

# Laser treatment improves appearance in burn scars, study shows

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In a collaboration among researchers at the University of Cincinnati (UC), Shriners Hospitals for Children–Cincinnati and Cincinnati Children's Hospital Medical Center, burn and skin specialists have shown that use of a pulsed-dye laser tool improves the appearance, texture and elasticity of burn scars.

The study, published online ahead of print in the journal [Dermatological Surgery](#), compared the use of the pulsed-dye laser and compression therapy on scars against compression therapy alone for pediatric burn patients.

Lead author and UC burn surgery researcher J. Kevin Bailey, MD, says it's the first time the laser has been shown to improve the condition of scars with this kind of objective data.

Though survival from severe burns has improved markedly in recent years, Bailey says multiple treatment options have been used for scar management with no clearly superior method. Instead, burn specialists relied on clinical judgment and experience to evaluate treatments, including the pulsed-dye laser.

"Based on subjective judgments, everyone says it works. I was not convinced," Bailey says.

Working with researchers in UC's surgery department and the university's James L. Winkle College of Pharmacy, along with [skin](#)

specialists at Cincinnati Children's, Bailey said he set out to prove whether the laser conclusively improved scars on several measurements of skin condition, including redness, elasticity and scar thickness.

Participants in the study were pediatric patients undergoing burn scar reconstruction with newly healed skin grafts. While patients had compression therapy across the length of the graft, researchers applied laser treatments to one half of their graft seam at six-week intervals.

Then, researchers evaluated the treatment areas using high-resolution digital photography, 3-D laser surface scanning of topography and standardized assessment of biomechanical properties, or measuring the elasticity of the scar.

Using the digital photographs, they counted the percentage of pixels showing redness in the image. With 3-D tomography, they measured the difference in height of the scar at each new treatment.

Each aspect of skin health showed improvement with combined laser and compression therapy.

"We standardized each step of the process," says Bailey. "For each photograph, we could see the average amount of redness in the scar. We can break skin down into numbers."

Marty Visscher, PhD, co-author and director of the Cincinnati Children's Skin Sciences Program, says the quantitative nature of the study allows it to have far-reaching implications, from further refining the best way to use the [laser](#) to evaluating new treatment options for patients.

She says the technique can be used not just for patients with severe burns, but also for minor burns or scars. It can also be taught across

specialties, allowing other clinicians to measure their patients' progress with skin treatments.

"For patients with burn scars, their self-esteem and integration into society is a huge factor in their well-being and quality of life," Visscher says. "In this case, we demonstrated a good way to determine if these treatments are working and how well they are working. It creates a framework to see if we can improve reconstruction even more for these patients."

Co-authors include: Shona Burkes and Randal Wickett, PhD, Winkle College of Pharmacy; Jennifer Whitestone, Total Contact, Inc.; and Richard Kagan, MD, Kevin Yakuboff, MD, and Petra Warner, MD, UC Department of Surgery and Shriners Hospitals.

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Provided by University of Cincinnati

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