An introduction to lasers in dental hygiene

By Jeanne M. Godett, RDH, EDEF, RDHIEF

What is a laser? How does it work? How long have lasers been used in dentistry? How do they benefit our patients? How are lasers integrated in dental hygiene? Are there any disadvantages to the use of a dental laser?

These and more were the questions I had when I first became interested in using laser technology. In short, this technology has simplified my dental hygiene day.

I now have more time in my hygiene treatment regimen to introduce complete restorative dentistry, granting my clients the dentistry they want and deserve along with the ability to preserve their investment.

What is a laser?
The word laser is an acronym for “light amplification by stimulated emission of radiation.”

We can thank Albert Einstein for theorizing that photoelectric amplification could emit a single frequency, or stimulated emission, which explains how a laser operates. Light is a form of energy that exists as a particle, called a photon, and travels in a wave. A photon wave has three basic properties.

Velocity: The speed of light.
Amplitude: The vertical measurement of the height of the wave, from the zero axis to the peak, which describes the energy of that wave. For convenience, energy is measured in millijoules, or thousandths of a joule.
Wavelength: The horizontal distance between any two corresponding points on the wave. In dentistry, we use wavelengths that range between 450 nm and 10,600 nm.

Light is distinguished from ordinary light in that it is monochromatic, it can be visible or invisible and each wave is coherent or identical in physical size and shape. Laser energy is nonionizing radiation.

Lasers were introduced to dentistry in 1980 and are capable of providing results comparable to or superior to conventional techniques and instruments.

There are more than two dozen indications for laser use ranging from simple gingival troughing for homeostasis to caries detection, caries removal, tooth preparation and curing.

Laser energy can be reflected, absorbed, transmitted or scattered within the target tissue or can pass through without any effect on the tissues. The diode family of lasers range in wavelengths from 808 nm to 1,064 nm. These are soft-tissue lasers and are absorbed in hemoglobin, blood components and melanin.

The Nd:YAG 1064 nm wavelength is also a soft-tissue laser and also absorbed in hemoglobin, blood components and melanin.

From the above, we can see why lasers can be such a versatile tool in our hygiene armamentarium.

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Are children receiving prompt cleft lip/palate treatment?

The timely repair of orofacial cleft (OFC) can greatly improve a child’s medical and psychosocial well-being.

The American Cleft Palate-Craniofacial Association (ACPA) has set forth guidelines for the optimal time by which primary repair surgery should be received, broken down by type of OFC.

A retrospective study, published recently in The Cleft Palate–Craniofacial Journal (Vol. 46, Issue 6, Nov. 2009) was conducted to determine whether children with OFC receive primary repair surgery within the time recommended by these guidelines.

The study, conducted in North Carolina, found that most children in that state are undergoing primary repair surgery by the recommended age.


The many variables analyzed fell into five broad categories: maternal, child and system characteristics, perinatal care region and place of residence.

The findings suggest that most (78.1 percent) North Carolina children with OFC received primary repair surgery by the time recommended by the APCA guidelines.

Percentages varied among cleft lip (about 90 percent), cleft palate (58 percent) and cleft lip and palate (89.6 percent).

According to the authors of the study, “Children whose mothers received maternity care coordination, received prenatal care at a local health department, or lived in the southeastern or northeastern region of the state were more likely to receive timely cleft surgery.”

This is most likely due to the distance to the craniofacial center and the services provided by the different centers.

To read the entire article, “Timeliness of Primary Cleft Lip/Palate Surgery,” visit www.pinnacle.allenpress.com/doi/abs/10.1597/08-134.1JournalCode=epj.
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References

About the author
Jeanne M. Godett has been making a professional difference in people’s lives for more than 25 years. She has consulted with hygienists throughout the United States and Canada providing instruction, guidance and productivity guidelines related to hygiene and the use of lasers.

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