

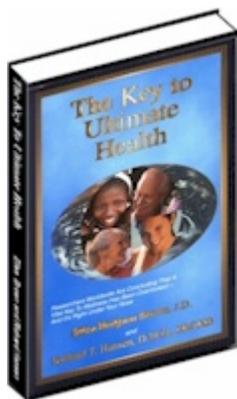
The Key To Ultimate Health

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THE KEY TO ULTIMATE HEALTH

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Written as a **guide** for all **health practitioners** and their **patients** to help them understand the **vital role** the **mouth** plays in the **total health** picture.

This timely text helps **educate patients** concerned about their health on the **mind/body/mouth** connection, thus **saving** their primary care givers from having to explain the complicated **dental/body interactions**. Many now believe that no patient can achieve **total wellness** when their mouth is toxic!



Dr. Richard T. Hansen

Chapter 10: Salvaging The Root Canal

"...I'd avoid root canals like the plague, because that's what they may turn out to be." - Dr. David Williams

There remains the question of a biocompatible root canal filling material. We've seen that conventional root canal materials may shrink when they dry, leaving spaces where toxic anaerobic bacteria can breed. Gutta percha, the most popular of these materials, is a waterproofing latex derived from the sap of trees. It was used in industry years ago because nothing sticks to it. In its pure state, gutta percha is a milky white latex, which does not show up on x-rays. Mercury salts are sometimes added to give it the pink color that dentists can visually recognize inside the tooth. Barium, cadmium and lead are then added to make the material radio-opaque on x-ray, so the dentist can see his work; but barium and lead leakage from the root canal may harm the body. The cements used in conventional root canal therapy may also be quite toxic. Some patients are so chemically sensitive that they can't tolerate the conventional materials and are forced to have their teeth pulled. In addition since nothing sticks to gutta percha, achieving a completely sterile, bacteriologic seal of the millions of dentin tubules may be impossible. Because of this, many times the bone surrounding the root may become irritated, inflamed, infected, and die, especially where the nerve tissue has died and remained in the canal for some time. This dead bone (cavitation) may not heal and regenerate even with the best of the root canal procedures. On an x-ray it may appear normal, because it is still bone structure, but it may have died, lost its blood supply, and remains a gangrene-like, septic source, which can infect the otherwise healthy body.

Convinced of their toxicity, Dr. Price maintained that all root filled teeth should be extracted; but that approach, too, is problematic. Fortunately, a root canal filling material and sterilization procedure are now available that can help solve these problems. After all why would we want to perform a treatment of last resort (extraction and surgery) first, before we attempt all viable alternatives? This is the very principle of alternative medicine.

A Successful Root Canal Involves More than just Teeth.

Many practitioners look at the root canal as the source of all the problems, i.e. cavitations, infections and health related problems. However the root canal involves more than just a tooth. Surrounding each tooth is a periodontal ligament that is continuous with the mucous membranes of the gum tissue in the mouth. These ligaments attach to the cementum layer on the tooth root and attach into the bone. Around each tooth is a bone structure that is filled with marrow spaces, blood vessels that bring in nutrients and oxygen, and lymphatics to drain off waste and toxins. The bone also is designed to absorb the shock of biting/chewing forces that are transferred to it by the teeth roots and dissipate these forces so that the body is not

harmed. The act of chewing also stimulates the blood circulation and lymphatics to keep the bone healthy.

The mouth has millions of bacteria, fungus and parasites present at any time especially around the teeth. Many of these are beneficial and help with digestion. Some are not and become harmful and produce toxins. Normally our mouth, as does any open orifice of the body, has built in defense systems. Immunoglobins are produced in the saliva as well as the mucous membranes around the teeth, gums and periodontal membranes to protect against these invaders. The bone and marrow spaces produce white blood cells and lymphocytes to fight disease. Also in the bone is an extensive lymphatic system that carries away toxins and are home to the lymphoid organs that produce lymphocytes, which defend our cells and body tissues.

Even if we have healthy teeth and nerves, if the bone and defense systems around the teeth are not healthy, the opportunistic organisms can invade and make diseased teeth and bone. In fact recent research has shown that the majority of cavitations and infected root canals may be a long-term degenerative condition in the bones circulatory and lymphatic system. This may even be a direct cause of teeth becoming painful and infected and needing a root canal in the first place.

Ongoing research by pathologist Dr. Jerry Bouquot at the University of West Virginia suggests that the cause of the bone disease and infections may be an ischemic circulatory disorder producing high pressures within the bone, choking off the blood supply, lymphatics and nerve causing osteonecrosis and infected tissue. Almost all the cavitated teeth and bone removed by surgery in the United States are sent to the pathology lab of Dr. Jerry Bouquot, the Maxillofacial Center for Diagnostics and Research in Morgantown, West Virginia. Dr. Bouquot has analyzed more cavitated bone, performed more research, and written more scientific papers on the subject than anyone in the world.

In order to make teeth, the bone, and the mouth healthy we must first identify the underlying cause of disease, restore the normal circulation and lymphatic system, and repair any damaged or infected teeth, gums and bone. It is much more than just looking at a tooth or root canal as the sole problem or cause of any diseased state. In our attempts to make a mouth healthy, to save a tooth, or perform a good long-term root canal, it becomes necessary to treat the underlying problem of bone disease. Occasionally cavitational surgery is necessary to remove dead or diseased bone around a root treated tooth, or even a healthy tooth in order to remove toxins that have accumulated in the bone. However, if the procedures are done without improving the bone circulation, lymphatics and health first, any procedure including extraction and cavitational surgery may not be successful. The bone may never heal correctly, will be continually infected and diseased, and new cavitations formed.

So the treatment decisions should now include having the bone, blood supply, and lymphatic system treated prior to any dental treatment. This must include a whole body approach to improve the teeth and mouth. Even before drilling a cavity or a crown, we must consider the circulatory/lymphatic condition so that we do not create more ischemic bone disease. In order to create a healthy root canaled tooth or a healthy cavitation surgery, we must also treat basic cellular health which includes circulation and lymphatic support. We can only create a healthy root canaled tooth or cavitation if the bone environment and terrain is healthy first. In a booklet written by Dr. Hansen titled "Root Canals, Cavitations, and Bone Disease" the diagnostics, treatment and follow up procedures are described in great detail.

A Material That Grows Like Natural Teeth

Once the bone health is reestablished, a healthy root canal can then be performed. It is vital to sterilize the roots and fill with materials that produce the desirable properties for long term health.

The filling material used to produce healthy root canals has recently been approved for use in the United States, but it has been used for nearly two decades in Europe. Called Biocalex 6.9, it is being marketed by Future Dentistry, Inc. in the U.S. and by Biodent in Canada. Unlike other filling materials, Biocalex actually expands to fill and seal the root canal and being a heavy calcium oxide, it is naturally bactericidal. Bacteria thrive in an acid environment, and Biocalex is the opposite, a base. Also, scientific research demonstrates that calcium oxide, not calcium hydroxide, can calcify the dentin tubules effectively occluding them and preventing future bacterial invasion.

Biocalex is composed of calcium oxide, zinc oxide, and a special ethylene glycol/water liquid. Calcium oxide is unique in that it has an affinity for fluid: it absorbs liquids in the root canal and dentin tubules and expands, allowing the material to penetrate otherwise inaccessible canals. When calcium oxide combines with water, it forms calcium hydroxide, the most biocompatible material used in endodontic therapy. But when calcium hydroxide is used initially as a filling material, no expansion or calcification occurs. Only when calcium oxide is used as the initial material does its affinity for water cause it to penetrate devital dentin tubules, sealing areas that would otherwise be left as hiding places for bacteria to breed. The calcium hydroxide to which it is converted is then converted to calcium carbonate, creating a wall of calcification that further seals off these filled areas. Unlike with conventional root canal filling materials, no toxic chemicals or cements need to be used with

Biocallex to sterilize and seal the canals.

In a 1990 Italian study, calcium oxide was found to produce perfect asepsis (absence of germs) in the root canals.² Questions were raised in another Italian study, in which Biocallex produced only 67 percent asepsis; but Dr. Hansen maintains that the problem wasn't with the material. It was with the procedure for preparing the tooth. When the root canal is sterilized with a laser, a nearly perfect asepsis is achieved, as shown in a recent German study.³ Many additional studies have verified the sterility achieved by the laser and its ability to penetrate through the entire tooth, its millions of dentinal tubules, and even into the surrounding bone. Combining these two innovations assures a germ-free root canal.

"The Biocallex raises the pH to the point where it's bactericidal, which is good," he says; "but its main purpose is to induce the body to calcify and seal the canals. That's what the studies have confirmed - tubule occlusion. Several studies have shown that heavy calcium oxide continues to induce calcification of the millions of tubules that compose the tooth root, sealing off these tubules so that bacteria can no longer penetrate the tooth. When we combine virtually complete tubule occlusion from the Biocallex with nearly perfect asepsis from the laser, long term sterilization is no longer a problem."

Disinfecting with Light

The root canal, explains Dr. Hansen, is a two-step procedure. The first involves cleaning out all the necrotic, decaying, bacteria-filled, nearly gangrenous tissue inside the canal and sterilizing it. Then, because bacteria migrate and grow, the canal must be sealed with something. So the second phase of the treatment is to seal the sterile canals and tubules with something that will be not only biocompatible but will permanently seal and occlude all the microscopic tubules while maintaining the long term sterility. The problem in the past was that everything available to seal it with produced effects that were worse than taking out the tooth or having nothing done at all. Biocallex solved the problem of compatibility, but there remained concerns about sterility. These concerns have now been met with the laser.

"The canal is pure dentin," he observes, "with millions of tubules going out the sides in every direction, communicating with the body. The tubules are unbelievably small - about five microns across. There is no traditional way to clean or treat them adequately. Files have been used, but they can only access the larger main canals, not the smaller accessory canals and tubules. But now lasers and rotary-type cleaning instruments are available that can perform the procedure more effectively. Spiral-type nickel titanium instruments wind into the root canal with a rotary-type motion, scraping the sides of the tooth as they go in and pulling debris back out. The top layers of tubules, which are the most bacteria-laden, are removed first. A chelating agent, EDTA, is used to dissolve the debris, and open the tubules. After this solution is rinsed from the canals, the canals are dried. This is followed by the laser, which eliminates bacteria and their toxins and sterilizes the inside of the tooth, penetrating through the tubules and into the surrounding bone. A disinfecting rinse may also be used.

The procedure is very precise; the laser doesn't blow gases, toxins, or other materials out the end of the root or drive them into the tubules as some uninformed, non-laser dentists have speculated. Another misconception of some dentists is that lasers travel only in a straight line and cannot therefore sterilize a tooth root. While a pure form of monochromatic light such as a laser does travel in a straight line, laser light has four molecular effects - transmission, absorption, scatter, and reflection. Through scatter and reflection laser light does indeed penetrate in all directions through the root canal, dentin tubules, and bone. In fact any dentist who does use a laser in a root canal with a bright enough aiming beam, observes the light all the way through the bone to the exterior gum tissue on the surface. It is quite dramatic to observe.

At the same, there are some "laser dentists" who are claiming to be sterilizing the root canal or killing the bacteria and removing toxins, that are either using the wrong laser, improper laser settings, or low level red/infra red lasers. The fact is that while low level lasers are perfect for bio-stimulation, wound healing, increasing circulation and improving lymphatic drainage, they do not sterilize or kill bacteria. Studies done under a microscope observing the effect of these lasers on bacteria show that they do not kill or sterilize or "chase" the bacteria. There are also laser dentists who have been using lasers in gum therapy or cosmetic dentistry who have had no training with laser use in root canals. There are specific protocols and power densities that need to be used with appropriate lasers in order to be effective in root canals.

With the appropriate power densities selected and when used properly, the laser light can penetrate through the canal, the tubules, and into the surrounding bone for additional sterilization. Then we use a spiral filler, which completely penetrates, forcing the mixed Biocallex material down, totally filling all the canals. Some dentists worry that they won't be able to see what's going on without barium to make the Biocallex radio-opaque. But the heavy calcium is a different density and actually provides a phasecontrast, so it does show up quite well on x-ray, especially the computer enhanced digital x-rays that also reduce radiation by up to 90%. When the tooth is cleaned, sterilized and sealed right, there shouldn't be any problems with the Biocallex or the root canal. Biocallex has also been shown in several scientific studies to cause calcification of the microscopic tubules and effectively block future bacterial invasion."

An Improved Technique

Dr. Hansen who teaches these specialized root canal procedures has developed many additional techniques for providing the optimum root canal. Many times dentists use just any laser without knowing which wavelength, power densities, or time is most appropriate for the proper sterilization and cleaning of the root canal. As Dr. Hansen conducts extensive laser research he has over twelve different lasers in his dental practice. Only three have proven practical for root canal procedures. In addition he has found some limitations with the normal Biocalex technique. Often the rinse solution may interfere with the set and hardening of the Biocalex. The high Ph of Biocalex is irritating to the fragile tissue at the end of the root and since it takes 24-48 hours for the Biocalex to harden it may be washed out of the root end if there is excess moisture in the tissue at the end of the root. To solve these potential problems Dr. Hansen has perfected a technique using a new material called MTA or Mineral Trioxide Aggregate, one-third of which is the calcium oxide of Biocalex. It has had extensive scientific research that shows its ability to harden quickly and seal the root end. MTA works very well in a wet environment, and is so biocompatible the body regrows new tissue around the end of the root sealing it better than anything before. These new techniques developed and taught by Dr. Hansen have made these root canal procedures the most successful he has performed to date.

Testing and Follow up

After testing these laser-sterilized, Biocalex/MTA root canals on follow up visits the long term success has been confirmed. "The ones we've tested are perfect," he reports. "Normal root canals many times test bad. They're making people sick. With the use of the laser, light can enter the canal and do a thorough job of disinfection throughout the entire dentinal tubules. The MTA seals the end of the root and the Biocalex is then placed into the canal and dental tubules. This effectively fills and seals the canal and tubules so that the tooth, instead of being a festering anaerobic breeding ground of poison, remains healthy. It solidifies, so there is no place for bacteria to be harbored. It also induces the dentinal tubules to calcify, solidify and harden so that they cannot be penetrated by future bacteria. Sealing with Biocalex has been very successful in cases where the conventional gutta percha has completely failed. When conventional methods are used to drill out the tooth, the inner side wall has to be drilled, costing calcium and tooth. But with this technique, you don't lose much of the side wall which is so critical for keeping the tooth's strength."

Many times a root canal alone is not enough to make the tissues, bone, and body free of disease. This is especially true if the original bone disease and resulting infection has been present for some time. Additional cavitation surgery around the root canaled tooth may be necessary to remove any dead bone and help rebuild the tissues. This bone augmentation procedure, if combined with circulatory and lymphatic support techniques, can help restore the terrain around the root canal back to health. Without this, even the best of root canals may not be successful and further bone disease and infection will result.

Continued testing can be performed over time to insure the success of the root canal. Affinity Labeling Technologies has developed an in office toxicity screening test called Topaz and a more complete lab analysis which can measure a percent of toxicity present. Bone biopsies can also be performed periodically and sent to the MaxilloFacial Center for Diagnostics and Research in West Virginia for analysis. In addition electro-dermal screening, thermography, ultrasound and other tests can be used to monitor and follow up root canaled teeth, cavitation surgery sites, as well as any other tooth in the mouth.

Avoiding Root Canals With Lasers

Lasers can be an effective tool not only for disinfection during the root canal procedure, but for avoiding the procedure entirely. Arabinda Das, M.D., wrote in the May 1994 Townsend Letter for Doctors that when a root canal was recommended for his 18-year-old son, he tried passive laser treatment on it instead. Dr. Das had a dentist open an access hole in the crown of the affected tooth. Then a helium and neon laser was applied to the opened tooth for ten minutes, and the hole was sealed. The biostimulation effect of a cold laser to induce biologic repair, speed healing, and for pain relief has been well documented in Japan. Dr. Das wrote that the preserved tooth has given his son no problem since that time, a period of twelve years.⁴ However, this laser is not cleared in the United States for this purpose. Dr. Hansen, utilizing the newly approved Erbium laser, has completed over 130 cases of teeth that had large, infected, bleeding nerves. When treated with the Erbium laser, their pain and bleeding were not only gone, but the teeth have continued to remain healthy and pain free, thereby avoiding certain root canals or extractions. (See Figures 23-26.)

One of these cases was on Dr. Hansen's son who was just 16 at the time. The thought of a root canal and a crown was out of the question for Dr. Hansen. He treated the infected, bleeding nerve with his laser nerve treatment technique and injected a glass filled composite into the deep cavity to completely restore the tooth. In the November 1999 edition of Alternative Medicine Magazine, published by Burton Goldberg of Alternative Medicine.com, Inc., editor Tom Klaber conducted an extensive interview with Dr. Hansen on this subject.

Avoiding Root Canals By Avoiding Amalgam

Dr. Hansen has another suggestion for avoiding root canals: avoid silver/mercury amalgam fillings.

"Most problems that we see today," he says, "are because of rampant decay that has gone unchecked, or because of large silver/mercury fillings that aren't adhesive and break the teeth or leak and decay. But rampant decay is getting less and less common. The vast majority of root canals and crowns are now done around large silver-filled teeth. When a tooth has its first cavity, a dentist should never grind away perfectly good tooth structure just to put in a large mercury filling. This destroys the tooth forever and will set it up for most of the later adult dental problems. Instead the dentist can use the Erbium laser, vaporize just the decayed tooth, inject a biocompatible tooth replacement, and maybe stop most of the invasive, traumatic future dental needs. If we could replace all mercury amalgam with something biocompatible like some of the newer ceramic, ceramic polymers, or porcelain, we could virtually eliminate root canals and most crowns."

Lasers To The Rescue

Even when amalgam has done its insidious work, however, infected teeth can now be saved, thanks to laser disinfection.

"We've been doing laser techniques with the new Erbium laser on teeth that automatically in traditional dentistry would have needed root canals and crowns," says Dr. Hansen. "When you open the pulps, they're bleeding all over and heavily decayed and infected with bacteria. In traditional dentistry, nearly 100% of these teeth would die. If you do a root canal right away, you prevent necrosis (or death) and the development of necrotic neurotoxic products at the ends of the roots. But most dentists don't do that. They put medications on the teeth in the hope of preserving the tooth. Usually, it dies anyway, if not immediately, then over several years. Meanwhile, necrotic, toxic products accumulate in the root and bone. With the laser, we can vaporize the decayed area - since decay is heavily filled with water and bacteria, which the laser attacks and literally vaporizes - with no trauma to the nerve and no drilling. The drill alone would kill an infected nerve by traumatizing it with heat, vibration, and pushing bacteria inside. Vaporizing the decay with a laser doesn't produce the heat and vibration of a drill, and it sterilizes the area instead of pushing the debris into the canal. We can literally vaporize the infected nerve tissue in this way without traumatizing it, and produce a bacteria-free zone, even with multiple bleeding sites. Then we seal over these infected nerve tissues that are now decay and bacteria-free. In the 130+ cases we've done, they've all healed up; and the patients have had no pain immediately afterwards. In the traditional case, pain goes on for days after treatment. Instead of grinding the tooth down for a crown or having to do a root canal, we now have a perfectly preserved tooth that formerly would have been destroyed and crowned or root-canalled."

