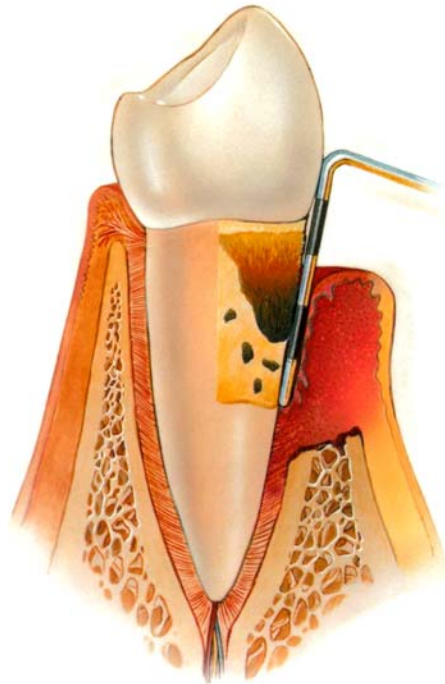


***Understanding Periodontal Disease
and Gum Infections
While They Can Still be Treated
Early & Easily with an Excellent Prognosis*** ©



**For Patients Who Want Successful Periodontal
Therapy, a Lifetime Smile and Fewer Dental Bills**

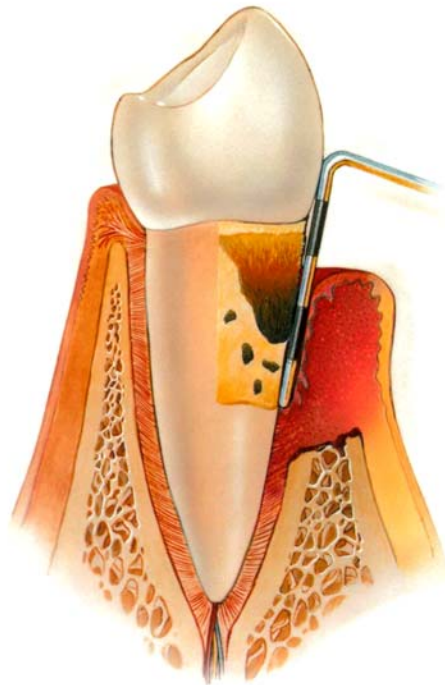
by

Dr. Neal C. Murphy, DDS, MS
Associate Clinical Professor of Periodontics
Case Western Reserve University
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Cleveland, Ohio USA (216) 368-6757

Lecturer, UCLA School of Dentistry
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Academic Outreach toward Fully Informed Consent, November, 2010...

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and Gum Infections
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Who is Dr. Neal C. Murphy?



There is an old adage in healthcare professionals that says, “Never treat a stranger.” This means that doctor-patient rapport is a traditionally special relationship in our society. Sadly, commercial mogrelization, an inevitable social evolutionary step in capitalist cultures. However, in a free society it can be counteracted by elective collaboration between doctors and patients. So, these background data, honestly and boldly presented for your edification, are tendered in the spirit of meaningful outreach. With increasingly depersonalizing trends in healthcare, it is always good to know your healthcare provider thinks and acts on a human level. It’s important. The essence of healthcare is neither art nor science; it is humanism. So, here is the human being.

BIOGRAPHICAL SKETCH

Associate Clinical Professor, Department of Periodontics & Affiliated Skeletal Research Center
Case Western Reserve University, Cleveland, OH 44106
Associate Clinical Professor, University of Southern California, 1982-1987
Lecturer, Division of Associated Clinical Specialties, 1981-2010
Capt. USAFR (Ret.), married with 2 grown children

Formal Education

Postdoctoral Orthodontics & Dentofacial Orthopedics, UCLA
Postdoctoral Periodontics, Case Western Reserve University School of Dental Medicine
MS Biology, Case Western Reserve University Graduate School
DDS The Ohio State University
BA Kent State University

Experience & Leadership

Major National Presentations

1. “Effect of Inadequate Iron Intake on Periodontics,” Amer Assn of Dental Research, Las Vegas, Nevada, 1977
2. “Orthodontics for the Periodontist,” American Academy of Periodontology, Denver, CO, 1987
3. “Orthodontic Forces: Therapeutic or Traumatic?” American Assoc. of Orthodontics, New Orleans, LA, 1988
4. First Annual Symposium of Bioactive Ceramic Alloplastic Bone Grafts, “How PerioGlas® Works for me”.
5. Pacific Coast Society of Orthodontists, Monterey, CA, September 1996
6. Orthodontic Patients’ Needs, Philadelphia, PA, September 1996
7. Managed Care – Adapting to the Emergency Paradigm, National Meeting, American Academy of Periodontology, New Orleans, LA, October 1996
8. Bioactive glass as a regenerative material – 3 years of clinical observations, National Meeting of the American Academy of Periodontology, San Diego, CA, 1997
9. Practical Application of Bioactive Glass – Clinical Tips for Success, American Academy of Periodontology, San Diego, CA, 1997
10. Bioactive Glass; Clinical Observations and Practical Use, American Academy of Periodontology Annual Meeting, Boston, MA, 1999
11. Dental and Periodontal Complications to Eosinophilia – Myalgia Syndrome, National Meeting of EMS Network, San Diego, CA, 1999
12. *The Oral Management of EMS*, National Eosinophilia-Myalgia Syndrome (EMS) National Research Teleconference – March, 2001
13. *The “Bayesian Smile”-Decision Analysis in Dentistry*, 42nd Annual Bayesian Research Conference, 2003, Studio City, CA –Feb., 2003
14. *Dental Decision Science A Bayesian Approach*, Dental and Maxillofacial Interest Group, Society for Medical Decision Making, Chicago, IL, October, 2003
15. *The Frost-Jee Procedure: A novel method of surgical Canine Retraction for the Periodontist*-American Academy of Periodontology, 91st Annual meeting, Denver, CO, Sept 24-27, 2005
16. *Considering the Mouth as a (W)hole*, American Association for the Advancement of Science, (AAAS), St. Louis, MO, February, 2005
17. *Tissue Engineering for the Orthodontist: An Exploitation of the Utah Paradigm for Accelerated Tooth Movement and Epigenetic Regional Phenotype Modification* The 8th International Conference on Biological Mechanics of Tooth Eruption, Resorption and Movement, Phuket, Thailand, November 7-10, 2005

18. *The Frost-Jee Procedures: Therapeutic Surgical Induction of "Therapeutic Regional Osteopenia in Clinical Orthodontics*, Testimonial Meeting for Dr. Webster S.S. Jee, Oakland, CA June, 2005
19. *Bone Tissue Engineering in Surgical Dentofacial Orthopedics*, 11th International Symposium on Dentofacial Development and Function, University of Illinois at Chicago, June 18-22, 2006.
20. "Facial Morphing": Tissue Engineering and Epigenetic Perturbation of the Adolescent and Adult Human Face, (An Exercise in Translational Biological Research), California Tissue Engineering Conference, UCLA November 30- December 1, 2007, UCLA Los Angeles, CA USA 90095.
21. American Association of Orthopedic Surgeons, Limb Lengthening and Regeneration Society, (date pending) Albuquerque, NM April 2007.
22. PAOO Complications and Sequella, a 5 year Retrospective American Academy of Periodontology, Seattle Washington, Sept 9, 2008
23. Surgical "Face Morphing": in vivo tissue engineering for therapeutic alteration of regional phenotype during intraoral wound healing, Tissue Engineering and Regenerative Medicine International Society, (TERMIS) Annual Meeting, San Diego, California, December 2008.
24. "Orthodontic-Periodontal Interactions: Building the House while Protecting the Foundation", Las Vegas, NV, October 13-17, 2009, Rondeau Seminars, Toronto, ON, Canada.
25. Malpractice Prophylaxis – Using tort law as guidelines for a healthy patients, the commonweal and a ethical practice" Las Vegas, NV October, 2010 (in preparation)

Private Practice Experience

Private practice in Orthodontics and Periodontics in Encino & Oxnard/Ventura California, 1982-present

Honors & Awards

1. 1987—Commendation for Teaching Excellence, awarded by orthodontic residents, UCLA School of Dentistry
2. Who's Who in American Education, 1992-1993, 3rd Ed. National Reference Institute, Wilmette, Illinois 60091
3. Certificate of Appreciation, UCLA Orthodontic Alumni Assn. 2010 for 25 years of support and 3 terms as President.

Publications (copies available upon request)

Textbook Chapters

1. "Orthodontic Considerations in Periodontics," in Glickman's Clinic Periodontology, 8th Edition, Chapter 52, Carranza F, Editor, 1990.
2. "Orthodontics and Pure Mucogingival Problems in the Transitional Dentition" and "Pure Mucogingival Problems in Adult Orthodontic Cases" in Decision-Making in Dental Treatment Planning pp 158-162, Hall, W., Robert, W., and LaBarre, E., Editors, C.V. Mosby, St. Louis, 1994.
3. Murphy, NC: "In vivo Tissue Engineering for the Orthodontist: A Modest First Step", Biologic Mechanisms of Tooth Eruption, Resorption and Movement, Davidovitch Z, Mah J and Suthanarak S (Eds.) Harvard Society for the Advancement of Orthodontics, Boston, 2006
4. Davidovitch Z and Murphy N, Accelerated Tooth Movement through Surgery, Chapter 1 The Biology of Tooth Movement, Davidovitch Z and Krishnan V, Eds.
5. Murphy NC, Bissada, NF, Davidovitch, Z, et. al. Tissue Engineering for Orthodontists II: A "Stem Cell" Protocol, Theory, and Rationale, In The Scope of Interactive Orthodontics, Chapter 12, Davidovitch Z and Krishnan, V (Eds.) (submitted for publication)

Scientific Journals

1. Murphy, NC and Badger, S.: New concepts in the microbiology of periodontitis. *Ohio Dent. J.* 52 (11):33-39, 1978
2. Murphy, NC: Clinical observations on occlusal adjustment, *Ohio Dent. J.* 53(3):41-50, March 1979. (Selected for inclusion in Compendium of the American Equilibration Society, Vol. 16, R. Coy, ed.)
3. Murphy, NC and Bissada, N.: Iron deficiency: an overlooked predisposition factor in angular cheilitis, *J.A.D.A.* 99(10):640-641 October 1979.* (Selected for inclusion in Yearbook of Drug Therapy, 1981).
4. Murphy, NC, Mahar, P. and Fair, R.: Uveitis and its relation to periapical-periodontal infection, *Ohio Dent. J.* 53(11):24-25, November 1979.
5. Murphy, NC and DeMarco, T.J.: Controlling pain in periodontal patients, *Dental Survey*, 55(7):46-56, July 1979.

6. Murphy, NC: Physiologic recession and implants, Ohio Dent. J., Feb. 1979.
7. Murphy, NC and Newman, M.G.: Update and commentary on periodontics, California Dent. J., August 1981.
8. Vego L. and Murphy, N.C.: Early orthodontic diagnosis in general practice: method and significance. Calif. Dent. J., April 1982.
9. Murphy, NC et al.: Experimental force analysis of the contraction utility arch wire. Am. J. Orthod., 1982.
10. Murphy, NC et al.: How to write a scientific article, Part 1, Why not say it with style? Calif. Dent. J., February 1982.*
11. Murphy, NC: How to write a scientific article, part 2, Why not say it with credibility? Calif. Dent. J., March 1982.(Selected by ADA Council on Journalism as an exemplar for distribution and use in editors' workshops)
12. Kaufman, H., Endres, B., Carranza, F., Newman, M. and Murphy, N.: Influence of trauma from occlusion on bacterial pocket repopulation. J. Periodont., June 1984.
13. Murphy, NC and McCreary, C.: Clinical guidelines in managing fear of dental surgery, Ohio Dent. J., May, 1986
14. Murphy, NC: Listen to periodontists. PCSO Bulletin, Fall, 1986.
15. Murphy, N.C. "Adolescents are Never Healthy": letter to Editor, PCSO Bulletin, 2002
16. Murphy, NC: "A Matter of Degree": Letter to Editor, JADA 2005
17. Williams MO and Murphy NC, "Beyond the Ligament": A "Whole Bone" Periodontal View of Dentofacial Orthopedics and Falsification of Universal Alveolar Immutability, In: Seminars in Orthodontics, Emerging Orthodontic-Periodontic Interactions, , Murphy NC and Bissada NF, (Eds.), Elsevier, St. Louis, 2008
18. Krishnan V, Ambili R, Ze'ev Davidovitch Z, and Murphy NC Gingiva and Orthodontic Treatment, In: Seminars in Orthodontics, 2007 Side Effects of Orthodontic Force and Mechanics, 13(4): 257-271. [Selected as "Editor's Choice" AJO-DO, 2009, 135(3): A13-A14.
19. Mihram WM and Murphy NC, The Orthodontist's Role in 21st Century Periodontic-Prosthodontic Therapy In: Seminars in Orthodontics, Emerging Orthodontic-Periodontic Interactions, , Murphy NC and Bissada NF, (Eds.), December Issue, Elsevier, St. Louis, 2008.

Websites/Blogs/Internet postings

www.UnivesityExperts.com

GoogleScholar.com:

1. Murphy NC, Beyond the ligament
2. Murphy NC, In vivo Tissue Engineering for Orthodontists

Professional Collaborative Activities

1. Editor/Reviewer: American Journal of Orthodontics and Dentofacial Orthopedics, 1987-present
2. Guest Editor: Seminars in Orthodontics, December, 2008

Professor Murphy and the technical staff over the years have carried out research and development on a variety of intellectual subjects that relate to orthodontics and underlying periodontal science, applications of this science in both traditional and managed care milieu. He has served as a quality assurance consultant for 5 insurance firms, numerous law firms and engaged in consistent student counseling activities. With on-going research and teaching relationships at 3 major U.S. universities, UCLA, USC and CWRU and collaborates on clinical studies in his native state of Ohio and Florida. Dr. Murphy also interfaces with elected government organizations at the local, state, and national levels, and has 2 U.S. patents pending.

Personal Interests

Fly fishing, professional boxing, English literature and composition, mathematics, statistics, logic & experimental design, military history, cognitive and educational psychology, college football, linguistics (Spanish & German)

Note:

We hope this background information is helpful to you in making dental and oral health decisions. If you would like further data about our office kindly contact:

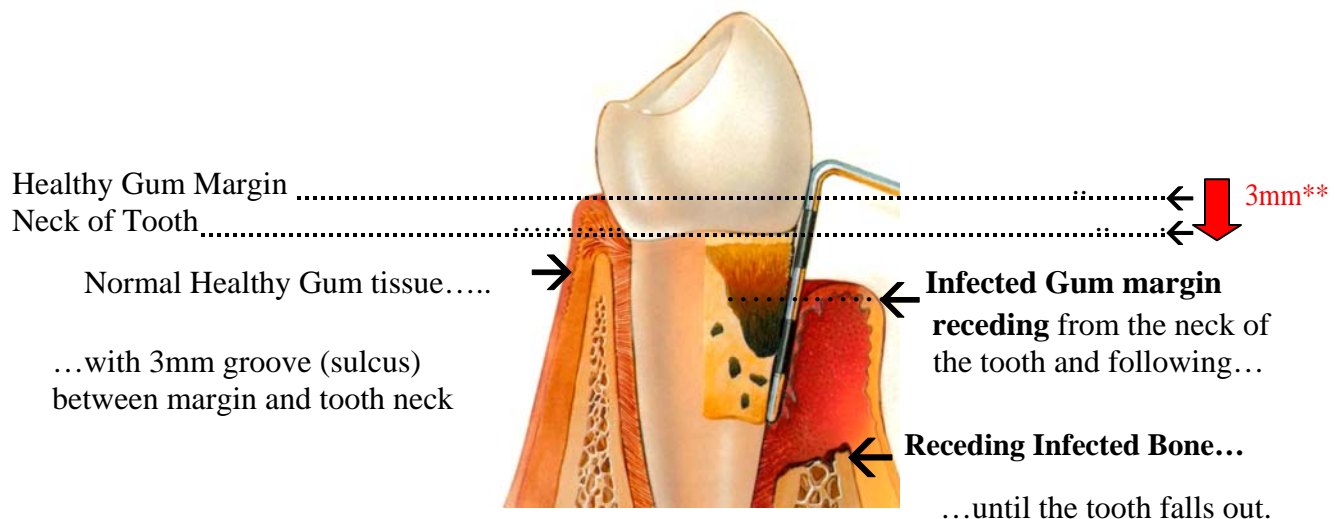
Lorraine Vigil

Ms. Lorraine Vigil
Professional Relations Officer

Now some bad news (Just a little)...An increasing number of studies are showing that gum infections may be hazardous to your general health. Inadequate dental treatment, crooked teeth and avoiding the dentist may allow infection of the gums below the gum line, putrefaction of the tissue and release of pus and toxins that travel through your bloodstream. These poisonous chemical compounds are often not noticed because they are unconsciously swallowed. But when they get into the bloodstream they land in such vital organs as your heart and the health of young mothers and babies .^{1,2,3,4,5,6} This is because gum infections have no subjective symptoms, so it is easily missed. Because braces make it more difficult to control oral infections even kids are at risk. Gum diseases, gingivitis and periodontitis (pyorrhea) are symptomless (no pain or obvious bleeding) slowly erosive chronic infections to which you become accustomed. Yet it is progressive, without pain, to the point that it can cause all your teeth to fall out. Treated in its early stages, gingivitis or mild periodontitis is curable. However as signs of infection: bleeding on probing or bone loss and “pocket” formation, become advanced, even heroic regenerative surgery will not stop its progress, only slow it down. Unrelated to caries (cavities) gum infection bacteria “eat” protein (your blood and tissue) not sugar. Even patients who are in comas and fed intravenously get gum disease because pathogens of the gum tissue eat protein in the tissue and blood. They don’t need food or sugars.

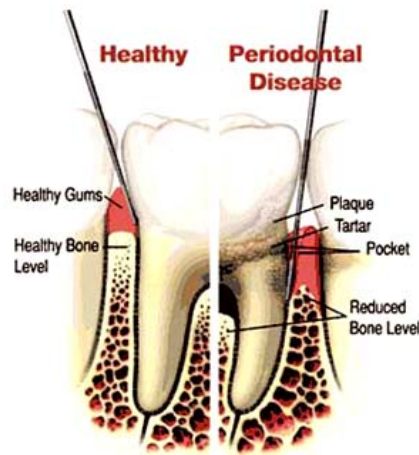
So don’t feel safe by having numerous “deep cleanings”. That only masks the disease and drives it “underground” deeper into the bone. So be sure to ask your dentist to follow our recommendations for periodontal care during and after your treatment. We will give you a copy of the recommended treatment. You should ask your dentist **three key questions** every time you have a teeth “cleaning”.* (1) “Do I have pockets deeper than 3 mm?” (2) “Are they bleeding upon probing examination?” (3) “Where are they?” This is the only way you can be adequately informed so you are not unpleasantly surprised one day in your 30’s, 40’s or 50’s when you are told, “I’m sorry to tell you that you have advanced gum disease and you must have dentures”.
Now, the good news...

We’ve treated patients, even with advanced gum disease, who commit to good care late in life, and now show no significant progression of the disease for over 25 years. For chronic diseases that’s a “cure”. Now, let’s empower you with scientific knowledge. Study the diagram below:



On the left you see gum health. On the right you see advanced gum disease as measured by a periodontal probe. The activity deep in the pocket may be invisible to you because dental floss and the bristles of a toothbrush cannot reach below the gum line deeper than 3 mm, the first silver bar at the end of the probe. See: Red Arrow above. The first three millimeters below the gum line is called the anatomical “Range of Effective Home Care”.

* Related terms: scaling, prophylaxis, root planing, “deep cleaning” – all symptomatic treatment that address symptoms but not the underlying causes of gum infection.



It is important to know that “cleaning”, like the word “nice” or “love” in the English language is so overused that it means almost nothing in a strict scientific sense. It can mean brushing your teeth lightly with an abrasive, to fundamental *debridement* of infected soft tissue. The best words in a periodontal context are the scientific terms “scaling” or “root planing”. The former refers to the removal of scales and calcium deposits used by bacteria to invade the supporting dental bone. “Root planing” refers to the removal of surface root tissue that is literally dead tissue, killed by bacterial toxins.

Complications of Gum Disease

The ultimate outcome of uncontrolled periodontal disease is tooth loss. As the destructive factors cause the breakdown of bone and connective tissue, there remains no anchor for the teeth. But before that happens a lot of other pathological events occur along the way.

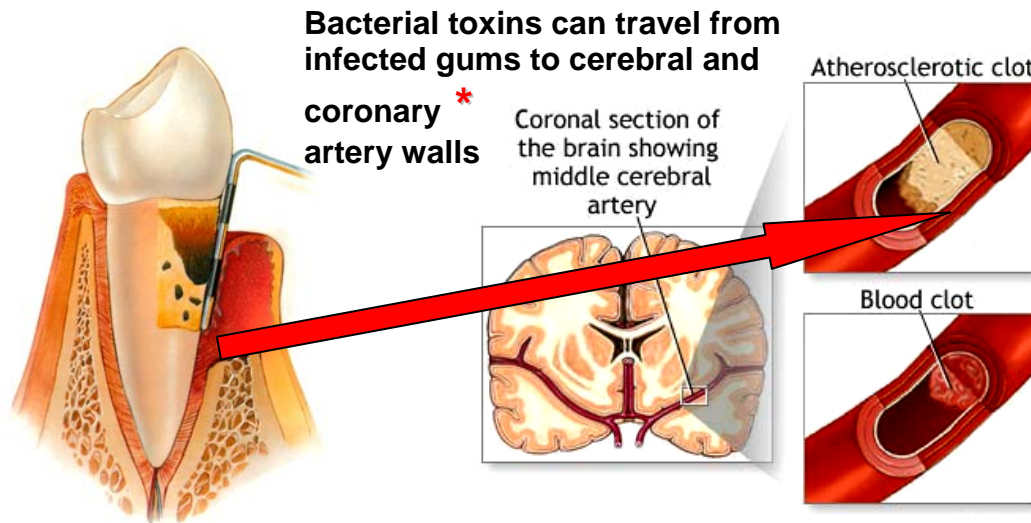
Bad Breath

A much less severe but nevertheless distressing problem caused by periodontal disease is bad breath, although coatings on the tongue may contribute more to bad breath than periodontal disease there is not doubt that the flow of pus from the chronic periodontal abscess renders a putrefying odor before it is swallowed. In a way that is good, because at least the infection is draining. When infection is held inside the tooth pulp chamber and the pressure cannot escape, the tooth is raised hydraulically in the socket and the pressure is interpreted as pain. But if there is no pain then one does not notice slowly evolving events. That’s what makes gum infection so insidious.

Heart Disease and Stroke

Studies have reported that people who have heart disease have a 1.5 - 4 times increased risk for periodontal disease. This is greater odds than the association with cholesterol! And the risk is highest for patients with extensive gum disease, bleeding from every tooth. Acute coronary syndrome, high blood pressure (hypertension), and high cholesterol have also been associated with periodontal disease in scientific studies for decades.

Periodontal disease has also been linked to stroke and to coronary artery disease (CAD) or the more general cardiovascular disease (CVD). The more severe the periodontitis, the greater the risk for heart problems. Many experts, however, are still not sure whether periodontal disease is a risk factor for stroke or a marker that reflects various risk factors common to both conditions.



* Tonetti M, et.al. New England Journal of Medicine, Volume 356; pp.911-920, March 1, 2007 (Reprint available upon request.)

A stroke is caused by a loss of blood circulation to areas of the brain. The blockage usually occurs when a clot or piece of atherosclerotic plaque breaks away from another area of the body and lodges within the blood vessels of the brain. Some aggressive bacteria even invade the lining of the blood vessels like termites and get inside the cells of the tissue they contaminate.

Recent evidence suggests that the inflammatory response may be the common element. This is an over-reaction of the immune system that causes injury to tissues in the body. A common link between patients with both heart conditions and periodontal disease may be elevated levels of C-reactive protein (CRP), a marker for the inflammatory response. Some experts believe that immune factors causing this response are released into the bloodstream during periodontal disease and cause injury in the arteries supplying blood to the heart.

Other evidence suggests that the periodontal disease bacteria itself -- particularly *P. gingivalis*, *T. denticola*, *T. forsythia*, and *streptococci species* -- may be the main culprit. In 2005, the NIH sponsored *Oral Infections and Vascular Disease Epidemiology Study* (INVEST). This scientific panel determined an association between cardiovascular disease and the bacteria that cause periodontal disease. In this study, higher levels of oral bacteria were associated with thicker carotid arteries (a predictor of heart attack and stroke), regardless of C-reactive protein levels.

While this study's findings are an important advance in understanding the relationship between periodontal and heart disease, it is still not clear if periodontal disease actually causes heart disease. Researchers hope that future results from INVEST will clarify this issue. Experts suspect that gum disease treatment may reduce the risk of heart disease for nearly everyone. While many studies are equivocal, all scientists agree that infection is bad and needs treatment.

Effect on Diabetes

Diabetes is not only a risk factor for periodontal disease; periodontal disease itself can worsen diabetes. Some evidence suggests that the bacteria that causes periodontal disease may enter the bloodstream and activate cytokines, (damaging immune system factors), which then destroy cells in the pancreas where insulin is produced. Other research indicates that treating periodontal disease can reduce the need for insulin and improve blood sugar control.

Effect on Respiratory Disease

Bacteria that reproduce in the mouth can also be carried into the airways in the throat and lungs, increasing the risks for respiratory diseases and worsening chronic lung conditions such as emphysema, or even serious cases of pneumonia.

Effect on Pregnancy

This may be the most important of all you learn because it involves the welfare of a totally innocent dependent, a growing baby. Many studies strongly indicate that bacterial infections that cause moderate-to-severe periodontal disease in pregnant women increase the risk of premature delivery and low birth weight infants. ***The more severe the infection, the greater the risk to the baby.*** Research indicates that the bacteria from gum disease, and from tooth decay, may trigger the same factors in the immune system as genital and urinary tract infections. These biologic substances, called prostaglandins and tumor necrosis factor, produce inflammation in the cervix and uterus that can cause premature dilation and contractions. Research also suggests that periodontal disease increases the risk for preeclampsia, a life-threatening disorder that occurs in mid- to late pregnancy and is characterized by high blood pressure.

Experts recommend that women have a periodontal examination before becoming pregnant or as soon as possible thereafter. Because women with diabetes are at higher risk for periodontal disease, it is especially important that they see a dentist early in pregnancy. Experts are still not sure exactly how treating periodontal disease might improve birth outcomes, but fortunately, a 2006 study in the *New England Journal of Medicine* indicated that periodontal treatment is definitely safe for pregnant women.⁷ This is important when severe gum infection may be a risk factor in premature births and low birth weight, an unhealthy sign in newborns.⁸

For pregnant patients the news about gum infection can be a very serious medical problem. In a recent issue of the *Journal of Obstetrics and Gynecology* (February, 2010) Dr. Y. Han, et.al. reported that a Santa Monica mother's gum infection (*Fusobacterium nucleatum*) had infected the unborn baby and resulted in the *death* of the child at full-term delivery. The original article is available for download or free from our office staff. Six years previously, in the scientific journal, *Infection and Immunity*, 2004 Dr. Han had warned the medical and dental community that such tragic events were possible based on her compelling evidence derived from mice studies. But due to culture lag, scientific skepticism, the slow pace of data delivery, and the lack of advocates, this news came too late for the Santa Monica mother and her unfortunate child. You can read the story by Google.com. (key words: term stillborn, oral, *Fusobacterium nucleatum*, 2010)

Verifiable Data

One of the advantages of our philosophy (Patient Empowerment) is that our statements are not simply based on experience or learned opinion. They are evidence-based and can be confirmed by you if you simply use Google.com or Wikipedia.com. We also have a list of sites as diverse as medical data, decision making (computer logic assisted), measures of quality and governmental research projects. This computerized "Age of Information" can work for you as your best tool. This is important at a time when giant corporations and government bureaucracies are dictating what you should get regardless of your personal tastes or interests. Use the data; we will help you in your personal research. If you'll be a good student, we'll be good teachers. It's all up to you.

Effects in the Orthodontic Patient

Effects of chronic low-grade infection can range from a complication of treatment, to accelerated bone loss, to quite the opposite: a 70% chance of **permanent overgrowth of gum tissue** (below left) which can obscure 1/3 of the smile with deep pus pockets and infected bone.⁹



Unretouched Photos of a real patient
Uncontrolled growth of abnormal gum tissue after braces have been removed because of poor oral hygiene. It can get this bad... really!



Unretouched Photos of a real patient
Normal, healthy gums and supporting bone in an orthodontic patient who followed our instructions for good oral health.

For further images simply go to "Google images" and type in the key words you see in this informative essay. For copies of the scientific article this essay is based on, contact Dr. Murphy. All our treatment and pedagogical efforts are "evidenced-based".

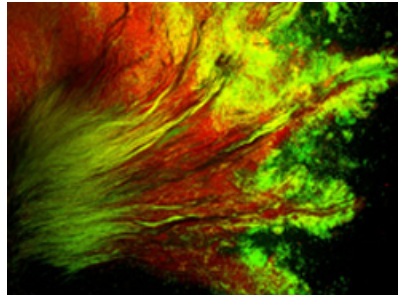
Common Questions Patients Ask (or Should Ask) about Oral Infections, their Treatment and Prognosis

Are cavities and gum swellings actually infections?

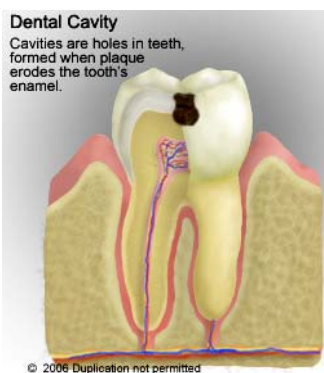
Yes! Now let's address the most important issue of all: controlling the infections. Yes, cavities are dental infections. You usually think of infection as acute soreness. Well, that's an *acute infection*. Most dental problems are *chronic infections*, the stage before they become acute. So let's learn a little about chronic infection that is easier and cheaper to treat. And let's have you treat it instead of a dental professional. Yes, you can do it yourself if you choose to. I'll teach you; just call me "Coach".

What exactly does "good oral hygiene" mean?

It is very important to keep bacteria off of your teeth while your braces are on. If left on teeth, they will form small white spots. These are cavities and will not go away, ever! Braces do not cause white cavities (see image below); poor brushing does. Trust me, you do not want a great smile at the end of treatment and have white spots on the gum line. I or one of my assistants will always be willing to coach you into a "Gold Medal" dental patient. All you have to do is ask.



This patient had braces taken off before the end of treatment because she allowed the bacteria to eat away at the enamel causing “white spot” cavities. Remember: the stuff you brush off you teeth is not food. It is an entire colony of living, eating and reproducing bacteria* The image (above, right) is what it looks like under the microscope. ***Yes! It's alive! ...and you are its lunch!***



For the patient above dental health came too late. This patient needs \$8,000 gum surgery, a \$1,200 root canal treatment and a \$1,500 crown. All this because she did not listen to us or use one of **our free toothbrushes and floss!**

Don't the periodic “deep cleanings” every 6 months control the diseases?

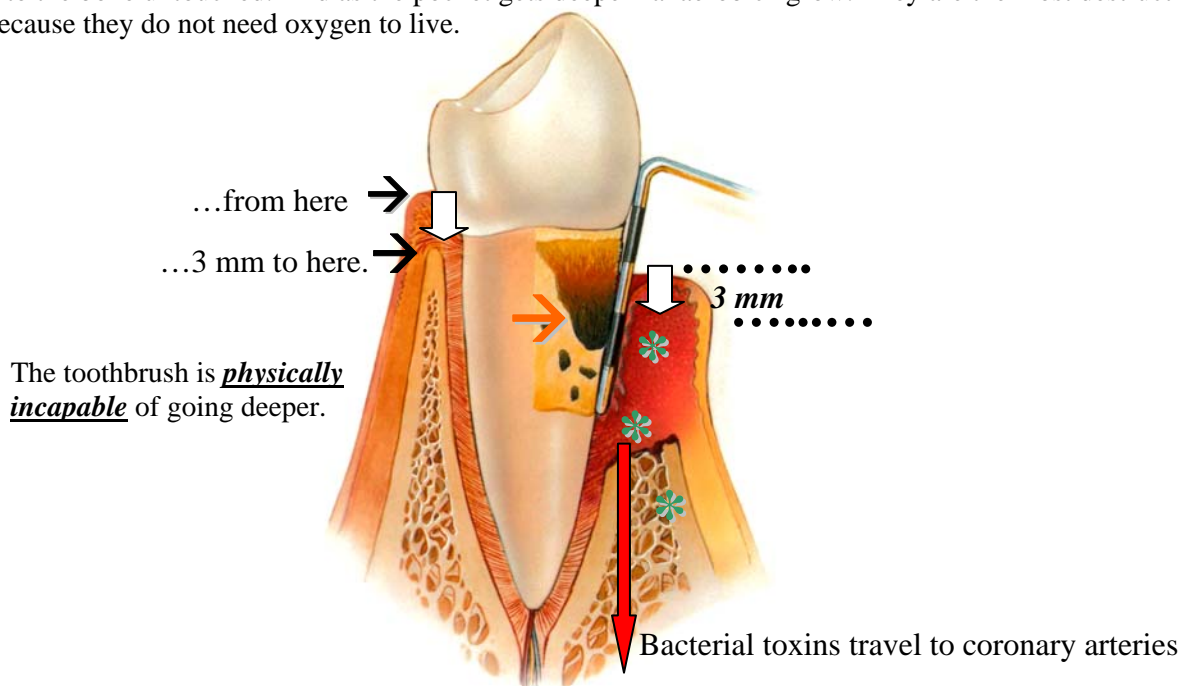
Well, yes and no. If you just have *gingivitis* (pockets no deeper than 3mm) and you use floss and brush every day effectively then a “cleaning” and “check up” radiographs for cavities (caries) may be sufficient. That's why most insurance companies pay for “cleanings”. They presume you are doing what you should and it is effective. That way if you don't follow through on your part they have justification for canceling your policy or denying a claim. The same policy is enforced if you don't lock your car. If something is stolen, your auto or homeowners insurance can legitimately deny the claim.

But a six month interval may not be enough for some people. As a matter of scientific fact it takes 24-48 hours to inflame the soft gum tissue and about 2-3 months to cause **irreversible bone loss** where your brush and floss have missed the mark. That is why 3 month intervals between scaling and root planing are recommended by scientists, not just our office.

Regarding “deep cleaning” you must know that the term is not scientific so it can mean anything, like the words “love” and “nice”. They are not precise. If the term “deep cleaning” means scraping the tooth surface below the gum line then it is not effective care and can actually be dangerous. Scaling the root suppresses symptoms and signs of deeper disease. Therefore if not all the infection is taken out the “deep cleaning” only drives more severe infection deeper into the tissue while indications that you have something wrong are muffled. The serious infection is not

on the root. It is in the soft tissue and the bone. So “deep cleaning” suppresses the symptoms but does not eliminate the cause of the disease, bacteria in the soft tissue and bone. Suppressing symptoms is called “symptomatic care” or “palliative care” and this is what’s often done for very elderly terminal medical patients. You may have heard “Don’t take heroic efforts to keep Granny alive; just keep her pain-free. She’s 97 and lived a good life, just let nature take its course and treat the symptoms so she doesn’t suffer” Sad but true, this same thinking is often applied to 40 year old dental patients with periodontal disease and in some cases constitutes negligence if you are not informed and lose your teeth. See diagram below:

A tooth brush and floss can only reach the infection as deep as 3 mm, No deeper than the white arrow”,
 ↓ This 3mm limit is about the thickness of two dimes. Below the white arrow the disease continues into the bone untouched. And as the pocket gets deeper “anaerobic” grow. They are the most destructive because they do not need oxygen to live.

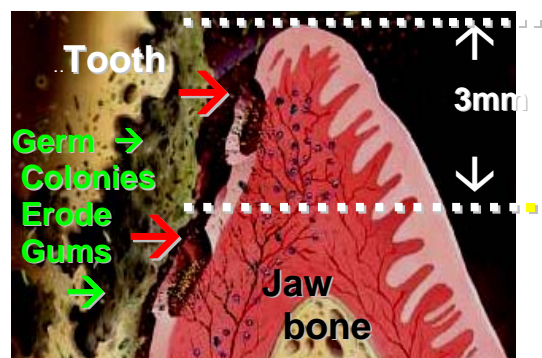


Deep Cleaning scrapes infection off the roots (orange arrow →) But your infection is often in the soft tissue diagramed at the green asterisks (*). These infections are what a periodontist treats.

Why do my gums hurt and bleed?

Your gums hurt and bleed because they have microscopic ulcers, small tears in the skin just like a skinned knee. Even if you touch a skinned knee with a feather it bleeds and hurts. That doesn’t mean the feather is sharp. It means the knee is “ulcerated” with a superficial abrasion. For bacteria, that raw tissue we’ve all seen as kids is a direct 8-lane highway to your internal organs. The same is true for oral ulcers (see red arrow) inside the gums.

The red arrows in the illustration to the right show exactly how oral germs on the teeth (small green arrows) get into tissue to cause bleeding. After the bleeding stage, when the infection gets deeper into the tissue -- beyond where the brush and floss can reach – germs destroy supporting bone and spread through the body to infect foreign organs and blood vessels of the heart and vascular system ...silently, with no pain!



How can I prevent gum infections each day?

- 1) Brush after every meal. If this is not possible then brush morning and night, but do it well.
- 2) Leave your travel toothbrush in your locker or desk at school or work and clean your mouth after lunch or snacks.
- 3) Brush your gums, not just your teeth. If your gums bleed when you brush, then brush that spot harder. I promise you will not bleed to death. Bleeding gums mean there is an infection there and the bleeding helps wash it away.
- 4) Be sure to floss between your teeth. It is very time consuming so use it as an excuse when you need an excuse for staying up late or being alone. Use the floss holder we give away for free. They're the best.
- 5) Use the medicines that we give you and listen to your "assistant coach".
- 6) Most importantly, see your dentist at least every 3-6 months.
- 7) Read and heed the home study program in the Appendix.

If I have bone loss how can I decide which treatment is best for me?

Fist you should know that you phrased the question in exactly the right way. YOU are the final arbiter of what is done with your body, NOT the doctor. When a doctor of any kind, surgeon, physician, dentist, podiatrist, etc. treats you they should remember that it is a privilege, not a right. That is why you are protected by a state government "license". The word "license" means special permission. In our office we always respect that.

However, while acute disease such as major hemorrhage or traumatic injury principally entails the acts of the professional, chronic disease requires a covenant by the patient and doctor and a partnership of actions over time. If you choose our office you should plan on seeing us for about 1-3 years depending on how well the treatment, which YOU select, is working and how long you want the therapeutic effects to last. In this regard the team we put together includes you and what is "best" depends upon your risk tolerance and your value system. Different people have different values, risk tolerance and preferences. We respect that.

Compare the disparate values in this composite dialogue between two of our patients.

Patient #1 "Why did you choose a non-surgical course of therapy from Dr. Murphy?"

Patient #2 "Because I do not want surgery. I think surgery should be the last treatment of choice and we should exhaust all alternatives before we choose the surgical option."

Patient #1 "But isn't that a waste of time and energy? Surgery includes most of the non-surgical techniques, is much more predictable and definitive. You can go from a disease state to perfect health in a matter of 2-3 months. Exhausting all the non-surgical alternatives, herbal remedies, "deep cleaning", are incomplete for many patients and is expensive because of inefficiencies. Indeed periodontal surgery was introduced in America in 1949 precisely because the non-surgical alternatives at the time were only partially effective for a few patients."

Patient #2 "True! But when you impetuously elect periodontal surgery – and it is an elective procedure – you never really know in your heart if it was all really necessary. Doesn't it prey on your mind that another non-surgical treatment would have worked but it was never tried?"

Patient #1 “You think too much. Who cares if another gamble might have worked? The issue is this: surgery is 98% predictable, painless and cost/time efficient, and most importantly, puts ME in charge of my health everyday; I am not a slave to the dentist. I am independently empowered. So, the non-surgical alternatives are not necessarily bad treatments. They are simply tedious, unpredictable and irrelevant to my decision process.”

Patient #2 ”I can always elect surgery but I cannot un-operate. What if I have regret?”

Patient #1 “Almost no surgical patients have regrets with modern periodontal surgery. Sure, in the 1950’s and 60’s techniques were less refined than they are now but you can’t judge 20th century problems with 21st century techniques that actually regenerate lost tissue or use stem cells for tissue engineering. You fear what occurred in the past. Non-surgical cannot regenerate lost tissue.”

Patient #2 “But still, if the doctor does not close doors of future opportunity I can elect regeneration and modern surgical care whenever I want in the future. So I say, “Not me.” I like to take the time and effort of thorough investigation even if it costs more and takes more time.”

Patient #1 “So be it! It’s a free country and you make your choices and assume the risks. I don’t want to gamble. I go with a sure thing.”

Patient #2 “I think you’re impetuous and a risk taker. I’m conservative and willing to pay for a prudent, slower course of action.”

Patient #1 “I am happy with my informed choice.”

Patient #2 “And I am happy with my choice.”

Now you can call Patient #1 Mr. or Mrs. Decisive, a bold risk-taker, modern, liberal, confident, well-educated or reckless. Similarly Patient #2 can be called indecisive, prudent, uninformed, conservative or timid, fearful or cautious. Who’s right? As you might guess, both are right FOR HER OWN CASE.

(By the way, for the sake of cultural context, Patient #1 (Mrs. Bold/Decisive) is Dr. Murphy’s wife, an optometrist for Kaiser Permanente and pragmatic refugee from Communist Cuba! Patient #2 (Mrs. Cautious/Indecisive) is Dr. Murphy’s sister a modest and shy retired school teacher in Ohio. So don’t feel bad about any ambivalence you might feel, even Dr. Murphy’s family has the same prudent and intelligent trepidation. With logical decision making methods and scientific data your choice can be made reasonably. We hope this dialogue helped.

What are the objective characteristics of all treatment options. I need to know the facts before I can decide what’s “best” for me.

Again this is an excellent question. So look at the comparisons and descriptions below then ask Dr. Murphy on your next visit any questions these issues bring to mind. Bear in mind that each treatment includes all the options that come before it. In other words, “III. Surgical Options” include all the non-surgical options and “Chemical Degranulation” includes periodontic scaling and “deep cleaning”.

I. No treatment at all

II. Non-Surgical Treatment Options

- B. Periodic scaling – every 6 months
- C. Intensive scaling every 2-3 months
- C. “Deep cleaning” –
- D. Chemical Degranulation

III. Surgical Options

- A. Minimally Invasive Surgery
- B. Osseous Surgery
- C. Regenerative Surgery
- D. Extraction and Implants
- E. Logical Decision Making
- F. What about Cost?

I. No treatment – studies of untreated periodontitis show that it is not self-limiting and over the course of time will ultimately result in the loss of all teeth. Usually they are all extracted for denture before they fall out spontaneously because the final stages are painful. But we consider **tooth extraction** tantamount to **amputation**. Amputation of a body part is effective, permanent and cost-effective. The price is cheap in dollars but very expensive in biologic and psychological costs. Furthermore, speaking as unapologetic “Anti-extractionists” we believe it is heresy to take teeth out when modern biological therapies are globally dedicated to preserving tissue, regenerating lost organs, and encouraging wellness.

Untreated, periodontal infection is a kind of race between the disease and your lifetime. It is important to realize that although it seems to be a slow progressive disease this is a research artifact derived from “pooling data”. In fact, periodontal disease comes in “spurts” or acute exacerbations punctuating periods of quiescence. If you get run down or stressed over time your lowered disease resistance will allow these flare ups to occur faster and with more frequency.

Dr. Murphy testifies that he has never, in 25 years seen a patient get worse in 3 months. However he has seen some patients get worse (5 mm pockets to 10 mm pockets and tooth loss) in 12 months. So although you need not panic or rush your decisions, you should not ignore these issues over 6-12 months. You are at a crossroads in your oral and systemic health. So be concerned but not alarmed, prudent yet ultimately decisive. So now is the time for assiduous study. If you will agree to be a good student, Dr. Murphy will be a good professor and coach.

Here’s some good news: Over the last 25 years of practice we have patients who have maintained teeth in a state of health for over 25 years with no further signs of disease progression which only had 10-15% of original support. They had 85-90% of the bone destroyed but still keep the teeth healthy and comfortable! Now with dental implants to supplement natural teeth, there is no reason not to smile.

II. Non-Surgical Options

When done well and at early stages of gingivitis or incipient periodontitis non-surgical care can be very preventive. However, when employed as an alternative therapy in moderate to severe periodontitis it can make things much worse. There is risk. Consider these comments from the scientific literature:

*Using adjunctive agents to temporarily hide inflammation has been termed “disease masking” Disease masking * should be avoided. This occurs when treatment is directed at resolving soft tissue inflammation rather than focusing on the elimination of etiologic agents (root causes) from the root surface by mechanical treatment (scaling, flossing, brushing)*¹²

Herbal remedies, water irrigation devices (Water Pic®), nutritional supplements, and various novel therapies that are advertised over the internet, newspapers, health magazine and TV are not well scrutinized by scientific studies. These popular nostrums come and go in history and are difficult to study because ingredients are not consistent and often not disclosed. We are not qualified to address these sundry alternatives so you will have to consult other authorities until science can study them.

* Ask us for a copy of the original classic articles on “disease masking” by Greenwell and Bissada.^{12, 13}

Water irrigation devices do not stay near the deep bacteria long enough to have a lasting effect but they do remove food particles well for handicapped individuals. Unfortunately, food is not the problem. This notion derives from a conflation of caries (cavities) science and periodontal (gum) science. Patients in comas, fed

intravenously, still get gum infections but not cavities because the bacteria that cause periodontitis “eat” protein (your tissue and blood) instead of sugar. Technically, the pathogenesis is even more disgusting than that. The bacteria secrete catabolic enzymes, like a spider, that liquefies your tissue the way Jell-O turns to liquid in the sun. Thus, the bacteria don’t “eat” you, they “drink” you! All this is done from a sticky film that impervious to water sprays. The use of a water jet is naïve. Any attempt to take off the sticky bacterial biofilm is like trying to take sticky jam off a kitchen countertop by splashing it with a glass of water.

A. Periodic Scaling – every 6 months – This is the removal of tartar (calculus). That hard deposit, which accumulates above and below the gumline like barnacles on a ship, carries bacteria into the bone. Because it is a hard scale like the mineral deposits that collect around a faucet which delivers hard water, only a dentist or dental hygienist can remove it with sharp stainless steel instruments.

B. Intensive Periodic Scaling – every 2-3 months – This simply evokes treatment results more often and is a vague term that can mean variable degrees of thoroughness. If you elect this treatment know how deep the pockets are and understand the issue of “bleeding on probing”. If you do not you run the risk of driving the infection deeper into the bone and “masking” disease with superficial appearance of health.

When scaling is done in deep pockets 5-10+ mm it is more difficult to see and remove all calculus. And, the deeper the infection, the more serious tissue damage it produces. Deeper pockets tend toward “anaerobic infections” and are very destructive to tissue, e.g. gangrene.

C. “Deep cleaning” – This is a non-scientific term that can be conveniently used without accountability. Like the word audit it can be used in a strict or liberal sense, the former being helpful, the latter being misleading. Deep Cleaning, Scaling, Scaling and root planing are all attempts to reduce symptoms of the disease and do not address infection in the gum tissue or bone. Choose this if you want to “let nature takes its course”. This can mask deeper disease and drive it into the bone if you do not know all the facts*

D. Chemical Degranulation – including scaling and root planing, this treatment is an interim therapy directed to the soft tissue and bone and requires local anesthesia (“Novacaine”) It is a thorough elimination of infected soft tissue that has grown into a kind of benign tumor (“granuloma”). In medical parlance it is termed “wound debridement”. Nurses use the term in medical circumstances to bring healing by “freshening the wound”.

This allows arterial blood to replace the abnormal tissue and venous stasis with fresh blood and new young tissue. Think of it as a project to eliminate “stagnation” that is comparable to civil engineers “draining a swamp”. It works best when combined with chemical cautery that sterilizes the pocket and turns the root surface that is toxic to bacterial growth for 2-3 years. Small spoon-like instruments remove the gelatinous granuloma like scooping jelly or ice cream out of a container. This can only be done legally by a dentist in the state of California.

In mild-moderate disease states (5-7mm pockets) it can totally eliminate the need for surgery but it is only about 50-75% predictable. Nonetheless, for advanced disease it “buys time”, so if you are undecided about treatment choice this is a reasonable non-surgical alternative that has better long-term effects than simply “deep cleaning”.

III. Surgical Options

A. Minimally Invasive Surgery (MIS) – This is commonly referred to among periodontists as an “open and close” or “open curettage” procedure. It’s best representative is formally called a “Modified Widman Procedure” and is not taught as the treatment of choice in many California dental residencies. However, as popularized in the Midwest, it can be most effective where very little tissue is manipulated or cut. Often patients do not even need to take more than commercial non-prescription aspirin or ibuprofen (Advil®, Motrin®) for post-operative discomfort. Done well this is very effective for shallow pockets (5-6mm) where the bone damage is uniform (horizontal bone loss). It often leaves uneven tissue contours that must be reshaped but that can usually be done without local anesthesia. Sometime “residual defects” or pockets remain for a surgical revision but in mild cases of periodontitis one treatment can reduce surgical need by 80-95%. The risk is the need for surgical revision 3-9 months after the initial surgery.

B. Osseous Surgery – This is usually reserved for deeper bone infection (6-10 mm pockets). Irregular bone shapes that promote more deep disease are smoothed over and made to a natural form that occurs in health. The objective is to shape the underlying bone tissue in a way that eliminates hiding places for the bacterial colonies and makes them vulnerable to your brush and floss every day. With this procedure you are telling the germs, “I know where you are and there is no place to hide.” The risk and disadvantage is that excessive amounts of bone must be removed.

C. Regenerative Surgery – validated about 1985, regeneration of lost tissue is now a reality for American patients. When Dr. Murphy was in his residency in Cleveland, regeneration was in its infancy, documented by case studies it was considered the Holy Grail of oral surgery and was not widely evidence-based until the 1990’s.

Bone grafts, growth factors and (as of June, 2009) non-embryonic, somatic stem cells are available to regenerate lost bone around the teeth. When used at best it gives us a very kind, gentle and tissue friendly rebirth of healthy tissue in a natural way. This is similar to the natural processes that occur when a frog regenerates a lost toe or a California lizard regenerates a new tail lost to a predator. In the future, perhaps as soon as 50 years if you lose a finger a new one will be regrown in a dish using your own stem cells that are harvested, grown to maturity and replaced in a fresh therapeutic wound. Fortunately because we work in the range of millimeters not inches, dentistry can do much more with regenerating lost anatomy than surgeons who work with larger organs or appendages. Yet their day is coming, perhaps as soon as 2060.

Medicine cannot do that predictably now because major organs are measured in inches or meters. But in dentistry we work in smaller dimensions of millimeters (the thickness of a thin dime) or fractions of millimeters. So if 4 mm of tissue is regrown in a 8 mm pocket that is tantamount to regrowing half of your thumb. Although we do not get 100% success in all patients, we can usually count on 3--85% regeneration of bone that otherwise would be cut away in order to save the rest of the tissue. The risk is unpredictability due to biodiversity in individual humans.

Synthetic material

Synthetic “bone” is a kind of space filler. It provides a kind of “wedge” or shim between the tooth and bone to mechanically hold the tooth in place. But often they do not really regenerate the entire supporting organ known as the periodontium. The advantage of this kind of bone graft is that it is inexpensive, so it is very popular among many dentists; but it does not regenerate the damaged tissue.

Processed Tissue Elements

All tissue from bone banks, processed compounds, from human or animal tissue best regenerate the damaged bone and ligament totally. So far, no man-made synthetic is as good as natural ingredients. This is why tissue banks for blood, corneas, skin substitutes and bone products are processed in factories and banked. Growth factors are better at reconstructing the entire tissue complex. That is true regeneration. Under some circumstances not only can we regrow the original tissue form but even engineer an entirely

new and novel shape by altering genetic expression in the natural stem cells that you have in your body and blood. (tissue engineering). This tissue is processed bone that has been donated usually by healthy young people often killed in vehicle accidents. This is not “cadaver material” the tissue elements (not whole organs) are taken from living donors. The ethical question you must ask it this: **“Do I have any religious or philosophical objections to taking processed tissue, such as blood, processed bone or stem cells from a tissue bank?”** For example, orthodox patients of the Jewish faith cannot receive pork-derived tissue elements or even pork derived chemicals. Jehovah’s Witnesses cannot take blood or blood products in many instances. If Dr. Murphy ethically commits to “treating the human being, not the tooth” then he must respect the social, psychological and spiritual preferences of each patient. If you have objections be sure to tell Dr. Murphy.

Stem Cells

The advantage of stem cells is that they are alive. And, each viable cell is a living “bone factory” and produces 6-9 generations of daughter stem cells. So *theoretically* we are grafting cells that in 6 generations will theoretically produce 75,000,000,000,000 (75 trillion) bone forming cells. The wound boundaries limit this potential to what is necessary for healing and typically stem cell healing produces more and better regeneration. It is also faster, less infected, less painful and has less swelling. This means less narcotic pain medication, less down-time, and fewer surgical revisions over time, and less chance of immune rejection.

Used frequently in medical orthopedics and ophthalmologic specialists for over a decade, stem cell therapy is considered the latest and best way to regenerate issue and is used extensively by medical orthopedic surgeons for decades. But if you do not want viable stem cells from a tissue bank you can have your own stem cells taken, concentrated and reimplanted into defects. This is the latest 21st Century technology that has emerged in medical orthopedics for the last two decades. Now it is available to you. It can be achieved in one comprehensive visit under mild sedation or one part of the mouth at a time if you. How much is done, and how many months or years it takes is purely a patient-preference issue. There is no scientific data that treating slowly is better than fast or vice versa.

Remember: we do not regenerate teeth. Our specialty is focused on regeneration of lost BONE whether the teeth are present or not. Fewer teeth ironically means the surgery is more difficult. This is due to the technical issues of physical tissue manipulation like the sewing the folds in a very thick fabric. In fact, 21st Century Dentistry is evolving to 21st Century Oral Health.

This requires a new way of thinking that is alien to your grandmother and many of your friends and fellow citizens. Many people still think in terms of the 19th and 20th Century. So ask yourself, “Do I want to think like a 20th Century patient or a 21st Century patient? If you like the progressive ideas of the latter and wish to fully fathom the emerging gifts of modern biological science, you should engage in 21st Century “NewThink”.

<u>Don’t think:</u>		<u>Think:</u>
“Teeth”	--	“Bone”.
“Rows of Teeth”	--	“Smile”
“Dental Cavities”	--	“Oral Infection”
“Mouth”	--	“The Lower Third of My Face”.
“Tooth loss”	--	“Bone loss”.

If you think this way then we have a meeting of minds that helps build a successful biological partnership and empowers you to be the captain of your own ship. Some people think, “I only have a few teeth left, who cares (The best of my life is over.) Others say, “I have lost many teeth already; I want to stop the process

now and thus the teeth I have left are even more precious. In this regard, fewer teeth do not make the treatment or even the surgery easier. Actually it makes bone regeneration more difficult so the best rules are: (1) never get gum disease, (2) never treat it too late and (3) never go back to your old oral hygiene habits. Once these rules are followed your oral and general health are better assured.

That being said, if you commit to periodontal therapy do it enthusiastically. In sports a champion says, "If I'm in the game, I'm in to win!" According to a classic Harvard study*, assiduous collaboration by patients accounts for about 50% of the success at least. *You'll hear the weak and erroneous notion that appraisal that gum infections can't be cured, only controlled. That's not true. We've cured many patients over the last 25 years. We always go for the cure! So commit to therapy for at least 2-3 years until your disease control score is 95%. We cannot ethically guarantee cure, but we can guarantee you'll not have it if you don't try.*

D. Extraction and Implants – Recently dental implants, artificial roots made of medical grade titanium can replace a tooth that is severely diseased. This is controversial because some periodontists, including Dr. Murphy, feel they are being over promoted and "oversold" by avaricious corporations seeking to maximize profits for stockholders. This is especially egregious since periodontal therapy at its worst is 50% successful and promises a "Cure" rate of 90-58%. *There are serious ethical issues when implants are used to capriciously replace a natural tooth that can be made healthy. After all the best dental implant was made by God and is called a healthy root. This is the first choice in our office so about 20% of patients who request implants are turned away. Beware of this social threat. Yet, again, an ethical question emerges that only you can answer in dialogue with us: "Do I want Dr. Murphy to be 'heroic' and save teeth that only have about 1 chance in 5 of surviving, ...1 in 10?...1 in 100?" Let's talk about it and make it an integral part of your informed consent. This is an important issue.

That being said, dental implants can be marvelous, even seemingly miraculous, replacements for lost teeth. The success is about 95% but remember the risk. 95% probability is the biologic standard but mathematically that means 1 out of 20 fail. And a success rate of 65% - 80% is often cited for immediate implant placement (same day or week) and dental implants in soft or damaged bone respectively. This means that your implant may only have a roughly 50-50 or 2 times out of ten chance of complete rejection and failure.

So dental implants done well in properly selected patients are very, very good. But they are not perfect. They are not a panacea and because they cost thousands of dollars should be considered cautiously. There are two other threats to dental implants that are rarely discussed. Dental implants get gum disease just like natural teeth and if the biting surface of the crown is not perfect incorrect biting forces can cause even a successful implant to be lost prematurely. Yet, there is no way that you can tell if your implant is safe unless a periodontist makes special tests for "osseous integration" and "occlusal analysis" very 3-6 months.

E. Logical Decision Making

Finally, our office can even help you with the process of logical decision making even when you are ambivalent or uncomfortable even after you know all the facts. We are trained in "Clinical Heuristics" which is the new process of logical or even computer-assisted decision making. You have probably heard of Artificial Intelligence and IBM's Big Blue computer that beat a world champion in chess. This is a cutting edge technology that employs logical algorithms to make logical decisions, used in more fields than chess.

In the late 20th century a computer using logical algorithms and neural network programs was pitted against a panel of leading cardiologists to diagnose heart disease and the computer proved better! So, now this technology is used in cardiology to help physicians, and in our office to help you make logical clinical treatment decisions. That is what we mean when we believe in the 21st century philosophy of Patient Empowerment. Knowledge is power and power is freedom. So use all our resources, call Dr. Murphy "Professor" or "Coach" to empower yourself in 21st Century health care.

* Haffagee A, Socransky S, et. al. Site survival analysis of the periodontal lesion, J Periodont, ca. 1986.

F. What about cost?

The very cheapest way to have predictable dental costs is to have all your teeth taken out at the age of about 18-25. This ludicrous conclusion was actually published by Forbes Magazine (November 16, 2009). This of course is strictly a cold and calculated economic analysis that Forbes Magazine would advise a company's Chief Financial Officer (one who probably would never take the advice and would buy a comprehensive plan for his family) The point is for some people, one cannot afford NOT to have preventive care as one cannot afford NOT to put oil in one's car or pay one's mortgage. Periodontal care is "Intelligent Cost".

Nonetheless, they advise that a cheap set of dentures can be purchased for about \$365. Ignoring human costs, biological, social, psychological costs and other intangibles, The Forbes Magazine might be right. But

we do not see patients who think thusly, we see sensitive human beings who wish to minimize all costs and maximize all values. For an extensive cost analysis of monthly and daily financial costs see the Appendix at the end of this essay.

The cost/affordability issues are discussed by our financial and insurance consultant in collaboration with state and national professional consultants. In the long run periodontal therapy pays for itself over and over again. Yet in the short run amortization, or installment scheduling is the best way to finance this new approach to dentistry and oral health. We believe we should help you achieve health with NO PAIN. -- no financial, emotional (fear), intellectual (lack of knowledge) or financial pain.

F. What about Prognosis?

Your prognosis (chance of keeping you out of dentures) is very good. Over the last 25 years no patient under our watch has ever had dentures. The only ones who do came to us with no teeth but now have dental implants so their dentures feel like natural teeth.

The leading cause of tooth loss is not actually periodontal disease. The leading cause of tooth loss is American Dentistry giving up and patients not caring. So be concerned but not scared. There is plenty of good science for this attitude.

F. Who do we thank?

It is always good to count one's blessings. In this cynical age of spin and duplicity, simple truths and ingenuous kindness may seem rare. So, remember that the hero here is not Dr. Murphy. He is just the messenger of the science. Make sure you give a big "**Thank you!**" to the doctor who referred you to us. He or she is the real hero because they looked out for your interests first. In this age of corporate health care you and I are merely numbers on a lawyers docket or an accountant's ledger sheet in a New York Insurance building. Hence, it is refreshing and encouraging indeed to know we still have professional dentists who look out for patients' welfare first. Stick with the one who helped you. Treat them like golden family members. They saved your teeth, smile and face from the ravages of premature aging and chronic infection.

With adequate insurance the ongoing cost of dental health is about \$0.96 per day. That's a fact and it is inarguable. In fact economists have analyzed periodontal therapy and found that just replacing one lost tooth is about the cost of periodontal therapy. So if save one tooth in the next 10 years, you've paid for your therapy. This is a bargain at any price and that is not even considering the benefits of cardiovascular health. So in addition to saving your teeth thank your benefactor for saving you thousands of projected dollars. Finally, in addition to your referring doctor, you should also thank American Dental Science. Dentistry in the last 50 years has made light speed changes and revolutionary clinical advances. Just ask your grandfather what going to the dentist meant to him in 1955!

Addendum:

Despite the fact that all medical and dental care is highly variable in its outcome there is still such a margin of safety in dentistry that most problems, indeed even complications do not have grave consequences or great clinical significance like permanent infirmity or death. Minor inconvenience or disappointments are the usual complaints we see. Treatment of a biological system (patient) is like taking a trip on a sail boat. Even though one has a plan the entire trip is modified every second due to winds, currents temperatures and course corrections. This is why refunds are never given. One pays for service, intellectual judgments and probabilistic forecasts in fields of future uncertainty. So if you have any doubts do not proceed with medical or dental care. Like a winning sports team, if you're "in" you should be "in to win, 100% to actively participate and win. This maximizes all values and minimizes all costs. That is productive, efficient and intelligent living.

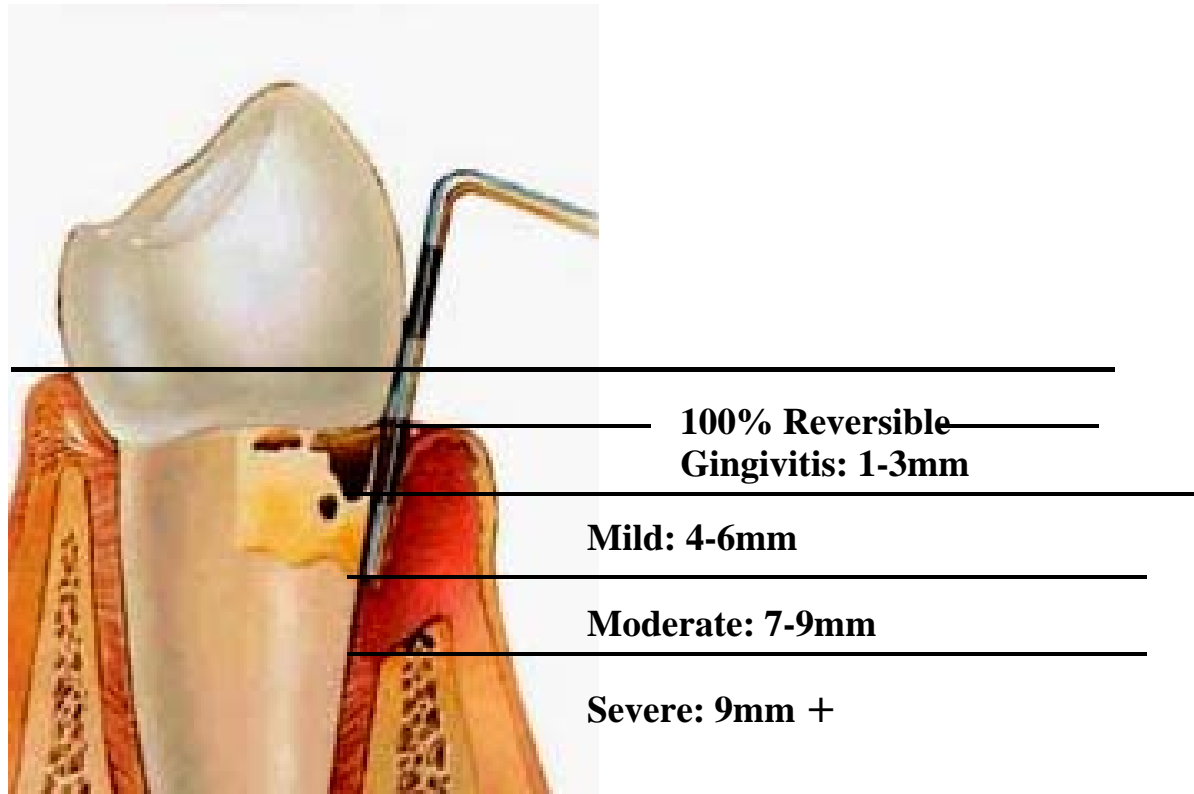
There are plenty of other discount clinics in Southern California or Tijuana and LA that disregard studied and prudent concern for patients. They are quick and cheap. The ethical question you must ask: Is fast and cheap good for my face?" If any questions or problems arise during treatment we are always there to counsel you. You can check out any of the terms and concepts in this syllabus by going to the very excellent and authoritative source: www.scholar.google.com and secure a summary of "periodontal therapy" and "periodontitis" on: www.wikipedia.org.

And to see in real time, exactly what's happening in the germ colonies under the gum line. Go to your computer and watch a movie of the living organism under the microscope. You can see it at: <http://www.erc.montana.edu/Res-Lib99-SW/Movies/default.html>. For a more academic description and source of precise scientific terms see: www.perio.org. Or ask us to search our UC Proxy Server for any arcane data or articles in the biological science and medical literature on a host of topics you might feel are important. The new world is literally at your finger tips but only if you act, and you make the existential choice to know. So...

~ Carpe Diem!

Appendix

Range of Disease Severity: Judge for yourself how bad your disease is. Check you numbers against the chart below.



Look at your periodontal charting and determine the degree of disease yourself. Ask Dr. Murphy if you are right.

PROGNOSIS* DETERMINATION BY POCKET DEPTH ALONE

1-3 mm suggests excellent prognosis without Professional Treatment beyond scaling (cleaning) and good daily home care.

4-6 mm suggests good prognosis with surgery or non-surgical soft tissue and bone treatment.

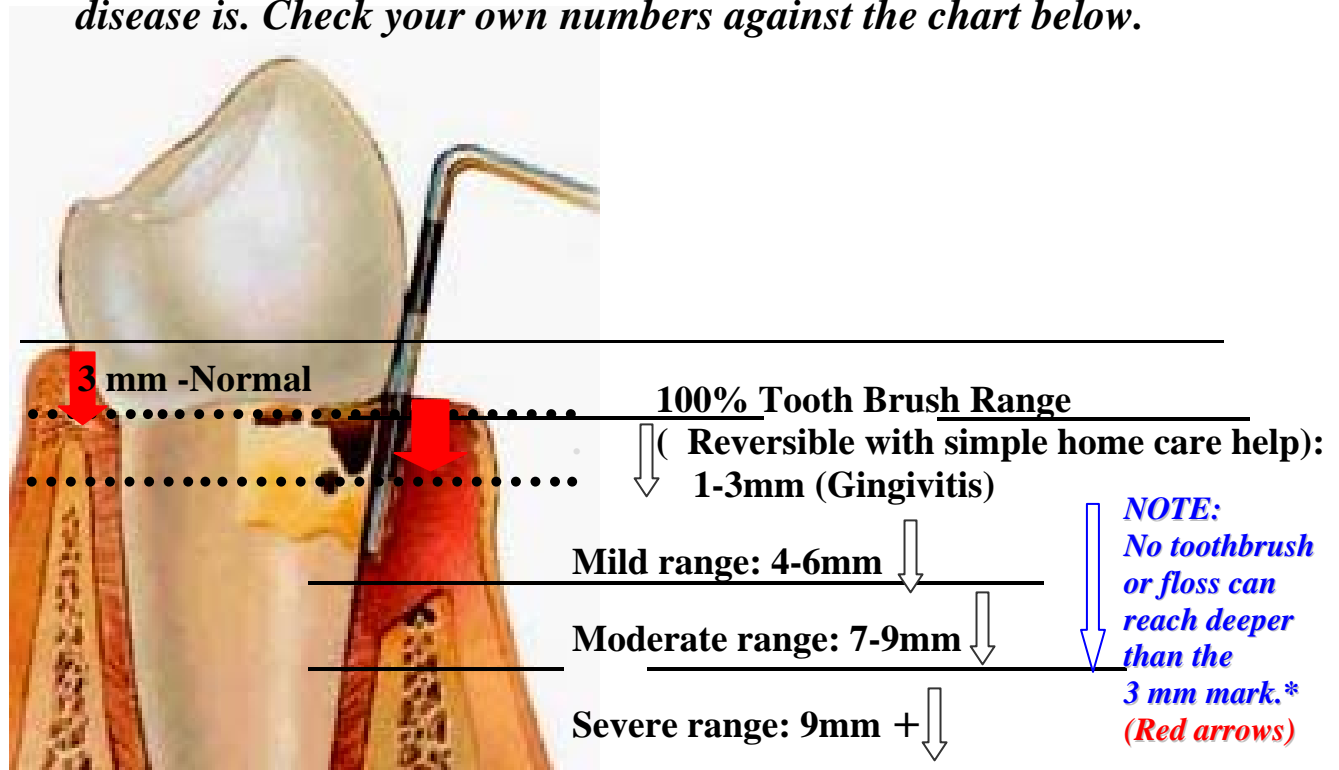
7-9 suggests fair prognosis/ this means there is a good chance of disease remission with regeneration and constant close scrutiny of disease.

9+ mm suggests stopping the disease process may be problematic even with aggressive professional care; the objective is to slow down the rate.

-
- Prognosis (def.) – chances of full recovery from disease for 10-20 years.

Range of Infection Control

Range of Disease Severity: Judge for yourself how bad your disease is. Check your own numbers against the chart below.



*** The deeper the pocket the less control you have of the infection and the more virulent (destructive) the bacterial population. In other words the deeper the pocket the faster the rate of tissue destruction and the worse the prognosis (chance of success)**

Look at your periodontal charting and determine the degree of disease yourself. Ask Dr. Murphy if you are right.

A good scientist always allays intellectual skepticism by performing experiments to get empirical (measurable) data. Do this yourself. Brush one half of your mouth the way you were used to and the other half according to Dr. Murphy's personal instruction. You'll notice that after 1-2 weeks Dr. Murphy (or you if you choose) will be able to elicit pathological bleeding on the old method side and no bleeding on the side where you used his methods of brushing and flossing. **Rely on yourself: empower yourself with scientific knowledge and your own common sense, then take charge of your own dental and oral health.** Then watch your dental problems and dental/oral health bills drop precipitously over the next 5 years.

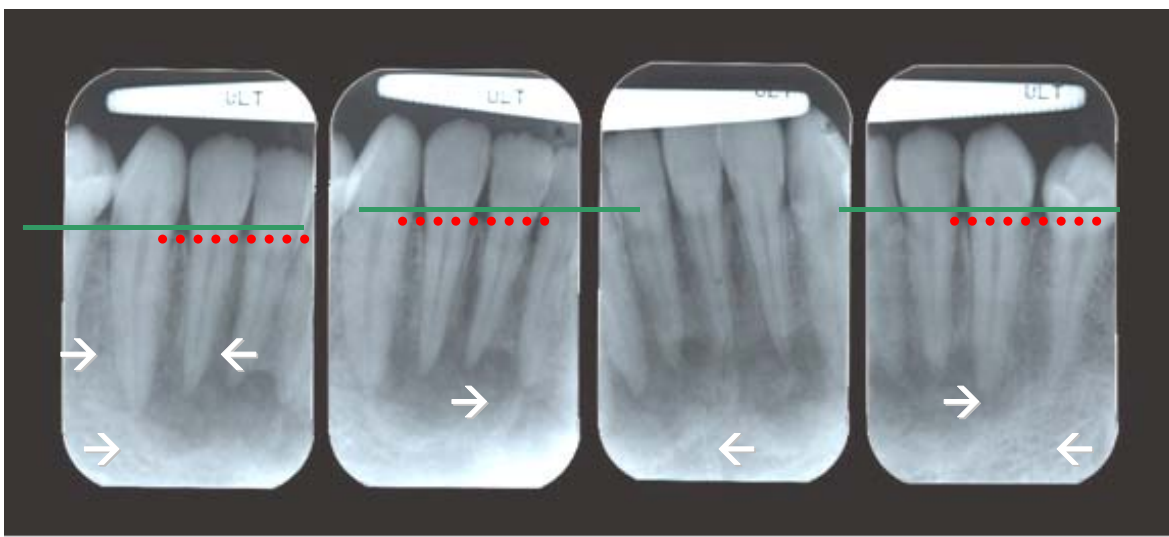
* Prognosis (def.) – chances of full recovery from disease for 10-20 years.

X-Ray Analysis

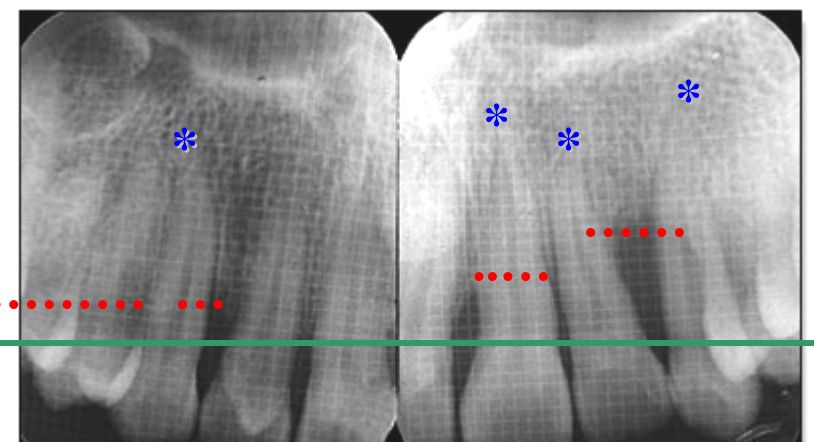
Now let's teach you how to read dental radiographs (X-Rays*)

If you took 8th Grade Health in school, you should remember that the tooth is divided into three anatomical parts: the crown (corona), the neck (cervix) and the root. Well, it so happens that the supporting dental bone, in Latin, "*spongiosa*" (white arrows), that forms the mass of the jawbone IN HEALTH should lie about 1mm beyond the neck of the tooth. This "crest of the bone" is located at the red dotted line. This line is 1mm beyond the green line when the bone and gum tissues tissue are healthy.

We indicate that healthy level by the green line marks the neck of the teeth, where the crown meets the root, and below. As you can see it holds up very well because the lower teeth in this 40 year old composite patient only has gingivitis. The infection has not yet spread into the supporting bone.



Now let's look below at the patient's upper front teeth that are infected with moderate bone loss from periodontitis. The green line (———) indicating a healthy bone level and the red dotted line (•••••) are far apart where bone has been lost. The blue asterisk (*) shows the end of the roots. Analysis of Radiographs is not so difficult after all! Now ask Dr. Murphy to demonstrate your dental radiographs. Can you analyze them?



* "X-Rays" is really a misnomer. X-Rays are actually the specific waves of the electromagnetic radiation on the non-visible spectrum that produce the image we more accurately call *Radiographs*.

Is Periodontal Treatment Expensive?

Is the cost of this treatment really worth it? That's a good question but it's a question of priorities. The question this begs is, "...compared to what? So, wouldn't it be nice if you could have a private financial analyst to consult? Well, we did that. If one uses what is taught by economics professors at universities (exponential utility analysis) and basic "cost accounting", the absolute cost is high in the short run and relatively negligible to zero in the long run.* So, excellent treatment can logically be categorized as "expensive but affordable", just like a car or house. Just take your favorite daily cost and work backwards! That is your most economical treatment plan. You can even ask your accountant to look at this cost schedule.* Here is what "expensive" (50% more than our fees) periodontal therapy, costs:

<u>A. Cost to eliminate infection</u> (high fee)	<u>Per Month</u>	<u>Per Day</u>
\$3,600/quadrant x 4 = \$15,400.00	\$1,283	\$42
After the first year 15,400/2 = 7,700	641	21
After 5 years	256	8
After 10 years	128	4

We rarely need to treat more often than every 10-20 years. We have patients treated for 25 years with no dental cost other than our quarterly scaling fees.

<u>B. Cost to Eliminate Infection</u> (with a moderate - high fee)	<u>Per Month</u>	<u>Per Day</u>
\$2,300/quadrant x 4 = \$9,200	\$766	\$25
After the first year 15,400/2 = 7,700	383	13
After 5 years	153	5
After 10 years	77	3

Dividing the Treatment over 2 years

\$2,300/quadrant x 2 = \$4,600	\$383	12
After the first year	192	7
(For 5-10 year value divide by 5/10)	\$39-19	\$1.40- \$0.70

C. Cost to maintain health

\$175/visit x 4 visits/year =	58	2
Extra cost out of pocket beyond insurance @ 350/yr	29	\$0.96

Subtract the cost of dental care that you will not need: Total cost = \$0.00 Remember, this is not mathematical trickery. Show it to any cost accountant or economics professor and he/she will note it is an application of "exponential utility analysis" an classic analytical tool from Economics 101. With this insight one need only ask, "What subjected value (utility) do you assign to your smile?" Anything in the positive range indicates that the return of investment is both manifold and obvious, viz. one cannot afford NOT to undergo periodontal therapy. It's an economic imperative at any price. The only question is monthly affordability and zero-interest financing takes care of that.

D. Cost of No Treatment, i.e. cost to restore missing teeth

Finally take the monthly cost and subtract what your insurance will cost. This is the "Real Cost" of your treatment. The same arithmetic can be applied to one bridge or one restored implant.

Now compare it to the cost of a tooth replacement = \$1,000/crown x 3 = \$3,000

Amortized: \$3,000 /year = \$250/month or \$8.00 / day

*Accounting verified as accurate by Howard Fox, C.P.A., Agoura Hills, CA (818) 897-0600 and economics professors at UCLA and USC.

References

(Available at www.scholar.google.com)

1. Chung CH, Comparison of microbial composition in the subgingival plaque of adult crowded vs. non-crowded dental regions, *Intl J Orthodon Orthognath Surg* Winter, 2000, 15(4):321-330.
2. Seinost G, Periodontal treatment improves endothelial dysfunction in patients with severe periodontitis. *Am Heart J* June, 2005, 149(6):1050-1054.
3. Elter JR, The effects of periodontal therapy on vascular endothelial function, *Am Heart J* January, 2006, 151(1): 47.
4. Dietrich Z, Age-dependent associations between chronic periodontitis and risk of coronary heart disease *Circulation*, April 2008, 117(13):1668-1677.
5. Tonetti MS, et.al., Treatment of periodontitis and endothelial function, *New Eng J Med*, March 2007, 1:911-920.
6. Xiong X, Periodontal disease and pregnancy outcomes: state of the science, *Obstet Gynecol Survey*, Sept 2007, 62(9):605-615.
7. Conde-Agudelo A, Maternal infection and risk of preeclampsia systematic review and meta-analysis, *Am J Gynecol* January, 2008, 198(1):7-22.
8. Michalowicz BS, Hodges JS, DiAngelis AJ, et.al. Treatment of Periodontal Disease and the Risk of Preterm Birth *N Eng J Med*, 2006, 355(18):1885-1894.
9. Offenbacher S, Katz V, Fertik G, et.al. Periodontal infection as a possible risk factor for preterm low birth weight. *J Periodontol* 1996 67(10 Suppl):1103-13, 1996.
10. N.J. López NJ, Smith PC, and Gutierrez J, Higher risk of preterm birth and low birth weight in women with periodontal disease, *J Dent Res* 81(1):58-63, 2002.
11. Waldrop T, Prevalence of Gummy Smiles: Post Treatment Gingival Enlargement in Orthodontic Patients, in *Emerging Periodontal Concepts Orthodontic-Periodontal Interactions, Seminars in Orthodontics*, Murphy NC and Bissada NF, Editors, December, 2008.
12. . *The Periodontic Syllabus*, 5th Ed., Vernino AR, Gray J, Hughes E. (Eds.) Lippincott Williams & Wilkins, Philadelphia, 2008.
13. Greenwell H, Bissada NF, Dodge JR. Disease Masking: A hazard of non-surgical periodontal therapy. *Periodontal Insights* 1998: 5:14-19, 1998.)
14. Han YW, Redline RW, et. al. *Fusobacterium nucleatum* induces premature and term stillbirths in pregnant mice: implications of oral bacteria in preterm birth, *Infection and immunity* April 2004, 73(4):2272-2279.
15. Han YW, Yann F, et.al. Term stillbirth caused by oral *Fusobacterium nucleatum*. *Obstetrics and Gynecology*, February 2010, 115(Issue 2, Part 2): 442-445.

Notes and Questions: