Laser Custodians
Fighting Periodontal Disease, Professional Attacks and Skeptics

By Thomas Giacobbi, DDS, FAGD Editorial Director, Dentaltown Magazine
Historical Overview

Millennium Dental Technologies (MDT) was founded in 1994 as a research entity to conduct basic science laser research in dental applications. The Company’s founders, Robert H. Gregg, DDS and Delwin K. McCarthy, DDS are practicing dentists with 16 and 18 years of laser experience, respectively, and over 44 years of combined dental practice experience. In those years, Drs. Gregg and McCarthy used every wavelength and device available in dentistry, including CO₂, Holmium YAG, Erbiums, Er, CR, YSGG, diodes and blue/green surgical Argon—and a few investigational devices that were never released to the market. Fascinated by the possibilities of lasers in dentistry, they saw an opportunity to utilize lasers for periodontal therapy.

Through years of dedicated research, they developed a revolutionary periodontal therapy—Laser assisted new attachment procedure or LANAP.

Beginning in February 1999, MDT began selling its PerioLase Periodontal Package with a pulsed Nd:YAG manufactured “OEM,” and MDT conducted the laser and clinical training. It would take two years for the doctors to design and build the PerioLase MVP-7. MVP stands for “multi-variable pulsed” with seven user selectable and discrete pulse durations. The PerioLase MVP-7 was the World’s first digital dental laser, the first dental laser engineered in the new millennium and was designed specifically for dentistry and the treatment of moderate to severe periodontal disease.

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In November 2001, two months following America’s tragedy on September 11th, the PerioLase was FDA cleared for the elemental claim of “sulcular debridement” for the “removal of diseased or inflamed tissues in the periodontal pocket.” Eschewing equity debt financing, and fighting to keep the company privately held, the doctors went into heavy personal debt to finance the company’s operation for the next several years. The doctors funded a university human histology study at LSU in order to know what sort of wound healing was taking place with LANAP. In March of 2004, LSU Professor Ray Yukna presented the findings of his research at the International Association of Dental Research (IADR) meeting. In the third largest human histology study in the periodontal literature, 100% of the six LANAP treated teeth demonstrated “cementum-mediated new periodontal ligament attachment” while the six control teeth did not. These extraordinary results were summarized in the FDA submission, “Clinical Performance Data: The new clinical outcome claim is based on human histological and radiographic data from a controlled prospective University-based clinical study.” This convincing new data led the FDA in July of 2004 to clear the PerioLase MVP-7 for a specific and defined laser periodontal protocol—the first clearance of its kind: “Laser assisted new attachment procedure: cementum-mediated new periodontal ligament attachment to the root surface in the absence of long junctional epithelium.”

continued on page 28
DT: What prompted you to start a company that develops a laser to treat periodontal disease?
Dr. Gregg: We originally started a company in order to obtain a tax ID number so we could apply for National Institute of Health grants to conduct basic science research involving lasers. In the early 1990s, we wanted to understand laser tissue interaction better than we did. So, we worked with a Gregory Zeltzer, MD, PhD who had recently emigrated from the former Soviet Union. He had a patent on artificial tissue that mimicked the thermal response of lasers at sensitivities from as little a 5 degrees Centigrade to 100 degrees.

Dr. McCarthy: We investigated a number of lasers and laser parameters that allowed understanding of which laser wavelengths and operating parameters were optimal for specific outcomes in both hard and soft tissue. We investigated erbium YAG, carbon dioxide, neodymium YAG, diodes, etc. Once we understood what various lasers and different parameters would do, we decided we wanted to focus on periodontal disease. That choice was based on our own clinical frustrations in getting patient acceptance, as well as more durable clinical results without the morbidity we often saw associated with conventional periodontal surgery methods.

DT: What challenges have you faced in starting and growing your business?
Dr. McCarthy: We were regularly disrespected and ridiculed for not being “real” businessmen by competitors and service providers alike. We were derisively called by one CEO “a couple of dentists and a part time secretary” — referring to us and our Business Manager of seven years, Janie DeMatteo.

In the late 1990s with the dot com craze, we were not taken seriously by venture capitalists since we had a “profit model” versus a “branding and marketing” model of e-commerce as was the fashion of those days.

Dr. Gregg: We were dismissed by our laser colleagues who disparaged our emphasis on variable pulse technology as being without any clinical significance, and marginalized our contributions to the field of laser dentistry.

We were — and still are — attacked by elements of certain specialist groups as making false and misleading advertising claims, when they can offer no evidence of such. This, in spite of the fact we only advertise our FDA cleared LANAP protocol combined with the LSU/IADR research findings and a picture of the PerioLase.

Furthermore, when we started to be successful, we were told that other laser gurus and companies would claim, “We can do what they do with our laser and our techniques.”

DT: Your company tag line is “a company formed by clinicians for clinicians” — are you still practicing and what significance does it bring to your company?
Dr. Gregg: I still practice full time, four days a week. LANAP was developed in a real-world private clinical practice setting where the demands of any new or novel treatment regimen must meet the toughest of conditions, like non-compliant patients. Staying involved in clinical practice keeps us well centered to the realities and challenges of PerioLase clinicians, their practices and their LANAP variations. Since we have the most LANAP experience, we continue to push the envelope of understanding it in all its nuances and novel presentations. In that way, we can be a resource to our customers for the benefit of their patients, thus pushing LANAP towards becoming the gold standard of care.

DT: I understand that you will not ship a laser until a doctor has attended your three-day Boot Camp – why is that and why is training so important to you?
Dr. Gregg: That’s correct. No laser is ever shipped until the dentist has successfully passed three days of didactic, live-patient clinical LANAP treatment, and passes a device specific (PerioLase MVP-7) Standard Proficiency exam that follows the Curriculum Guidelines for Dental Laser Education.

We take our professional responsibility for the patient outcomes of what we sell very seriously. As we’ve been told, we’re dentists, not businessmen, and our dedication is to those patients of our customer dentists, not the maximization of the bottom line.

Dr. McCarthy: We strongly feel that if we want lasers to replace the scalpel for the treatment of gum disease, then we cannot afford to have any bad patient outcomes, as has happened in the past by companies that did not bundle their training with their laser as a requirement of purchasing a laser.

Dr. Gregg: We feel patients are our ultimate “end-user” and that the PerioLase customer dentist is our proxy that allows us to treat them, in a sense. Happy patients with successful outcomes will help expand the adoption of LANAP as friends, family, co-workers ask their dentists and periodontists about them.

DT: We understand that your affiliated education and training institute has unique CE recognition?
Dr. McCarthy: That’s correct. The Institute for Advanced Laser Dentistry (IALD) is the entity that provides the education and training for MDT after the sale has taken place. The IALD is the only laser-manufacturer affiliated institute that has ADA CERP and AGD PACE provider recognition.

continued on page 32
DT: Why is five days of training spread out over 12 months?

Dr. McCarthy: We've been teaching and training dentists about lasers for a long time—18 years in my case, 16 years for Bob. We know what the learning curve is for using an end-firing, non-tactile fiber optic or waveguide. There first needs to be intensive initial training to drive home the points on lasers regarding physics, safety, difference between mechanical devices and clinical technique.

Dr. Gregg: There needs to be a period of time where the doctors can go back and practice what they learned in a sort of clinical residency in their own offices. In their practice, dentists will face challenges and obstacles. They then return to IALD to learn how to tackle these challenges, as well as learn new techniques to serve their patients better. We found that six months is generally the time frame dentists need before they have enough experience to know what they need to learn. A fifth day is scheduled at 12 months for the same reason, only now the dentist is learning advanced techniques that would have been too overwhelming to appreciate if they were shared in the beginning.

DT: Many Dentaltown.com forum comments from your customers complement you on the training they receive, what is the “five-star experience” all about?

Dr. McCarthy: Dentists often are treated as second-class healthcare professionals, when as a profession we often have the highest ranking in public opinion polls. At Millennium we treat all of our dentists as if they are the most important people in the world. That’s because we think they are. We think dentists who take the time to consider and purchase our PerioLase Periodontal Package for LANAP have paid us the highest compliment and deserve to be treated the same.

DT: What challenges have you faced with the periodontist community?

Dr. McCarthy: We were dismissed in the beginning because we were general practitioners, we had only anecdotal case studies, no university-based science and no FDA clearances for how we were using our laser to treat periapical infection. Then, when we accomplished certain milestones such as the patent and FDA clearance that received media coverage, we were attacked.

Dr. Gregg: We were not appreciated by many in the perio community in the early years, had several complaints filed against us at the state board level for “false and misleading” advertising and claims, and recently the AAP has accused us of the same.

We believe the tide is turning; however, as 12% of our customers are now periodontists, which is up from 7% a year ago. This compares to 6% who are periodontists in the overall dentist population at large. As the number of LANAP users increases, a greater percentage comes from the periodontist community. We also recognize that it is difficult to accept such a paradigm shift for these specialists. This is one of the reasons we funded the first-ever laser human histology study, and why we have launched a new multi-centered university-based clinical study.

DT: What do you mean when you say your annual Clinicians Meeting is an “open meeting”?

Dr. McCarthy: We insist on being completely fair and balanced in our presentation of lasers and their therapeutic advantages as a matter of corporate policy. That goes for all laser devices and wavelengths. To that end, we invite all laser device manufacturers and dentists – whether they are PerioLase owners or not – to our annual clinicians’ meeting. We welcome dentists new to lasers, or skeptics of LANAP, to come and listen for themselves what our message is, what our doctors are saying and doing.

Dr. Gregg: If what we have done as clinicians is to come up with the best possible perio protocol and laser operating parameters for LANAP, then why would we be afraid to stand side-by-side with anyone else’s laser or protocol. We have nothing to fear from close professional or competitor scrutiny.

DT: Have you had any laser returned and why?

Dr. McCarthy: Yes, we have had one laser returned in seven and a half years since 1999. Lasers are not magic wands. And they won’t compensate for deficiencies in office management, staff management, or case presentation verbal skills with patients.

Dr. Gregg: In this one situation, the dentist never used the PerioLase in the first three months of his six-month guarantee. Once he did—on one patient where he did say he liked the result—he didn’t use it much more since he wanted to see how things turned out in the first case. Now, he was up against the six-month guarantee deadline. We offered to extend his guarantee to nine months, but he declined. He also refused to return for any remedial training. We refunded his purchase price in full. The lesson we learned is that buying a laser, and specifically the PerioLase, to compensate for any practice deficiencies other than an effective way to treat gum disease is not a good reason to buy the PerioLase MVP-7.

DT: The Millenium Dental Technologies story is truly inspiring. Two practicing dentists developing a treatment protocol and a laser company is remarkable. Laser dentistry is a very real part of our profession, and MDT is ready to teach. If you ever have a chance to visit with Drs. Gregg or McCarthy, do it. Visit their Clinician’s Meeting, or call the company and obtain their speaking schedule.

1 Millennium’s Laser ENAP therapy was awarded U.S. Patent No. 5,642,997, July 1, 1997.