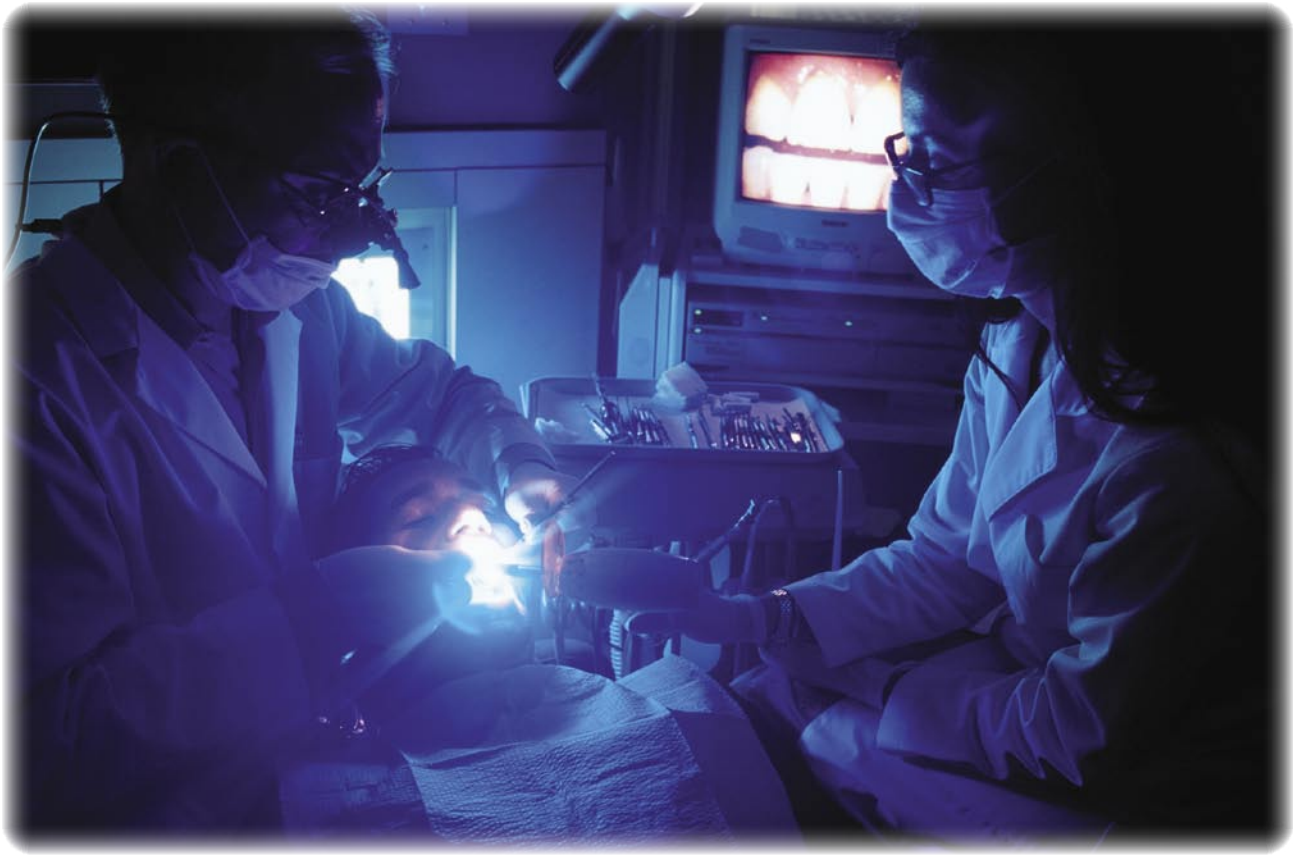


Lasers: Slowly Being Accepted

By Dell Richards

In the past five years, lasers have become a more accepted part of dental practice — at least in perio work, curing, and whitening. Lasers for diagnosing and prepping cavities use are increasingly also, but their acceptance has been slower. The future holds promise for root canals and caries treatment and prevention — but the future could be a long way off.

Pamela DiTomasso, DDS, is typical of dentists who are working their way into lasers. She has three diode lasers for soft-tissue work and couldn't live without them. "That's a workhorse here," said the Sacramento dentist. "The hygienists couldn't go back to practicing without it. The improvement in the tissue as it heals is phenomenal."

"The more water you have, the better the laser does, which is the opposite of the drill."

DONALD COLUZZI, DDS

Not only do the hygienists use it constantly, the dentists also use it to replace the retraction cord when doing crowns. "We just zip around there with the laser, which stops the bleeding and allows us space to get a good impression."

The erbium laser is another story. "We are creatures of habit," said DiTomasso. "It's easier to pick up the drill. We have to make ourselves use it more."

DiTomasso has had the erbium for about a year. When she bought it, the staff took the training offered by the company. Then, the staff trained with Joel White at the University of California San Francisco School of Dentistry. "We wanted a more objective training to make sure we knew everything about laser technology in general."

That one-day lesson cost $5,000 on top of the $70,000 spent for the machine itself.

In addition, the laser is not pain-free, as is sometimes touted. "We tried it without numbing people, but they commented on it. So we just automatically numb them now."

One unexpected benefit was the patient response to the idea of lasers for cavities. "Patients like the fact that it is high-tech, something new other than the traditional drill," DiTomasso said. "There is an image factor. Patients think we are better than the other guy.

"We didn't think of the patient angle when we got it," said DiTomasso.

Rodger "Rod" Kurthy, DMD, agreed — and not just about image. A Mission Viejo dentist who has written seven books on marketing, two of which are on lasers, Kurthy is an early adopter. He had an air abrasion years ago, but developed lung problems as a result. "I woke up one morning gasping for air," Kurthy said. "On Friday, I tried to cut back but everyone kept asking for it."

Over one weekend, Kurthy dismantled it.

Knowing he had to keep up his image of providing the latest available care to his patients, Kurthy went to a nearby laser company and bought one sight unseen. "I stumbled on it that way," Kurthy said. "And it was no miracle machine."

Nonetheless, Kurthy swears by the technology. Today, he has soft- and hard-tissue lasers, as well as one to diagnose caries. He praises the diagnostic tool unabashedly — not only for prevention of larger cavities, but for the money-making aspect. "When you find these small cavities, it's wonderful for the patient," said Kurthy. "These tiny areas of decay are not going to get bigger.

"You find two little, tiny cavities not found otherwise, and you get 100 percent of your charge. Because you don't charge by the size, you charge by the surface. You charge as much as an occlusal, but knock these out on a recall."

Patients love it because the machine not only gives a reading, but beeps like a Geiger counter. "It's not just the dentist who thinks there's a cavity, there's this machine," Kurthy said. "Young patients are thrilled we found a cavity when the sound goes off. When you find cavities, nobody questions it."

Whether lasers are used for hard or soft surfaces, dentists have noticed another advantage — that they seek out diseased areas, vaporizing them and killing bacteria in the process.

Donald Coluzzi, DDS, past president of the Academy of Laser Dentistry, has noted that "... the laser has some selectivity in removing disease. It has some preference," said Coluzzi, who also is on the faculty of the School of Dentistry at UCSF.

If you set the right amount of energy, the laser won't take away as much of the healthy tooth, even for cavity prep because decay has more water. "The

great news is that the primary attractor of laser energy is water," said Coluzzi. "The more water you have, the better the laser does, which is the opposite of the drill."

Another beneficial use of lasers is in cosmetic work. To remove gum tissue, dentists often remove bone. "In removing gum tissue, we have to be careful of the supporting bone underneath," said the Portola Valley dentist.

A 2004 Japanese study that overviewed prior articles as well as running their own, found that lasers are safer and more effective than the drill on bone.

Despite the touted benefits, dentists are not jumping on the laser bandwagon. Only 5 to 7 percent of dentists worldwide have them.

Although prices have come down on some, that hasn't been the case for the high-end ones. "The disadvantage at the moment is the cost," Coluzzi said.

As a result, companies are questioning the value of continuing, even if there is a huge potential market waiting. "The companies are wondering if they should do this, especially if they can only sell four," said Coluzzi.

"The price is a really big problem in a young doctor's office," said Peter Rechmann, DDS, professor and director of Clinical Research at the UCSF Department of Preventive and Restorative Dental Sciences. "The erbium came out with a new model and raised the price, saying the tool is wonderful and you have to pay for that. The components are not that expensive, but the companies want their R&D back."

Research and development not only is expensive, but can be painfully slow. Root canals are a case in point. "We are still struggling with developing a tip to do everything we need in root canals," Coluzzi said. "The challenge is to get the laser energy out the side effectively."

One company has developed a side-firing tip, but it's not flexible. "Which then begs the question of getting it into canals that are curved. But, it's an engineering challenge, not a physics challenge."

Nonetheless, research does continue to hold out exciting new possibilities. Rechmann is working on a laser that will remove the calculus and microbial plaque without taking away healthy tooth structure. Although he has been working on it since 1985 — and saying he hopes it will be ready next year — he has no idea when it actually will be available. "I always say it will be done next year," joked Rechmann.

Also at UCSF, John Featherstone, MSc, PhD, is working on a low-energy CO2 laser that changes the enamel of the tooth to make it more caries-resistant.

"The erbium works on the water in the mineral, using another wavelength. If you run with low energy, you really change the enamel rather than ablating it," Rechmann explained.

"The idea is to get a similar effect as fluoride or an even better one with additional fluoride for adults and children."

Although efficiency studies are halfway done, dentists shouldn't expect anything coming to market for at least five years, if not longer.

Despite their promises, lasers have a long way to go. Even when dentists spring for them like DiTomasso has done, they still have to incorporate them into their daily workload. "It's an investment of your time as well as money," said DiTomasso. "It's not just plug-and-go. It's a different mindset."

While proponents sing their praises and researchers continue to find new and better uses, most dentists are taking a wait-and-see approach.

A practicing journalist, Dell Richards runs Dell Richards Publicity, a public relations firm specializing in dentistry and health care.

Treatment Costs Examined

A recent study has compared and analyzed trends, as well as the initial average costs associated with placing implants with crowns in comparison to placing three-unit bridges or root canals with crowns, and the respective associated restorative and/or surgical procedures.

"It is our understanding that this research is the first to explore these important issues," said Richard Hastreiter, DDS, MPH, in a press release. Hastreiter, coauthor of the study, also is dental director and vice president of oral health management and analytics at Delta Dental Plan of Minnesota.

The study, conducted by Delta Dental Plan of Minnesota, revealed the average initial cost of implants with crowns and associated procedures was the most pricey, $3,255; followed by three-unit bridges and associated procedures, $2,410; and root canals with crowns and associated procedures, $1,591.

Honors

The Academic Senate Committee on Academic Personnel at the University of California, San Francisco, has recognized **Michael McMaster, PhD**, with a 2005-2006 Distinction in Teaching Award. Joining the UCSF faculty in 1994, he is an assistant adjunct professor in the Department of Cell and Tissue Biology at the School of Dentistry.

The award recognizes distinction in teaching for faculty at the school for more than five years.

Fluoride Varnish, Education Helps Stem Decay in Toddlers

According to a study at the University of California San Francisco School of Dentistry, fluoride varnish lowers the rate of early childhood tooth decay in combination with dental health counseling for parents.

Investigators examined caries-free infants and children, predominantly from low-income Hispanic and Chinese families in San Francisco. All of the families were counseled on dental health and the children were randomly placed into three groups: those receiving fluoride varnishes twice a year; those getting the dental preventive treatment once a year; and those not receiving any treatment. Of the 376 children initially enrolled, 280 completed the study.

Children not receiving any fluoride varnishes were more than twice as apt to develop tooth decay as the group assigned to getting the annual fluoride, according to the study's findings. Those who did not receive varnish were close to four times more likely to develop tooth decay than those receiving it twice a year (four treatments over a two-year period). The results were published last February in the *Journal of Dental Research*, the journal of the International Association of Dental Research as well as online, http://jdr.iadrjournals.org.

Jane Weintraub, DDS, MPH, Lee Hysan Professor at the University of California San Francisco School of Dentistry and principal investigator of the study, said there are two key points parents should know.

"First, the results support the use of fluoride varnish to prevent tooth decay in very young children. Second, the results support parents bringing children for their first dental visit at age 1 when they are getting their first teeth.

"Fluoride varnish is relatively inexpensive, easy to brush onto a child's teeth, and can be part of a positive first dental visit to help prevent tooth decay," Weintraub said. "In contrast, when very young children get cavities, it is difficult for them to sit still for dental treatment. Often, young children needing many fillings receive care in the operating room, at great expense to their family and with the additional risks posed by general anesthesia. We now have an easy, low-cost way to keep teeth healthy."

It had been previously been shown that varnish prevents tooth decay for older school-age children who have permanent teeth. This was the first randomized study of children as young as six months old and shows the efficacy of fluoride varnish to prevent tooth decay in a young child's baby teeth.

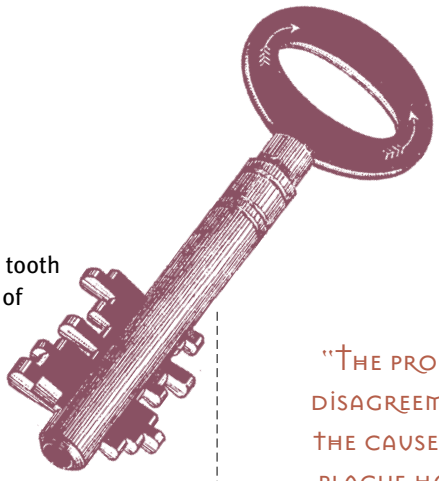
Dental Records Ranked Higher Than DNA Testing in Identifying Tsunami Victims

When it came to identifying the bodies from Thailand's tsunami, dental records outperformed DNA testing. According to an article in *New Scientist* magazine, the bodies of some 75 percent of victims were identified using dental records; 10 percent using fingerprints; and 0.5 percent using DNA.

Nick Bracken of London's Metropolitan Police and commander of the Information Management Center based in Thailand said that because DNA testing, although accurate, requires multiple samples from living relatives, as well as refrigeration and highly specialized laboratory equipment, it is not the ideal technology in identifying large numbers of disaster victims.

Researchers made tentative identification using pictures of smiling victims in cases where dental records were unavailable or did not exist.

Dental Pulp Key to Unlocking Ancient Mystery



The discovery of an ancient mass grave and recently extracted DNA from tooth pulp have scientists convinced it was typhoid fever that wiped out one-third of the population in Athens in 430 BC.

Anthrax, Ebola fever, Lassa fever, and tuberculosis previously had been suggested as the cause of death to leader Pericles, his people and the golden age of Athens.

"The profound disagreement on the cause of the plague has been due to the lack of definite microbiological or palaeopathological evidence," wrote Manolis Papagrigorakis, DDS, assistant professor at the University of Athens School of Dentistry. However, the unearthing of a mass grave dating from the time of the plague appears to have answered the long-time question.

In the *International Journal of Infectious Diseases*, scientists said they took three teeth at random, extracted DNA from the dental pulp, and compared it with sequences from anthrax, cowpox, cat-scratch disease, tuberculosis and typhus. It matched with typhoid fever.

"The profound disagreement on the cause of the plague has been due to the lack of definite microbiological or palaeopathological evidence."
MANOLIS PAPAGRIGORAKIS, DDS

Marfan Website Provides Assistance to Dental Professionals

The National Marfan Foundation now features on its website dental and orthodontic information on the genetic disorder that affects the body's connective tissue, including the skeleton, eyes, blood vessels, and heart. An estimated 200,000 Americans have Marfan syndrome or a related disorder.

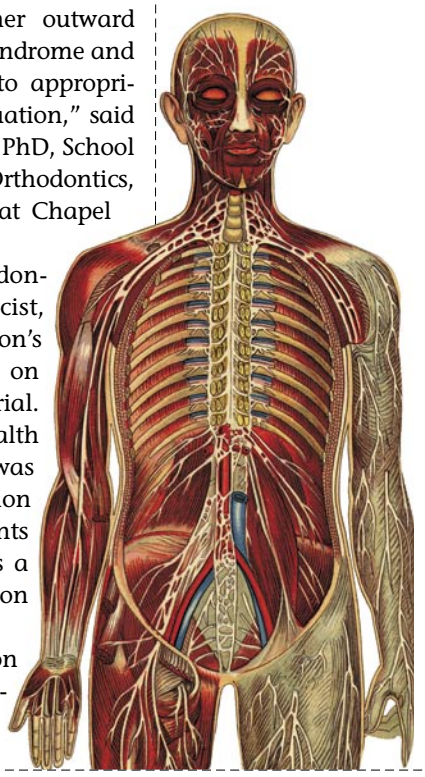
Those with the potentially life-threatening disease have high-arched palates and narrow jaws, which can pose dental problems. While there is limited research on the specific management of the orthodontic problems typically seen in individuals with Marfan syndrome, orthodontic care is an essential part of managing the disorder, especially in children, according to a press release from the National Marfan Foundation.

Some may be at severe risk without proper diagnosis and subsequent treatment because potential aortic enlargement predisposes those with the disorder to aortic tear and rupture. Additionally, those with artificial heart valves and valve prolapse are at risk for infection of heart valves and the heart when having dental work performed. The foundation suggests that recommendations regarding endocarditis prophylaxis be followed, and more information is available in the foundation's "Dental and Orthodontic Concerns" brochure. The brochure can be found on the foundation's website, www.marfan.org, under the heading "Living With Marfan Syndrome."

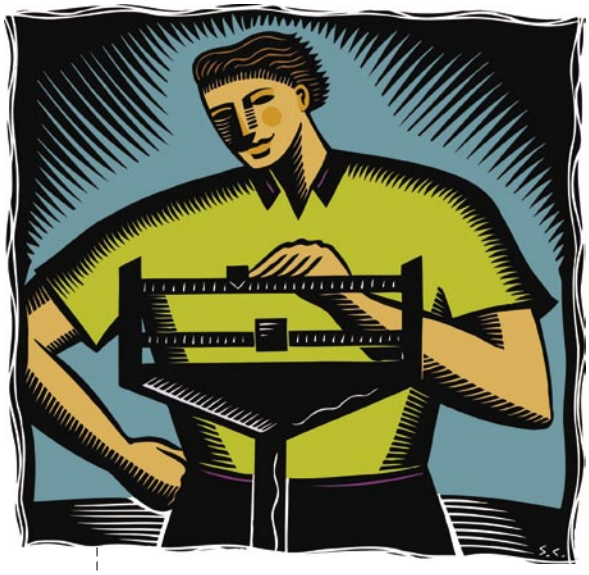
"Many people with the Marfan syndrome do not know that they have the disorder, but they may be visiting a dentist or orthodontist for treatment of the specific dental aspects. In these cases, it is important for the dentist or orthodontist to combine their observation of the face and mouth with their knowledge of other outward physical signs of the Marfan syndrome and to refer a suspicious patient to appropriate specialists for further evaluation," said Sylvia A. Frazier-Bowers, DDS, PhD, School of Dentistry, Department of Orthodontics, University of North Carolina at Chapel Hill, in a press release.

Frazier-Bowers, an orthodontist and molecular geneticist, consulted with the foundation's Professional Advisory Board on the development of the material. A not-for-profit voluntary health organization, the foundation was created to provide information about the disorder to patients and physicians, and serves as a resource for medical information and patient support.

For more information on Marfan syndrome, visit the website or call (800) 8-MARFAN.



Significant Predictor of Periodontal Disease: Obesity



There's a new reason to get fit and stay that way: Researchers have found that obesity is a major predictor for periodontal disease. The finding, published in a recent supplement to the *Journal of Periodontology*, is independent of one's gender, race, age, or whether one smokes or not.

What's more, analysis of the national sample suggested that insulin resistance mediates the relationship between periodontal disease and obesity, and that the severity of periodontal attachment loss proportionally climbed with increased insulin resistance. Researchers from the University of Buffalo also found that the number of teeth lost dramatically rose with elevating levels of insulin resistance. Individuals in the highest insulin resistance category lost 1.1 more teeth than those in the lowest category.

A total of 12,367 non-diabetics from age 20 to 90 participated in the dental section of the Third National Health and Nutrition Examination Survey. Of these, 47 percent were women and 53 percent were men, and 43 percent of all the individuals were overweight.

"People who have a higher body mass index produce cytokines (hormone-like proteins), that lead to systemic inflammation and insulin resistance."

ROBERT J. GENCO, DDS, PHD

"People who have a higher body mass index produce cytokines (hormone-like proteins), that lead to systemic inflammation and insulin resistance," said Robert J. Genco, DDS, PhD, editor of the *Journal of Periodontology* and vice provost at the University at Buffalo. "We propose that chronic stimulation and secretion of proinflammatory cytokines associated with periodontal infection also occurs, contributing to insulin resistance, which may further predispose to diabetes mellitus."

Genco and his research team recently showed that diabetics who have periodontal disease may have greater mortality from diabetic complications ranging from kidney complications and cardiovascular disease than their counterparts with little or no periodontal disease.

"The presence of periodontal infection combined with obesity may contribute to type 2 diabetes and its complications, such as coronary heart disease," said Kenneth A. Krebs, DMD, and president of the American Academy of Periodontology. "Although further studies are needed, people should remember that living a healthy lifestyle along with daily brushing and flossing and visiting your oral health care provider is always in fashion."

Upcoming Meetings 2006

Sept. 15-17	CDA Fall Session, San Francisco, (866) CDA-MEMBER (232-6362).
Oct. 7-11	Pacific Coast Society of Orthodontists 70th Annual Session, Honolulu, Hawaii; www.pcsortho.org, (415) 674-4500.
Oct. 11-13	Pacific Coast Society of Orthodontists post-meeting program, Poipu Beach, Kauai; www.pcsortho.org, (415) 674-4500.
Oct. 16-19	ADA Annual Session, Las Vegas, (312) 440-2500.
Nov. 2-4	Hispanic Dental Association 14th Annual Meeting, Universal City, www.hdassoc.org or (217) 793-0035.
Dec. 3-6	International Workshop of the International Cleft Lip and Palate Foundation, Chennai, India, (91) 44-24331696.

To have an event included on this list of nonprofit association meetings, please send the information to Upcoming Meetings, *CDA Journal,* 1201 K St., 16th Floor, Sacramento, CA 95814 or fax the information to (916) 554-5962.