



## *What Is Laser Dentistry?*

Medical grade lasers have been around since the mid-1970s. Since then, multiple advances have been made in the safety, efficacy, and individual applications of laser instrumentation in medicine. For many people, the most recognizable medical laser procedure is LASIK eye surgery. But surgical lasers are now in use around the world and across multiple healthcare disciplines, including dentistry.

### *How do dental lasers work?*

All surgical lasers work on the same basic principles. A core containing gas, crystal, or a solid-state semiconductor generates a specific set of light waves. These light waves differ from ordinary light in that they are all a single color (usually infrared) and they are all coherent, meaning that each wave is identical in physical size and shape.

The application of this monochromatic, coherent wave of light energy to various types of living tissue produces a thermal reaction. Depending upon the laser's parameters, the temperature of the targeted tissue will rise to differing degrees and various effects will occur.

At lower temperatures of thermal reaction, most oral bacteria can be deactivated with little or no damage to the surrounding living tissues in the mouth. Higher temperatures allow for the cutting and removal of inflammatory or diseased soft tissue. Lasers designed to cut through harder tissues, like tooth structure and bone, create the highest levels of thermal reaction and most often work in conjunction with water.

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## ***How do dental lasers work? (cont'd)***

These hard tissue lasers produce a level of thermal reaction that actually vaporizes the aqueous component of tooth and bone. The addition of an external water stream to the function of the laser itself aids in the production of this reaction, and also acts as a cooling element in order to ensure that the thermal reaction stops exactly where the dentist intends it to.

## ***Are dental lasers safe?***

In the hands of a certified dental professional, dental lasers are safe and effective tools that can produce superior results to traditional dental techniques for a variety of treatments. Unlike some of the images many people have in their minds of lasers in science fiction movies, clinical dental lasers are highly-precise devices that are only capable of affecting tissues no further than 2 millimeters away from the tip of the device.

That being said, looking directly at the light energy produced by any laser without eye protection is not recommended. During certain dental laser treatments, everyone in the room must wear specialized protective eyewear until the laser treatment is complete.



## ***Why choose a laser dentist?***

Laser dentistry offers some significant advantages in overall healing, patient comfort, and the preservation of healthy tissue in comparison to traditional techniques. Here are just a few of the benefits laser dentistry has to offer:

### ***Comfort***

Laser dentistry uses laser energy and a gentle spray of water to perform a wide range of dental procedures – without the heat, vibration, pressure, and noise associated with the dental drill. With many procedures, it's possible to use less anesthetic, and in some cases anesthetic may not be required at all.

### ***Convenience***

A laser dentist can often perform treatment faster, because it is less likely that you'll need an injection. Not using anesthetic, or using less anesthetic, can allow your dentist to perform procedures that used to require more than one visit in a single appointment.

### ***Precision***

A dental laser can remove decay far more precisely than a drill. This preserves more of your healthy tooth structure. Retaining as much of your natural tooth structure as possible can save you from the discomfort and cost of crowns, bridges, dentures and implants down the line.

### ***Improved restorations***

Laser preparations have been shown to increase the bond strength of tooth-colored restorations, resulting in longer lasting fillings.

### ***Less bleeding and swelling***

The conservative, gentle cutting action of a dental laser produces less trauma to the body than a drill or scalpel. Laser incisions also coagulate far more quickly. Bleeding during or after the procedure is minimal, and there is far less post-operative swelling.

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## ***Can all my dentistry be done with a laser?***

Although a great many dental procedures can be performed with the laser alone, there are still some limitations to its applications. For example, dental lasers cannot be used to remove old fillings or cut through gold or other metal-based restorations. Certain types of contouring required in the preparation and adjustment of crowns and other restorations are also often best performed with a drill. However, an experienced laser dentist will often choose to use a laser in combination with other traditional techniques within the same appointment in order to take advantage of all the benefits lasers offer in overall healing, infection control, bleeding, and sensitivity.

For more information on the laser dental services Dr. Rich currently offers, please visit our *Laser Dentistry* treatment and services page.

### **References:**

Academy of Laser Dentistry: *A Brief Overview of Dental Lasers*

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Journal of Periodontology: *Comparison of Er,Cr:YSGG Laser and Hand Instrumentation on the Attachment of Periodontal Ligament Fibroblasts to Periodontally Diseased Root Surfaces*

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