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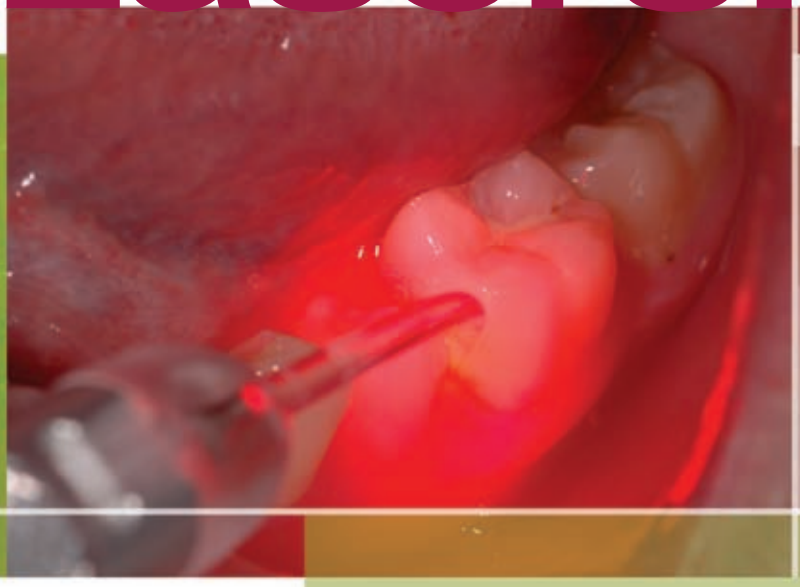

Orthodontic Applications Throu

by Benjamin Lund, Editor, *Orthotown Magazine*

When Dr. Theodore H. Maiman developed the first working laser in 1960, he described it as "a solution looking for a problem." Almost 50 years later, lasers are everywhere – even in the orthodontics profession. There are dozens of laser companies offering a throng of lasers on the orthodontic market, and each one is unique – making it difficult for an orthodontist starting to think about purchasing a laser. To ease a little of the burden for you, Orthotown Magazine *contacted several leading laser companies to find out what orthodontists ought to know when it comes time to purchase a laser. Lasers aren't looking for a problem anymore – they're looking for orthodontists.*

Respondent List

AMD LASERS (Picasso)
Biolase (ezlase)
HoyaConBio (DioDent Micro 980)
Ivoclar Vivadent (Odyssey series)
Sirona (SIROLaser)
Zap Lasers (Styla Ortho Microlaser)

gh Light Amplification

Why should an orthodontist purchase your laser? What are the benefits of using a laser in orthodontics?

AMD: Picasso combines ease of use, plenty of power and a great three-year warranty – all at a third of the price of the competition. Every orthodontist should own a laser. The tissue response is fantastic, it is safe around metal and patients are so much more comfortable post op.

Biolase: The ezlase soft-tissue laser helps improve your orthodontic diagnostics and treatment by giving you control of the soft tissues that frame your patient's smile; allows better bracket placement; improves patient hygiene and makes patient satisfaction soar; improves access to treat partially erupted permanent 6s and 7s; and allows easy exposure of un-erupted teeth.

Hoya ConBio: The DioDent Micro 980 soft-tissue laser enhances tissue healing and reduces postsurgical complications, due to the conservative nature of the treatment accomplished with the laser. The diode laser is utilized in both aesthetic enhancement of the smile, and treatment management of soft tissue issues that impede efficient orthodontic treatment. It can be an effective tool in your practice to reduce treatment times, control oral hygiene, and enhance the final result of your cases. If used properly, it can increase practice efficiency and be a practice builder for you in your community.

Ivoclar Vivadent: Benefits of using an Odyssey laser for the orthodontist include: precise tissue modification; early placement of brackets; fast, effective hemostasis; minimal or no bleeding; reduced treatment time; improved productivity; high patient acceptance and satisfaction; increased revenue; and the ability to expand current services. Benefits for the patient include: maximum comfort, rapid healing time, minimal or no anesthesia, less chair time, and optimal outcomes.

Sirona: Benefits to the orthodontist include: char free ablation – using radiant as well as conductive energy; peak absorption in water; good absorption in hemoglobin and oxyhemoglobin; eight times more absorption in water than an 810nm diode; 0.5 to 7 Watts of power for procedures; in the chopped/pulsed mode there is better thermal control and it keeps tissue cool while ablating; autoclavable tips and disposable tips are available; it weighs less than one lb.; keeps tissue cool and limits thermal damage to surrounding tissue; and 7 CE-credit course is included. Benefits to the patient include: virtually no bleeding, minimized thermolateral damage, hemostasis, little to no charring, less swelling, less pain, improved post-operative healing, no need for cord packing, improved post-operative healing, and minimal scar formation.

Zap Lasers: The diode laser can be used to remove tissue such as gingivectomy and gingivoplasty. These procedures provide earlier attachment to teeth and can significantly reduce treatment times. Commonly, cuspids are some of the last teeth bonded due to slow eruption, delayed passive eruption, or impaction, so the diode laser yields simple and predictable tissue exposure prior to bracket placement.

What procedures can orthodontists do to get the most out of their laser?

Zap Lasers: One of the most commonly used laser procedures is cuspid exposure. This laser technique eliminates the need of waiting the unexposed cuspid to be erupted. Exposing the excess tissue is simple, bloodless and can be performed with topical anesthetic. After applying a topical anesthetic of your

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choice, employ the use of a laser utilizing 1.2 to 1.4 Watts of power with initiated tip. When tissue is to be removed, the tip is held in light contact with the tissue, and the procedure is performed with light, sweeping brush strokes. The tissue will be removed very easily. There is rarely any bleeding or discomfort, since the blood vessels and nerve endings are sealed while the tissue is removed.

Hoya ConBio: The DioDent Micro 980 creates access for bracket placement, establishes tooth proportionality, oral hygiene, aphthous ulcer, herpetic lesion management, gingival contouring and shaping, and exposure of un-erupted teeth.

AMD: Lots! Obviously cutting and coagulating tissue is the main reason but lots of little procedures like treating aphthous ulcers make using Picasso convenient for the doctor and a great experience for the patient.

Sirona: The following orthodontic procedures ideal for the SIROLaser: uncover partially erupted teeth, hyperplastic tissue, frenectomy, treatment of aphthous ulcers (e.g.: canker sores), herpetic lesions and gingivoplasty.

Ivoclar Vivadent: Crown exposure to aid tooth eruption, operculectomy for faster band placement, treatment of gingival hyperplasia, gingival sculpting, ulcer treatment and frenectomy.

Biolase: The ezlase provides excellent solutions to orthodontic soft tissue challenges: gingivectomy, gingivoplasty/gingival recontouring, exposure of unerupted teeth, hemostasis, operculectomy, soft tissue crown lengthening, treatment of aphthous ulcers and herpetic lesions, fibroma removal, frenectomy and frenotomy.

What sort of training do you offer for orthodontists on your laser?

Hoya ConBio: We offer an eight-hour continuing education course.

AMD: We are dedicated to ensuring every dentist is properly certified and trained in laser usage. We have three levels of training: step 1 – introductory manual, quick reference guide and DVD training; step 2 – basic certification; and step 3 – a two-day, in-office, hands-on course.

Zap Lasers: A full spectrum of laser training is offered by Zap Lasers including in-office tutorials, DVD, online courses and Webinars.

Ivoclar Vivadent: On-site installation and training is provided by the Ivoclar sales reps. Ivoclar also provides certification training courses.

Above photos show before and after a laser procedure by Andy Hayes, DDS, MSD

Sirona: The purchase of the SIROLaser includes a one-day, free product specific training seminar (7 CE credits) to familiarize the user on the safe use of this product. The SIROLaser training seminar focuses on operation, safety and hands-on use of the SIROLaser.

Biolase: The ezlase includes comprehensive training by Orthodontist Robert L. Waugh, DMD, MS, and Intellident Solutions, Inc. Course content includes: Laser physics, science and laser treatment to patients; master controls and fiber treatments used in different laser modalities; case studies and appointment/treatment sequencing to establish laser-assisted therapies in practice; identifying types of appointments, objectives and what can be accomplished in available time; designing needs-based treatment plans; practice clinical simulation and perform tasks involving various tissue interactions; use of verbal skills for patient involvement and scheduling of laser procedures in low-stress day; and comparing diode dental lasers that are available.

Do you offer special pricing at conventions?

Biolase: Yes.

Hoya ConBio: Yes.

Zap Lasers: Zap Lasers is always promoting price incentive at shows and conventions.

Sirona: We are currently offering a $500 rebate on the SIROLaser if purchased before June 30, 2009.

Ivoclar Vivident: Yes, at all conventions, courses, etc. Also, ortho departments at universities receive university rates.

AMD: Our pricing is the same at conventions, online and over the phone. We have made an incredible product that every orthodontist can afford.

Do you offer a trial period with a return option on a new purchase?

Ivoclar Vivadent: Yes, the laser can be returned within 30 days of purchase, no questions asked.

AMD: Absolutely. We offer a try-before-you-buy program.

Biolase: We offer a "Seeing is Believing" in-office demo, which allows orthodontists to try the laser in their office for a day with a Biolase laser specialist.

Zap Lasers: Yes, we offer a 30-day trial period.

What is the appropriate amount of time to obtain the necessary skills to use your laser?

AMD: We recommend our Three Step Training program to ensure confidence and the best return on investment to a first time laser user. Experienced laser dentists can take Picasso out of the box and within five minutes can start using the product.

Hoya ConBio: Immediately. The DioDent Micro 980 is plug and play, and comes with an instructional DVD.

Sirona: After attending our one-day training seminar the dentist should have the necessary skills to use the SIROLaser properly.

Zap Lasers: The typical learning curve using diode lasers is a few weeks. Zap provides clinical training specifically designed for orthodontics to assist the laser implementation and increase the comfort level when using the laser for the first time.

Biolase: After a one-day comprehensive diode laser training course, included in the purchase price of the ezlase, the orthodontist will be able to perform many basic procedures. Application of the laser in daily practice and additional advanced training will allow orthodontists to quickly expand their repertoire of procedures.

Where else do you recommend dentists go to learn more about clinical laser usage?

Biolase: We recommend advanced training through the World Clinical Laser Institute and associated instructors and teaching organizations.

Ivoclar Vivadent: Courses from our instructors, the Academy of Laser Dentistry and Advanced Laser Training.

Sirona: The Academy of Laser Dentistry offers a number of educational opportunities including a laser certification course.

As more and more lasers enter the market, where do you see the cost of purchasing a laser in five years?

Hoya ConBio: Decreasing.

Ivoclar Vivadent: About 30 percent less.

Zap Lasers: As the sales volume increase, economy of scale drives the pricing down. Unfortunately, along with that, you will see companies trying to slash pricing extremely low with the hope low pricing will translate into high sales volumes. The laser market has it is own way to evolve and the industry moves on it's own pace as well. In order to reach that high volume to bring the economy of scale down, a lot of education, dedication and patience is needed, so orthodontists can become more and more comfortable with laser technology.

Sirona: Lasers are technology and as technology continues to improve, the price of existing technology tends to decrease. For instance the cost of LCD and Plasma TVs in the last few years have continued to decrease. You can now purchase a LCD TV for under $1,000 and several years ago they cost several thousands of dollars. However five years from now, our view today of a dental laser might be completely different. As technology advances so do our capabilities.

Thank you to the companies that participated in this survey. To view the comparisons of some of the lasers on the orthodontic market, please turn to our Orthodontic Lasers Chart found on pages 40 and 41. ■

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Orthodontic Lasers Chart

This comparison chart covers just a sample of the many lasers available on the market today.

Manufacturer	AMD LASERS	Biolase	Hoya ConBio	Ivoclar Vivadent	Ivoclar Vivadent
Machine name	**Picasso**	**ezlase Soft Tissue Laser**	**DioDent Micro 980**	**Odyssey 2.4G**	**Odyssey Navigator**
Wavelength	810nm	940nm or 810nm	980nm	810nm	810nm
Lasing Medium (eg: diode, solid state, etc.)	Diode	Diode	Diode, Solid State	Diode	Diode
Autoclave Fiber	Yes – three meter lasts about a year	No	Yes	No	No – disposable tips
Weight	Less than 2 lbs.	2 lbs.	4 lbs.	5.5 lbs.	2.5 lbs.
Electrical (in volts)	110-240V	100 to 240V ~ at 2A	120V	110V	110V
Footprint (dimensions)	15cm x 16cm x 23cm	3.5" x 7" x 2.5"	9" x 7" x 2"	6.25" x 8.75" x 5.5"	7" x 4" x 3"
Warranty	3 years	2 years	2 years	1 year	2 years
Retail Cost	$3,495 for 1 unit or $9,995 for three units	Contact Biolase or Henry Schein Representative	$8,595	$11,000	$13,300
Watts	7 Watts	Up to 7 Watts	Up to 3.5 Watts	5 Watts	3 Watts

					
Ivoclar Vivadent	KaVo	KaVo	Millennium Dental Technologies	Sirona	Zap Lasers
Odyssey 3W	**GENTLEray 980 Classic**	**GENTLEray 980 Premium**	**PerioLase MVP-7**	**SIROLaser**	**StylaOrtho Microlaser**
810nm	980nm	980nm	1064nm	970nm +/- 10nm	808nm
Diode	Diode	Diode	Diode	Diode	Diode Microlaser
No	Yes	Yes	Yes	Yes	No – disposable tip with fiber
5.5 lbs.	7.7 lbs.	9.9 lbs.	43 lbs.	Less than 1 lb.	1.9 oz.
110V	110V	110V	110/220V	110V	Battery Powered – Lithium Ion
6.25" x 8.75" x 5.5"	7" x 10.2" x 6.7"	7" x 10.2" x 6.7"	11" x 16.5" x 24.5" (includes cart)	7.5" x 3.4" x 2.1"	Handheld 6.9"
1 year	2 years	2 years	1 year	2 years	1 year
$8,500	$11,650	$15,500	$69,995 for the LANAP Package; $42,995 device only	$13,999	$11,400
3 Watts	6 Watts	6 Watts standard and 12 Watts GENTLEpulse micro-pulse mode	6 Watts	7 Watts	1.2 to 1.4 Watts

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Donald J. Coluzzi, DDS

Opinions of a Laser "Pro"

by Wm. Randol Womack, DDS
Board Certified Orthodontist
Editorial Director, *Orthotown Magazine*

Donald J. Coluzzi, DDS, a 1970 graduate of the University of Southern California School of Dentistry, is an associate clinical professor in the Department of Preventive and Restorative Dental Sciences at the University of California San Francisco School of Dentistry. He is a charter member and past president of the Academy of Laser Dentistry, and is currently the editor-in-chief of the Journal of Laser Dentistry. *He has used dental lasers since early 1991. He has Advanced Proficiency in Nd:YAG and Er:YAG wavelengths. He is the 1999 recipient of the Leon Goldman Award for Clinical Excellence and the 2006 Distinguished Service Award from the Academy, a Fellow of the American College of Dentists, and a Master of the Academy of Laser Dentistry. Dr. Coluzzi has presented about lasers worldwide, co-authored two books, and published several peer-reviewed articles.* Orthotown Magazine *asked Dr. Coluzzi about his experiences with laser use and how it fits in orthodontics.*

How did you get started using lasers?

Coluzzi: In the mid 80s I started reading about lasers use in medicine I was actually the first dentist in the U.S. to use air abrasion instead of using the dental drill to remove a carious lesion and air abrasion looked like quite a good idea. I used it for a while, but I was a little disenchanted with the mess and the dust and stuff however I thought it was pretty interesting technology. I started looking at other technologies that could be utilized other than the conventional stuff that we learned in school. An oral-surgeon friend of mine had a carbon dioxide laser. He said he was using it in the operating room to remove soft tissue, and I thought, "Oh that's interesting," and I got more involved in that. He showed me a couple of cases he was working on and we played with the laser on some ham steaks. I kept following it along and then in 1987 or 1988 I read that there was going to be a laser developed for dentistry – the pulsed Nd:YAG laser, which was finally introduced in 1990. This was something I wanted to try, so I signed up for it. It was $53,000. I got it and it really changed my career. I started using it on soft tissue and I was amazed. For perio, I could contour some gingival tissue, I could remove some gingival tissue and I learned how to do troughing around crowns and things like that. I started with this technology 18 years ago and I still think it is wonderful.

There are a lot of new laser companies, new machines and new technologies. How do you see lasers going forward in dentistry?

The latest statistic I'd heard is that 12 percent of dentists around the world are using lasers. First of all its impact is slow. If

approximately 90 percent of our profession is not using them, I am not sure if it is making a great impact. Last weekend I taught some introductory courses and most of the people attending were non-laser users. They said that they were amazed at the number of soft-tissue procedures that general dentists can do. So the potential impact is significant because we have another device that we should add to our toolbox that can do something quite well. Hemostasis is wonderful, the ability to disinfect a lesion that has bacterial is significant; the fact that you can do things right away, those are significant benefits to lasers. If the profession looks at those as a positive I think they will profoundly impact dentistry and orthodontics. I am excited because the price clearly has gone down for a lot of them, which will make a difference too.

Let's talk about orthodontics. Where do you see lasers being used in the orthodontic office in the future?

The management of soft-tissue in orthodontics is significant. For soft tissue, managing the gingival tissue around a tooth that you are going to put a bracket on is a big plus. Uncovering a tooth to band, especially if there is a soft-tissue flap over the top of the tooth, is a big deal. Trying to help the patient maintain his or her hygiene, like hyperplasic tissue or some areas that are inflamed, if there is a small area that needs to be dealt with at that moment the orthodontist can do that. I really see it as an adjunctive tool for the orthodontist to help soft-tissue management. If there is an issue with getting the band positioned in the right place and there is some extra tissue, the laser can certainly be utilized there. Another significant use that I can see is the management of aphthous ulcers, areas that are inflamed maybe even due to the placement of the orthodontic bracket. So that is what can be done in any orthodontic office quite straightforwardly. I have talked to a couple orthodontists who have erbium lasers, which are the hard-tissue and soft-tissue lasers, and they have actually used the erbium laser to do some osseous surgery. In concert with the surgical aspect in orthodontics you can certainly use a laser for that.

Do you think that learning how to use a laser would be easier than learning how to place TADs?

That's a great question. The answer is yes in terms of the lasers action; it is a direct result of what you do. What you see is what you get. Using a laser, you can pretty much see your result instantly. In terms of the learning curve, how do you learn? You keep repeating the procedure until you get it right. I can imagine initial trepidation of placing your first screw into the patient after you have practiced on animal tissue or something like that. The laser is easier to use as you are removing soft-tissue – you see exactly what is going on. While the laser is a sophisticated piece of scientific equipment, the interaction between it and the tissue is pretty straightforward.

When an orthodontist buys a laser, generally the company provides some sort of orientation or training. Is this training sufficient? Is something else needed?

Some of the training out there is very inadequate. Many times sales representatives parrot back something they learned somewhere else. There's a big difference between a dentist teaching a course versus a salesperson delivering the device. Unfortunately, I've seen some of the sales representatives offering the only training that is around and that, to me, is just not good enough. The best thing for a dental laser company to do would be to offer a decent course in training with the device. There is another level of training involved that understands the basics of the laser, the tissue interaction, the basics of what the laser energy is doing to the tissue and that is more of a certification course.

Some of the companies I talked with at the recent AAO meeting said, "We have a DVD but we also have an outside independent resource doctor who provides training courses through his own company and we recommend that you take that."

Quite frankly, if I sold lasers I would try to include that. I wouldn't even give the purchaser the option. I would demand that there would be a dentist-given training course for purchase. Again the training courses are generally quite good. Most of

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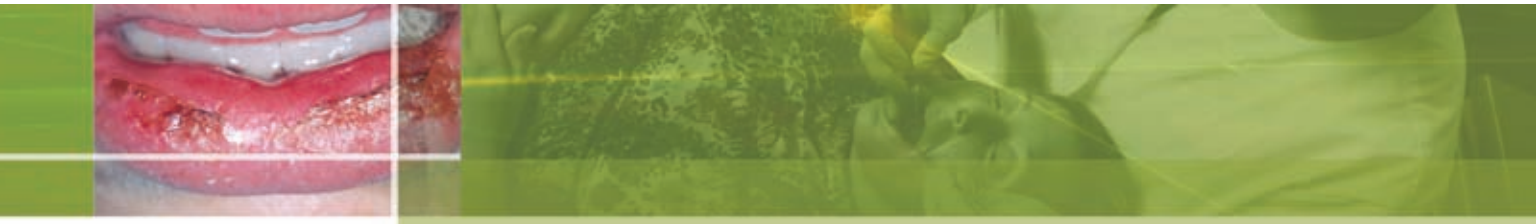
those training courses don't necessarily include certification. The DVD is something you should look at minimally and then go get some training.

What is the major benefit of laser dentistry certification over just doing a training seminar?

The certification curriculum at the Academy of Laser Dentistry (ALD) we have developed over a good number of years is very specific in the sense of giving the student the overall fundamental of lasers and how a laser operates and which laser does what for the dentist. The curriculum of the certification course is really designed for practitioners to spend considerable time on the different basics of laser energy. Making you understand what the light energy is doing to the tissue, not just, "Push this button and put it on the tissue and keep going." The interesting thing about the certification is there are some state boards that are looking at the possibility of requiring a course based on the certification process for licensure. In fact Arizona and Louisiana have a specific recommendation that you take a pretty rigorous "hands-on" course and it is based on the ALD certification process. The major benefit of certification is you get a lot of information about the basics of your laser device and then if you are also trained on that device, in my opinion, that makes you a very safe laser-practitioner.

Would you agree that the requirements for advanced certification impacting the orthodontists seem to be either present now or at least coming in the future?

Yes, I agree. I would love to see really good training and certification included with each laser sales. That would require several things. The manufacturers would have to figure out how



Treating Herpetic Lesions and Aphthous

In the past we, as dental clinicians, have watched our patients enter our offices with painful lesions on their lips and inside their mouths, only to let them know that there were limited options that we could provide. But, as we know in dentistry, things are continuing to change on a daily basis.

Dental lasers have been setting the pace in our offices for quite some time know, and there are several exciting options that soft tissue lasers can provide. Diode soft tissue lasers, for instance, can be utilized in the orthodontic office for treating these unsightly and often painful lesions.

Below are some suggested guidelines to follow when using a diode soft tissue dental laser to treat these areas.

First, be sure to check to see if your state dental practice act will allow the use of soft tissue lasers in your state. This is more important if a dental hygienist will be using the laser.

In addition and of utmost importance is laser safety. Please be sure to know the safety parameters of the laser that you operate. If questions arise, please consult your laser manufacturer, the owners' manual or for further consultation, you can contact the Academy of Laser Dentistry at www.laserdentistry.org.

To begin, make sure to confirm the diagnosis of the lesion that you are going to treat. Typically, no form of anesthesia is necessary however topical anesthesia can be used if needed.

Prepare your laser by using the following parameters: cleave your laser fiber and begin with an uninitiated fiber. Place the fiber approximately 2mm (non-contact mode) above the lesion. This will work for both herpetic and aphthous ulcer lesions.

Continuous wave is the appropriate setting to choose for this application. Starting at 0.5 Watts of power, begin by lasing around the borders of the lesion extending past the borders of the lesion to make sure you are treating the entire lesion. From there simply

Before treatment with laser for herpetic lesion

2 weeks post op