

# SOUTHWESTERN NEWS

Contact: Shanna Swendson  
(214) 648-3404

## LASERS PROVIDE TREATMENT FOR MULTIPLE SKIN PROBLEMS

DALLAS — November 12, 1993 — Laser technology has entered everyday life: It is used to play compact discs, make photocopies and print computer documents. But all laser beams are not the same, and choosing the correct type can make a big difference when laser technology is applied to surgery.

Plastic and reconstructive surgeons and dermatologists at The University of Texas Southwestern Medical Center at Dallas use a variety of lasers in skin surgery to remove disfiguring birthmarks, enlarged blood vessels, so-called "age spots," warts and lesions, and even fade or remove tattoos.

The principle by which lasers work is fairly simple. Lasers emit light of a specific wavelength. "Each substance in the skin absorbs the energy of one wavelength more than others," explained Dr. Amit Pandya, assistant professor of dermatology at UT Southwestern.

For example, lasers designed to treat the excess blood vessels that cause port-wine stain birthmarks are targeted to the color red. "The red color in blood from oxygenated hemoglobin absorbs this light and heats the vessels inside out," said Dr. A. Jay Burns, UT Southwestern assistant professor of plastic surgery. "The light does selective damage. It goes through all the normal tissue to obliterate blood vessels."

Some medical lasers and their uses include:

- \* **Tunable-dye laser** used to treat enlarged blood vessels on the face caused by sun damage, as well as a condition called rosacea that causes red blotches on the nose and cheeks.

- \* **Copper-vapor laser** can be tuned to different wavelengths to be absorbed by melanin, the substance in the skin that causes freckles, "liver" spots and tanning. The laser can be used to remove the brown spots called *cafe au lait* maculae that appear on the face and neck. "The copper-vapor laser is a high-intensity laser that is very detail-oriented," Burns said. "It requires meticulous technique. I compare it to a fine pencil."

(More)

\* **Carbon-dioxide laser's** energy is absorbed by water. Because the body is made mostly of water, this laser will destroy everything in its path. "It's like a scalpel made of light," Pandya said. "It destroys tissue with a minimum of blood loss because as it destroys tissue, it seals blood vessels." It also is beneficial for working in delicate areas because of its tight focus.

The carbon-dioxide laser is often used to destroy warts and can precisely remove warts that are less than 1 mm in diameter.

It also can treat actinic cheilitis, a premalignant condition of the lips that can lead to cancer if left untreated. "The laser is the treatment of choice for this condition," Pandya said. "You can't treat it as well with a scalpel, which requires much more surgical time and damages more normal tissue."

\* **Q-switched Yag laser** is most frequently used for removing tattoos. It slowly fades tattoos over the course of several treatments. "The laser delivers high energy to the pigment in the tattoo, exploding the pigment particles to microscopic fragments the body can clear out," Pandya explained. The treatment usually is done without anesthesia and with little pain. "It's no more painful than getting the tattoo itself," Pandya said.

Four to eight treatments are required to remove a tattoo, depending on the size, the amount and kind of ink used, and whether it was applied by a professional or an amateur. Most tattoos fade significantly with treatment, but not all can be completely removed.

Burns also uses the Q-switched Yag laser to remove the pigmented nevi, or age spots, that develop on the arms and backs of hands. Most can be removed in one treatment. "These spots are acquired during life so they are more superficial," Burns said. "Now we are studying the use of this laser to remove congenital nevi, which are dermal and go deeper into the skin."

\* **Flash-lamp-pumped-dye laser**, also called the Candela laser, is used most often to remove port-wine stain birthmarks. These large red marks that usually occur on the face and neck are caused by an excess of blood vessels near the surface of the skin. The laser's energy is absorbed by the blood vessels, obliterating them.

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In children, the treatment is quite effective, but adults with untreated port-wine stains or birthmarks treated earlier by inferior lasers often must be treated with two different lasers. Many adults' birthmarks grow darker and acquire a pebbly texture over time. An initial treatment with the copper-vapor laser, followed by finishing work with the candela laser, results in an 80 percent fade of the entire lesion, Burns said.

"Specific lesions respond better to specific lasers, and at UT Southwestern we have them all," Burns said. "We can mix and match uses to be more specific."

UT Southwestern physicians perform laser surgery at Zale Lipshy University Hospital, Children's Medical Center of Dallas and the James W. Aston Ambulatory Care Center.

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