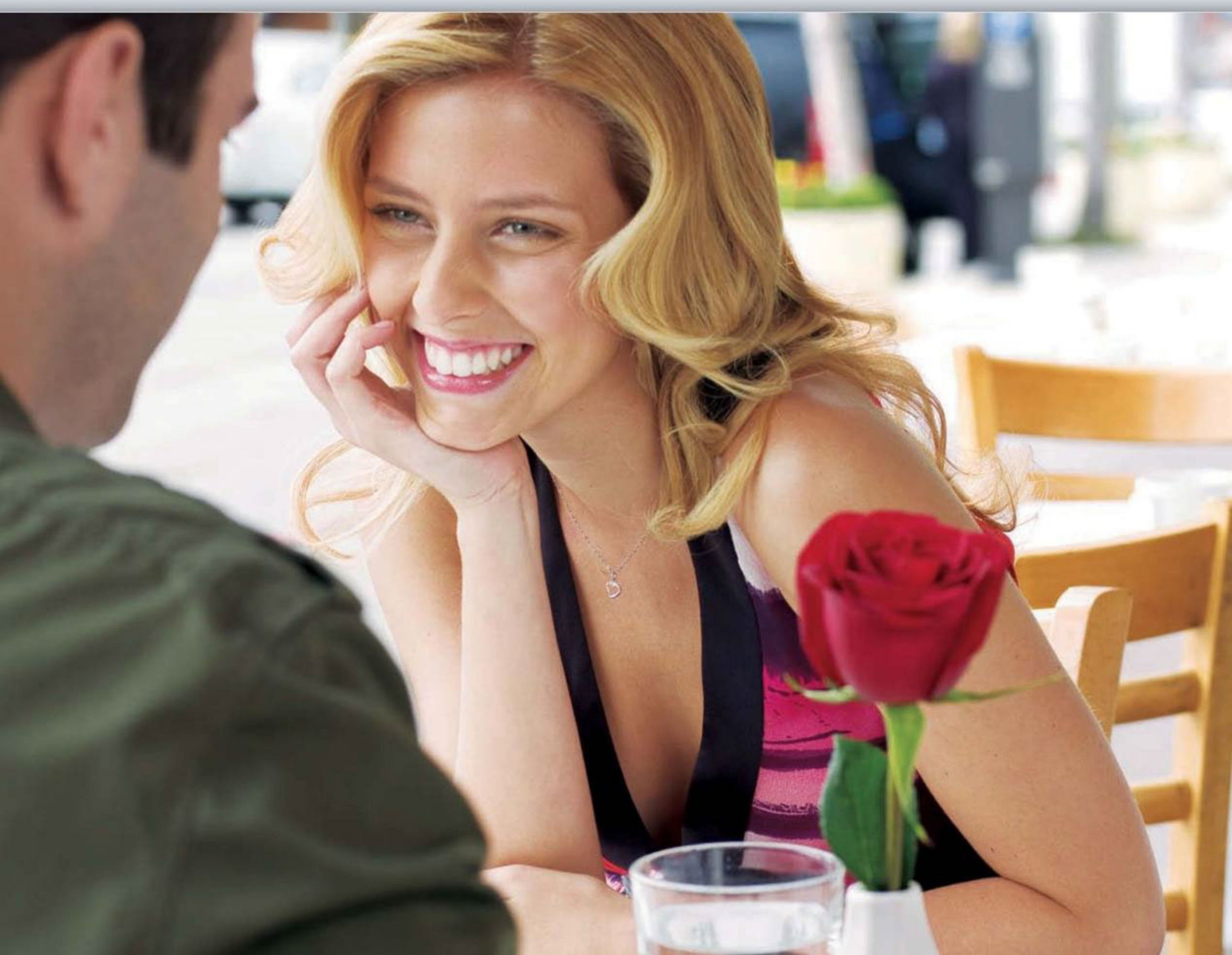

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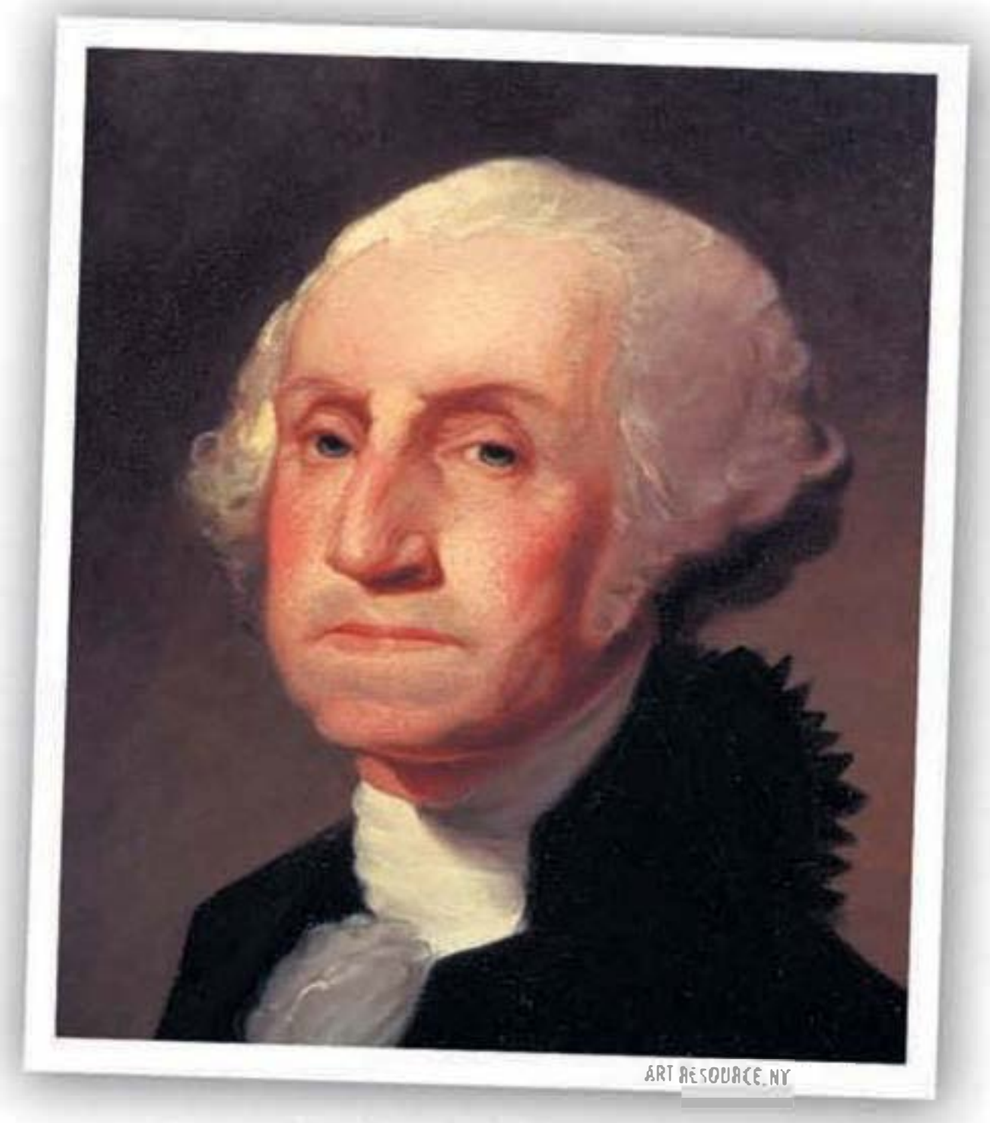
George Washington had Wooden Teeth - True or False?

False – though, our first U.S. president did indeed have several sets of false teeth.

RÉUNION DES MUSÉES NATIONAUX / ART RESOURCE, NY

1779 portrait after Charles Wilson Peale shows faint scar on left cheek probably caused from a dental abscess. Notice the distance from tip of nose to the chin when compared to later portrait below.



ART RESOURCE, NY

Portrait by Gilbert Stuart (mid 1790's) shows a scar on the cheek and a shorter distance from the nose to the chin indicating poor fitting dentures. The cheeks and lips were padded for the portrait.

Washington's dental problems are well documented beginning in his early adulthood. By age 47, when he became president, he had only one natural tooth left. His diaries contain numerous references to bouts of toothache, and historians speculate that his well-known hair trigger temper may have been related to his constant battles with dental pain.

Although one of the richest men in America at the time (and purportedly treated by many of the country's most prominent dentists), Washington was still contending with 18th century dentistry which was not even close to what it is today. In an effort to find a good fit, "The Father of our Country" tried several types of dentures made from various materials including gold, hippopotamus tusk, elephant ivory and even human teeth – but never wood.

"The Father of our Country" tried several types of dentures made from various materials including gold, hippopotamus tusk, elephant ivory and even human teeth – but never wood.

For all these efforts, Washington still suffered greatly from his dental problems, and portraits of the time seem to show that. A scar on Washington's cheek in a portrait after Charles Wilson Peale in 1779 probably resulted from an abscess of dental origin. In a later portrait (mid 1790's), artist Gilbert Stuart padded out his cheeks and lips in an attempt to mimic normal contours, because his dentures at the time were probably too short.

The seventeen-year interval between these two portraits also displays a striking degradation in Washington's dental health brought on by aging and prominent tooth loss. While Washington is better known for his place in the early history of our country, his dental problems serve as a warning to all of us: "Look after your teeth and they will look after you."

Space Age Dentistry NOW!

If only poor George were alive now! Star Trek dentistry is here. Imagine going into a dental office because you've lost an old crown. Your dentist cleans the tooth up, freshens the edges, takes a wand, scans the tooth, it's image appears on a monitor. As he scans the tooth the information is simultaneously beamed to a machine which shapes, grinds and fashions a perfectly shaped and contoured "restoration" of the lost tooth structure from a block of exactly matched tooth colored material. The tooth is then permanently and invisibly bonded imperceptibly into place, all in the same visit.

Enter CAD (Computer Aided Design) and CAM (Computer Aided Manufacturing) and it can be done. These techniques were developed from manufacturing processes which had their infancy in industry in the 1950's and 60s, and have been painstakingly applied to dentistry over the last twenty years. This technology has come about due to the ingenuity and persistence of Drs. Mormann, Duret, Rekow, Brandestini, Giordano and others who pioneered the techniques which, together with improvements in the science of dental materials, have made this dream a reality for them and the many patients who are now its fortunate recipients. Over the last twenty years three basic parts have come together; computing power has increased exponentially; huge industrial sized milling machines have been reduced to desk top size and ceramic materials are much more abrasion resistant particularly when based with metallic substances like alumina and zirconia. In addition the restorations are of such precision that they can be directly bonded to the remaining tooth and essentially become part of it. CEREC, (for Star Trek lovers, not Spock's father but close), is one of the systems now in its third generation, which is becoming more and more widely used in dental practice. "Beam me up Scotty".

In children under age 16, regular brushing with fluoridated toothpaste results in 24 percent fewer cavities than does brushing with non-fluoridated toothpaste.

(Cochrane.org)

BEAUTIFUL SMILES *by design*

by Stephen R. Snow, DDS

English novelist Charles Reade once observed,

"Beauty is power;
a smile is its sword."

Indeed, our ability to smile is one of the most profound non-verbal communication skills we humans have. A smile is universally recognized and identically interpreted by every culture on the face of the earth. Smiling exerts a positive influence on our personal and professional relationships – and some researchers believe it positively impacts our physical and mental health. Public opinion polls confirm that nearly 90% of adults feel that an attractive smile is an important social and career asset.

Yet, despite widespread agreement regarding the power and importance of a smile, many people are insecure with their own. Though the specific reasons may vary, the end result is the same: many people look in the mirror and they do not see an inviting smile they expect reflected back.

Cosmetic dentistry can completely correct or significantly diminish these perceptions through a comprehensive approach known as Smile Design. Through both traditional and emerging dental techniques, the cosmetic dentist works in partnership with the patient to produce a new smile – one that the person will readily share with others with a new sense of confidence and esteem.

WHAT IS AN IDEAL SMILE?

Some might ask why tinker with what nature has created. A person's smile is as unique to them as their fingerprints – it defines who they are. Who, then, is to say what a "normal" smile really is? Who can accurately judge when it is deficient? Who can decide what should be changed?

When considering the possibility of smile enhancement, cosmetic dentists must carefully evaluate these valid points. We learn all too quickly what society deems attractive by observing how people respond to their surroundings and their peers. We can't help but notice how some fashion choices, body shapes, hair styles, and even smiles are greeted with more acceptance than others. We naturally seek to emulate these appearance preferences to maximize our own sense of purpose and peace of mind.

More than just socially and culturally, however, these perceptions are rooted in very real biological and physiological conditions. One reason we prize sparkling white teeth, for example, is because healthy, disease-free teeth are likely to be free of the discoloration of decay. By the same token, a full mouth of straight teeth isn't just attractive, it is a sign of a fully-functioning masticatory system. Only a few centuries ago, a person with few or no teeth faced very real health dangers – even the possibility of starvation. While that scenario may seem extreme in our modern-day, industrialized society, the echoes of the past remain. Our perceptions of what is beautiful and desirable are steeped in an instinctual understanding of health and survival.

In the end, the ability to distinguish an "ideal" smile rests in the emotional experience a person has when looking in the mirror – it is both individual and personal. The mission of the cosmetic dentist is to help each person integrate their subjective cultural perceptions of beauty and perceived preferences with the reality of an objective diagnosis and practical treatment possibilities.

ENVISIONING THE FUTURE

Author Lewis Carroll once wrote, "If you don't know where you are going, any road will take you there." Author Laurence J. Peter quipped, "If you don't know where you are going, you will probably end up somewhere else." These may be cynical witticisms, but they actually contain profound wisdom for anyone considering cosmetic enhancement.

Smile design requires much more than a patient specifically requesting a popular procedure or even generally saying, "Make my smile beautiful." Like any other worthwhile undertaking, it necessitates forethought and planning. Effective planning begins with an extensive, thought-provoking discussion between patient and dentist. Therefore, the patient and the dentist should begin with the end in mind.

The first priority is to gain an understanding of the patient's perceptions. To appreciate a patient's concerns, the dentist will often start the discussion with a few key questions. How do you feel about your teeth? What do you like, and what do you dislike? If you could change anything you wanted, what would it be? Thinking ahead several years, what do you want for the future? These questions take direct aim at the heart of the issue – the patient's concerns and priorities. As a patient openly and honestly shares the answers, an insightful clinician can discern the patient's insecurities and desired visualized outcome.

It can be fun too, a chance to stretch the imagination and picture the ideal result. A little dreaming is always the heart of any great plan process, even the creation of a new smile. With the destination firmly in mind, the patient and dentist can take the next step in charting the course to reach it.

"YOU ARE HERE"

You've seen it on posted diagrams on the walls of large buildings: "you are here". It is only after you know where you currently are that you can effectively navigate your way and decide which way to turn. The same is true of cosmetic dentistry which is both an art and a science. The dentist must fully evaluate all aspects of the patient's oral status to determine the starting point. A comprehensive examination is the key.

Figure 1: Before treatment, a cosmetic dentist looks at the overall composition of a patient's face in determining the final smile design.

Figure 2: By intentionally selecting materials, dimensions, and proportions that balance with the patient's face, the dentist can create a final result that is attractive and balanced.

Understandably, many patients tend to focus exclusively on their esthetic concerns. As a part of the comprehensive evaluation, the dentist performs a smile analysis. Researchers and artists have carefully studied beautiful smiles and have discovered several recurring themes that combine to create attractive smiles. Among these are facial balance – the elements of the smile that relate to each other, blending within the context of the entire face [Figure 1 and 2]. Facial shape is important, for example some may have an overall oval form, and others are more square or even tapered in outline. In addition to facial shape and type, many other characteristics are important: asymmetries, skin color and complexion, eye color and position, lip form and posture, and smile dimensions. Believe it or not, taking into account the overall look of the face will have a substantial bearing on the eventual appearance of the teeth and gums. The cosmetic dentist observes all of these factors and

Figure 3: The proportion of the teeth and gums displayed in a full smile are key factors in evaluating the esthetic zone.

Figure 4: Cosmetic dentists often utilize lip retractors to create photographs for smile design purposes. When teeth are well-aligned, evenly colored, and proportionally shaped, the resulting smile is often pleasing. (same patient as figure 3)

Figure 5: When an excessive amount of gums are revealed in a smile, the teeth may look proportionally small and insufficient.

Figure 6: Misalignment, asymmetry, decay at the gum line, and chipped edges all combine in forming a smile that is less than ideal. (same patient as figure 5)

considers how the shape and position of the teeth themselves enhance or detract from the mix of facial features.

When the lips part during a smile, it is like a theater curtain going up to reveal the stage behind. In addition to the shape and posture of the lips, other smile analysis themes include the esthetic zone principles in which the dentist looks for a blend of the proportions of teeth, gums and shadows as they are revealed in a full smile [Figure 3-6]. Gum esthetics are determined by the frame and color that the gums create around the teeth; tooth esthetics are determined by relative proportions of shape and size, alignment, symmetry and the arrangement of teeth in the upper and lower jaws and even how they relate to each other. Finally, themes in the tooth characterization category are used to evaluate the color and contour qualities. Together, these principles combine to create the visual impact of your smile. With a perceptive visual evaluation and the aid of high quality specialized dental photography, the dentist and the patient can evaluate which of these specific factors contribute to a person's disapproval with their smile.

Beyond pure cosmetic concerns, however, the highest priority for any medical professional is to care for the health of their patients.

As noted before, esthetic problems (missing, misaligned or discolored teeth) are often an indication of underlying dental disease or an inherited problem. A full periodontal evaluation is important, that is a determination of whether the supporting structures of the teeth, the bone and gum tissues are healthy since these are the foundations upon which the teeth are supported. Even though a patient may not be aware of the presence of some of these problems, the dentist's first obligation is to make sure they are healthy.

The remainder of the comprehensive examination, then, incorporates the evaluation categories that comprise a complete oral health analysis. Through the use of radiographs, photographs, models, measurements, and direct clinical observation, the dentist analyzes the function of the patient's jaw joints, the stability of the bite relationships, and the health of the teeth and gums. After accumulating this full set of data, the dentist will use all of these findings in combination with the smile analysis to make a "definitive diagnosis" – the dental equivalent of "you are here". With a firm grasp on this starting point and a clear focus on the desired destination, the patient and doctor are now ready to consider the options in charting a course of action.

Smile design has as much to consider as the designing and building of a home!

SMILE DESIGN: ART MEETS ENGINEERING

Consider the challenges of building or remodeling a house. Planning would require decisions about design, engineering, materials, contractors and subcontractors to name a few! From the choice of construction materials to the size of each room to the style of architecture – the eventual assembly for each home would be as varied as its geographic location just as the final design would be as diverse as the preference of the owner living within.

Planning for a new smile is much the same. By comparing the person's current conditions with the desired result, the dentist can map out several possible strategies for consideration in meeting the desired smile design goals. The interrelation of the smile analysis criteria and the comprehensive oral health factors is addressed. The benefits of supplementary care with other dental specialty disciplines may be considered [Figure 7 and 8]. The array of available treatment procedures will be described, and the palette of prospective restorative materials will be explained. Together the dentist and patient will weigh the advantages and disadvantages of each of the many choices to determine the scope of treatment and the final plan to achieve the desired smile.

Figure 7: Treatment rendered by dental specialists is often required to position the teeth and gums appropriately to achieve the best esthetic results.

Figure 8: Both orthodontic (braces) and periodontal (gum treatment) procedures were utilized in addition to cosmetic restorative treatment to create a result that met the patient's goals. (same patient as figure 7)

Figure 9: Before treatment, a photograph of a full smile illustrates how discolored restorations with decay mix with misaligned and worn teeth to form a smile that this patient feels is unattractive.

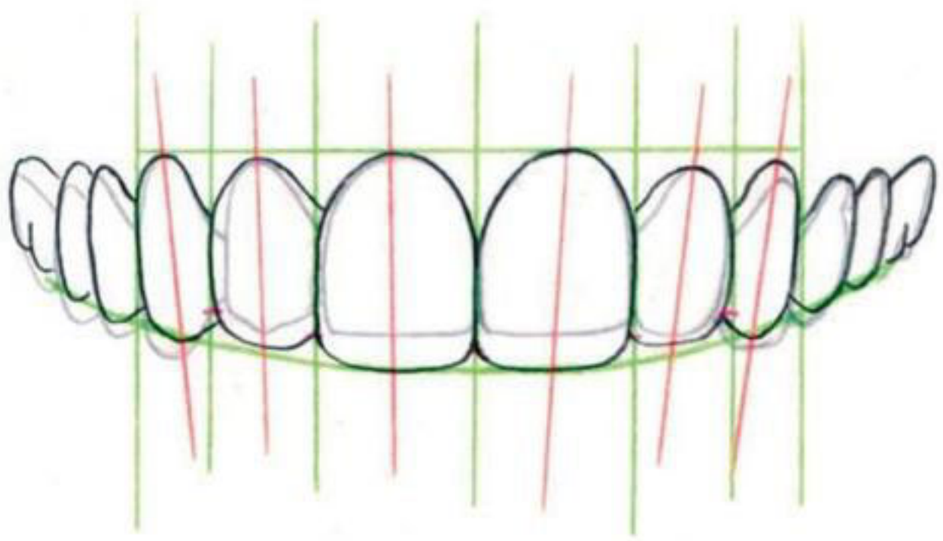


Figure 10: A tracing technique is used to design an smile that possesses improved alignment and proportion. The light gray lines represent the original teeth while the dark gray signify the proposed design as it fits within an ideal framework.

Figure 11: The final result demonstrates how the previous detracting elements have been eliminated or improved in developing a beautiful new smile. (same patient as figure 9 and 10)

The dentist as artist can help a patient visualize the potential results of proposed treatment recommendations using photographic images, tracing analysis, and even computer simulation [Figure 9-11]. While these pictures may differ slightly from the eventual outcome, the dentist can utilize drawings or digitized images to describe particular procedures and to compare how they could affect the final look.

By altering the relative size, edge design, or angulation of the front teeth, the final effect may appear "sexy," "sporty," or "sophisticated".

Of course, the enjoyment of all things possible must eventually rub shoulders with the limits of reality. At this point, the cosmetic dentist must take up the consideration of prognosis – the predictability for achieving and maintaining every aspect of the desired outcome. Options may range from limited-scope to all-inclusive, less expensive to more elaborate, invasive to conservative, or durable to shorter term. Inevitably career, financial, and other life activity issues may become part of the discussion. Other realities like age and overall health may play a factor. Some procedures make sense for some patients while they may not be as advantageous for others. Here the dentist draws on both clinical experience and scientific evidence to make recommendations that are ultimately in the patient's best interest.

In crafting the most appropriate smile design, each person must consider what he or she is willing to pursue to achieve the future they have envisioned? Is the commitment to time and money available to complete an extensive design plan? Is there a willingness to accept an enhanced but more limited improvement anticipated with a less extensive design plan? In the end, it boils down to the perspective of value for the each patient. Eventually, the dentist and patient work together to determine the best course of action as they collaborate to achieve a practical and realistic smile enhancement.

PUTTING THE PLAN INTO ACTION

To this point, the smile design is still on paper – or perhaps a computer screen. Once the plan is finalized, though, the real work begins: the actual procedures the cosmetic dentist uses to create the patient's brand new smile.

You might be surprised at the wide array of techniques now at a cosmetic dentist's disposal, but most have been in development for decades. Some techniques, like whitening, bonding, veneering or enamel shaping, change the appearance and shape of the patient's natural teeth. Other techniques like crowns, bridgework and implants provide permanent artificial replacements for missing or abnormal teeth that cannot be corrected with the previously mentioned procedures.

Orthodontics may also play a role in many smile design plans to correct malocclusion and faulty tooth alignment. Although the optimum time for orthodontic applications is typically just before or at puberty, cosmetic dentists have realized their benefit for smile design even for adults of all ages. Innovations in braces and other orthodontic devices have reduced discomfort and improved their appearance and even saved time.

Some of these procedures involve just one visit to the dentist; others may take months or even years to complete. Regardless of the techniques involved the outcome should be the same, the smile you once beheld in the mirror has been transformed. A sense of disappointment or embarrassment has now been replaced with confidence as you freely share your new smile with the world. More importantly, dental health has simultaneously been restored. You will be a healthier you and that is definitely something to smile about.

SMILE DESIGN TECHNIQUES

Here's a brief description of some of the more common techniques used by cosmetic dentists to correct or enhance a person's smile:

- **Whitening** – a chemical application with a peroxide base is applied directly to the teeth to remove minor staining and discoloration.
- **Bonding** – An acrylic material is applied to a tooth that can be shaped and colored to match the natural look of the patient's other teeth. Primarily used for chipped, broken or decayed teeth, as well as to alter tooth shape with minimum tooth removal.
- **Enamel Shaping** – the removal of minute amounts of enamel, the tooth's outer layer, to improve the look of the shape of a tooth.
- **Veneers** – a thin shell of tooth-colored material, usually porcelain, custom-designed to be affixed to the front surface of the teeth.
- **Crowns and Bridgework** – a technique that covers heavily damaged teeth or replaces missing teeth. They usually have an inner core for strength and an outer porcelain shell for the feel and appearance of real teeth.
- **Implants** – as an alternative solution for replacing missing teeth, titanium posts are surgically implanted in the patient's jaw. Artificial tooth replacements are connected to the posts to restore missing tooth above the gum.
- **Gum Contouring** – a minor surgical procedure altering the position of the gum tissue and sometimes the underlining bone, to improve the look and regularity of the gingival line around the teeth.

Look for more information on these exciting Smile Design Techniques in upcoming issues!

ABOUT THE AUTHOR

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Stephen R. Snow, DDS graduated first in his class from UCLA Dental School. He is an accredited member of the American Academy of Cosmetic Dentistry. Dr. Snow holds active memberships in Academy of General Dentistry and the Omicron Kappa Upsilon Honor Society. He is a published author and lectures nationally on smile design, cosmetic restorative techniques, dental photography, and digital technology. Dr. Snow is on faculty at the UCLA Center for Esthetic Dentistry and Esthetic Professionals Cosmetic Continuum in Woodland Hills, CA. He is the founder and director of PERFECT Perspectives Advanced Dental Education Seminars. Dr. Snow serves without remuneration as a consultant to numerous manufacturers in the development of dental materials, computer software, intraoral photography and smile imaging.

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No action should be taken based upon the contents of this magazine; instead please consult with your dental professional.

Replacing Back Teeth

Just because you can't see them doesn't mean you won't face problems if your back teeth are lost.

A Consultation with Dr. Steven Potashnick

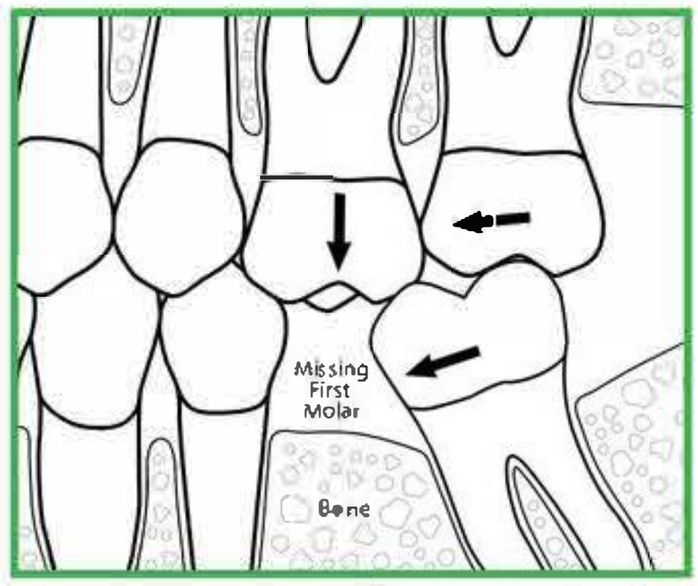
Replacing Back Teeth?

From: Mary (Maryland)

To: Consultations@deardoctor.com

Subject: Replacing Back Teeth?

Dear Doctor,
I have been missing one of my back teeth for awhile. My dentist recently recommended that I consider a dental implant or a permanent bridge. Why can't I leave the space alone and not replace the tooth?



The loss of one tooth can result in the shifting of the adjacent teeth which causes a potential collapse of bite support.

Dear Mary,

Because missing front teeth are considered aesthetically and socially unacceptable, most people consider their replacement a higher priority than back (posterior) teeth normally hidden from sight. From a dental point of view, however, you should definitely consider their replacement, if not for cosmetic reasons, then for the loss of function created by their absence.

Besides their obvious role in chewing, the posterior teeth affect the overall bite and help ease some of the excessive pressure on the front teeth created by chewing. Dentists generally agree the loss of posterior teeth can lead to a wide array of consequences, especially involving the remaining teeth, gums, jaw muscles, ligaments and joints:

- Decrease in chewing efficiency
- Tipping, migration and rotation of remaining adjacent teeth
- Eruption or extrusion of unopposed teeth
- Excessive wear or erosion of remaining teeth
- Loss of alveolar jaw bone and reduction of the residual boney ridges
- Painful dysfunction of the temporomandibular joints (TMD) that unite the lower jaw with the skull

And, just because the site of the missing teeth is hidden from view doesn't mean there won't be changes to your appearance. For instance, the loss of the posterior teeth can cause a reduction in facial height that becomes increasingly noticeable over time.

Unfortunately, that's only the beginning of problems you may encounter from missing posterior teeth. Some of the above factors, particularly shifting or migration of teeth, can set off a chain reaction that weakens the overall dental system.

For instance, teeth normally move to maintain contact with adjacent and opposing teeth as natural wear slowly occurs over time (you won't notice this movement because of the equilibrium created by the teeth touching each other).

Have a Question?
Send an email to consultations@deardoctor.com and have your question answered in an upcoming issue!

azadmed

Implants or Fixed Bridgework: Which Option is Better?		
	PROS	**CONS**
Dental Implants	Easily maintained; Installation doesn't affect adjacent teeth; Durable and long-lasting, increases bite support; future flexibility to replace missing teeth	Process requires several months and visits; Requires certain amount of bone height and volume
Fixed Bridgework	Good option where implants won't work; Can be blended for color and appearance with natural teeth; Durable if adequately cared for; can splint loose teeth to reduce mobility	Possible nerve damage to anchor teeth; More prone to trapped food than implants; More work during chewing for anchor teeth; must remove enamel; potential for future decay; potential for sensitive teeth

When you lose a tooth, however, the remaining teeth tend to shift at an accelerated rate. This creates a force greater than normal along the tooth, causing abnormal displacement of the tooth in the jaw bone. If these teeth shift too much they may become worthless in the future.

Along the same lines, if the teeth erupt too much there may not be enough room to replace the missing teeth below them. Also, as a tooth moves, it changes the relationship of how the jaw bone is attached to the tooth. This change may leave the tooth more vulnerable to periodontal disease.

Obviously, then, replacement would help deter some of these consequences – but which method is best? Dentists now recognize implants as the best option for replacing missing teeth. They have some obvious benefits: as a free-standing restoration, adjacent teeth aren't usually affected by the preparation process and the replacements are easier to clean and can contribute to the support of the bite.

The most critical factor for implantation is that adequate bone height and volume exists where an implant will be placed. If not, a non-removable fixed bridge is the second best option, although there are a number of considerations to take into account.

First, teeth must be present on both sides of the missing teeth to create a fixed bridge – and you are actually asking two teeth to do the work of three. The adjacent teeth have to be drilled down for bridge placement, so there is a greater risk to the nerves – a future root canal treatment may be necessary. There is also a greater risk of trapped food under a bridge than around an implant restoration.

When you lose a tooth, the remaining teeth tend to shift at an accelerated rate

A third and least favorable option is a removable partial denture. Removable restorations can be difficult to wear and trap more food. Because they are moveable, they may put additional stress on the teeth that hold them in place, which could lead to loosening and loss of those teeth.

In summary, I think you can now see the importance of replacing missing teeth, seen or unseen. Excellent options in dental implants or bridgework are worth looking into and discussing with your dentist.

Sincerely,
Steven R. Potashnick, DDS

ABOUT THE AUTHOR

Steven R. Potashnick, DDS

Dr. Steven Potashnick received his dental training at the University of Buffalo. He received certificates in both Prosthodontics and Periodontics from the University of Pennsylvania. He is a former Chairman of the Department of Dentistry and Oral and Maxillofacial Surgery and former Director of the General Practice Residency Program at Michael Reese Hospital and Medical Center. He limits his private practice to periodontal prosthetics, implant prosthodontics and advanced restorative problems. He is a Fellow in the Academy of Osseointegration, the American Academy of Esthetic Dentistry and the American College of Dentists. He has lectured extensively in the USA and abroad.

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Teeth Whitening

Bleaching is an effective method with minimal side effects

A Consultation with Dr. Albert Kadosh

Teeth Whitening?

From: Rachel (Kentucky)

To: Consultations@deardoctor.com

Subject: Teeth Whitening?

Dear Doctor,
How effective are bleaching techniques for whitening teeth? Are there any disadvantages or side effects?

Dear Rachel,

Bleaching by definition actually changes natural tooth color. Nearly all bleaching products contain carbamide peroxide or its breakdown product hydrogen peroxide, which helps remove both deep (intrinsic) and surface (extrinsic) stains. Deep staining is seen commonly as a result of changes to the tooth due to natural aging, old root canal treatments, large fillings, tetracycline antibiotic or excess fluoride intake during development. Surface stains are caused by substances such as coffee, tea, red wine and tobacco.

Over-the-counter, (OTC) products for home use have a lower concentration of the active ingredient which helps remove both types of stains. The American Dental Association reports that the accumulated data on neutral pH 10% carbamide peroxide supports both the safety and effectiveness of these home use products.

> Studies indicate that bleaching can successfully achieve noticeable increases in whitening of stained teeth

The same carbamide or hydrogen peroxide bleaching agents are applied by your dentist. They are stronger, however, varying in concentrations from about 15% – 35%, and sometimes used together with a specialized light or laser. This reportedly accelerates the process, down to a visit or two instead of two or three weeks for the home use OTC products. In all instances, look for the ADA Seal of Acceptance on the products used and consult with your dentist for advice before proceeding.

Bleaching attempts to whiten your natural teeth as opposed to improving whiteness with restorative materials like veneers and crowns which require removal of some of the tooth structure. Bleaching has proven to be a very effective method that involves less time and expense than restorative dental treatment.

While bleaching can dramatically improve your smile, there are some potential side effects such as tooth sensitivity and irritation of the gums or other oral tissues. These conditions are generally temporary with very rare reports of irreversible damage. Tooth sensitivity tends to appear earlier in treatment. When using the stronger professionally applied agents the dentist will sometimes isolate the gums and soft tissues with a "rubber dam" and/or protective gel.

When considering this technique, be aware of the following:

- Bleaching is not a permanent solution: the effects will diminish over time. Optimally, this period lasts six months to a year – referred to by dentists as the "fade rate."
- Although fading is inevitable, it is possible to slow down the process by avoiding foods and habits that cause staining. Some patients may need a tooth-whitening "touch-up" with the home bleaching technique for 1-2 days, once or twice a year.
- Acceptable color matching can be difficult to achieve due to the mix of natural teeth with pre-existing crowns, bridgework or fillings. Dentists can sometimes improve the color match by adjusting the concentration of the bleaching gel, as well as the actual contact time on the teeth.

While many over-the-counter whitening products produce successful results, patients should still seek a professional consultation before bleaching. Your dentist can discuss your cosmetic needs and review with you all the risks, benefits and alternatives to bleaching.

Sincerely,
Albert Kadosh, DDS

ABOUT THE AUTHOR

Albert Kadosh, DDS

Albert Kadosh, DDS graduated from N.Y.U. College of Dentistry and completed an internship in Oral Surgery at Fordham Hospital, N.Y. He is a member of the American Academy of Cosmetic Dentistry, San Francisco Academy for Advanced Dental Education, Academy of Osseointegration, American Dental Association, California Dental Association and San Francisco Dental Society.

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Ask... and we shall answer!

Visit www.deardoctor.com
or email us at
consultations@deardoctor.com
and ask us your dental questions.
Look for your answers in an upcoming issue!

Dear DOCTOR®
DENTISTRY & ORAL HEALTH

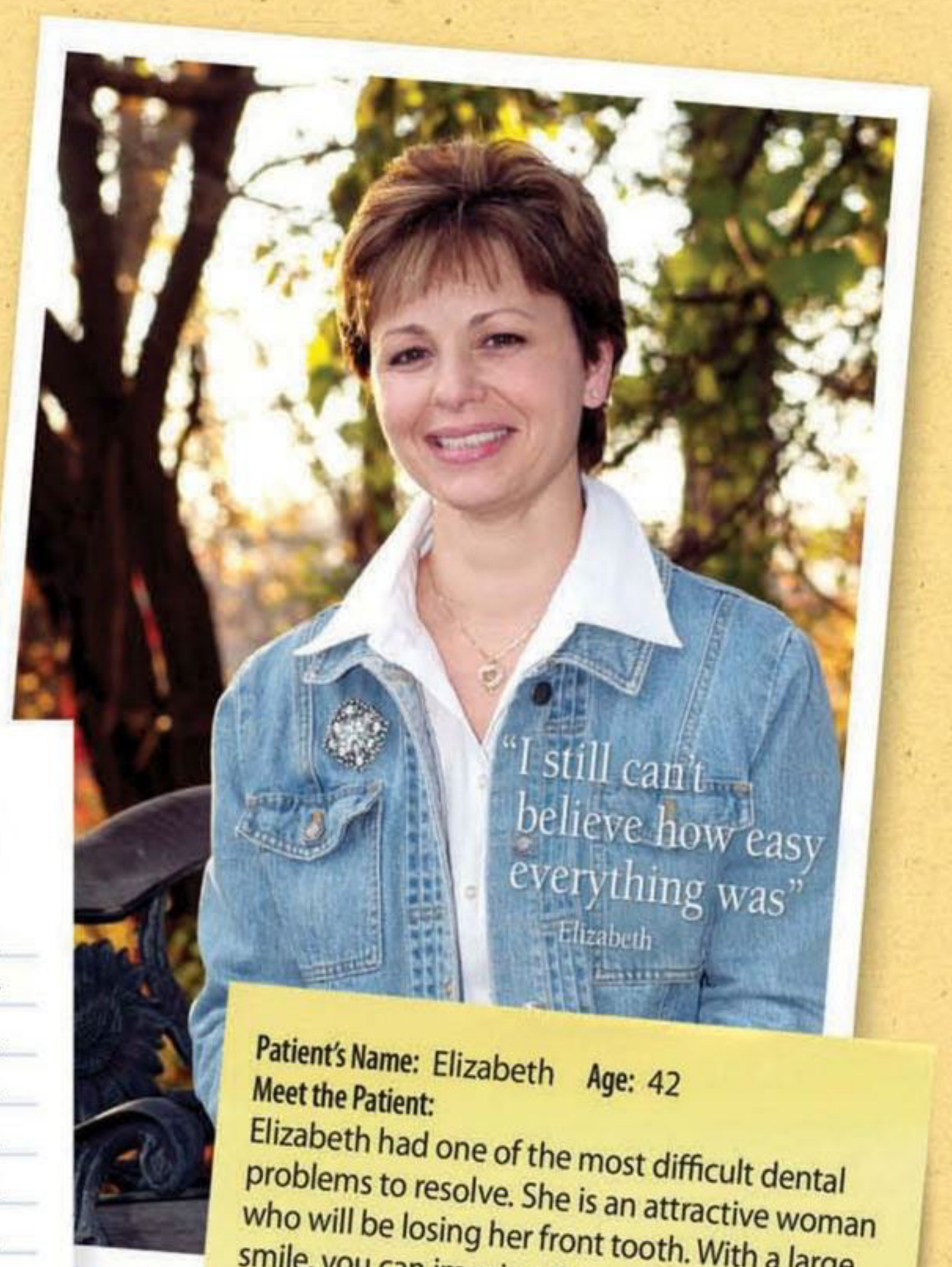
For your health & well-being!

How **Implants** Can Save a Smile

Follow along as Dr. Mario Vilardi becomes a detective and searches for the correct solution to his patient's problems.

The essence of treatment planning is to first define what issues and concerns need to be solved from both the patient's and treating doctors' perspectives, and then arrive at an agreed-upon plan of action – "the treatment plan." While it is important to realize a certain amount of "treatment" is necessary to treat disease, it is just as important to accommodate the patient's elective needs as closely as possible, especially when that involves aesthetic concerns. The following patient's story is an excellent example of this process.

TREATMENT PLANNING:



Patient's Name: Elizabeth **Age:** 42

Meet the Patient:

Elizabeth had one of the most difficult dental problems to resolve. She is an attractive woman who will be losing her front tooth. With a large smile, you can imagine the emotional anguish a trauma like this could cause. Fortunately for Elizabeth, she has a long-standing relationship with her general dentist and trusts his judgment to refer her to a periodontist, a specialist in the diagnosis and treatment of diseases of the supporting structures of the teeth. The involvement of these two dental professionals will help make this potential emotional trauma more manageable.

Patient's History

Elizabeth, age 42, was referred to Dr. Vilardi regarding the impending loss of one of her upper front teeth. At age 21, she received a traumatic blow to the front of her face while riding her bicycle. The accident caused a fractured front tooth that required root canal treatment and a cap (crown) in order to fix it. Years later, Elizabeth began noticing swelling and soreness above her front tooth for no apparent reason. She visited her general dentist, Dr. Daniel Doyle in Carmel. He examined her and suspected that the tooth might be fractured, and therefore, referred her to Dr. Mario Vilardi, a periodontal specialist, for consultation and treatment.

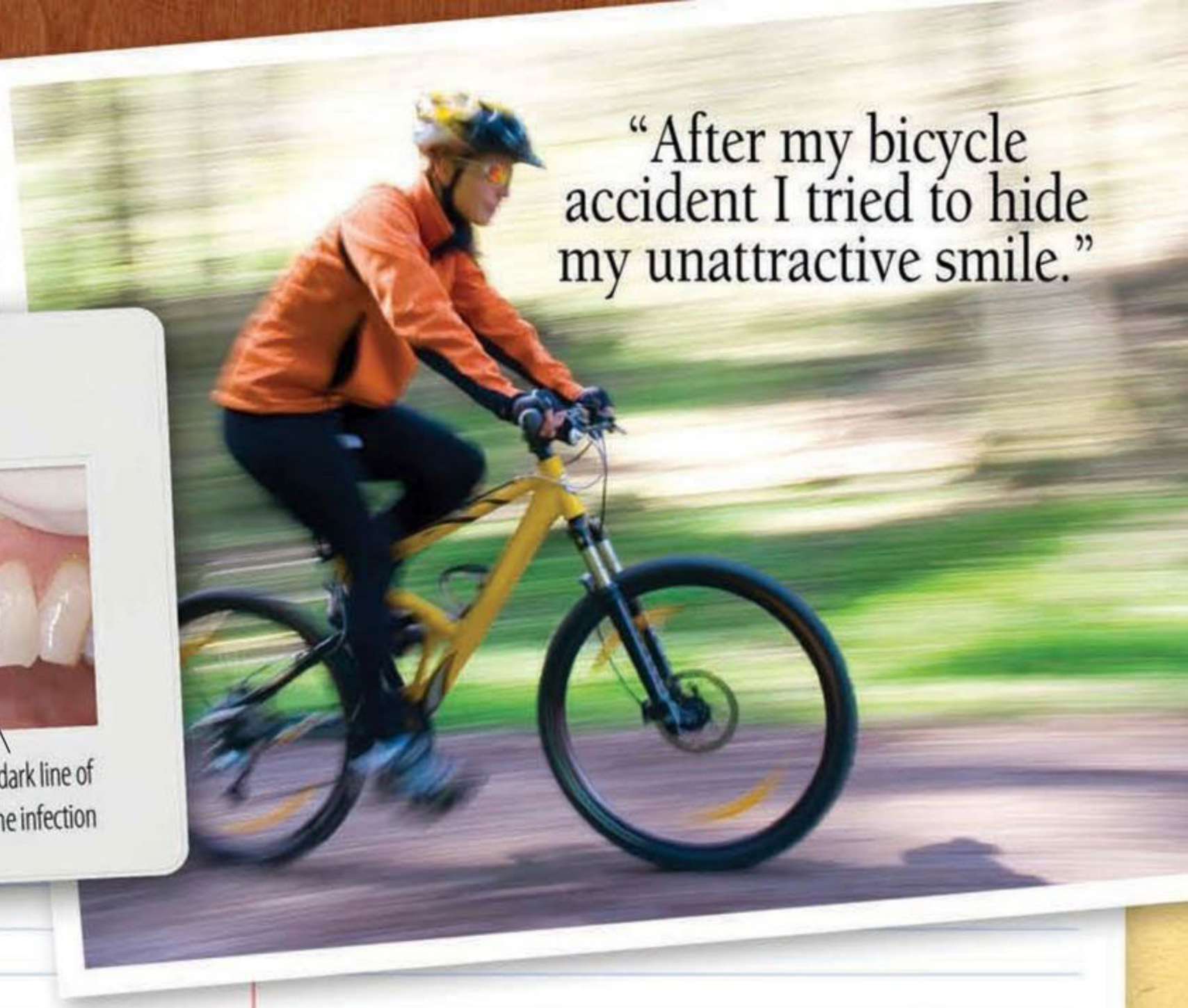


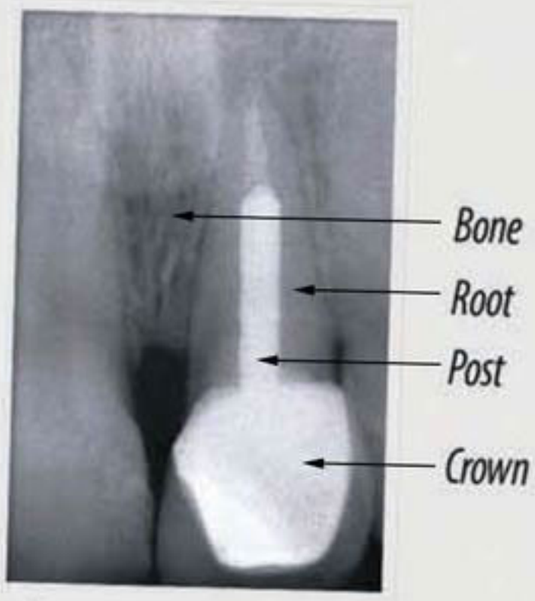
FIGURE 1

Pre-treatment photo showing the dark line of the old crown and swelling from the infection

Patient's Concerns

Elizabeth is primarily concerned about the worsening discomfort and swelling she has been experiencing for the past week. On further questioning, she reveals to Dr. Vilardi that she has been self-conscious about her smile since this tooth was capped because it has never looked quite natural; she has always tried to smile in a way that did not show the unattractive dark line at the gum tissue (Figure 1). She wants a permanent tooth replacement that will look good.

FIGURE 2



X-ray showing a large post and root canal beneath the crown

Findings & Diagnosis

Dr. Vilardi's questioning reveals that Elizabeth has had regular dental care resulting in a trusting and good relationship to dental care and her primary dentist. She is healthy and has no medical history that may impact dental treatment. A thorough and comprehensive clinical examination revealed that her oral health was generally good.

At the problem tooth, Dr. Vilardi discovers significant bone loss as well as a deep periodontal pocket (detachment of gum and bone tissue from the tooth root) on the front surface of the tooth that is now painful. An x-ray of the area (figure 2), showed a large post and root canal beneath the crown. Dr. Vilardi evaluated his clinical findings and determined that a differential diagnosis (a list of possible causes) included:

1. A fractured root (most likely the problem).
2. A periodontal infection caused by bacterial contamination.
3. A failed root canal.
4. A combination of all three.

(continued)

(continued)

Findings & Diagnosis

While it may be interesting to go over why one of these diagnoses is more likely than the others, it is important to realize that during this part of the examination, the doctor becomes a detective. He gathers information, analyzes clues and then uses deductive reasoning and his experience in determining the correct diagnosis. He identifies the cause of the disease and establishes a prognosis, discusses the possible outcomes of treatment and what the expected success of treatment is likely to be. This is all reviewed with the patient.

Dr. Vilardi told Elizabeth the tooth had indeed fractured. The root had broken due to continued normal biting pressure over the years, on a tooth that had already been heavily treated in attempts to save it. Inevitably in this situation a badly fractured tooth has to be removed. Understanding that this was a very traumatic and emotional event for Elizabeth, Dr. Vilardi explains that the tooth can be successfully replaced. It would require some minor surgical therapy with consequences that are quite uneventful and comfortable to go through.

Coordinated Treatment Planning

Teamwork between a general dentist and a specialist is critical for a successful result. Before any treatment, Dr. Vilardi consulted with Dr. Doyle to discuss his recommendations and how they can both best coordinate treatment on Elizabeth's behalf. The variety of options that exist and the best one for the patient are carefully discussed and selected with Elizabeth's consent and approval. The jointly decided treatment plan, with Elizabeth as a fully involved partner, is finalized with estimates of time and cost.

Afraid to smile because of receding gums or periodontal disease?

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Advances in genetic engineering are revolutionizing dental care. Introducing ***GEM 21S***® Growth-factor Enhanced Matrix, the first genetically engineered treatment designed to safely and effectively promote faster healing of bone and gum tissue around teeth. This exciting new product is available now. Ask your dentist or dental surgeon how you can be part of the ***GEM*** revolution.

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IMPORTANT INFORMATION

GEM 21S® Growth-factor Enhanced Matrix is intended for use by clinicians familiar with periodontal surgical grafting techniques. It should not be used in the presence of untreated acute infections or malignant neoplasm(s) at the surgical site or, in patients with a known hypersensitivity to one of its components. It must not be injected systemically.

The safety and effectiveness of ***GEM 21S***® has not been established in other non-periodontal bony locations, in patients less than 18 years old, in pregnant or nursing women, in patients with frequent/excessive tobacco use (e.g. smoking more than one pack per day) and in patients with more severe defects. In a 180 patient clinical trial, there were no serious adverse events related to ***GEM 21S***®; adverse events that occurred are those associated with periodontal surgical grafting procedures in general, including swelling, pain, bleeding, dizziness, fainting, headaches, infection, loss of feeling.

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Ask your doctor about the new *GEM* in dentistry!

GEM 21S® is available now. Ask your dentist or dental surgeon how you can be part of the ***GEM*** revolution.

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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:
BioMimetic Therapeutics, Inc.
389-A Nichol Mill Lane
Franklin, TN 37067

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PATENTS PENDING

BS0005 Iss. 12/05

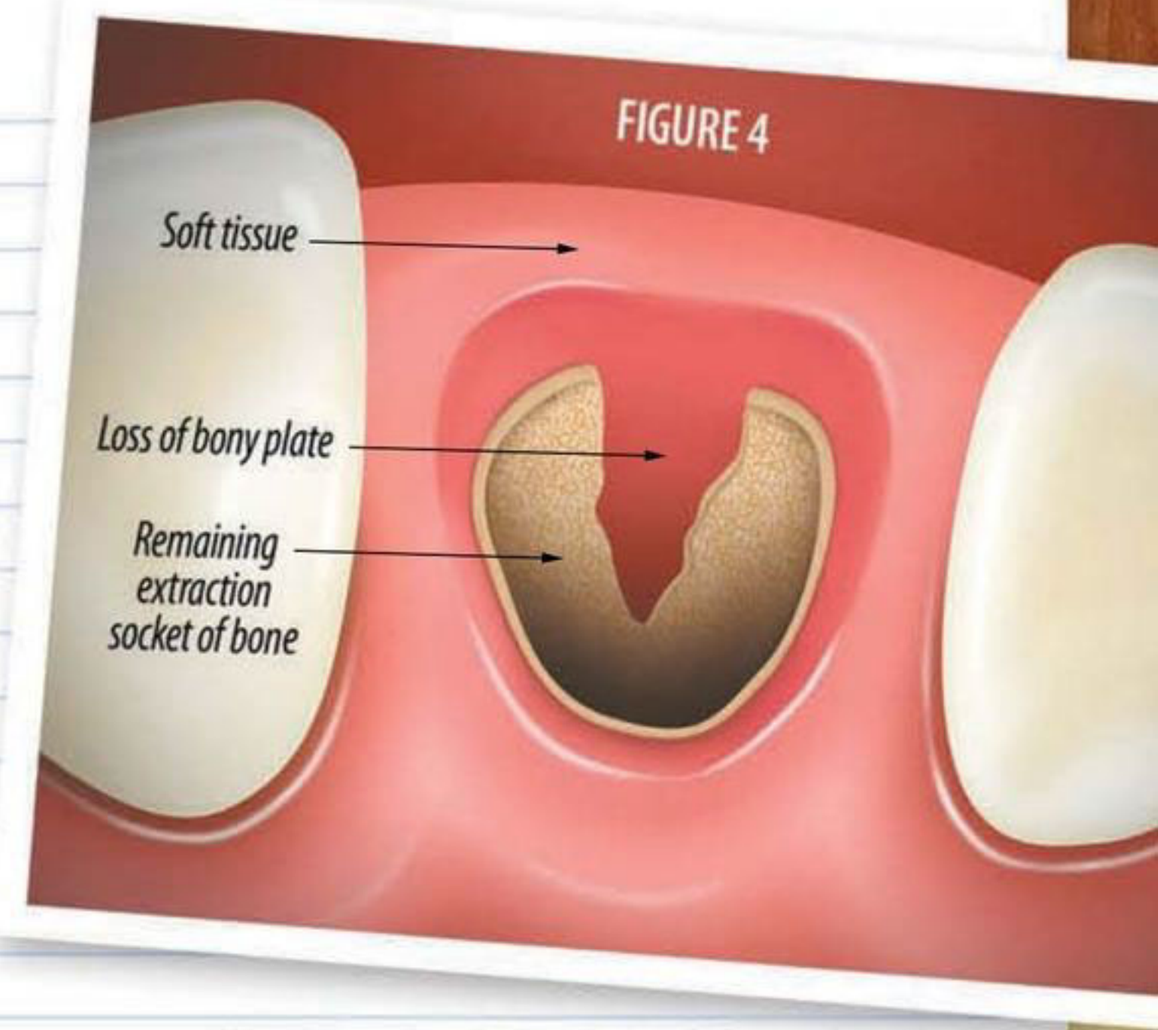
FIGURE 3

After her crown was removed, you can clearly see the fractured root

Treatment Plan

Sure enough her front tooth was fractured and needed to be extracted (Figure 3). Dr. Vilardi's concern for Elizabeth is the potential aesthetic nightmare she faces, because the infection has eroded the outer plate of bone. The socket holding the tooth in place is similar to an ice-cream cone – the infection had removed a large portion of the cone. For example, in this situation the lip-side portion of bone had been lost (Figure 4). The result is that the gum tissue would collapse and be very unattractive. Once the tooth is removed the socket falls in or implodes like a shattering light bulb, resulting in a great deal of shrinkage.

FIGURE 4



(Above) Illustration showing the loss of the outer plate of bone from the infection caused by the fractured root

Because of his training and experience, Dr. Vilardi knows exactly how to prevent this and regenerate new bone which can then be used to replace the tooth root. Moreover, he can coordinate with Dr. Doyle who will provide a temporary replacement tooth so that at no time will Elizabeth be without a front tooth that will allow her to eat, look good and be comfortable.

The extraction of the fractured tooth must take place in a very gentle manner in order to preserve as much of the gingival (gum) and bone tissues as possible. Also a researcher and teacher, Dr. Vilardi developed a technique specifically designed to preserve and regenerate a normal dimension of bone. Using a "resorbable barrier membrane technique" the width of bone can be preserved (Figure 5).

This conservative surgical approach preserves the adjacent tissue, preventing the volume of tissue from diminishing. Preservation techniques like this provide the patient with the greatest potential for excellent cosmetic results.

FIGURE 5

Placement of the barrier membrane into the extraction socket to replace the outer plate of bone

(continued)

(continued)

Treatment Plan

To preserve as much tissue as possible, a bone grafting material is used to help maximize the regeneration of bone. Grafting materials can be obtained from human, animal or synthetic sources, which can be safely used for surgery. A number of sources safe for human use were fully discussed with Elizabeth together with all the benefits, risks and alternatives, ending with her consent to the recommended therapy (Figure 6).

FIGURE 6

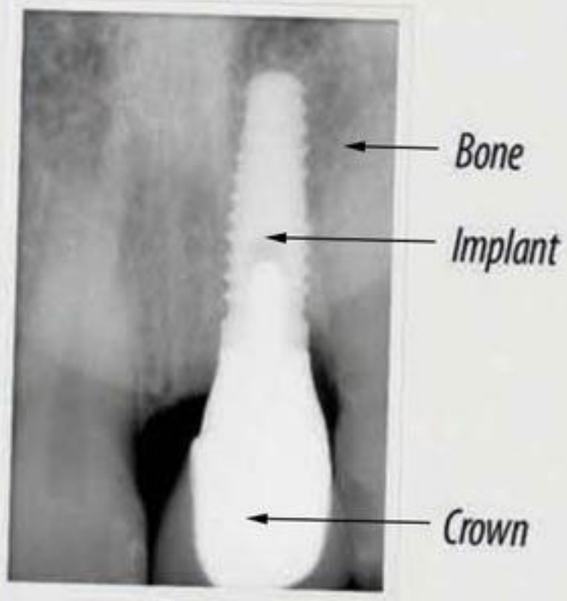
Bone grafting material filling the extraction socket

After three months of healing, the gum tissue where the tooth is missing has been very successfully and predictably restored to the same height as that of the adjacent teeth (Figure 7). This development allows for the next step: the replacement of the missing tooth by the surgeon, Dr. Vilardi. In this situation, an "implant" was the best option to achieve the desired cosmetic, functional and long-term result. Traditionally an implant, a tooth root replacement, is placed below the gum tissue for 2-3 months of healing so that the bone can join or fuse to the implant. An X-ray of the implant and the crown is shown (Figure 8) to show how the bone tissue attaching to the implant and the crown intimately fit together. Following this the general dentist will place a crown attached to the implant to exactly match the adjacent teeth.

FIGURE 7

The extraction after bone fill which is covered by the gum tissue showing a full ridge

FIGURE 8



X-ray of implant with new crown replacing missing tooth.

Did you know?

Terminology like "bone grafting" often scares patients. It sounds a lot worse than it really is. With the technology today most surgeries that require "bone grafting" or bone regeneration are often pre-packaged for human use with material the surgeon needs to safely place into bone loss areas. The body replaces that bone grafting material with your own bone tissue over time. Recipient sites can be periodontal defects, bone ridge deformities, or extraction sites. Bone regeneration will be discussed further in upcoming issues.

FIGURE 1 - BEFORE

Pre-treatment photo showing the dark line of the old crown and swelling from the infection

FIGURE 9 - AFTER

The final restoration demonstrating a normal soft tissue appearance and a very natural looking crown

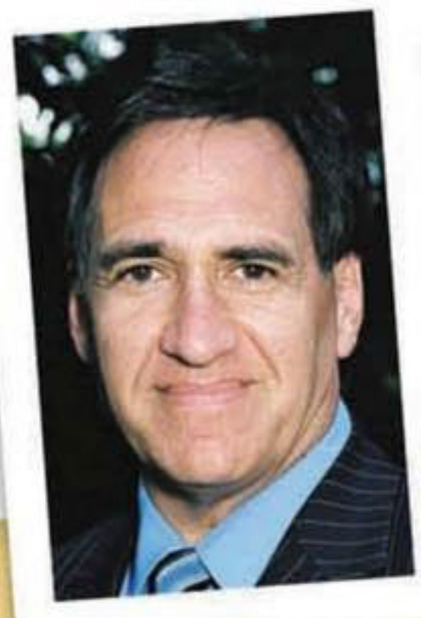
Final Result

Dr. Doyle achieved an excellent result when he placed the crown on the implant, which exactly matched the adjacent teeth (Figure 9).

The collaborative effort between the periodontal surgeon, the restorative dentist and the laboratory technician is critical to the final result. If the surgeon does not place the implant in the correct position, the restorative dentist cannot achieve the desired result. If the restorative dentist does not establish the natural shape and size of the patient's tooth form, the cosmetic result as well as the long term periodontal health of the implant is compromised. Special recognition must also be given to the laboratory technician as he is a major player in the collaborative effort. Without a great laboratory technician, the cosmetic result is in jeopardy. He creates the art work we call a tooth. The restorative dentist and the surgeon provide the environment for him to create a beautiful tooth. With technology and dental healthcare professionals working in harmony, beauty and health can be restored.

"With technology and dental healthcare professionals working in harmony, beauty and health can be restored"

Dr. Mario Vilardi



Author's Name: Mario A. Vilardi, DMD

About the Author:

Dr. Vilardi has a private practice limited to periodontics and implantology. He graduated from the University of Pennsylvania in 1977 and became a Diplomate in the American Board of Periodontology in 1982. He has taught at Columbia University from 1979-89 as well as the University of Pennsylvania from 2002-06.

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Fixed vs. Removable

Choosing between a removable bridge and a fixed bridge

A Consultation with Dr. Joseph Carpentieri

Fixed vs. Removable?

From: Valerie (Vermont)

To: Consultations@deardoctor.com

Subject: Fixed vs. Removable?

Dear Doctor,
I went to my general dentist for implants. I have no teeth in one jaw and he has recommended that I see a prosthodontist. I went to the prosthodontist, and he is recommending implants but instead of permanent teeth (fixed bridgework) he is recommending removable teeth (an overdenture) that fits on top of the implants. I was surprised. Do you think this is a good way for me to go?

Dear Valerie,

Both your general dentist and prosthodontist (a specialist in advanced crown, bridge and denture work) are right. For those patients who have lost all their teeth, but have not lost significant bone, a fixed bridge (permanent non-removable teeth) may be the treatment of choice since the new bridge is not needed for facial and lip support. However, not all patients are candidates for this treatment. For those patients who have lost all their teeth and/or significant bone, facial and lip support, a removable overdenture, which fits "over" the implants, will often be the treatment of choice.

Overdentures can be made with a full palate covered by denture plastic in the upper jaw or they can have an open palate design. The significance of the choice, to a large extent, is determined by a patient's personal experience. This approach to treatment is sometimes "patient-driven." Your motivation and experiences, both physically and emotionally, will in part determine your satisfaction with the replacement teeth whether fixed or removable.

> The decision-making process is a balance between patient preferences and the remaining bone, gum tissue, lip and cheek support.

In order to achieve your goals, it is very important that you express your thoughts and experiences to your dentist or prosthodontist. The decision-making process is a balance between patient preferences and the remaining bone, gum tissue, lip and cheek support. For those patients with severe loss of these remaining structures, a removable overdenture will offer several advantages over the fixed type which include:

1. **Aesthetics**: This is often the determining factor. With an understanding of the art and science of facial aesthetics, a removable yet stable denture supported by implants can replace lost tissues, re-establish facial harmony and truly result in a "makeover" with results often described as remarkable.

2. **Speech enhancement**: Patients describe speech as a major factor in the satisfaction with their denture. All implant supported dentures or bridgework especially on the upper jaw may alter speech, but speech is generally shown to be better with a removable denture as compared to the fixed bridgework *for those patients who have previously worn a denture*.

3. **Hygiene**: It is very important to have direct access to clean the tissues surrounding the underlying implants. This design may optimally preserve bone.

4. **Long-term maintenance**: All full jaw implant supported fixed bridgework or removable dentures will require some maintenance. If designed well overdenture maintenance should be easier and more cost effective for both the patient and dentist.

To summarize a removable overdenture will be similar to the fixed bridgework, both supported by implants, in terms of comfort and ability to chew, but the overdenture will offer significant advantages for those patients with severe loss of bone, gum, lip and cheek support. The bottom line is that loss of teeth affects people on an entirely personal level, and that the treatment needs to be highly individualized to be successful. Make sure you give thought to what you want and need, then express yourself to your dentist so your objectives can be met. Good Luck!

Sincerely,
Joseph R. Carpentieri, DDS

ABOUT THE AUTHOR

Joseph R. Carpentieri, DDS

Dr. Joseph Robert Carpentieri, DDS limits his practice to prosthodontics. He graduated Magna Cum Laude from the University of Maryland/Baltimore College of Dental Surgery. In 1977, Dr. Carpentieri was awarded a specialty certification in prosthodontics from Albert Einstein College of Medicine-Montefiore Medical Center. He is also a Fellow in the Department of Periodontology and Implant Dentistry at New York University College of Dentistry. A published author, Dr. Carpentieri has also lectured extensively across the country.

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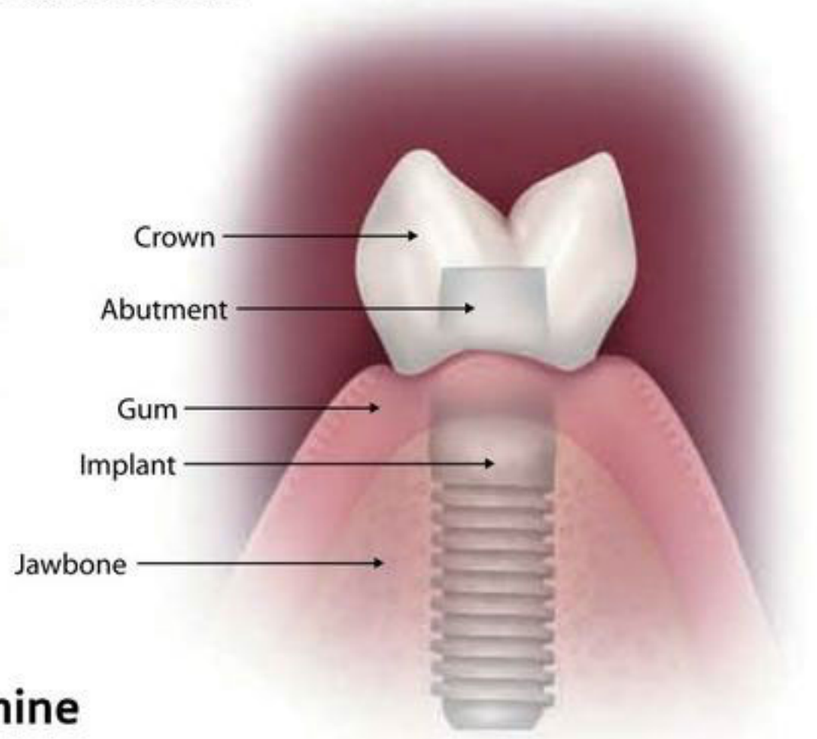
Implant Success Rate

Factors which can influence implant success

A Consultation with Dr. Alan Meltzer



Implant Success Rate?

From: Brian (Pennsylvania)

To: Consultations@deardoctor.com

Subject: Implant Success Rate?

Dear Doctor,
I thought implants had a high success rate. A friend of mine had an implant that failed, can you tell me why?

Dear Brian,

Implants traditionally have a very high success rate. The majority of studies that have been done indicate long-term success rates well over 95%. However, there are many factors that can compromise the success rates of implants. These can be divided into three categories: general health concerns, local factors and maintenance issues. It is important to consult with your dentist or dental professional prior to having implants placed to determine whether you are a good candidate. Most implant failures can be eliminated through proper case selection.

1. General health concerns that may impact an implant's success include such factors as smoking, certain drugs, osteoporosis, history of radiation treatment, or a compromised immune system.
2. Local factors that could impact implants include bone quality, bone quantity, and initial stability of the implant at the time of placement. Bite-related concerns depend upon the amount of stress that the patient will be placing on the implants. When evaluating an implant patient, your dentist has to evaluate whether you clench or grind your teeth. This will impact both the potential short and long-term success of implants.
3. Finally there are maintenance issues, while implants are wonderful high-technology replacements for teeth, they need routine maintenance. This includes daily cleaning and continued professional management. Without ongoing professional care, implants just like any other technically sophisticated device are susceptible to breakdown.

I believe that one should have confidence that implants are an excellent choice to replace missing teeth, but feel free to consult with your dental professional about your unique case requirements – how many implants you need, your medications, your medical history, and local findings such as bone quality and quantity. If you are properly evaluated by a qualified dental professional and determined to be a good candidate, there is no reason why you cannot have extremely high success rates as do most patients.

Sincerely,
Alan M. Meltzer, D.M.D., M.Sc.D

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ABOUT THE AUTHOR

Alan M. Meltzer, D.M.D., M,Sc.D

Dr. Meltzer received his dental degree from the University of Pennsylvania in Periodontics and Oral Medicine and a Master of Science in Dentistry at Boston University School of Graduate Dentistry. Honored in *Dentistry Today* magazine as one of the "Top 100" international leaders in dentistry, he has lectured extensively on implant procedures on six continents and received acclaim for his numerous publications.

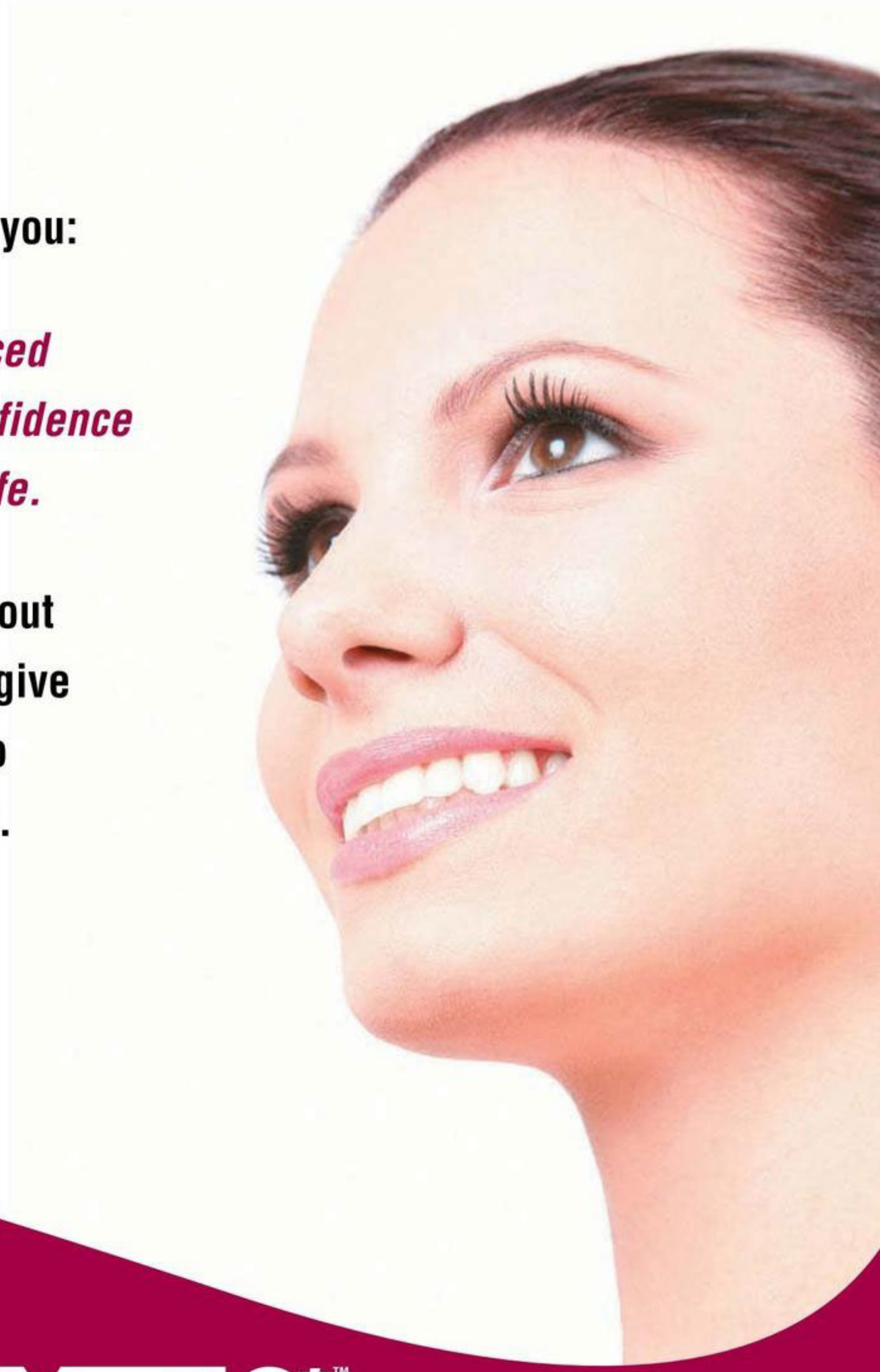
Make A Lifestyle Improvement.

Implant dentistry is the most advanced therapy available to replace missing teeth.

Dental implants may offer you:

Improved health, enhanced appearance, greater self-confidence and a better quality of life.

Ask your dentist today about how dental implants may give you the closest thing to beautiful, natural teeth.

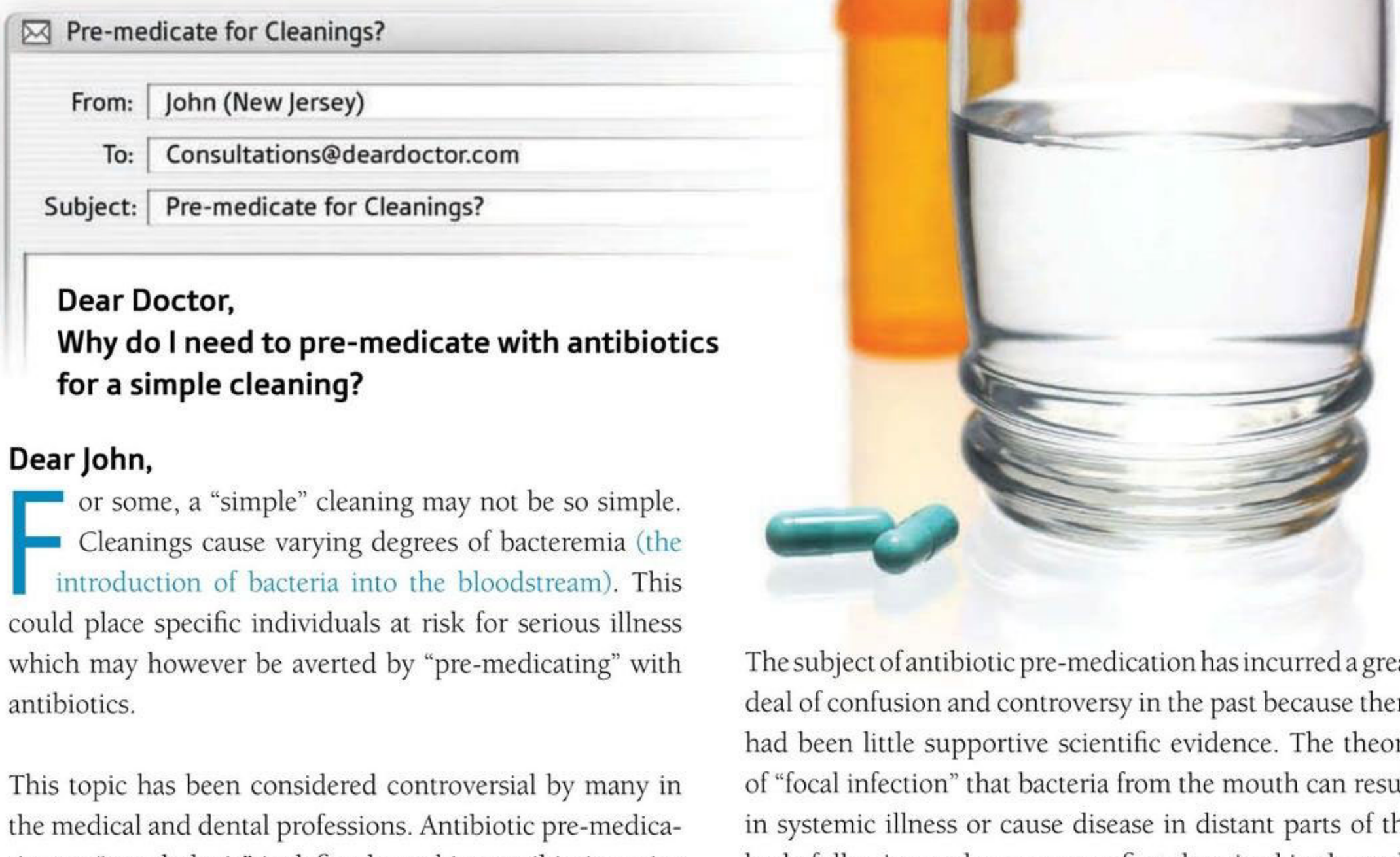


BIOMET 3i™

Antibiotics for Dental Visits

Some patients may require pre-medication before a dental visit

A Consultation with Dr. Louis Rose



Dear John,

For some, a "simple" cleaning may not be so simple. Cleanings cause varying degrees of bacteremia (the introduction of bacteria into the bloodstream). This could place specific individuals at risk for serious illness which may however be averted by "pre-medicating" with antibiotics.

This topic has been considered controversial by many in the medical and dental professions. Antibiotic pre-medication or "prophylaxis" is defined as taking antibiotics prior to treatment in order to prevent disease. There is consensus among doctors that there are relatively few medical situations where antibiotic pre-medication is indicated; primarily for the prevention of endocarditis (inflammation of the inner membranes and valves of the heart); prosthetic (artificial) joint infections and those with compromised immune systems (reduced ability to resist infection).

The subject of antibiotic pre-medication has incurred a great deal of confusion and controversy in the past because there had been little supportive scientific evidence. The theory of "focal infection" that bacteria from the mouth can result in systemic illness or cause disease in distant parts of the body following oral surgery was first theorized in the early 20th century. In the 1930s and 1940s, a strong correlation was shown between dental procedures that cause bleeding and bacteremia (bacteria in the bloodstream) and infective endocarditis. This led to the use of antibiotics for patients identified as having a risk for endocarditis and which was later expanded to include patients with prosthetic joints and those with compromised immune systems.

The subject of antibiotic pre-medication has incurred a great deal of confusion and controversy in the past because there had been little supportive scientific evidence.

For many years, the American Heart Association (AHA) recommended that patients with certain heart conditions take antibiotics shortly before dental treatment. This was done with the belief that antibiotics would prevent infective endocarditis, previously referred to as bacterial endocarditis.

The guidelines regarding premedication have recently changed representing a major change in philosophy.

The AHA's latest guidelines were published in its scientific journal, Circulation, in April 2007: the AHA and the ADA (American Dental Association) recommend that most of these patients no longer need short-term antibiotics as a preventive measure before their dental treatment. The new guidelines state that taking preventive antibiotics is not necessary for most people and, in fact, might cause more harm than good. Unnecessary use of antibiotics could cause allergic reactions and dangerous antibiotic resistance.

The new guidelines state that taking preventive antibiotics is not necessary for most people and, in fact, might cause more harm than good.

Patients who have taken prophylactic antibiotics routinely in the past but no longer need them include people with:

- mitral valve prolapse (valves failing to work in harmony)
- rheumatic heart disease (caused by rheumatic fever)
- bicuspid valve disease (valves failing to work in harmony)
- calcified aortic stenosis (narrowing of the aortic artery)
- congenital heart conditions (birth defects)

The new guidelines are aimed at patients who would have the greatest danger of a bad outcome if they develop a heart infection.

Infective endocarditis is characterized by growth of "vegetations" on, and inflammation of the inner heart lining which can be life threatening. Preventive antibiotics prior to a dental procedure are advised for patients with:

- artificial heart valves
- a history of infective endocarditis
- certain specific, serious congenital (present from birth) heart conditions, including:
    - unrepaired congenital heart disease
    - a completely repaired congenital heart defect with prosthetic material or device during the first six months after the procedure
    - any repaired congenital heart defect with residual defect at the site or adjacent to the site of a prosthetic patch or a prosthetic device
- a cardiac transplant that develops a heart valve problem.

The most usual recommendation of the AMA includes antibiotic pre-medication with 2 grams of amoxicillin one hour before certain dental or surgical procedures, or other antibiotics for those allergic to amoxicillin. Because there are no similar guidelines for patients with prosthetic joint replacements or whose resistance is severely compromised, the decision is up to the individual physician.

Because the conditions that now require premedication are highly technical in nature, there should be a clear indication for antibiotic pre-medication and it is the physician's responsibility to make the decision based on the degree of risk to a patient. It is the dentist's responsibility to communicate with the physician and make sure the patient is protected. That is why the relationship between the medical and dental professions is critical for your well-being.

Sincerely,
Louis F. Rose, DDS, MD

ABOUT THE AUTHOR

Louis F. Rose, DDS, MD

Louis F. Rose DDS, MD maintains a private practice limited to periodontics and implant dentistry. Dr. Rose received his dental degree from Temple University School of Dentistry and his graduate training in periodontics from the University of Pennsylvania School of Dental Medicine. He received his MD degree from the Medical College of Pennsylvania. Dr. Rose is a Clinical Professor at both the University of Pennsylvania School of Dental Medicine and New York University. A Diplomate and Director of the American Board of Periodontology, Dr. Rose is a nationally and internationally invited lecturer and has published extensively.

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Pregnancy & Birth Control

The effects of pregnancy and birth control on gum disease

A Consultation with Dr. Susan Karabin

Pregnancy & Birth Control?

From: Gina (Mississippi)

To: Consultations@deardoctor.com

Subject: Pregnancy & Birth Control?

Dear Doctor,
I am a 30-year old woman with gum disease: why are my gums so bad at my age – and could there be a genetic link? Just so you know, I had bleeding gums during my pregnancy three years ago and haven't taken good care of my teeth since then due to the pressures of taking care of my child, work and family. I've just recently seen my dentist who referred me to a periodontist. Please help!

Dear Gina,

Don't be alarmed – your periodontal (gum) condition is probably quite treatable. Your dentist was right to send you to a periodontist, a dentist who specializes in the study and treatment of the supporting structures of the teeth, and how these structures may be affected by the individual's general health.

Here are some helpful facts to allay your fears. Firstly, nearly all forms of gum disease are caused by dental (bacterial) plaque (an organized mass of bacteria), which generally accounts for 90% of the problem. Bacteria causes gum inflammation (noticed as bleeding or swelling) when it remains on the teeth for extensive periods of time. Daily effective brushing and flossing help minimize this condition. You should therefore have your dentist or hygienist review your techniques after your teeth have been thoroughly cleaned.

The effects of bacterial plaque are especially apparent in some pregnant women during their first trimester – a condition known as "pregnancy gingivitis" – or in some women who take certain birth control pills. In both cases the elevation of female hormones (estrogens) causes blood vessel changes in their gums, making them more susceptible to the effects of bacteria. Regular check ups and cleanings are

the best method for discovering and treating gum problems early.

Recent studies have shown a statistical relationship between pre-term low weight babies and mothers with severe periodontal disease, implying a relationship between the two. These trends, however, were seen primarily in low socio-economic groups. It does not affect all women, particularly those who are otherwise healthy with normal pregnancies and normal birth weight babies; such studies, though, are good to keep in mind.

Diabetes, however, is a known condition with extensive documentation in the scientific literature on its connection with periodontal disease. The presence of diabetes should be checked for during pregnancy, especially if periodontal disease is evident.

There are also many "risk factors" that further increase your susceptibility to infection and disease. The most important of these is smoking, which affects how you respond to other health issues and, more importantly, how you heal. Smoking affects the level of periodontal disease directly by causing greater amounts of plaque accumulation, and indirectly by affecting every other body system, including your immune system. If you smoke, you should try to cut down or stop altogether with a helpful smoking cessation program.

Your inquiry about genetics is a good one. We all inherit "traits" from our parents and grandparents – including to an extent our resistance response to disease (which is why family histories are important). While a genetic predisposition – particularly with a family history – may increase your susceptibility to periodontal disease, tooth loss is not inevitable. In many cases our parents – and certainly our grand parents – didn't always have access to the great dental and periodontal care commonly available today.

Stress can also affect your immune system and impact your periodontal health. We're generally referring to severe stress, though, either emotional or physical, which can reduce your resistance to disease by lowering your immunity, the way your body copes with or resists disease or infection. For example, stress increases the levels of hormones such as cortisol and adrenalin, both of which modulate your resistance and susceptibility to inflammation and infection. Make sure you are sleeping and eating well.

That brings us to the issue of age and the severity of disease. Generally speaking, the more bacterial plaque on your teeth and the longer it's there, the more periodontal disease you may have. Periodontal disease is also a catch-all phrase for a group of diseases that generally have the same outcome – the progressive loss of attachment of the gum and bone tissues to the teeth, which may eventually loosen and be lost. However, only about 10% of the population develops advanced or severe periodontal disease that endangers teeth. At age 30 you may have some of the signs and symptoms of periodontal disease, but your periodontist will be able to make a specific diagnosis of what your condition is and the extent of the problem. In all likelihood, a lot can be done to treat you and prevent further recurrence by controlling the cause of the disease and treating its effects.

The effects of bacterial plaque are especially apparent in some pregnant women during their first trimester – a condition known as "pregnancy gingivitis" – or in some women who take certain birth control pills.

The best way to protect yourself is to take the recommendation of your dentist and see a periodontist. No doubt your dentist has referred you to someone he or she trusts and has great confidence in their knowledge and skill in helping you get your gums and periodontal tissues back to a healthy state, in the most conservative low risk way possible.

If you would like to learn more about pregnancy, periodontal disease and other related topics, visit the American Academy of Periodontology at www.aap.org.

Sincerely,
Susan D. Karabin, DDS

ABOUT THE AUTHOR

Susan D. Karabin, DDS

Dr. Susan Karabin is presently President Elect of the American Academy of Periodontics and President of the Northeastern Society of Periodontists. She is past President of the New York Academy of Dentistry and is a fellow of the American College of Dentistry. Dr. Karabin received her dental degree and certification in periodontics from Columbia College of Dental Medicine where she is an Associate Clinical Professor. She has a full time practice limited to periodontics.

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ORAL HYGIENE BEHAVIOR

YOUR WAY OF PROMOTING DENTAL HEALTH

By Garry A. Rayant, BDS, DDS, LDS, RCS, MS.

A lot of folklore surrounds the time-honored but somewhat mythical beliefs about many oral hygiene habits, such as cleaning frequency, the types of brushes and aids we use and how to use them[1]. This article cuts through some of that confusion to help you tailor your oral hygiene habits to your own needs based on what we've learned from the fields of dental research and behavioral science.

There are many reasons touted for why people clean their teeth: to have a healthy mouth, to have a nice smile, to have fresh breath, and the like[2]. From a scientific perspective there is one primary reason for brushing, flossing or using other mechanical or chemical oral hygiene aids – to clean teeth as part of regular body and mouth hygiene. Through this process you remove dental plaque – bacteria actually, the whitish, sticky and nearly invisible film that grows at the gum line and on the tooth surfaces.

Studies dating back to the 1950s reveal the connection between plaque (bacteria) and dental disease. Over 90% of dental disease is caused by plaque accumulation alone[3]. Gum (periodontal) disease and dental caries (tooth decay), among the most common diseases known, are caused by this bacterial biofilm.

Most of the prevention of these two diseases is in your hands. They are manageable on both an individual and community level using simple plaque-control strategies[4,5]. Social scientists as far back as the 1970s working in the

field of dentistry have observed that oral health depends largely upon oral hygiene practices applied regularly throughout the lifespan; therefore,

an effective educational approach to oral hygiene and diet is essential to keeping teeth for a lifetime[6].

Oral hygiene behavior as distinct from other health behaviors involves the ability to carry out a simple brushing routine. This ability can be changed or "shaped" through a simple training program[7]. Unlike behavior modification for more complex habits like quitting smoking or alcohol, or even dieting, changing oral hygiene behavior is easier, and maintaining the change is generally better than for other behaviors. One particular model simply asserts that individuals training anew, or modifying their existing techniques, can develop a new oral awareness just by the different and more pleasant feel to their mouth brought by the changes in technique[8].

This good feeling is itself motivating and becomes part of a better long term habit. And, **the key to this behavior change is changing how you hold your brush**.

So here's the action plan to accomplish your goal of **Self Plaque Control**:

1. A method to achieve the goal:
   Education/Training in Daily Oral Hygiene Behavior

2. Evaluation mechanism to assess effectiveness of the method:
   The Evaluation System

3. Re-education based on the outcome of the evaluation system:
   Behavior Modification leading to an "Efficient Daily Oral Hygiene Habit"

Plaque is easily removable so hold the toothbrush in your fingertips using no more than pen, pencil or paint brush pressure instead of a fist grip. This will help prevent you from brushing too hard causing damage to the gum tissues.

STEP 1: EDUCATION/TRAINING IN DAILY ORAL HYGIENE BEHAVIOR

Dental plaque is easily removable, so here's the method to achieve the goal:

Hold the toothbrush in your fingertips using no more than pen, pencil or paintbrush pressure, not with a fist grip. The motion and pressure needed are minimal – not as much as required to scrub your nails – gum tissues are soft and easily damaged. A modified gentle "scrub" technique is best: the individual holds the toothbrush bristles of a well-designed multi-tufted toothbrush at about 45 degrees into the gum line, then gently wiggling or gently scrubbing as shown in the pictures to the right.[10, 11] Note the different bristle placement for different areas.

The motion and pressure needed are minimal since gum tissues are soft and easily damaged

Examples of correct bristle placement at the gum line from which to start gentle jiggling, mini-scrub movement.

DIGITAL VISION/GETTY IMAGES

After you've brushed, which should remove most of the plaque, you should then floss once a day. Use the floss by forming a "C" shape by wrapping it around each tooth surface and moving it up and down vertically and gently for 3-4 strokes. Clean each side of the teeth where they contact each other, being careful not to jam the floss down between the normally tight tooth contacts.

Floss positioning: Starting gently beneath the gum line, wrapped in a C shape (top) and then moved downward (bottom)

Over 50% of plaque accumulation occurs in the protected area between the teeth

PLEASE NOTE:

- Learning these new behaviors takes a little time and practice. Complete brushing may take up to 2 minutes at first and some places may feel awkward to get to.
- More is not better and can be damaging – don't scrub hard when brushing or saw when flossing.[12]
- We know most people don't mind brushing but don't like flossing. However, remember: over 50% of plaque accumulation occurs in the protected area between the teeth, the site where gum (periodontal) disease and cavities start and progress.
- An antibacterial mouthrinse is a useful adjunct to brushing and flossing. There are two main reasons for daily use of (antimicrobial) mouthrinses; first, given the fact that many people may not remove plaque adequately and secondly, as a method of delivering antimicrobial agents to soft tissues or membranes throughout the mouth. Bacteria stick to these membranes which can then act as reservoirs from which plaque formation begins.[13]

Overzealous brushing can cause damage to teeth and gums. Notice the gum recession and the roots are showing.

PHOTODISC/GETTY IMAGES

While pictures are worth a thousand words, having these techniques demonstrated in your own mouth is worth a million. The next time you visit your dentist, set up an appointment with a member of her/his team for an oral hygiene or plaque control training session or review. Ask them to specifically demonstrate these techniques in your own mouth so you can actually perceive how they feel when done correctly and then directly mimic and copy the correct technique or behavior. It's well worth the time and expense for what is arguably the most valuable procedure in dentistry.

STEP 2: THE EVALUATION SYSTEM

How do I know I'm doing it right? This is a very important question. To make your changed behavior a more efficient habit you need an evaluation system. Here are some easy ways to get feedback and provide yourself with positive reinforcement:

- **The Tongue Test:** Have you ever noticed after a professional dental cleaning by a hygienist or dentist how slick and smooth your teeth feel right down to the gum line? Well, that's how they should feel every time you brush your own teeth. Use your tongue to feel at the gum line and see if the tooth surfaces feel smooth and slick throughout your mouth. Try at the upper front first – that's where most people do the best job because it's easiest to reach; then, try the more difficult areas like the tongue side of the lower back teeth.

- **Floss check:** This is easier with un-waxed floss. Is there blood on the floss or does the floss smell? Do you notice when you run the floss up and down a tooth surface, it squeaks? We call that squeaky clean, so try it – once a day may be sufficient to keep your gums healthy.

"tongue test" to check for slippery clean feeling at the gum line after plaque removal.

If you are unable to carry out or assess these new or changed behaviors, don't be disappointed or frustrated – everybody has different levels of dexterity. Remember, it is important to reduce your daily plaque levels, even if you cannot remove all the plaque. The less plaque present daily on your teeth throughout your life the more likely you are to keep your teeth in relative health for life. Likewise, if you are unable to perceive or use these evaluation checks, do not be too concerned.

- **Bleeding:** Now here's a good one. It's important to note that healthy gums do not bleed; bleeding gums usually signal inflammation of the gums, i.e. gingivitis. If you note bleeding after brushing or flossing in the absence of pain, it should go away after a few days if you continue the new brushing and flossing methods. If you notice this or any other changes that concern you, consult your dentist.

So now let's be objective and proof positive. If you really want to know whether you're doing a good job or not:

- **Disclosants:** Disclosing solutions are simple dyes that can stain plaque and make it visible; your dentist or hygienist may have used them in your treatment before, together with an "index" or charting system to quantify your behavior at your dental visits, similar to your doctor recording blood pressure at every visit.

- **Visit your dentist:** This is the ultimate check for learning how well you are removing plaque daily and how this activity has affected the health of your teeth and gums.

11 year old child before disclosing solution is used. To the naked eye, it is impossible to see plaque (bacteria).

Same child after disclosing solution is used. The purple stain highlights older bacterial plaque and the pink newer plaque. Are you surprised?

Same child after plaque removal. Notice all the stain (plaque) has been removed.

STEP 3: BEHAVIOR MODIFICATION

These evaluation systems should allow for re-education by providing feedback to further modify your oral hygiene behavior until you can more easily and efficiently remove plaque daily. After practicing for a while, your hygiene behavior will again become pretty automatic; but now you should also be using the evaluation tips subconsciously to check and know how well you are doing. Then you will be practicing an efficient daily oral hygiene habit.

The ultimate check for learning how well you are removing plaque daily is a visit to your dentist

QUESTIONS AND ANSWERS

1. How many times do I brush and floss daily?

The dental literature has no absolute guidelines, nor is specific research available, to tell an individual how many times a day it is necessary to brush or floss to keep your mouth healthy.

Here are some reasonable suggestions:

- Try to make sure you efficiently remove plaque at least once a day. Since plaque takes 12-24 hours to reform on a clean tooth surface, once a day may be enough to be healthy. If you would like to brush/floss twice, for freshness that's fine. Whatever you do, be gentle and don't brush or floss until it hurts or causes damage.
- Some people who have gum (periodontal) conditions or high caries (decay) rates (for example, children who are at greater risk for dental decay with their newly erupted teeth) may be advised to carry out plaque control at a different or increased frequency; these issues should be discussed with your dental health professional for direct evaluation and recommendations.

2. When and how often should I change my brush?

A toothbrush should generally last several months if it is being used correctly. When the bristles become worn or splayed, it's time for a new one – a new broom sweeps clean.

An overused and worn out brush is damaging.

3. Is there an alternative to floss?

Floss is generally thought to be the most efficient way to remove plaque from between teeth, but some people really struggle or don't like using it. If you really have difficulty flossing, try doing it every other day and see if it's enough to keep your gums healthy. Other "inter-dental" aids are available, such as wood points, specially-designed brushes and other devices. These should be recommended to suit your individual mouth and condition. Have your dentist or hygienist review and demonstrate their use.

4. What about electric toothbrushes?

It's not so much about the brush as the way you use it. As a generalization, and within reason, there are no good studies that show one brush to be better than another if you use good dexterity. Studies have shown however, that some electric brushes are more efficient in plaque removal and can do it quicker with less effort.

5. What about toothpaste?

Toothpastes vary in their ability to help remove plaque and tooth stains. The best general guideline is to use toothpaste that contains fluoride and an anti-tartar agent. If used over time, fluoride toothpastes increase resistance to decay and reduce tooth sensitivity. Remember not to rinse out after brushing because you wash away the fluoride – just spit it out.

6. My teeth are sensitive when I brush and/or floss.

Sensitivity is usually, but not always, caused by exposure of root surfaces because of gum recession, and can be anything from a little to exquisitely sensitive to temperature and/or touch. If you have sensitivity you should visit your dentist. Be careful not to over-brush because it can cause damage.

ABOUT THE AUTHOR

Garry A. Rayant, BDS, DDS, LDSRCS, MS

Dr. Garry A. Rayant, BDS, DDS, LDSRCS, MS is in private practice limited to periodontics & implant dentistry. Dr. Rayant received his BDS graduating from London Hospital Medical College Dental School, London University in 1972; his LDSRCS degree from the Royal College of Surgeons of England in 1973; an MS Behavioral Science in Periodontics from the Royal Dental Hospital, London University in 1975; he was an Annenberg Scholar at the University of Pennsylvania where he completed the Post-Doctoral Periodontics program in 1977. He received his DDS from the State of California in 1998. He is the founder and director of the San Francisco Academy for Advanced Dental Education and Editor-in-Chief of *Dear Doctor* magazine.

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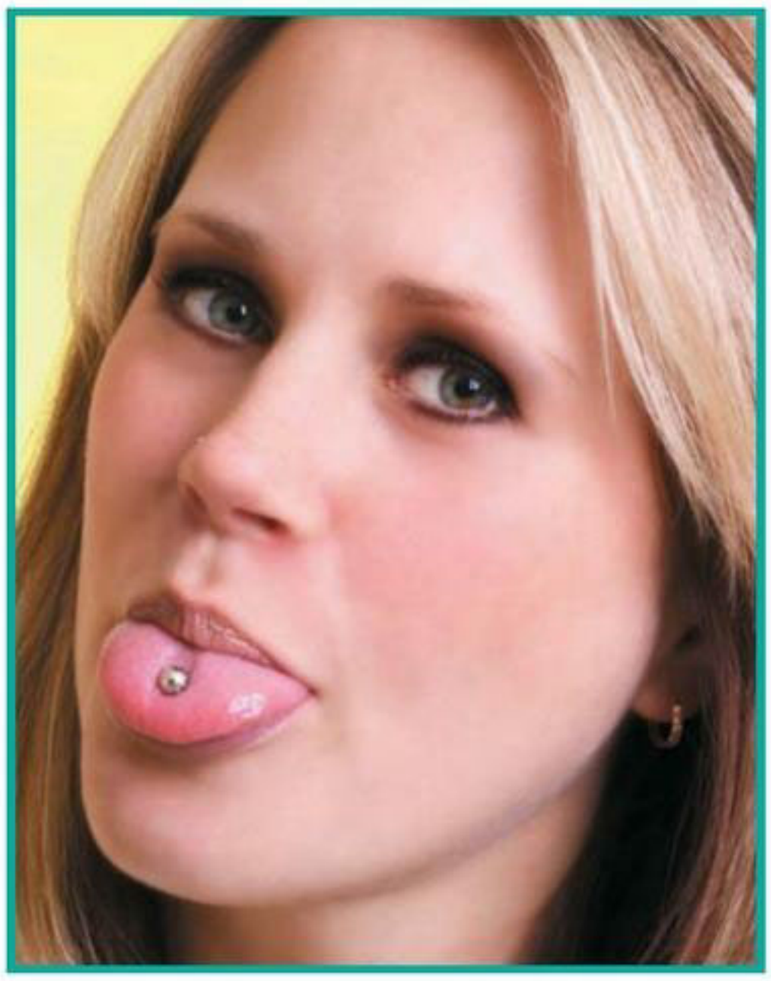
Dear Reader,

Your questions are very important to *Dear Doctor* because they shape our future editorial content. If, after reading this article, you have any questions please email us at questions@deardoctor.com or submit your questions via our website at deardoctor.com.

Body Piercings and Teeth

The dangers of tongue and lip piercings to dental health

A Consultation with Dr. Steven Gold



Body Piercings and Teeth?

From: Katie (California)

To: Consultations@deardoctor.com

Subject: Body Piercings and Teeth?

Dear Doctor,
My daughter has a tongue piercing and wears a metal ball in the middle of her tongue. She has already chipped her lower front tooth. Can this piercing result in other dental problems?

Dear Katie,

Tongue and other piercings can cause many clinical problems. Tongue bolts, as they are known, have resulted in a variety of problems including chipping, sensitivity and pain to teeth. More frequently, periodontal (gum) problems may result. These may appear as recession, inflammation, infection and bone loss. Rarely, nerve damage can occur when placing a tongue bolt. If she continues to wear the tongue bolt she should consult with her dentist about the frequency of her dental checkups. Even though wearing oral ornaments may be in vogue presently, it is a trend that can have significant long-term effects. The Journal of the American Dental Association has noted that the most common sites for intraoral piercings are the tongue and the lip. The American Medical Association recently reported a case of severe facial pain following a tongue piercing in a teenager, a student in Rome, Italy. Afterwards she started to get electrical shocks 20-30 times a day in many areas of her face. A neurologist explained that the tongue bolt irritated the nerve to the tongue and was the cause of these neurological symptoms, a condition known as trigeminal neuralgia. The bolt was removed and two days later the pain was gone.

Tongue bolts can be painful to have placed, the tongue is rich in blood vessels and nerves and much bleeding can occur. Think about how painful it is when you just bite your tongue or lip accidentally. Many question why people have oral or other piercings or markings like tattoos; fashion and peer pressure are usually cited. Make sure they don't become "permanent reminders of temporary emotions", in other words try not to make changes to your body that may be irreversible. Whatever you do, get advice first and learn as much as you can about all the ramifications before you make the decision to go ahead. The topic is worthy of discussion with your dentist first.

Sincerely,
Steven I. Gold, AB, DDS

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ABOUT THE AUTHOR

Steven I. Gold, AB, DDS

Dr. Steven I. Gold is the 12th recipient of the Scoop Award for his service to the profession. He received his dental degree from New York University College of Dentistry. He completed his certification in Periodontics at Columbia University College of Dentistry where he is currently a clinical professor. Dr. Gold has served as president of the Northeast Society of Periodontics and the International Academy of Periodontics and has published and lectured extensively.

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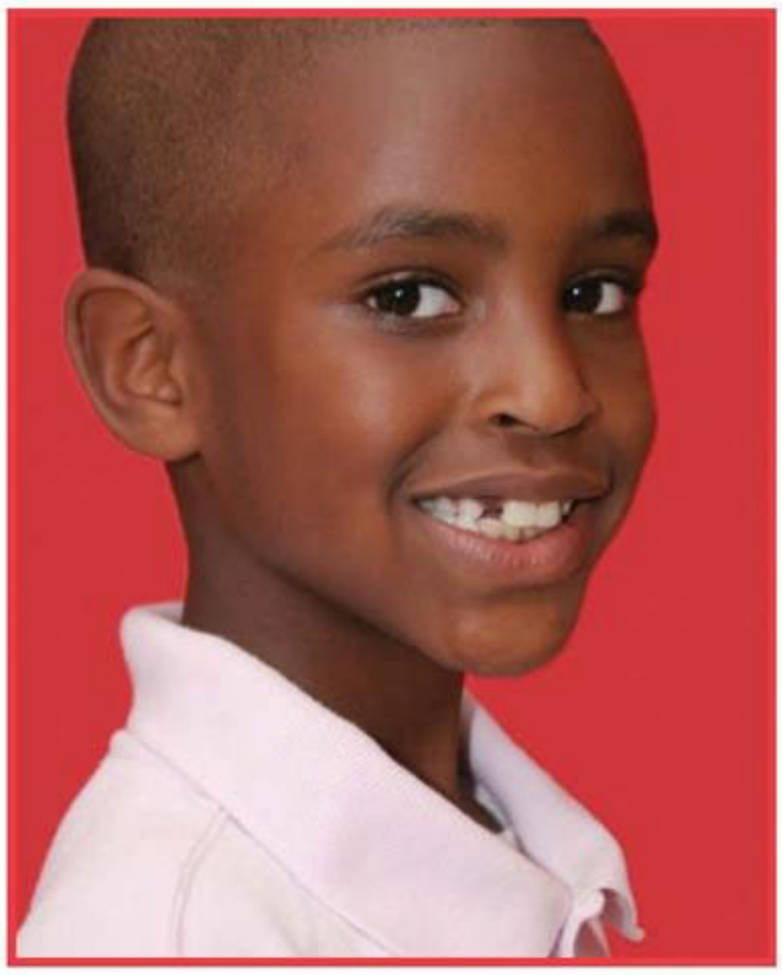
Early Loss of Baby Teeth

Importance of maintaining the space caused by the premature loss of baby teeth

A Consultation with Dr. Barry Kayne



Early Loss of Baby Teeth?

From: Sarah (New York)

To: Consultations@deardoctor.com

Subject: Early Loss of Baby Teeth?

Dear Doctor,
My child has lost some baby teeth from tooth decay. My general dentist wants me to see an orthodontist to discuss keeping the space. Could you explain to me why this is important?

Dear Sarah,

Your dentist and orthodontist understand the complex dynamics of growth and development of the jaws. What is essential for you to know is that the baby teeth also serve a very important function of maintaining space. If they are lost prematurely, the spaces created can dramatically shrink becoming smaller and smaller, leaving insufficient space available for the permanent (adult) teeth. As soon as the six-year molars have erupted into the mouth, it is important not to let them drift forward into the spaces created by premature loss of baby teeth. A "space maintenance appliance", a type of "retainer", can be used which can also help socially if the missing tooth or teeth show. If the spaces are not prevented from shrinking, the permanent teeth will come in crowded or crooked. As your child grows and matures these misaligned permanent teeth could necessitate prolonged orthodontic treatment (braces) with consequent greater financial impact.

Maintaining space is therefore to your advantage. It is unfortunate that your child has lost his/her baby teeth earlier than normal, but as you can see space maintenance can be critically important. If your child ultimately needs orthodontics to straighten his/her teeth, the possibility of needing further teeth extracted will be a reduced. Moreover, a beautiful smile could be compromised by not maintaining space should the baby teeth be lost prematurely. Be sure to ask you dentist or orthodontist about what to do if your child has to lose a baby tooth prematurely.

Sincerely,
Barry S. Kayne, DDS

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ABOUT THE AUTHOR

Barry S. Kayne, DDS

Dr. Barry Kayne received his DDS degree in 1969 from Ohio University. After extensive study, Dr. Kayne earned dual certification in 1979 in both periodontics and orthodontics from the University of Pennsylvania. His practice specializes in periodontics, implantology, adult orthodontics and the diagnosis and treatment of TMJ. Dr. Kayne has lectured extensively and has been on the staff of the University of Pennsylvania, Temple University, Veterans Hospital of Philadelphia, Wilmington Medical Center, and Delaware Technical and Community College.

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TMD
Understanding the Great Imposter

By Dr. Steven B. Syrop

It didn't make sense, Margaret had been to the dentist for a simple filling; a little decay had been removed and the new filling seemed fine, but pain from same area was getting worse.

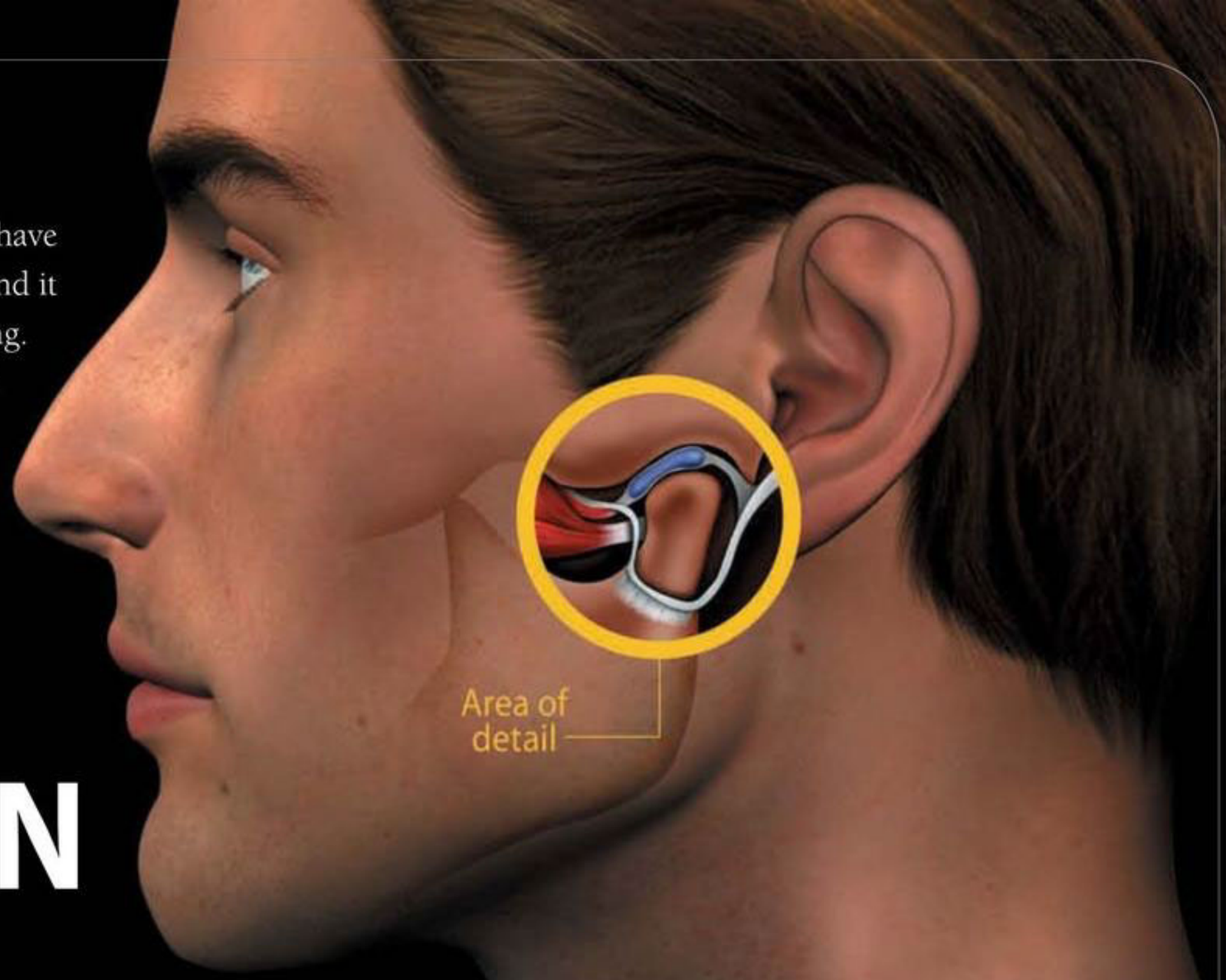
Al, a man in excellent physical condition, a coxswain on a crew team and the coach of a soccer team would have chronic headaches and what seemed like "post-workout" pain in his head and even his neck.

Elizabeth would wake every morning with soreness on one side of her jaw, a feeling like her teeth had been in a vice and her husband said that she was grinding her teeth so loudly in her sleep that the noise woke him up.

These three people suffer from seemingly different conditions, but in fact, all of their complaints are hallmarks of "Temporomandibular Disorder" or TMD. This condition is sometimes referred to as "the great imposter", because the similar character or nature of the discomfort or pain is the same for many differing conditions.

Let's try to simplify the situation to make it understandable: the temporomandibular joint is formed between a small depression in the temporal bone of the skull, into which an almond shaped structure, the condyle of the lower jaw or mandible, neatly fits. When you open wide you can feel the joints working by placing your fingers

in front of your ears, that's right you have two TM joints, one on either side, and it is the lower jaw that does the moving. It is a special joint in the body in that it has a small disc between the two bones, which allows forward and sideways movement.



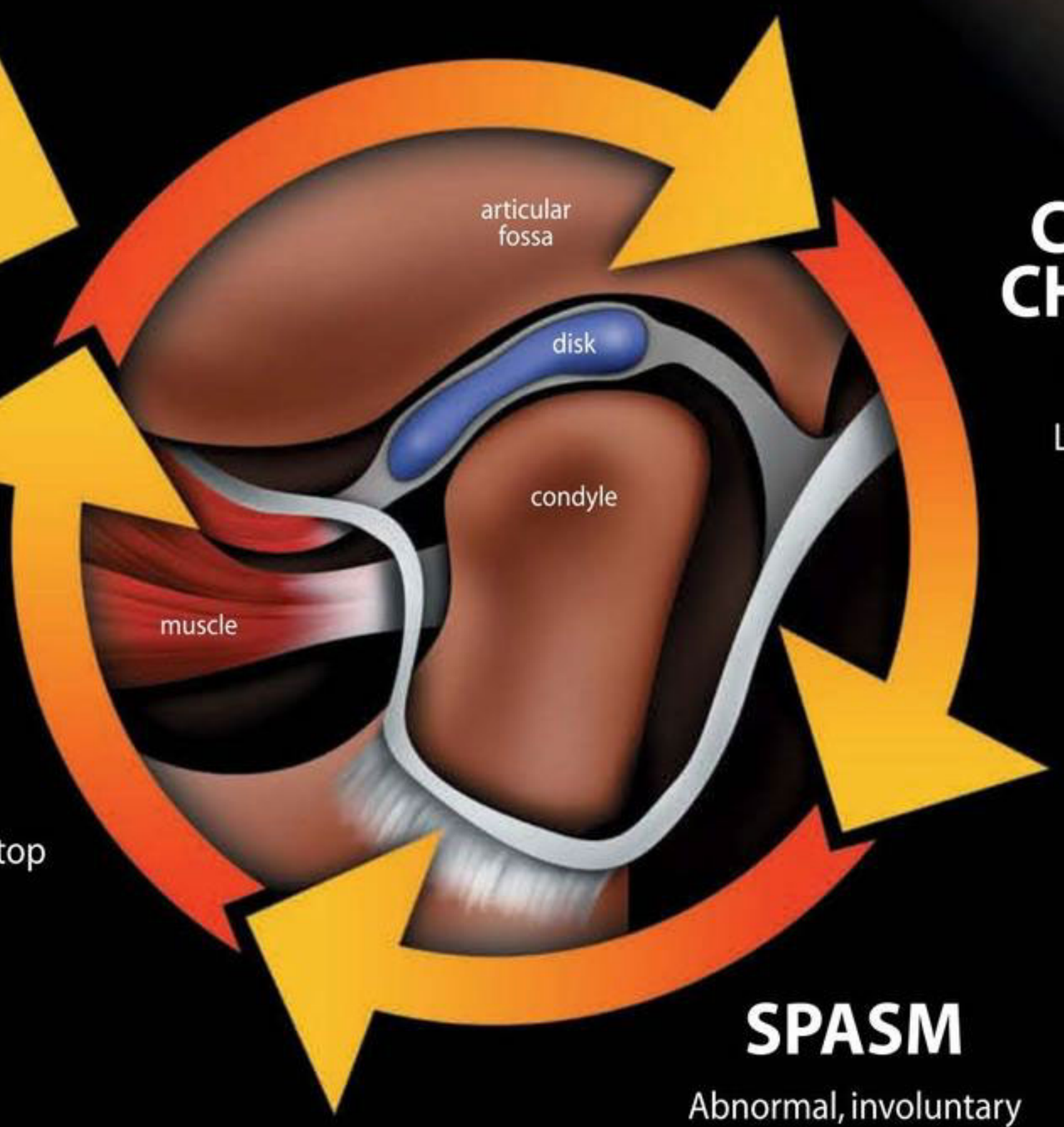
TMD PAIN CYCLE

CONSTRICTED BLOOD SUPPLY

Accumulation of waste products and less oxygen

CHEMICAL CHANGES IN MUSCLE

Lactic acid buildup due to muscle fatigue



PAIN

Pain signals to brain to stop muscle movement

SPASM

Abnormal, involuntary muscle contraction

Any traumatic, psychological, metabolic, or mechanical stimulant can cause muscle spasm

THE UNIQUE CHARACTER OF TMD

Like other joints the temporomandibular joint is stabilized by ligaments and moved by muscles. These structures allow the joint to move and also stabilize it during normal movement or function. The term TMD means "**Temporomandibular Disorder**"; it refers to problems inside the temporomandibular joint and the muscles attached to it. You may be familiar with the term TMJ as it was formally known and is still in common usage. Today, most dentists prefer TMD because it is more accurate than TMJ and is therefore used in this article both for simplicity and consistency.

> The nerves react by telling you something in the system is wrong, and they let you know by saying "pain".

What really is the cause of the pain? Simply put, the surrounding structures in the jaw "system" including, the teeth, air sinuses, even neck and back muscles share nerves with these joint structures so that when a problem arises in anyone of them "the great imposter" may be evident. The nerves react by telling you something in the system is wrong, and they let you know by saying "pain". The pain most commonly is caused by the muscles of the temporomandibular joint going into spasm and limiting your ability to open and function or even eat normally. TMD can affect anyone at any time, and presents with a wide range of similar symptoms.

As you will also see momentarily, TMD has a uniquely social character to it, which means that a person's emotional or psychological state, or state of stress plays a big role in TMD pain.

COMMON CAUSES OF TMD AND ITS DIAGNOSIS

Stress manifests physically in different ways, in some people it causes skin rashes, in others it causes stomach or bowel disorders; what is most commonly seen in dental patients is TMD manifested as clenching or grinding habits. These habits are many times completely subconscious until pointed out either by a dental professional or a "sleeping" partner. The pain may come and go depending on the level of stress, and if that's the way you deal with stress it may come back when you're next stressed, in other words TMD can go in cycles. It is common for people to find themselves clenching or grinding when stressed driving in traffic or during vigorous exercise, envision Lance Armstrong racing for the finish line of the Tour de France. But even acute injuries, like a blow to the jaw, as occur in sports can cause TMD pain.

When the force generated by the teeth coming together becomes excessive and habitual, it is called "parafunctional", that means outside the normal range. Such high forces to the joints and associated structures can become damaging; the muscles go into spasm and "guard" the joint to protect it and it is felt as TMD pain. If muscles have been overused during the day as in the case of Al, the soccer coach, they might go into spasm even during sleep. Even the sleep position itself may lead to stretching or compression of parts of the neck or jaw. Poor sleep and position can actually aggravate TMD problems.

In this most common cause of TMD, making the TMD sufferer aware that their subconscious clenching or grinding habits may be aggravating their symptoms and related to their stress. This diagnosis is largely dependent upon a good past dental and medical history taken by the dentist. This step in the discovery process can document seemingly unrelated past incidents which can turn out to be the main cause of the problem.

TREATMENT OF THE COMMON CAUSES OF TMD

Treatment is aimed at relieving the symptoms of pain and discomfort; recommendations include education, heat, mild painkillers, muscle relaxants, soft diet, and simple jaw exercises. The next phase of treatment may include a "bite guard" or some form of appliance therapy. Relaxation training and biofeedback with a licensed therapist in more intractable situations is also helpful. These procedures are "reversible", that is nothing is done physically that cannot be changed. Commonly a bite guard, an unobtrusive yet rigid plastic horse-shoe shaped appliance that fits over the biting surfaces of the upper teeth is used. It is designed to prevent the lower teeth gritting into the upper teeth and allowing the muscles and therefore the joints to relax. It is commonly worn at night, but can also be worn during the day if clenching and grinding are apparent. It is also re-usable during periods of recurrent stress and symptoms.

In the event that symptoms do not subside with these measures, re-evaluation and a new diagnosis may be needed and should be considered. Treatment recommendations may escalate to include irreversible procedures like bite adjustment or at last resort, surgical treatment. These procedures once applied cannot easily be reversed and are only used after conservative reversible procedures have been exhausted and unsuccessful.

There are four other common diagnoses which can cause TMD:

- Underlying dental conditions leading to muscle pain.
- Internal joint derangement.
- Osteoarthritis.
- Synovitis.

Once the person is out of pain the dentist is able to more fully diagnose the underlying dental conditions that may have led to TMD, such as bite problems, For example, if a filling is even a little high, it can throw off the bite and cause teeth to make inappropriate contacts. The bite itself may be a problem, excessive wear on individual or groups of teeth may also trigger muscle spasm and TMD. Exactly how the bite is related to TMD symptoms is controversial. In the past, much emphasis was placed on the bite. Today, most researchers agree that the bite is not as important as we once thought. Small discrepancies in the bite are very common and are not always the reason for TMD symptoms. Over 80% of

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patients with TMD will improve significantly with the conservative treatment described above. Since so many people do well with simple treatment, it's prudent to delay "bite adjustment" until you've tried simpler reversible approaches first.

Other causes of TMD as listed above require more sophisticated tests to ensure proper diagnosis and treatment. These may include head and neck examination, blood tests and joint visualization through x-rays, CT or MRI scans. A dentist will commonly take a panoramic (x-ray) radiograph as a first screening of the temporomandibular joints to rule out arthritis or other bone irregularities. Muscle pain or myalgia is the most common cause of jaw pain. A diagnosis of internal joint derangement or disc displacement, means that the disc in the joint is out of position. A displaced disc may result in "clicking" or "popping" sounds, and/or preventing the jaw from opening fully. This diagnosis requires more judgment in treatment as sounds from the joint can be fairly common without great significance. Osteoarthritis, commonly known as "wear-and-tear" arthritis, means that the joint's cushioning has been lost resulting in a change of shape of the bones. A diagnosis of Synovitis refers to swelling inside of the jaw joint.

SUMMARY

TMD pain varies in character from mild to severe, acute to chronic and in location, all of which give your dentist clues regarding the real culprit, but because the symptoms are similar, diagnosis or pinpointing the real cause can be tricky. Just because of this unfortunately, this common ailment may be initially missed or misdiagnosed, but it doesn't have to be. Inexplicable TMD pain can sometimes be misperceived by patients leading to unnecessary worry. Stress can aggravate the condition actually making it worse. Overall, it's best to avoid self-diagnosis and to seek professional attention to treat existing pain as well as to prevent further problems. Don't delay, if you're having TMD pain, mild moderate or severe don't hesitate to see your dentist, the problem may be quite simple to resolve. If your problem is not easily resolved, your dentist may refer you to a specialist to further diagnose and treat the problem effectively. Remember proper and early diagnosis is critical to successful treatment and relief.

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Steven B. Syrop, DDS

Steven B. Syrop is an Associate Professor of Clinical Dentistry in the Division of Oral and Maxillofacial Surgery at Columbia University, College of Dental Medicine and Weill-Cornell Medical College. Currently he is the Section Chief of Temporomandibular Disorders Service, Division of Dentistry, New York Presbyterian Hospital, Cornell Campus. He is former director for 15 years of the TMD Facial Pain Clinic at Columbia University. He is active in teaching and has been a member of the part time faculty at Columbia University College of Dental Medicine for over 20 years. Dr. Syrop is a member of the American Academy of Orofacial Pain, a Diplomate of the American Board of Orofacial pain and has authored numerous chapters and articles on TMD.

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Fosamax® and Surgery

Is there a risk to taking Fosamax® and other bisphosphonates when preparing for surgery?

A Consultation with Dr. David Stanton

Fosamax and Surgery?

From: Kristen (New York)

To: Consultations@deardoctor.com

Subject: Fosamax and Surgery?

Dear Doctor,
My dentist recently told me that because I have been taking Fosamax® therapy for osteoporosis that I had to wait three months before being able to have surgery. I have been taking bisphosphonates for approximately five years. Is this something that is true or is it over cautious?

Dear Kristen,

Your dentist is concerned about the potential for you having osteonecrosis (literally bone death). Precautions for elective surgery are now recommended for those who have taken Fosamax® for more than three years although the risk of osteonecrosis is very small. Fosamax® is the brand name of alendronate. It is one of a group of drugs called bisphosphonates. Our understanding of bisphosphonates is evolving and it is certainly not an exact science presently. What we do know is that bisphosphonates are not metabolized quickly in the body, but stay within the bone tissue for many years. If any type of treatment is planned which involves surgery to the jaw bone, there is a risk that osteonecrosis may develop if the precaution of stopping the drug and waiting for a three month period is not taken.

The cause of this condition is not fully understood. The general mechanism appears to involve a compromise of the blood supply to the bone. There are risk factors that make an individual more vulnerable to developing osteonecrosis; they include, but are not limited to, corticosteroid use, diabetes, alcohol abuse, tobacco use, infections and inflammation. The increase in concern is that bisphosphonates may be associated with a form of osteonecrosis that is specific to the jaws. Over the past few years there have been a growing number of cases reported.

Have a Question?
Send an email to consultations@deardoctor.com and have your question answered in an upcoming issue!

Osteonecrosis of the jaw may result from trauma in patients taking biphosphonates. Most case reports have occurred after dental extraction, but can also occur spontaneously and may be associated with pain at the site. The cause of the condition is not defined and may include the possibility of bisphosphonates altering the formation of blood vessels or bone micro-architecture.

Most cases of osteonecrosis of the jaw appear to occur in patients who have been on intravenous bisphosphonate infusions, as part of treatment for cancer. The reported incidence in patients receiving intravenous bisphosphonates is 0.8% to 12%. The reported incidence in patients on oral bisphosphonates, such as Fosamax® is much less, 0.01% to 0.04%. Following teeth extractions, the incidence increases, but is still small, 0.09% to 0.34%.

For patients on oral bisphosphonate medications, initial studies seem to indicate that three years of therapy makes patients more vulnerable.

The optimum duration of bisphosphonate treatment has not been defined and studies are investigating long term dosing regimens to determine the best utilization of this drug. For patients on oral bisphosphonate medications, initial studies seem to indicate that three years of therapy makes patients more vulnerable. Studies that have gone up to two years in duration have not shown any adverse effect. These studies also suggest that stopping a bisphosphonate for 3 months prior to a procedure seems to reduce the incidence of osteonecrosis. It is puzzling that some bisphosphonate treatment may be associated with osteonecrosis of the jaw where as other bisphosphonates have been used to treat similar conditions, for example, avascular necrosis (loss of blood vessels resulting in bone death) of the hip. This suggests that further research is necessary to understand the cause of osteonecrosis. The websites of the American Dental Association (www.ada.org) or the American Association of Oral & Maxillofacial Surgeons (www.aaoms.org) may also provide useful information on this topic.

Sincerely,
David C. Stanton, DMD, MD, FACS

ABOUT THE AUTHOR

David C. Stanton, DMD, MD, FACS

David C. Stanton, DMD, MD, FACS is an Associate Professor of Oral and Maxillofacial Surgery and OMS residency program director at the University of Pennsylvania. He has presented nationally on several of his fields of interest, including cosmetic facial surgery, obstructive sleep apnea, osteonecrosis of the jaws, and maxillofacial trauma. His research interests include obstructive sleep apnea, hair transplantation and facial trauma.

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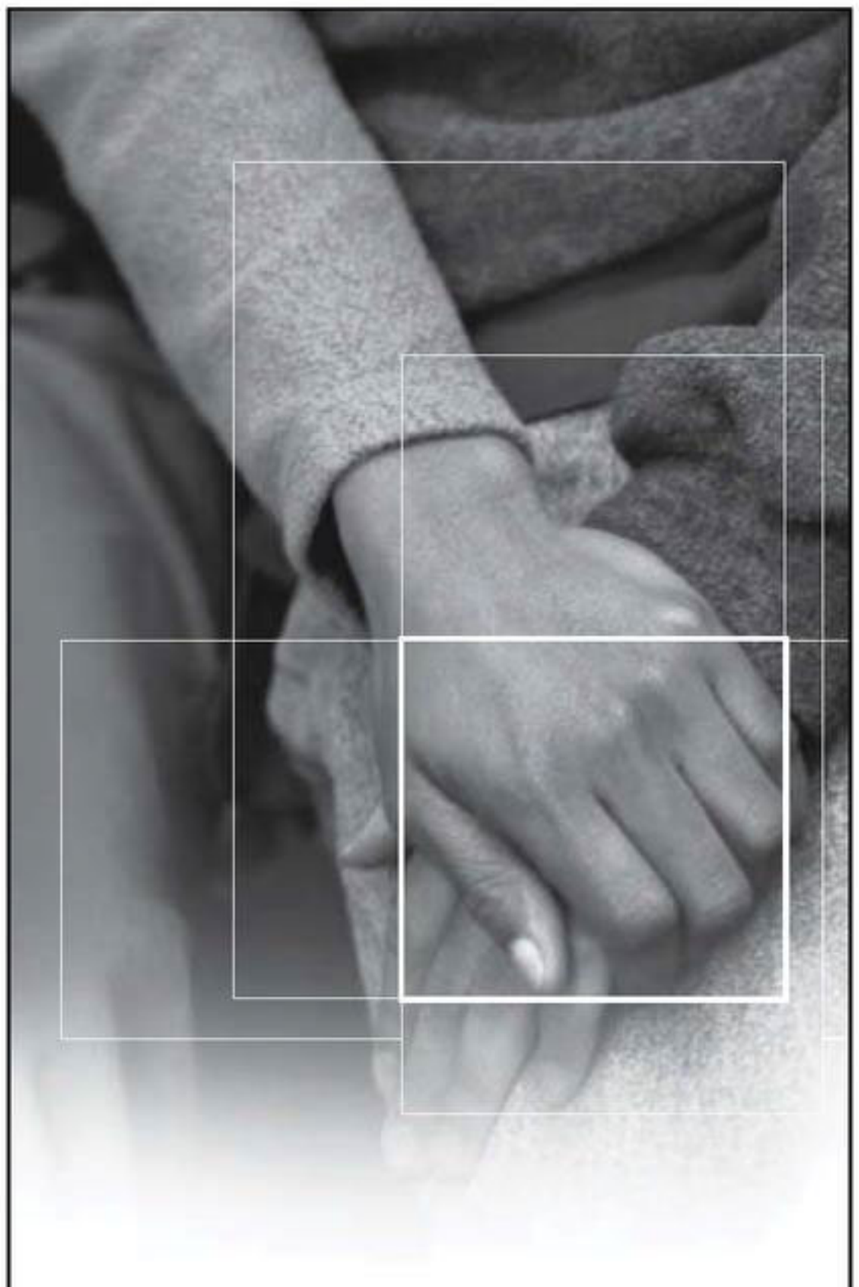

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Removing Wisdom Teeth

This common treatment prevents major dental problems before they occur

A Consultation with Dr. Martin Chin

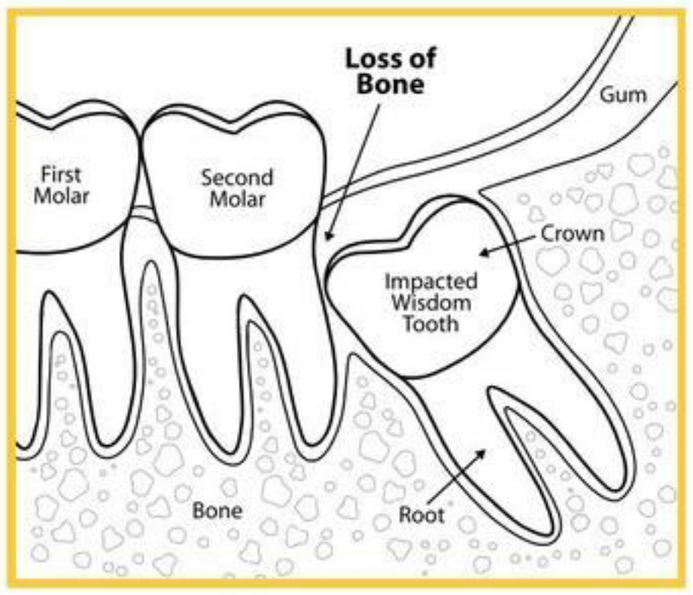
Removing Wisdom Teeth?

From: Kevin (Virginia)

To: Consultations@deardoctor.com

Subject: Removing Wisdom Teeth?

Dear Doctor,
Why do my wisdom teeth need to be removed if they don't bother me? My dentist has suggested that they be removed even though I don't have any discomfort or pain – I didn't even know I had them. What do you think?



Two objects cannot occupy the same place. If the wisdom tooth is up against the roots of the second molar, bone cannot cover the root surface as it is intended. Notice the bone that is lost between the second molar and the wisdom teeth. This area is now vulnerable to periodontal disease.

Dear Kevin,

Teeth consist of two main parts, the crown and the root. The root is formed in a way that it can exist beneath the gum tissue, long term. The crown, however, is covered by enamel and formed in a manner that should protrude through the gum for predictable health in the mouth. Having the enamel crown trapped below the gum can result in problems like infection, cyst formation, and gum disease.

Wisdom teeth (also called third molars) are most often recommended for removal because they become impacted, meaning the teeth are not able to erupt fully through the gums and become healthy, functioning teeth. Teeth normally develop deep in the jaw and during the formation of the crown and root, the tooth pushes its way through the gum into the mouth. Since wisdom teeth naturally develop as the last teeth, the available space for them to emerge through the gum is often already taken up by the teeth that have already erupted. Instead of erupting fully, these teeth run into the roots of teeth already in place. In this way, the teeth become stuck, or impacted, and cannot completely erupt into proper position in the mouth.

Having a tooth submerged below the gum, pressing on the roots of the other teeth presents a problem.

Having a tooth submerged below the gum, pressing on the roots of the other teeth presents a problem. Damage may occur to the roots of the important, erupted permanent teeth. Development of this damage may occur without any symptoms of pain and can severely compromise the adjacent tooth before anyone discovers what has happened.

Timing of wisdom tooth removal is important. The best time to remove a wisdom tooth is when it is not causing problems. This is because by the time the tooth becomes painful, significant damage may already have occurred to the teeth nearby. In addition, the ability of the body to respond well to oral surgery decreases with age. Young, healthy patients, with no prior infections at the site provide the best opportunity for uncomplicated tooth removal.

The best time to remove a wisdom tooth is when it is not causing problems.

Not all wisdom teeth are the same. This is why the decision to remove wisdom teeth needs to be discussed with the doctor. The potential benefits as compared with the risks must be part of an informed decision by the patient. I hope this gives you some insight into why wisdom teeth are removed. Your general dentist will most often refer you to an oral surgeon to have the teeth removed as well as get his opinion. I'm sure everything will go well.

Sincerely,
Martin Chin, DDS

ABOUT THE AUTHOR

Martin Chin, DDS

Martin Chin, DDS has a private practice limited to oral and maxillofacial surgery. Dr. Chin received his DDS from the University of California, San Francisco School of Dentistry in 1978. He interned at the University of California, San Francisco Medical Center where he also completed his residency in Oral and Maxillofacial surgery in 1982. Dr. Chin also conducts a hospital based reconstructive maxillofacial surgery practice with a subspecialty in pediatric reconstruction of complex craniofacial birth defects. He is a diplomate of the American Board of Oral and Maxillofacial Surgery.

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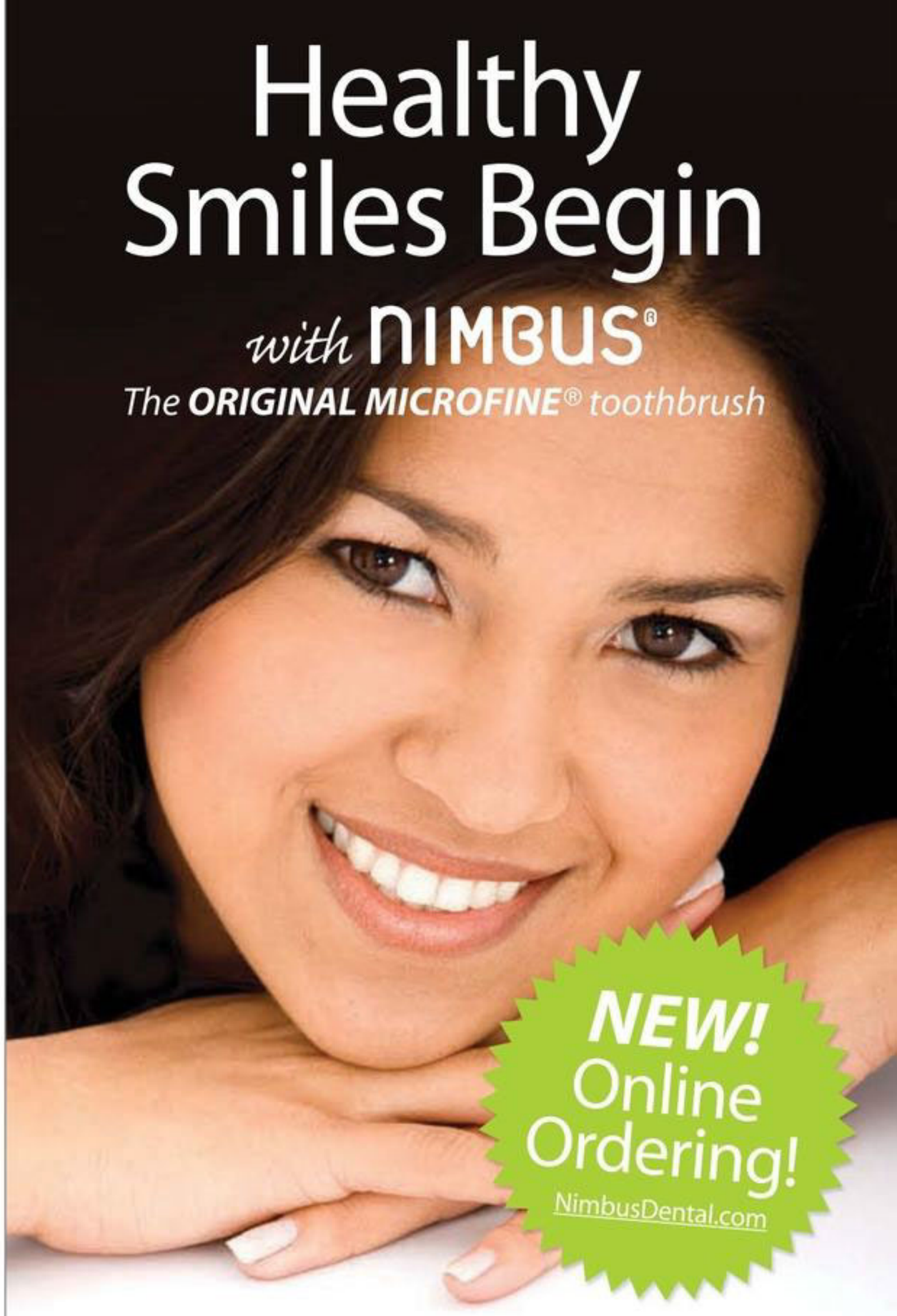

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Sealants for Children

This technique protects newly erupted teeth from decay

A Consultation with Dr. Martin Rayman

Sealants for Children?

From: Jessica (Montana)

To: Consultations@deardoctor.com

Subject: Sealants for Children?

Dear Doctor,
My Dentist has recommended that my children have sealants applied to their teeth to reduce tooth decay. Tooth decay was a big problem for me when I was a child so I'll probably have it done. Is there any research that shows whether or not this is really helpful?

Dear Jessica,

Before I explain some current thinking and practice regarding sealants, here's a little background on the subject.

A cavity, by definition, is a hollow place – a hole. Often, the posterior teeth known as premolar and molar teeth and the backsides of top front teeth are formed with deep grooves, that dentists call "pits and fissures." Despite our best efforts, the toothbrush bristles cannot reach down to clean out these crevices. It is warm, dark and moist at the bottom of these pits, and the acid produced by bacteria metabolizes sugar easily. This begins to dissolve the tooth enamel that starts the decay process.

"Pit and fissure" sealants are absolutely wonderful and certainly something you should consider. Because of sealants, fluoride, good hygiene, nutrition (including low sugar consumption) and regular dental visits, tooth decay has been dramatically reduced. Research shows that pit and fissure decay accounts for approximately 43% of all decayed surfaces in children aged six to seven, even though the chewing surfaces (of the posterior teeth) constitute only 14% of the tooth surfaces at risk.[1]

"Pit and fissure" sealants are absolutely wonderful and certainly something you should consider.

The newly erupted immature enamel of teeth is more permeable and therefore more susceptible and less resistant to tooth decay due to the higher organic content of the enamel surface. As the enamel matures, the organic content decreases along with its permeability, the enamel becomes more resistant and in a sense stronger. Until that occurs, it is critical to protect the surfaces of newly erupting teeth to enhance their longevity.

azadmed

Fluoride aids enamel because it makes the surface harder and impermeable, therefore less susceptible to acid attack and demineralization, which we know as decay. Fluoride adds some protection to the deep pits and fissures of the teeth but they are still at high risk because of their shape and very often need further protection.

You may have heard about "sealants." Sealants are protective coatings placed in these tiny pits and fissures to prevent decay – actually sealing them from attack. Some dentists advocate placing sealants on all permanent (adult) molar teeth and many primary (baby) molar teeth soon after they erupt into the mouth. Greater use of sealants could reduce the need for subsequent treatment and prolong the time until treatment may become necessary for permanent first molars, usually the first adult teeth to erupt.

Greater use of sealants could reduce the need for subsequent treatment

There are children who are at greater risk for decay; they do not see a dentist regularly and placing sealants in more teeth could reduce their decay rates. This has been seen among Medicaid and other high-risk populations.[2] However, it seems that not all children may need all their posterior teeth surfaces sealed. In fact, about 80% of children need sealants in only one permanent molar and about 10% of children need sealants in a primary (baby) molar.

In low decay risk communities, the sealant procedure is advocated only when dental examinations indicate that decay is just starting or extremely likely to start in a tooth.[3] Then, the tooth receives a mini-"resin,"an invisible filling. The "water whistle" as it is sometimes addressed to children (also known to many of us as the "drill") is used to gently explore the deep pits, fissures and grooves of the affected tooth and remove any minimal decay that is lurking there.

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In some dental offices, this exploration may be done with an "air abrasion" or a laser as an alternative to drilling. Only the least amount of tooth enamel is removed to eliminate any possible decay. This is usually a completely painless procedure for the child, and no numbing is routinely required. The enamel of the tooth where decay starts is inert and does not contain nerve fibers, so nothing is felt. Some children may feel a quick tinge of "cold" when the bottom of the pit is reached and the last bit of decay is removed. Children are always warned of this potential feeling at the appropriate time. The feeling is usually not enough to warrant an injection and the subsequent experience of numbness for hours afterwards.

Approached in this way, the resin will more likely remain for years without recurring decay under the small, conservative and invisible mini-filling. These are not the fillings with which most of us are familiar. I tell the children that these do not "count" as cavities because they could not be prevented.

Sincerely,
Martin Rayman, DDS

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ABOUT THE AUTHOR

Martin Rayman, DDS
Dr. Martin Rayman, DDS graduated from New York University College of Dentistry in 1971 and completed a residency program in pediatric dentistry at the Jewish Hospital and Medical Center of Brooklyn, New York in 1973. Prior to opening his pediatric dental practice in 1980, Dr. Rayman was a full time professor at the University of the Pacific School of Dentistry where he continued his affiliation until 2006.

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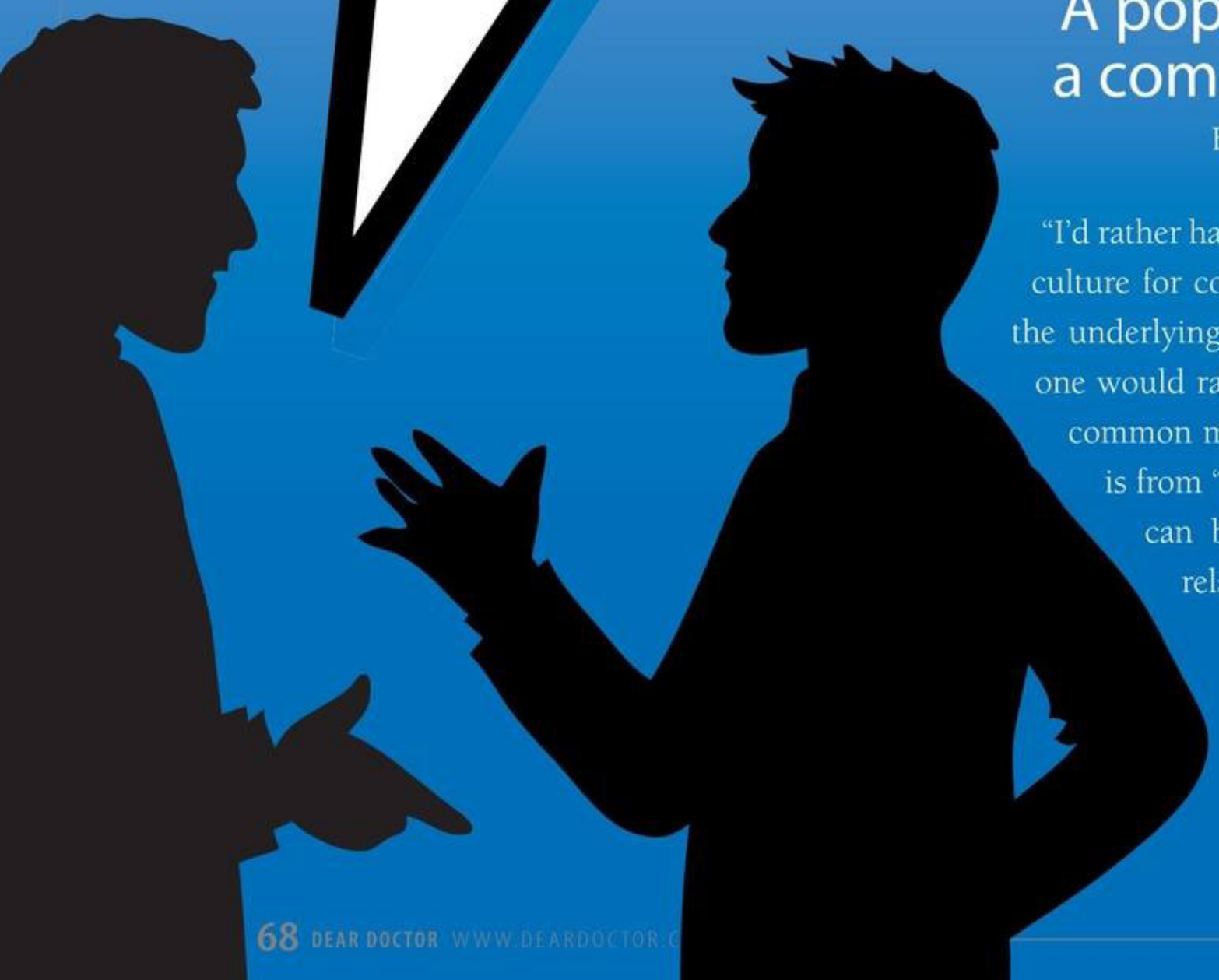
I'd Rather Have a Root Canal...



A popular expression with a common misconception!

By Dr. Michael J. Scianamblo

"I'd rather have a root canal" is a common idiom in our culture for comparing worst case scenarios. However, the underlying sentiment, that is, a situation is so bad one would rather "endure" a root canal is based on a common misconception. While pain in a root canal is from "pulpal" inflammation or infection, which can be excruciating, the actual treatment is relatively painless and very successful.

So the question to ask is, "What is Root Canal or Endodontic Treatment?" This particular treatment has its own specialty called "Endodontics." The word is derived from the Greek words meaning "inside" (endo) the "tooth" (dont). Endodontics or Root Canal Treatment is a specialized dental procedure performed by a dentist or endodontist (a root canal specialist) to treat the inner aspect of a tooth, specifically the area occupied by "pulp tissue." While most people commonly refer to this pulp tissue as the "nerve" of the tooth (and it does contain a few nerve fibers), the tissue contains much more; tiny blood vessels that give it vitality and "connective" or support tissues that function like most of the other soft tissues of the body.

The first "endodontists" realized the pulp or nerve tissue inside a tooth could be lost or eliminated without any significant consequences

Teeth are like icebergs; the crowns of the teeth are above the gums and are the parts you see in the mouth, the majority of the tooth is below the gum, which consists of the roots comprising roughly two thirds of the tooth. The crown of the tooth is covered by an enamel cap which is non-living. It is the hardest substance known in nature in the animal world; it is quite impervious to physical and chemical attack and is designed to protect the tooth.

Beneath the enamel cap is the majority of the tooth which is made of dentin, a living bone like substance. Coursing through the central part of each root is a hollow space or canal, which contains the pulp tissue. When a tooth is healthy, the pulp functions as a sensory resource for the tooth: the nerves in the pulp allow the dentin to sense temperature changes transmitted through the enamel. When temperatures are extreme the nerves signal sensitivity and pain.

The pulp, however, is a remnant of development and the tooth can function without it. In fact, as part of the aging process, the pulp shrinks as it lays down more dentin making the small pulp chamber smaller and smaller as it "calcifies" until it is essentially obliterated in late adulthood. The teeth become thicker, in a sense, and slightly darker with age.

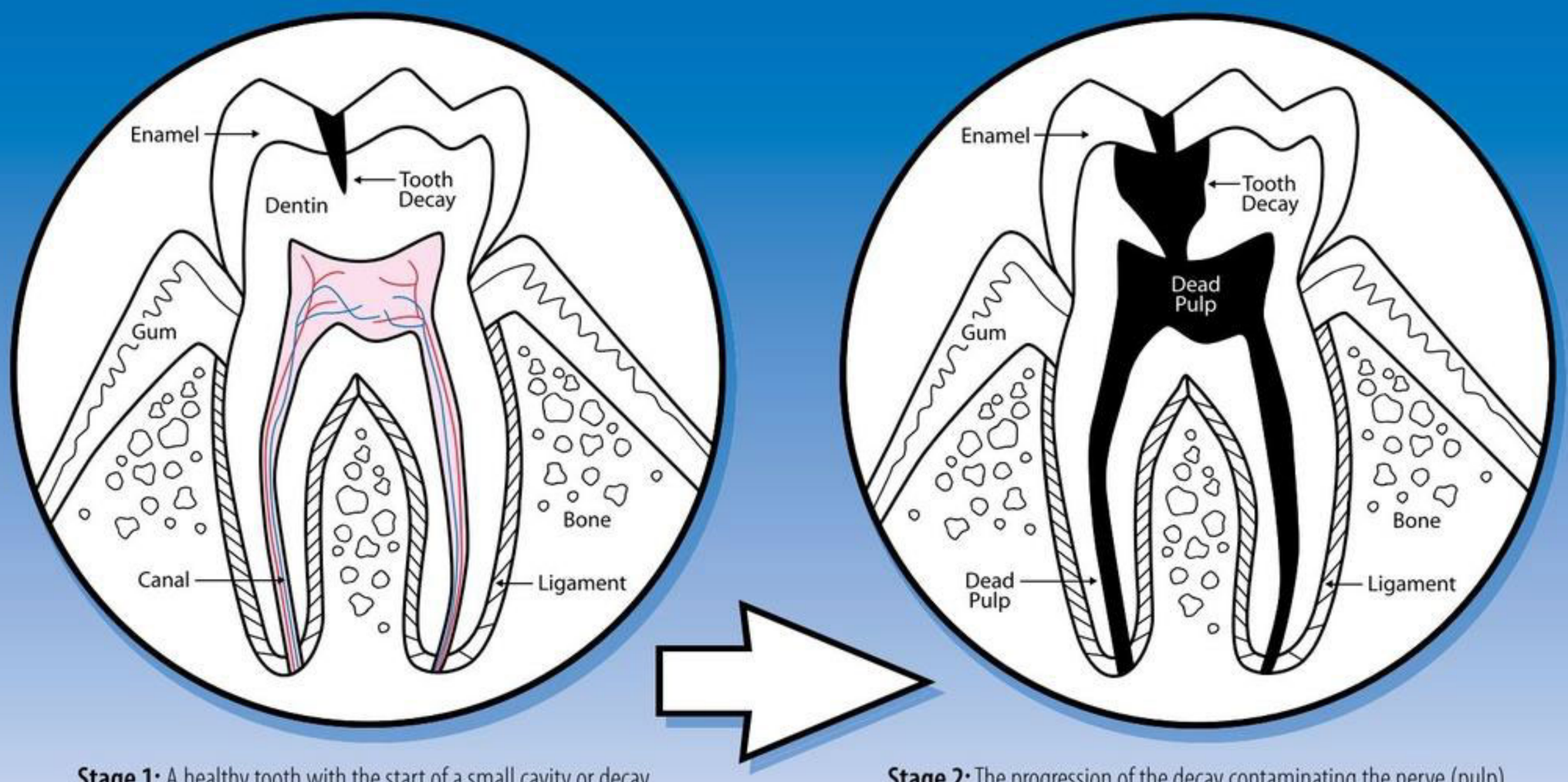
When the first "endodontists" realized the pulp could be lost or eliminated without any significant consequences, the discovery led to the root canal treatment used when this portion of the tooth became diseased. This occurs when the pulp becomes inflamed or infected due to a variety of causes including deep decay, extensive dental procedures, and cracked or injured teeth. If pulpal inflammation or infection is left untreated, it can cause pain or lead to an infection commonly presenting as a dental abscess.

Root canal treatment can be initiated to relieve pain by removing the inflamed or infected pulp, and the bacteria and bacterial toxins that are often associated with the diseased tissue. After the pulp chamber has been cleansed, enlarged and sterilized, also called "the root canal preparation", the canal can be sealed with inert filling materials that might replicate the calcific-deposits that occur naturally during the aging possess. The most common material used to fill or "obturate" the canal is a naturally occurring isomer of natural rubber called gutta percha and specialized sealers that are insoluble. These materials are biologically compatible with the tooth substance, and if placed properly, seal the root canal hermetically preventing further bacterial invasion (Figure 1).

Figure 1: The above x-ray is an example of how a root canal appears after endodontics is completed. Notice how the white filling material in each canal ends at the apex (end) of each root.

The pulp chamber is a complex system of extraordinary microscopic structure consisting of primary canals (trunks) and secondary canals (branches), which might resemble a Christmas tree. Specialized techniques are usually required to seal the fine lateral or accessory canals that offer "collateral" circulation between the pulp and the adjoining tissues. Most endodontists today use operating microscopes to achieve their task of performing excellent root canal treatment.

HOW TOOTH DECAY CAN CAUSE A ROOT CANAL



Stage 1: A healthy tooth with the start of a small cavity or decay from the developmental groove on the top of the tooth.

Stage 2: The progression of the decay contaminating the nerve (pulp) of the tooth causing the nerve tissue to die.

Effective removal of a diseased pulp and the bacteria associated with it can ensure a lifetime of comfort and function. Interestingly, tooth removal can be as effective in relieving pain as root canal therapy, but tooth loss can lead to other untoward side effects such as unwanted tooth movement or migration of teeth leading to subsequent malocclusion and an inability to chew. Saving your natural teeth should always be your first choice when dental care is needed. Nothing, not even the most advanced bridges or implants, can truly replace your natural teeth. If you are in doubt about saving a tooth with a root canal problem ask your dentist and seek his advice regarding a specialist consultation with an endodontist.

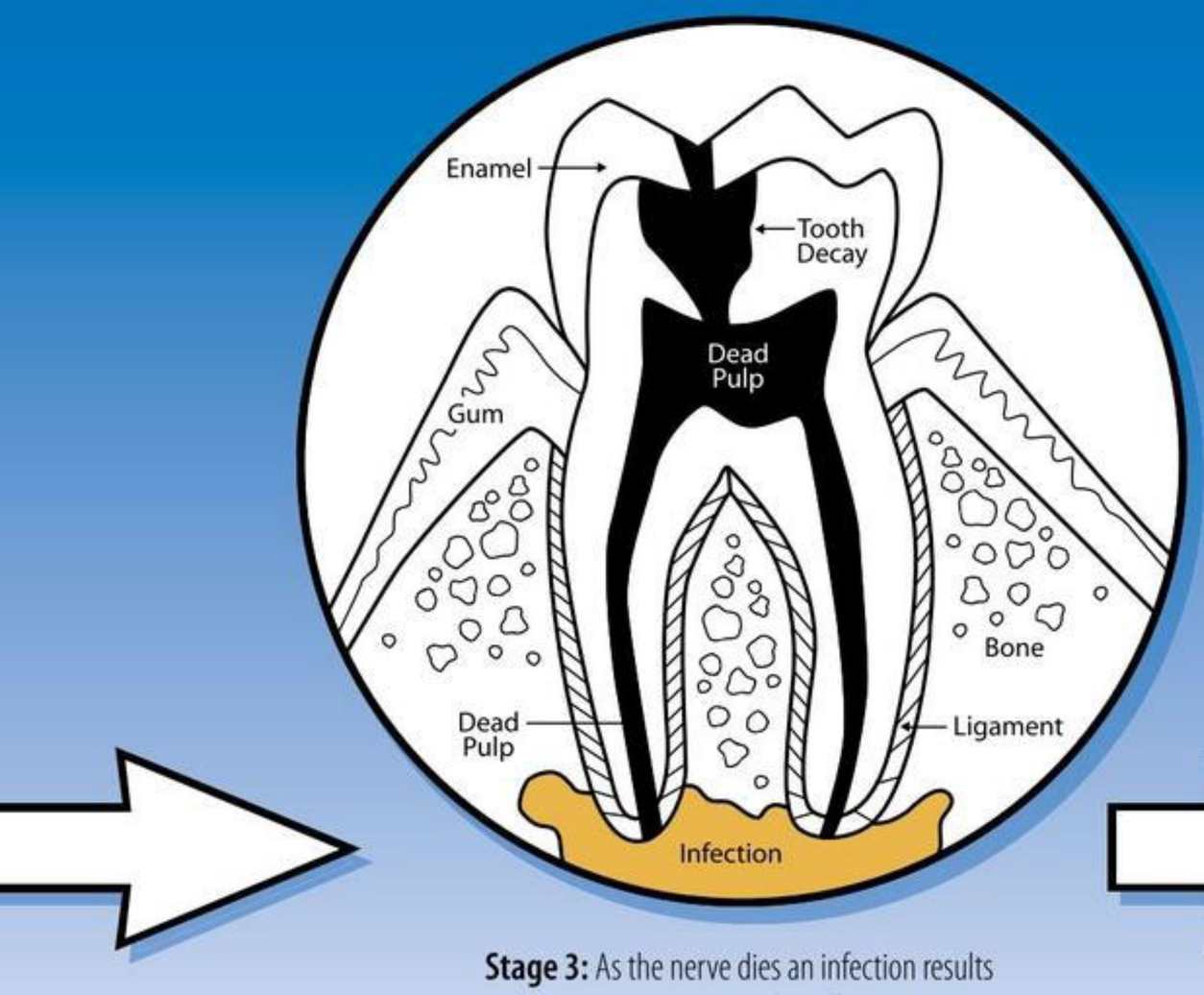
Symptoms that might indicate that you need a root canal treatment include:

- Momentary sensitivity and/or lingering pain after eating hot or cold foods
- Sensitivity to hot or cold foods after dental treatment
- Sharp pain when biting down on food
- Constant and severe pain and pressure
- Swelling of the gingival (gum tissue) and sensitivity to touch

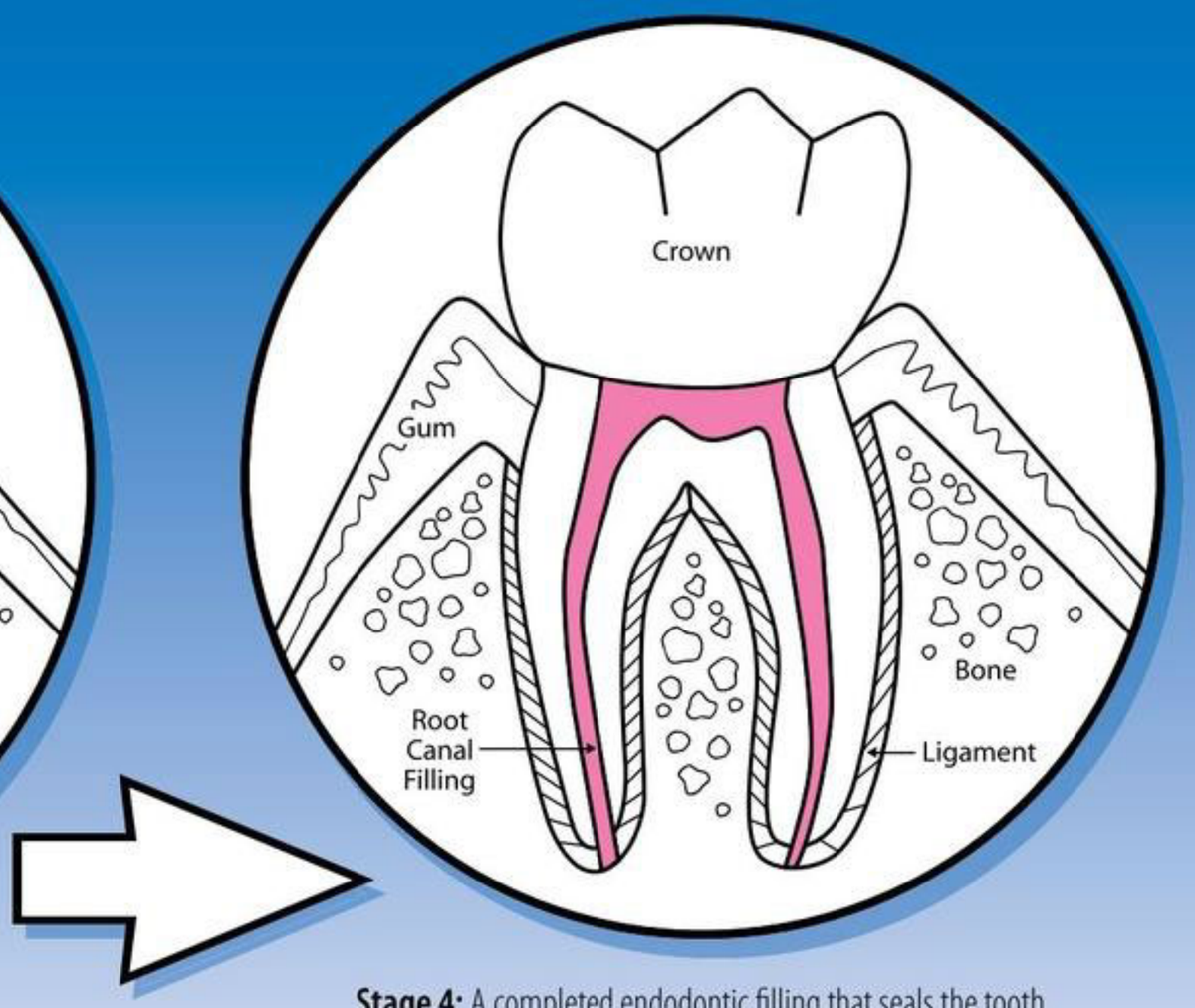
Gum abscesses may also be caused by periodontal disease so that a proper diagnosis is required to ensure that the correct problem is being addressed. It will take an examination by your dentist or endodontist to determine if root canal treatment is indicated.

Low-grade or "chronic" inflammation and infection can persist for extended periods of time and cause other problems. Some of the systemic problems that have been associated with chronically inflamed or infected teeth are endocarditis (infection and inflammation of the heart valves), a predisposition to atherosclerosis and strokes, pneumonia and auto-immune disease. Further, if the problem is diagnosed and treated before acute symptoms develop, there is a much higher rate of success and a minimum of post-operative side effects.

It is normal to feel some tenderness in the area of the root canal treatment for a few days after the procedure as your body undergoes the natural healing process. You may also feel some tenderness in your jaw from keeping it open for an extended period of time. These symptoms are temporary and usually respond very well to over-the-counter pain medications, particularly anti-inflammatory agents such as ibuprofen or naprosyn.



Stage 3: As the nerve dies an infection results causing pain and swelling.



Stage 4: A completed endodontic filling that seals the tooth and allows it to remain in function for many years.

Root canal treatment is only one step in returning your tooth to full function. A proper final restoration or crown on the tooth is extremely important in ensuring long-term success. Contact your dentist within two weeks to arrange your next appointment. If your tooth is being treated in more than one visit by an endodontist, do not return to your dentist for the final restoration until the root canal treatment is completed. Most posterior or back teeth (bicuspid and molars) will require a crown to protect them from further injury such as fractures since endodontically-treated teeth may become more susceptible to fracturing over time.

The tooth that has had appropriate endodontic treatment followed by a proper restoration can last as long as other natural teeth.

The tooth that has had appropriate endodontic treatment followed by a proper restoration can last as long as other natural teeth. After the tooth has been restored, you need only practice good oral hygiene, including brushing, flossing, regular dental check-ups and cleanings. Your dentist or endodontist may periodically x-ray the tooth to ensure that healing has occurred. Occasionally, a tooth that has undergone endodontic treatment does not heal or pain continues. At times, the tooth may become painful or diseased months or even years after successful treatment. Often when this occurs, repeating the endodontic procedure can save the tooth.

ABOUT THE AUTHOR

Michael J. Scianamblo, DDS

Michael J. Scianamblo, DDS is a post-graduate and fellow of the Harvard School of Dental Medicine. Dr. Scianamblo has served as a faculty member of Harvard University, School of Dental Medicine, the University of the Pacific and the University of California, Schools of Dentistry in San Francisco. He has also served as president of the Marin County Dental Society and the California State Association of Endodontists. He has presented numerous lectures both nationally and internationally and is a recognized author in endodontics, dental materials and instrumentation. He has special training and expertise in conscious sedation and sedation, and is an expert in the diagnosis and treatment of endodontic failure. He has maintained a private practice in endodontics since 1978.

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Accidental Tooth Loss

Saving a displaced tooth resulting from an accident

A Consultation with Dr. Daniel Flanders

Accidental Tooth Loss?

From: Jennifer (Florida)

To: Consultations@deardoctor.com

Subject: Accidental Tooth Loss?

Dear Doctor,
My son Ryan, was playing in a Little League Baseball game and he was hit on the mouth with the baseball. His tooth was knocked out and we had a hard time finding the tooth. When we did find it we really didn't know what to do. We went to the hospital and they had to call a dentist to come to treat my son. He was concerned because he said we didn't know how to handle the tooth properly. What would have been the best thing do do in this situation?

Dear Jennifer,

Handling this kind of accident properly and promptly is critical to saving the tooth. This type of accident is more common than you would think. As many as one out of three boys and one of four girls will have suffered a traumatic dental injury before they graduate high school. Sports participation can boost a child's risk, however teens and young adults can also injure their teeth in car accidents and falls.

Accidents can result in nothing more than a chipped tooth or can cause severe head trauma. Luckily, few dental injuries are true emergencies – but it is important to note that all dental injuries require professional care. The first step is to determine the extent of injury and then to take appropriate action. Parents, teachers, coaches, and school nurses should all be aware of the kinds of dental injuries that call for immediate attention.

A tooth that is knocked out of a person's mouth is called an avulsed tooth. Time is of the essence in this situation, re-implanting the tooth as quickly as possible allows the best chance of the tooth being re-accepted and therefore complete healing. Certain other steps can make re-implantation more likely.

Responding to a "Lost" Tooth

First things first: If a lost tooth is truly missing, it's important to locate the tooth right away. If you didn't witness the accident, try to find out when and exactly where it happened. These details are important because a tooth that has been out of the mouth for less than 30 minutes has the best chance for re-implanting. A tooth that might be at the bottom of

a swimming pool has a better outlook than one that has landed in a puddle of oil or gasoline from a car accident.

Once the tooth has been located, use nothing other than cold water to carefully remove any dirt or debris. Simply run or pour the water over the tooth – do not touch the root or scrub any part of the tooth, and do not use soap or other cleansers. If no running water is available, you can put the tooth in your mouth and gently suck it clean. Then delicately place the tooth back into the injured person's empty socket and have them hold it in place until they reach the dental office.

Handling the Isolated Avulsed Tooth

Sometimes a lost tooth cannot be immediately reinserted into the socket for some reason (for example, if the injured person is unconscious and may be in danger of choking on or swallowing the tooth). In this instance, the tooth must be transported to the dental office or hospital in a moist environment via a separate container. The success of re-implantation depends on keeping special ligament cells on the root's surface moist and alive – if these cells dry out, they will die and the tooth will not be accepted back into the gums.

Cold milk is one of the best liquids in which to (temporarily) store an avulsed tooth; sterile saline solution is another excellent option. Placing the tooth in the injured person's mouth, bathed in his or her own saliva, is actually a second choice, but still better than allowing the tooth to dry out. Wrapping the tooth in plastic wrap to seal in moisture is a third choice.

Following Re-implantation

If the right steps are taken, chances of a successful re-implantation are good. After the procedure, there is the possibility of infection, so a short course of antibiotics is usually prescribed. Even with the best response, however, a lost tooth may still be rejected by the body down the road. If there had been any damage to the ligament cells, the body may begin to wear away the root surface, gradually destroying it (this is called "root resorption") and causing loss of the tooth. To monitor for this condition, the patient should follow up with their dentist for at least five years following re-implantation of a lost tooth.

A re-implanted tooth may also eventually be damaged by a process called ankylosis. This condition causes the root of the tooth to actually fuse to the supporting jawbone beneath it, without any healthy ligament in between. Ankylosis can also lead to resorption and tooth loss.

4 Things to Remember for Accidents Resulting in Tooth Loss:

1. Quickly locate the lost tooth after the accident
2. Rinse the tooth with sterile water, saline or milk
3. If possible gently "reimplant" the tooth into its socket before rushing to the local dental office or hospital.
4. Making a call to the dentist or hospital en route ensures that the doctor will be there and ready for you and treat you immediately

Always Give it a Try

It would have been nice for Ryan to save the ball game and his tooth. In summary, quickly locate a lost tooth after the accident, rinse the tooth with ice water, and gently re-implant it if you can, on the way to the local dental office or hospital. Making a call to the dentist or hospital en route ensures that the doctor can meet you there, thereby creating the best possible situation.

Even in less than ideal situations, tooth re-implantation can work and should always be attempted. Saving a natural tooth is definitely the treatment of choice.

Sincerely,
Daniel H. Flanders, DDS

ABOUT THE AUTHOR

Daniel H. Flanders, DDS

Daniel H. Flanders, DDS is an endodontist, a dentist who specializes and limits his practice to performing root canal treatment. Doctor Flanders received his Doctor of Dental Surgery Degree from The State University of New York at Buffalo. He received his specialty training and a Master of Science Degree in Endodontics from the University of Nebraska. He has maintained a private practice in endodontics for 33 years. He has taught and lectured extensively around the country, and published numerous articles on the art and science of saving natural teeth.

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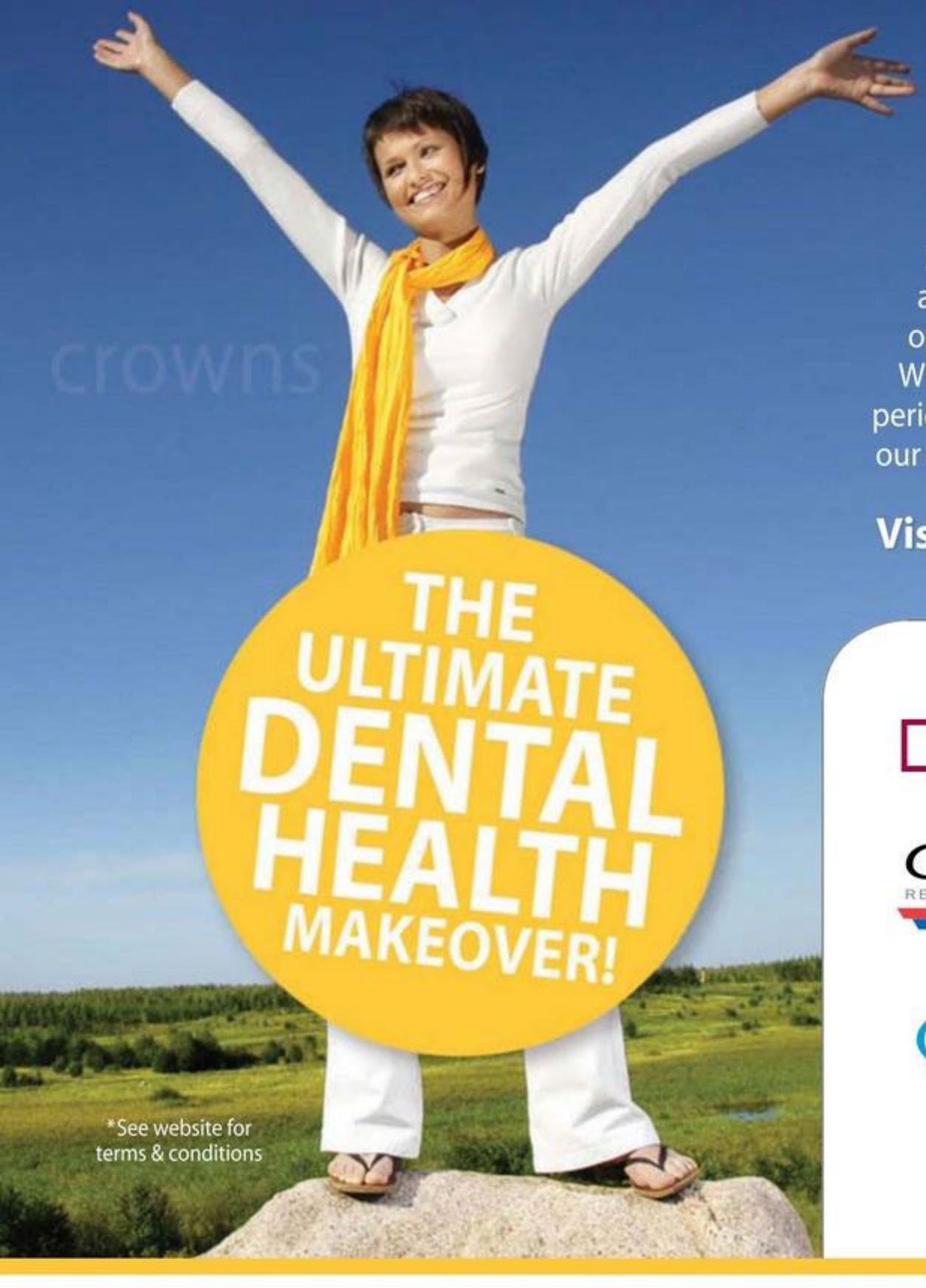

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