The Diode Laser, An Affordable and Effectible Technology, By Ray Voller, DMD, FACE

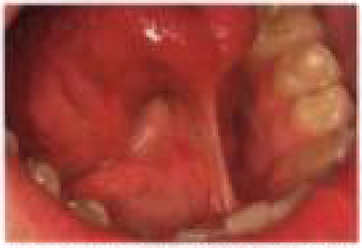
Technology is advancing at a logarithmic pace. There are many ways we can improve patient care and streamline our treatment; keeping abreast of the flux is almost impossible. Dental practitioners are bombarded with marketing tactics that try to force us into purchasing items before they have been proven to actually work in the mouth. It becomes difficult to make good decisions on how to update our armamentarium yet stay on the cutting edge of technological improvement. This is especially evident with new technologies that are designed to 'wow' the patient into searching for that particular dentist who has the latest and greatest toy touted by the manufacturers, yet perhaps not proven to truly improve care. One such item is the dental laser.

When it was first introduced, the average practitioner could not afford these early lasers and many were too large for the average operatory. They also had wavelengths that were site specific; for example, their use was restricted to soft or hard tissue. FDA approval, particularly for hard tissue applications, also slowed down the purchase process for many dentists. As more companies began to introduce the various types and lasers started to become more affordable, manufacturers also scaled down the tool's footprint, allowing them to actually fit into the average dental operatory. Additionally, many cosmetic and general dentists do not need more than one type of laser to fill a particular need in the office. With the introduction of more economically priced lasers, the application of laser usage has become common.

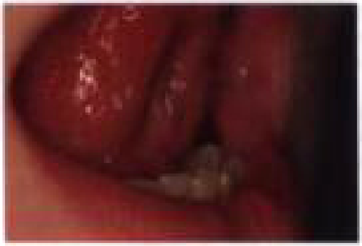
It is not the author's intent to go into the various wavelengths and brands of lasers that are available since many articles now describe each particular laser and their use. This article was written to show two particular cases using the diode laser (ZAP laser) and how it improved the lives and care of two patients.

TREATMENT CASE #1

In this first case, a fourteen year old boy came to our office for routine care. During a thorough examination, this patient was found to have ankyloglossia, known as "tongue tie"; neither he nor his parents knew of his condition. (Figure 1). When asked, the patient did describe an inability to eat an ice cream cone and he had noticed a decreased ability to move his tongue. There were no speech abnormalities or other contributory clinical signs or symptoms. When the use of the laser was offered to relieve his condition, his immediate concerns included questioning the amount of pain that would accompany the procedure. We informed the patient that the procedure would be virtually painless and there may not even be a need for any injections. The day of the procedure, the patient was seated and a topical application of L.T.P. anesthetic gel, medium thickness, (North Pointe Pharmacy, Oklahoma City, OK) was placed using cotton tip applicators. This local anesthetic is a eutectic mixture of 4% tetracaine, 20% lidocaine and 2 % phenylephrine as a vasoconstrictor. The entire base of the tongue and surgical site was coated with the anesthetic gel for a recommended period of two minutes. The ZAP laser was set to continuous wave at 1.8 watts and the tongue was held in place with gauze during the procedure. There was no sensation of discomfort during the procedure and immediately following, the patient was able to extend his tongue almost to his chin. There was no bleeding due to the coagulation effect of the laser. The additional antibacterial effect of the laser also helps prevent post-operative infection. Post-op photos two weeks later (Figure 2) illustrated ideal healing in the area with no complications reported by the patient. He also reported that he could more easily say words that had an "L" sound to them and there was little to no discomfort since the surgery.



(Figure 1) Pre-operative photo illustrating typical findings with ankyloglossia ('tongue-tie') with attachment of lingual frenum from floor of mouth to tip of tongue



(Figure 2) Right lateral, two-week post-operative view of surgical site

TREATMENT CASE #2

In this case, a patient complained that her bridge replacing #10 and with 11 and 12 as abutments seemed loose, and her previous dentist had not found anything wrong with it (Figure 3). She also noticed an odor during flossing. Radiographs indicated failing, decayed margins on both abutment teeth. When the bridge was removed, it was discovered that both abutments were non-restorable. When given a choice between a removable alternative and fixed implants replacing both abutments, she decided the implant option was the best. The decayed abutments were then replaced with 4.7 mm Zimmer (Centerpulse) implants and a flipper was temporarily incorporated to provide an esthetic and functional replacement.

After four months of healing, the patient came to our office for stage 2 surgery, to uncover the implant healing screws. The healing screws were uncovered with the diode laser set to continuous wave at 1.4 watts (Figure 4). The healing screws were subsequently removed and the implants were tested for osseous