

## SPECIAL REPORT

# WOUND HEALING



Patient with cut index finger before (left three photos) and after six weeks of daily low-level laser therapy. (Photographs courtesy of Douglas Dedo, M.D.)

# Speed Healing

## Low-level laser heals wounds quicker

**San Diego** — Low-level (wattage) lasers hold great promise for accelerating wound healing, Douglas Dedo, M.D., said at the

American Academy of Facial and Reconstructive Plastic Surgery meeting.

“I found out about low-level lasers from Dr. Rodrigo Neira of Cali, Colombia,” Dr. Dedo said. “When Dr. Neira treated the postoperative wounds of liposuction patients with low-level lasers at 635nm, the patients had less pain, less bruising, and better results. It’s a red light, a thin beam about six-inches long, depending on how close you hold it to the skin.”

Dr. Dedo practices at Palm Beach Institute of Cosmetic Surgery and Longevity, Palm Beach Gardens, Fla.



Dr. Dedo

Dr. Dedo and his colleagues tried to reproduce Dr. Neira’s postoperative results in 135 patients undergoing liposuction. “It was not a double-blinded study,” he said. “If we did both thighs of one patient, one thigh would be treated with a laser and the other would not. We found that the patients had less pain and the liposuctions went smoother. Most of us felt that the laser-treated side had a better result.”

### Full-Thickness Wounds

With these results, Dr. Dedo began treating his postoperative facelift patients with the low-level 635 nm laser. “One had a facelift, then 10 weeks later I excised the cheek/lip (nasolabial fold area),” Dr. Dedo said. “Immediately postop and for two weeks I lasered the cheek/lip fold scars and not the facelift scars. When you look at the facelift scars at 12 weeks and the nasolabial fold scars at two weeks, the

nasolabial fold scars at two weeks are better than the other scars at 12 weeks.”

In another case, Dr. Dedo was asked to treat a cut index finger, the end of which had turned black. Dr. Dedo referred the patient to a hand surgeon who scheduled an office visit for the following Thursday afternoon. “The patient agreed that I could laser his finger Tuesday night, Wednesday morning, Wednesday night, and Thursday morning,” Dr. Dedo said. “On Thursday afternoon the hand surgeon took the dressing off the patient’s finger and said, ‘I don’t know what to do, so I am not going to do anything.’ Six weeks later the patient’s distal finger was intact with a fingernail growing.”

Dr. Dedo had similar success with a lip cancer patient. “It was a resection of the lower lip,” he said. “I removed three fourths of this man’s lower lip down to his chin. I rotated the cervical skin up and lined it with mucosa from the inside (two mucosal flaps), and took the staples out. By the seventh postoperative day, the flap was dead — black, like the index finger of the earlier patient. I lasered his lip for three to four months and now he has a functioning, competent lip.”

A 37-year-old woman came to Dr. Dedo

with a red and swollen nose. “She took off the bandage and the end of her nose was infected, red, and swollen,” Dr. Dedo said. “The columella was black and had a scab, black like the lip and the finger [of the earlier patients]. Her septum was eaten away and she had a cocaine nose.”

Dr. Dedo treated the patient with a low-level laser for two weeks and prescribed an antibiotic. “She came back two weeks later, the scab had fallen off, and she had a columella,” he said.

Dr. Dedo did not debride the wounds in these four patients. “The scab acts as a dressing and the skin contracts under the scab,” he said. “For the man with the lip cancer, when the epithelium had migrated across the wound to the other side under local anesthetic, I trimmed the epithelium away. I knew it would stop contracting if I didn’t and indeed the wound kept right on contracting.”

Dr. Dedo uses a solid-state diode laser, the Erchonia “cold” laser (Erchonia Medical) set at approximately 10 milliwatts. “It’s called ‘cold’ because it doesn’t burn you,” he said. “There is no spot size. It’s a red bar and no cooling unit is necessary. The laser is 1.5 times the size of a pamphlet a doctor hands out about procedures.”

The low-level laser Dr. Dedo uses costs about \$20,000.

Dr. Dedo said he is not aware of other lasers available for these treatments.

Dr. Dedo treats all his facial cosmetic and liposuction patients with this laser. “It’s been approved by FDA for pain management, but we also use it off-label for wound healing and laser liposuction,” he said.

Dr. Dedo said the success of low-level laser treatment has a solid theoretical basis. “According to quantum physics, each living cell or matrix has an inherent vibration, or coher-



Lip cancer patient before (left) and after three to four months of five-times-per-week low-level laser therapy.

ent radiation,” he said. “In the 1960s, a Ph.D. forecasted that organs have an inherent coherent radiation and they vibrate at a certain frequency. Based on this theory, if you take this light energy and flash it at different frequencies, you achieve different things. For example, at 3 hz (3 cycles per second), you reduce edema. At 24 hz, you reduce inflammation. At 111 hz, you turn the nerve off and control pain. In each case, the laser enters into resonance with different vibrations of the cells.”

#### Study Supports Efficacy

Animal and biochemical studies support the efficacy of low-level lasers in wound healing, Dr. Dedo said. “Working with rats, a Saudi Arabian group showed that treatment with a helium-neon laser at 632nm resulted in a 20-percent increase in the rate of healing and a 50-percent increase in the rate of contraction of identical wounds. Others have taken fibroblasts, cultured them, then exposed them to this wavelength. The fibroblasts increased proliferation and collagen synthesis increased. Studies also show that 632nm lasers increase macrophage activity, increase RNA and DNA synthesis, and promote blood vessel formation.”

Just before liposuction, Dr. Dedo infiltrates the tumescent solution, and his staff run the laser slowly over the same area of the

patient according to the Neira technique. “It’s a continuous light exposure for 10 to 12 minutes preoperatively and intraoperatively,” he said. “After liposuction, you put a compression garment on, and before the patient goes home you laser-treat the patient again. Postoperatively, I see the patient the next day, take the compression garment off, then treat with the laser four minutes for edema and inflammation and two minutes for pain.” Dr. Dedo monitors the amount of bruising and swelling, and, in four to six weeks assesses the smoothness of the skin.

Dr. Dedo said wound healing for necrotic flaps requires daily laser treatment. “The manufacturer has designed a prototype at-home laser in which the patient comes in, receives treatment, then goes home with the laser which has a set amount of time on it,” he said. “The patient lasers the areas that had surgery and returns the laser in a week.”

#### The Future

Dr. Dedo and colleagues plan to do more studies on low-level laser treatment. “The company and [we] are talking with the institutional review board about a blinded study,” he said. “Four of us across the United States are trying for 100 patients to see if we can demonstrate a difference between the treated and untreated patients.”

He said low-level-laser light energy is in its infancy. “It’s proven to my satisfaction that it markedly helps wound healing, especially in compromised wounds,” he said. “It can be used to decrease patient pain and speed up healing, and you get a better result. It’s a win-win situation for everybody.”

Dr. Dedo has no financial interest in Erchonia. His work was not supported by any organization. DT

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