

The Rest of the Story

By Michael Margolis, DDS

A beautiful smile is more than a pretty face; teeth are a major component of human health. Each tooth is a piece of the meridian puzzle that goes from the top of our heads to the bottom of our feet. When a tooth is damaged, diseased, or missing, the consequences may result in ill health or a disease that is disguised and not easy to find. To review a tooth meridian chart, please go to my website, mydentistaz.com and click on the **Tooth Meridian Chart**. You can then click on any of the individual teeth on the Chart to see the connection to the rest of the body.

Let's start with the root of the matter:

A tooth is connected to the human jaw bone by the periodontal ligament, or '**PDL**'. As the tooth developed, the periodontal ligament connected the tooth to the jawbone and allowed the root to develop to its full length. The periodontal ligament gives us the ability to feel our teeth come together without pain (the ability to feel our teeth coming together also gives us our sense of balance). More importantly, the periodontal ligament prevents bone growth. Like all other ligaments within our bodies, the periodontal ligament attaches bone to bone (teeth are considered bone). Ligaments give our bodies the ability to bend, twist, and move comfortably. They also give our teeth some cushion so when we bite down hard, the teeth and jawbone have some give and do not absorb all the trauma.

If a tooth is removed and the periodontal ligament (PDL) is not properly cleaned out from the tooth socket, the blood vessels necessary to form new healthy bone are unable to penetrate the PDL and a 'cavitation' (a term used to describe a lesion or hole within the jawbone; different from a cavity within a tooth) may result in creating an environment for bacteria, viruses and protozoans to thrive and multiply.

A 'cavitation' is a generalized Holistic term that Dr. Jerry Bouquot renamed "NICO," which stands for neuralgia induced chronic osteonecrosis (or osteomyelitis). NICO is bone disease characterized by bone degeneration and death of the bone marrow and the bone itself. This occurs from a decrease in blood flow through the bone marrow, which slowly deprives the area of oxygen and nutrients. An increase of fibrogen in these sites may be spread throughout the body.

Although this bone degeneration can occur in bones throughout the body, NICO is accentuated by dental infections after root canal therapy and improperly removed teeth where the periodontal ligament is not removed following tooth extraction. The condition may or may not be painful. If pain occurs in the head and neck region, the term osteonecrosis is appropriate; if pain occurs in the rest of the body, it is referred to as osteomyelitis.

NICO can be responsible for producing blood clots, however this is not normally seen in regular blood tests. This hypercoagulation problem might be suggested by a history of family stroke and heart attacks, hip replacement or arthritis, deep vein thrombosis, pulmonary emboli, retinal vein thrombosis and recurrent miscarriages. (www.maxillofacialcenter.com/NICO)

NICO lesions are considered a focal point of infection. Depending upon the location of this 'cavitation' or lesion, infection in this area may affect the rest of the body in different areas, raising a patient's risk for heart disease, circulatory problems, chronic fatigue, fibromyalgia, arthritis, digestive disorders, and cancer, just to name a few.

Essentially, the Focal Infection Theory states that infection or trauma to one part of the body may affect another, sometimes distant, part of the body. Even traditional medicine and dentistry agree that if a person suffers from kidney disease, heart disease or if a patient has had a recent artificial joint transplant, the patient must be pre-medicated prior to a simple cleaning or an invasive dental procedure. The bacteria, viruses and protozoans present in our mouth are not conducive to good health in other parts of our bodies and may cause health complications outside of the mouth. However, many physicians and dentists are not trained to recognize that teeth or the components of the mouth may be the source of a patient's disease.

So could your mouth be the source of your illness or disease?

Let us look at two situations that certainly have adversely affected the health of my patients; improper extractions of teeth and root canals (also known as root canal therapy).

When a tooth is extracted, the periodontal ligament (PDL) either remains in the tooth socket or comes out with the tooth. If there is PDL remaining in the tooth socket, it prevents the bone from growing new healthy bone within the entire socket, and it forms an environment for bacteria, viruses and protozoans to live and thrive. This lesion or 'cavitation' is a magnet for toxins. The body forms fatty tissue within the lesions to collect the toxins being produced, along with dissolving the surrounding bone - turning the bone into crystal forms of brittle bone or a soup. The body further responds by forming new healthy bone around this lesion, trying to contain the toxins within it. Depending upon which tooth was extracted or the location within the jawbone, the tooth meridian chart helps predict what areas of the body may be impacted.

The most common teeth extracted in North America today are people's wisdom teeth, the third molars. These teeth are on the heart, blood circulation (blood pressure) and small intestine meridian. Extracting these teeth improperly may be the beginning of a heart attack or stroke that may not occur for forty years - or more. Unfortunately, it is a very slow but predictable process when you take into consideration the average North American diet, full of beef and dairy products which have been overdosed with hormones and antibiotics. Add in statin, beta blockers and cholesterol reducing drugs, and the toxins within the body and jawbone, and many people have a time bomb ticking away in their bodies.

- **Thyroid – Stomach** **Teeth numbers: 2,3,14,15,20,21,28 & 29**
- **Heart and Small Intestine** **Teeth numbers: 1,16,17 &32**

The science behind the tooth meridians is based on Chinese Medicine and Acupuncture. I would recommend two books which explain this in greater detail: Peter Dosch MD, Manual of Neural Therapy according to Huneke, Haug Publishers, English Edition and Dawn Ewing, Let the Tooth Be Known, XXXX.

Historically, Histological Biopsy Reports have been the standard of diagnosis for many human disease conditions. The problem with this method is that it identifies what has happened to the body through the disease process, or recognizes that a condition does exist. But many times, it fails to give the doctor key information needed to treat the condition.

In dentistry, Histological Biopsy Reports can give a diagnosis of osteomyelitis, ischemic osteonecrosis or traumatic bone cyst, however the diagnosis itself does not inform the dentist what antibiotic, antifungal or dietary restrictions would be most effective to fight this disease.

DNA testing of the biopsy sample does.

The major component dentists have missed for years has been a new testing process that Dr. Hal Huggins has developed with his new lab, Dental DNA. In the past, the biopsies I have sent of dental surgical sites showed both Staph and Strep organisms were present in the biopsy. Sometimes, this is all the reports showed. The biopsies revealed living organisms. However, if the bacteria, virus or protozoan cells died in the collection, transportation, or processing for evaluation, no organisms would grow in the culture, and consequently, would not be recorded or reported.

With Dr. Huggins' Dental DNA process, it does not matter if the organism is alive or dead - its DNA will be present, and therefore can be read and recorded.

I first began sending biopsies of surgical sites to Dental DNA about four months ago. After receiving the results of my first 90 biopsy reports, I compiled a list of 84 different organisms found and recorded by the lab. In the test studies, the frequency of the occurrences of these organisms ranged from 1% to 96%. Some of these organisms are indigenous to the mouth while others are dangerous to the human health system. Below are the top 20 occurring organisms I found in my biopsy reports.

Top 20 Occurring Organisms in Dental DNA Results:

1	Acinetobacter baumannii	13	15	13	15	15	15	86	96%
2	Parvimonas micra	14	15	13	13	15	15	85	94%
3	Selenomonas noxia	15	12	15	13	15	15	85	94%
4	Klebsiella pneumonia	14	8	14	15	15	14	80	89%
5	Ochrobactrum anthropic	14	11	14	13	14	14	80	89%

6	Mobiluncus curtisii	15	7	13	15	13	14	77	86%
7	Mobiluncus mulieris	14	13	14	10	13	13	77	86%
8	Campylobacter gracilis	10	11	10	15	15	14	75	83%
9	Actinomyces odontolyticus	13	11	10	15	10	15	74	82%
10	Bifidobacterium catenulatum xfp gene *	11	11	11	12	10	11	66	73%
11	Stenotrophomonas maltophilia	11	8	10	12	13	11	65	72%
12	Aggregatibacter actinomycetemcomitans	6	11	12	12	9	10	60	67%
13	Atopbium rimae	10	9	8	12	10	10	59	66%
14	Gemella morbillorum	13	6	10	9	13	8	59	66%
15	Tannerella forsythia sod	7	4	11	11	9	13	55	61%
16	Porphyromonae gingivalis	7	7	7	7	14	11	53	59%
17	Salmonella typhi	10	5	8	7	13	10	53	59%
18	Escherichia coli	10	6	9	8	8	9	50	56%
19	Lactobacillus vaginalis	2	5	9	12	11	11	50	56%
20	Pseudomonas aeruginosa	8	5	7	4	14	9	47	52%

1. *Acinetobacter baumannii* (96%) is a species of pathogenic aerobic gram-negative bacterium that is resistant to most antibiotics. As a result of its resistance to drug treatment, some estimates state the bacteria is killing tens of thousands of U.S. hospital patients each year. The bacteria can cause illnesses throughout the body, such as severe lung (pneumonia), urinary tract infections and other parts of the body via the blood system. Pollack, Andrew. "[Rising Threat of Infections Unfazed by Antibiotics](#)" *New York Times*, Feb. 27, 2010

2. *Parvimonas micra* (94%) are indigenous microbes of the oral cavity and gut of humans and animals, frequently associated with polymicrobial infections. The species is present in high proportion in subgingival dental plaque from most periodontitis patients, mainly in those with diseased active sites and smokers. Brazilian Journal of Microbiology, Print version ISSN 1517-8382, Braz. J. Microbiol. vol.39 no.4 São Paulo Dec. 2008. <http://dx.doi.org/10.1590/S1517-83822008000400001>

3. *Selenomonas noxia* (94%) is composed of anaerobic, motile (self propelling), nonsporeforming, gram-negative rods usually present in periodontal disease. The organisms are curved, crescent shaped, with flagella as a means of mobility.

<http://ijs.sgmjournals.org/content/37/3/271.full.pdf>

Researchers found the bacteria in the saliva of overweight women. Saliva was collected from the women, and the type of bacteria found were noted and compared to those found in the saliva of a control group of healthy individuals. More than 98 percent of the overweight women were found to have a bacterium called *Selenomonas noxia* in their saliva, while the normal weight women did not. It is believed that bacterial species might somehow be related to obesity.

<http://www.weightlossurgerychannel.com/breaking-wls-news/obesity-could-be-caused-by-oral-bacteria.html/#more-5363>

The *Selenomonas noxia* is usually found with other strains of selenomai types and a variety of fusobacteria which supports the concept of coaggregation partner specificity that has been observed with every genus of oral bacteria. <http://www.ncbi.nlm.nih.gov/pubmed/2777378>.

4. *Klebsiella pneumoniae* (89%) is a gram-negative, non-motile, encapsulate, lactose fermenting, anaerobic rod shaped bacterium found in the normal flora of the mouth, skin, and intestines. It naturally occurs in the soil in anaerobic conditions and is found in nosocomial infections. Klebsiellae have become important pathogens in hospital-acquired infection or HAI, whose development is favored by a hospital environment, such as being acquired by a patient during a hospital visit or among hospital staff. Such infections include fungal and bacterial infections and are aggravated by the reduced resistance of individual patients. It is able to grow without external sources of nitrogen.

<http://ijs.sgmjournals.org/content/37/3/271.full.pdf>,

<http://www.cdc.gov/HAI/organisms/klebsiella/klebsiella.html>

5. *Ochrobactrum anthropi* (89%) elevates white blood cell (WBC), lowers blood pressure, elevates pulse, elevates bilirubin, depresses albumin, depresses liver function, and is an amidase producer. It is an opportunist organism found with implants, septic arthritis from trauma wounds, osteomyelitis of bones, peritonitis with a low grade fever from septic shock and is difficult to treat.

Reference: <http://jac.oxfordjournals.org/content/47/6/745.full>,

<http://scholar.lib.vt.edu/theses/available/etd-08282006-174114/unrestricted/Chapter2.pdf>

6. *Mobiluncus curtisii* (86%) is present in the vagina and is highly specific although not sensitive for the diagnosis of bacterial vaginosis (BV), the most prevalent cause of symptomatic vaginal discharge in the United States. It is mainly associated with inflammatory diseases and commonly seen with *M. mulieris*.

http://journals.lww.com/stdjournal/Fulltext/2008/06000/AssociationofMobiluncuscurtisiiWith_Recurrence.16.aspx

7. *Mobiluncus mulieris* (86%) a gram-negative, anaerobic, rod-shaped bacteria found in the human vagina, particularly in association with *Gardnerella vaginalis* in cases of bacterial vaginosis. *Mobiluncus* species (*M. curtisii* and *mulieris*) have been uncommonly isolated from nongenital sites. It is a sexually transmitted disease primarily found in Bacterial vaginosis (BV), which only occurs in females of reproductive age.

<http://www.online-medical-dictionary.org/Mobiluncus+mulieris.asp?q=Mobiluncus+mulieris>,

<http://www.ncbi.nlm.nih.gov/pubmed/7874884>,

8. *Campylobacter gracilis* originally mislabeled as *Bacteroides gracilis* and has been isolated from gingival crevices and from visceral, root canaled teeth, head, and neck infections in humans. It is associated with serious deep-tissue infections; a high level of antibiotic resistance suggests that this organism may be an important pathogen whose importance is underestimated. This organism has been correlated to heart attack, periodontal disease and an impaired immune system.

<http://ijs.sgmjournals.org/content/45/1/145.full.pdf>,

9. *Actinomyces odontolyticus* has been associated with multiple invasive infectious disease, from a brain abscess to pulmonary and cardiovascular disease, periodontal tissues, abdominal, pelvic soft tissue involvement. It is an opportunistic organism when the patient's immune is suppressed.

http://wwwnc.cdc.gov/eid/article/9/12/02-0646_article.htm,

10. *Bifidobacterium catenulatum xfp gene* * Bifidobacteria represent one of the largest bacterial groups within the Actinobacteria. Over 30 species of the genus Bifidobacterium are recognized. Bifidobacteria have been isolated from a number of environments such as sewage (Scardovi & Trovattelli, 1974), an anaerobic digester (Dong et al., 2000) and fermented milk (Meile et al., 1997; Masco et al., 2004). Their common, and probably natural, habitat is considered to be the intestine of man and other warm-blooded mammals (for a review see Ventura et al., 2004b). In the human gastrointestinal tract, their presence has been associated with beneficial health effects, such as immunomodulation, amelioration of lactose intolerance and prevention of diarrhea.

<http://ijsb.sgmjournals.org/content/56/12/2783.full>

11. *Stenotrophomonas maltophilia* is an aerobic, nonfermentative, gram-negative bacterium; it is an uncommon bacterium creates a difficult to treat human infection. It usually affects hospital patients undergoing a change in their antibiotics. Reactions due to biofilms make these organisms and others that they come in contact with resistant to antibiotics, which increases patient morbidity rates.

<http://en.wikipedia.org/wiki/Stenotrophomonasmaltophilia>,

12. *Aggregatibacter actinomycetemcomitans* is a Gram-negative facultative non-motile rod that causes a chronic, degenerative disease of the gingiva, periodontal ligament, cementum and alveolar bone, collectively called the periodontium. The main etiological factor for development of periodontal disease is dental plaque or oral biofilm in association with anaerobic bacteria. *Aggregatibacter actinomycetemcomitans* is one of the most powerful periodontopathogens. This microorganism produces many virulent factors: leucotoxin as the most important, then bacteriocin, chemotaxis inhibiting factor, cytotoxic factors, Fc binding proteins, immunosuppressive factors, lipopolysaccharide collagenase, fibroblast inhibiting factor, antibiotic resistance determinants, adhesives, invasives and function inhibiting factor of polymorphonuclear leukocytes. The ability of *Aggregatibacter actinomycetemcomitans* lipopolysaccharides to stimulate macrophages to release interleukins IL-1, IL-1 β , and tumor necrosis factor (TNF) is of main importance. These cytokines are able to stimulate the bone resorption. *Aggregatibacter actinomycetemcomitans* and *Porphyromonas gingivalis* represent exogenous microorganisms, based on its minor presence in healthy individuals. It has been recommended that periodontal diseases associated with periodontal pathogens represent "true infections". Acta Medica Medianae 2009;48(3): 35-37.

These organisms affect heart, endocarditis, and have the ability to lyses, or cut up into pieces, only polymorphonuclear leukocytes macrophages (PMN) and monocytes by triggering degranulation, a process by which granules within a cell open up killing or damaging the cell and if present in periodontal disease, makes it 500% worse than if it were absent.

[http://publisher.medfak.ni.ac.rs/2009-html/3-broj/THE%20IMPORTANCE% 20OF% 20AGGREGATIBACTER....pdf](http://publisher.medfak.ni.ac.rs/2009-html/3-broj/THE%20IMPORTANCE%20OF%20AGGREGATIBACTER....pdf),

Saunders Comprehensive Veterinary Dictionary, 3 ed. © 2007 Elsevier, Inc.

13. *Atopbium rimae* has been recognized as part of the human gingival oral flora; some species, including *A. rimae* and *A. parvulum*, have been identified as agents of chronic periodontitis (4,5). *A. rimae*, formerly known as *L. rimae* (1), forms short, gram-positive, strictly anaerobic, elliptical bacteria with low G+C content (4). *A. rimae* produces large amounts of lactic acid and has been recovered previously from normal human gingival flora (4,5). Apart from periodontitis, it has not been implicated in other types of infection. It is associated with periodontal disease.

http://wwwnc.cdc.gov/eid/article/15/2/07-1399_article.htm

14. *Gemella morbillorum* is an anaerobic gram positive coccus. Rarely the cause of disease in humans, it may be found benignly in the oropharyngeal area. Infections, when found, are similar to *viridans Streptococci* in range. Cases have been reported of endovascular infections (predominantly endocarditis), and acute invasive infections.

The Lancet, Volume 342, Issue 8870, 28 August 1993, Pages 560

15. *Tannerella forsythia sod a* is an anaerobic periodontal pathogen that encounters constant oxidative stress in the human oral cavity due to exposure to air and reactive oxidative species from coexisting dental plaque bacteria as well as leukocytes. *Tannerella forsythia* is recognized as one of the microbial pathogens implicated in the development of periodontal disease, a bacterially induced inflammation of tooth-supporting tissue and bone.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2782426/>

16. *Porphyromonae gingivalis* a non-motile, gram-negative, rod-shaped, anaerobic pathogenic bacteria. It is found in the oral cavity, where it is implicated in certain forms of periodontal disease. From there it can spread to the gastrointestinal tract, including the colon and respiratory tract, the trachea, bronchus and lungs. Collagen degradation is observed in chronic periodontal disease results in part from the collagenase enzymes of this species.

Additionally *P. gingivalis* has been linked to rheumatoid arthritis. *P. gingivalis* contains the PAD (Peptidyl-Arginine Deaminase) which is involved in citrullination. The conversion of protein-contained arginine to citrulline is an enzymatic process that is carried out by peptidylarginine deiminase (PAD), an enzyme that appears to be hormonally controlled. Because of its remarkable specificity, patients suffering from Rheumatoid Arthritis have an increased incidence of periodontal disease and antibodies to the bacterium are significantly more common in patients with rheumatoid arthritis.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1300>

17. *Salmonella typhi* is a bacteria that is found in the gastrointestinal tract of most animals, but in humans causes gastroenteritis. After ingesting contaminated food (usually beef, poultry or vegetable) or water, a person experiences nausea, vomiting and diarrhea.

<http://web.uconn.edu/mcbstaff/graf/Student%20presentations/Salmonellatyphi/Salmonellatyphi.html>

18. *Escherichia coli*: commonly abbreviated *E. coli*, is a gram negative rod shaped bacterium commonly found in the lower intestine. Most *E. coli* strains are harmless, but some can cause serious food poisoning in humans and are occasionally responsible for product recalls due to food contamination. The harmless strains constitute about 0.1% of the normal flora of the gut, and can benefit their hosts by producing vitamin K, and by preventing the establishment of pathogenic bacteria within the intestine. Harmful transmission comes from fecal-oral transmission of the pathogenic strains of the bacterium and can cause disease.

<http://www.cdc.gov/ecoli/>

19. *Lactobacillus vaginalis* is a gram-positive facultative anaerobic (also lives in an oxygen environment) or microaerophilic (grows in low levels oxygen) rod-shaped bacteria. They are a major part of the lactic acid bacteria group, which converts lactose and other sugars to lactic acid. In humans they are present in the vagina and the gastrointestinal tract where they make up a small portion of the gut flora. They are usually benign, except in the mouth where they have been associated with cavities and tooth decay (dental caries).

<http://ijs.sgmjournals.org/content/39/3/368.full.pdf>,

20. *Pseudomonas aeruginosa* is a common bacteria that can cause disease in humans. It is found in soil, water, skin flora and most man-made environments throughout the world. It thrives not only in normal atmospheres, but also in hypoxic atmospheres (lack of oxygen) , and has, thus, colonized many natural and artificial environments. It uses a wide range of organic material for food; in animals, the versatility enables the organism to infect damaged tissues or those with reduced immunity. Clinically, *Pseudomonas aeruginosa* thrives in both medical and dental facilities through cross contamination of instruments and the symptoms of such infections are generalized inflammation and sepsis.

If this organism colonizes in critical body organs, such as the lungs, the urinary tract, and kidneys, the results can be fatal.

Pseudomonas aeruginosa can be found in health care facilities because it thrives on most surfaces, dental and medical equipment and causes cross-infections.

<http://textbookofbacteriology.net/pseudomonas.html>

As presented before, different organisms have a different affinity for different organs.

The heart is targeted by: *Aggregatibacter actinomycetemcomitans*, *Campylobacteri gracilis*, *Campylobacteri rectus*, *Campylobacteri Showae*, *Gemella morbillorum*, *Prevotella denticola* and *Pseudomonas aeruginosa*.

The nervous system is effected by: *Capnocytophaga ochracea*, *Escherichia coli*, *Fusobacterium necrophorum*, *Gemella morbillorum*, *Pseudomonas aeruginosa* and *Salmonella typhi*

The lungs are targeted by: *Acinetobacter baumannii*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa* and *Porphyromonas gingivalis*.

The kidneys are affected by *Porphyromonas gingivalis*.

The liver and spleen are targeted by: *Fusobacterium necrophorum* and *Salmonella typhi*.

The gallbladder is effected by *Salmonella typhi*.

Oral Cancer is caused by *Prevotella melaninogenica*.

When evaluating a patient's condition, we start with their chief complaint, combined with the clinical physical examination, review the radiographs (x-rays), an ultrasonic 3D Cone Beam (CAVITAT) ultrasonic imaging machine, address the patient chief complaint or concerns and present a patient with their options.

When I see a female patient with a root canaled tooth along the fourth meridian, I can often predict that she likely has lumps in the breast on the same side the root canal is located. Using the Focal Infection Theory, I can also unfortunately predict my patient may develop cancer in that breast. The organisms listed above are likely the stepping stone leading to a weakened immune system, opening the door for aggressive bacteria, viruses, and protozoans to cause cancer to develop.

The final missing link to solving the mystery of some of these diseases may be identifying what Drs. Fry and Ellis of Fry Laboratories of Scottsdale, Arizona have found in a biofilm formation in the blood stream and organs within the human body. Drs. Fry and Ellis believe a particular parasite, called *Protomyxzoa*, may be the initial building block of the biofilm involved in many of these types of chronic infections.

As DNA testing develops and improves with better biopsy sampling and identification techniques yielding better results in a timely manner, the proper removal of root canals, cavitations or ischemic osteonecrotic lesions could give patients hope to discover exactly what organisms may be the root of our patient's degenerative disease. The question is, will traditionally trained dentists be willing to accept the fact that what care they provide their patients, what materials they use in their patients' restorations, and procedures they perform will determine if their patients overall health will be good or bad? Will traditional medicine, the

establish paradigm for physicians, be willing to take this information and apply it to treat their patients with degenerative diseases?

The science is coming. Are we as healthcare providers ready to change our focus on what was the Standard of Care and Treatment, to a new concept.