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Lasers are being developed and used in many medical fields. The laser used on teeth and other hard tissue in the mouth is the Waterlase Er, Cr: YSGG laser. Here, Dr. Jeffrey R. DeMartino demonstrates how the Waterlase laser works.

Getting to the root

No pain, no Novocain with laser dentistry

EDITOR'S NOTE: This is the first in a two-part series about lasers in the field of health care. This week's story focuses on lasers in dentistry. Next week's story focuses on lasers in medicine.

By **AMY SATKOFSKY**
The Express-Times

Children who visit DeMartino Advanced Cosmetic and Laser Dentistry in Phillipsburg are not afraid of the dentist. They've likely never had their teeth drilled and they've probably never had to get a shot of Novocain before having a cavity filled.

A new laser that painlessly takes care of cavities is being used on this new generation of patients. The result is children who don't need to be dragged — sometimes kicking and screaming — into the dentist's office.

Carol Pintande of Easton, a dental assistant with the practice, says while the laser is great for children, it is used on adults, too. If the technology existed years ago, many adult generations would not have a major dentist phobia, she says.

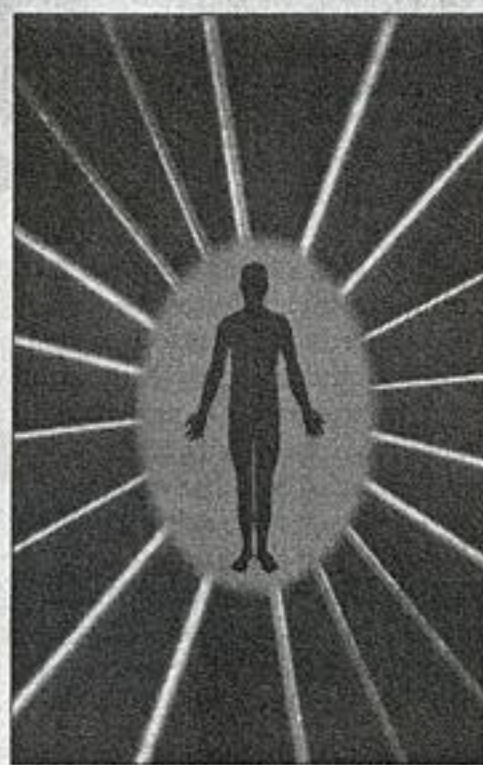
"My generation was terrified of the dentist," says Jeanne Hagen of Phillipsburg, who recently had a cavity fixed using the laser. "Today's kids won't be scared."

The new laser means there are no needles, no high-pitched whirring drill, no vibration, no pain, no reason for anxiety.

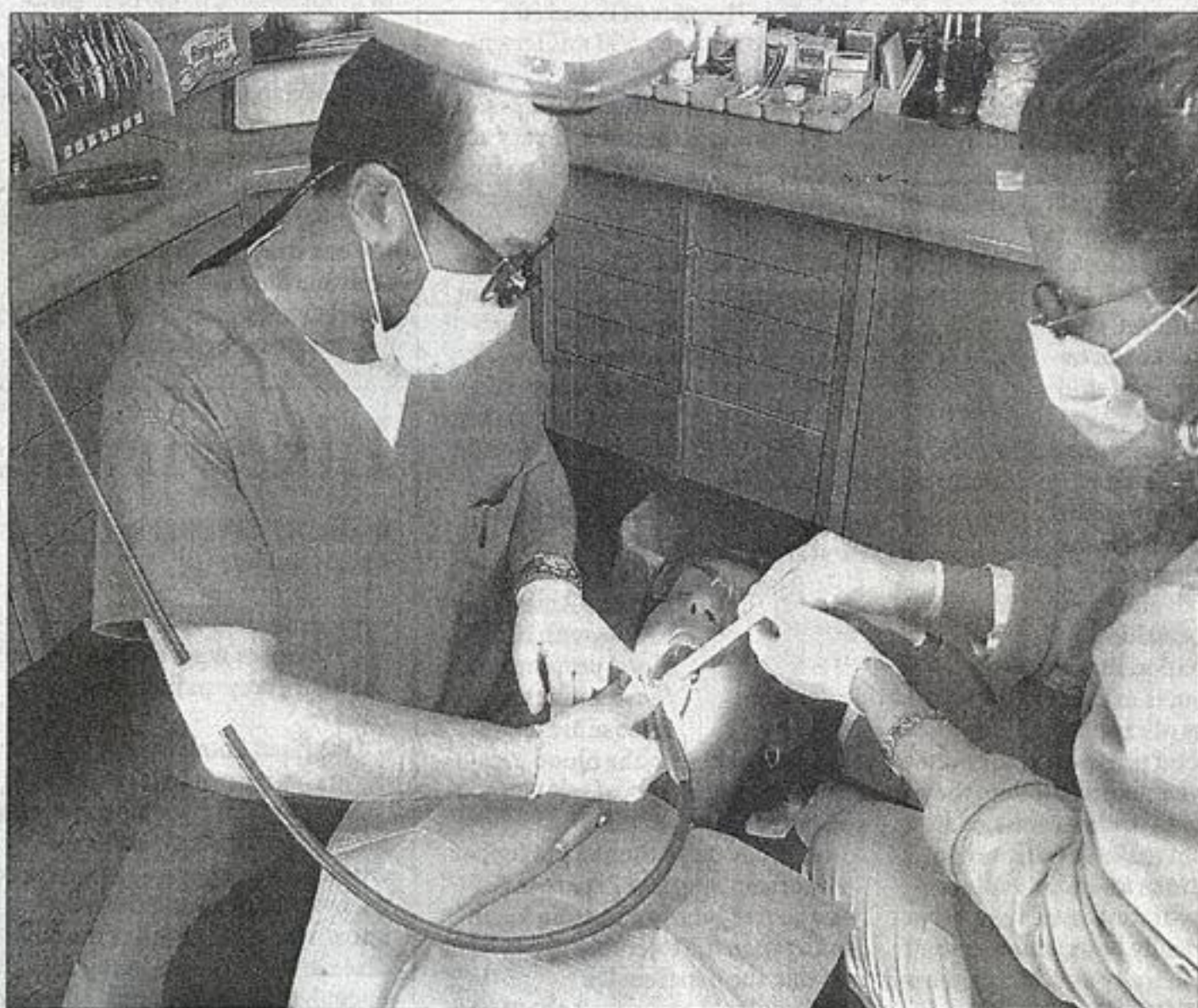
Hagen, herself, was never too scared of the dentist, but found waiting for Novocain to wear off from the traditional way of drilling and filling a cavity a little frustrating — especially since she usually schedules appointments first thing in the morning.

"It's hard to drink your morning coffee when you can't feel your lips," laughs the human resources director and vice president of Somerset Valley Bank.

Lasers that can be used on teeth have been making life easier for patients, dentists and dental assistants for about a year now. Prior to that, another type of laser — the Argon dental laser — was used for soft-tissue applications, like gum work. That laser, which has been around for about 10 years, is still occasionally used for such applications and allows for painless, bloodless, precise surgery on gum tissue. It also is used in teeth bleaching,



LASERS IN HEALTH CARE:
◆ Part I of a 2-part series.
◆ Next Thursday, lasers in medicine.



Dr. Jeffrey R. DeMartino, left, of DeMartino Advanced Cosmetic and Laser Dentistry in Phillipsburg eliminates the need for Novocain and the sound of a whirring drill when he uses the Waterlase laser on cavities. Patient Jeanne Hagen says the procedure is virtually painless. That's why DeMartino's assistant, Carol Pintande, right, says the laser is a great tool to use when treating children.

"People always wanted to know why we couldn't just use the Argon dental laser on their teeth for cavities, too," recalls Dr. Jeffrey R. DeMartino. "But that particular laser wasn't designed for that. We knew it was just a matter of time before a laser would be developed that could be used on teeth."

The Waterlase dental laser from Biolase Technologies Inc., introduced just a year ago, can be used on hard tissue, like teeth and bone, and on soft tissue, like gums. DeMartino says the practice, which he operates with his wife, Dr. Nelida Garcia-DeMartino, and his father, Dr. Gaeton J. DeMartino, was the first and is quite possibly the only dental practice to use the Waterlase locally.

Martino and his wife recently attended a symposium hosted by the World Clinical Laser Institute. The three-day meeting consisted of 300 dentists from all over the world discussing the latest techniques in the emerging specialty of laser dentistry.

Lasers are being developed and used in many medical fields, from dermatology and urology to gynecology and vascular surgery. Each field uses a few different types of lasers in many ways.

The Academy of Laser Dentistry reports more and more dentists are using lasers on soft and hard tissue and to detect cavities.

The Waterlase laser used on teeth and other hard tissue in the mouth is the Waterlase Er, Cr: YSGG laser. The letters stand for Erbium, Chromium: Yttrium, Scandium, Gallium and Garnet. The

proper combination of chemical elements creates a wavelength of energy, or laser.

The Waterlase uses a hydrokinetic process, meaning it uses water to divert the energy of the laser. The laser does not actually touch the teeth or gums but is focused on a stream of water the tool sprays out. It cuts through the water droplets which, in turn, remove the tooth decay.

"The only thing a patient feels is a little bit of water spraying against the tooth," DeMartino says, and Hagen confirms it.

"I literally did not feel a thing but a little bit of water," she says.

The process is painless for a few reasons. First, the tooth does not absorb any of the heat from the laser, since the laser doesn't touch the tooth. Traditional dental drills produce heat, and the heat, paired with vibration, irritates and inflames underlying nerves. The laser eliminates the heat and vibration factors, which means the patient is more comfortable during the procedure and has significantly less sensitivity following it.

Because it's painless, the laser requires no Novocain. That's a bonus for dentists, who no longer need to wait for patients to be numb before beginning a procedure. And it's nice for patients who don't need to wait for the numbness to go away.

Hagen says the best part about the new laser was being able to walk away from the short

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Jeanne Hagen
of Phillipsburg

LASERS

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appointment without being numb. But for DeMartino, the best part about the new laser is his enhanced ability to practice what he calls microdentistry.

"The Waterlase allows me to be much more precise and that means I can conserve as much of the tooth as possible," he says.

The laser preferentially removes softer structure, like tooth decay, faster than hard, healthy structure. "Any good dentist strives to be as conservative as

possible when it comes to removing decay," DeMartino says. "The laser makes that possible because it is so much more precise than a traditional drill."

Furthermore, laser treatment of the tooth surface increases hardness, making the tooth 50 to 72 percent more resistant to decay, he says. The laser also sterilizes the tooth as it removes decay. This combination means less chance of new decay under the filling and a decreased likelihood of needing future crowns and root canals.

The laser also eliminates what dentists call a "smear layer," or a very thin layer of dead organic ma-

terial that forms when a tooth is drilled. Eliminating the layer makes fillings bond more strongly to the tooth. "It makes the bond strength four to five times stronger," DeMartino says. "That means there's a much lower chance of a filling coming out at some point down the road."

The Waterlase can do everything the Argon laser was used for — painless, bloodless, precise gum work — plus it can do teeth, root canals and oral surgery involving bone structure. Even most root canals can be performed without Novocain when using the laser. "Movies and television have

portrayed root canals as being truly awful," DeMartino says. "It doesn't have to be that way anymore."

Another laser dentists are using is the Diagnodent laser, used to detect cavities in the very early stages.

"The Waterlase and Diagnodent lasers together are a perfect marriage," he says. "One detects decay, the other fixes it. It's a win-win situation."

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