

BURN CARE COMMENTARY[®]

WINTER 2020-2021



BURN AND RECONSTRUCTIVE
CENTERS OF AMERICA

FROM THE BURN CENTER

Using technology to heal lives of patients



BURNS LEAVE SCARS. The healed tissue is often a tangible, touchable sign that our patients have traversed the acute phase of their healing journey. Over the years, many techniques for addressing and revising scar tissue – whether the result of a burn, trauma, soft tissue disorder or other injury – have been added to our treatment options. While we address the needs of each patient individually (and form a personalized treatment plan based on those needs), historically we understood that the effectiveness of the scar treatment

was directly related to the invasiveness of the technique. In other words, the more invasive the procedure, the larger the impact. However, that also meant increased recovery time and higher risks of complication.

In this edition of Burn Care Commentary, we'll explore one of the newest ways to help alleviate the daily challenges scars pose to our patients: Lasers.

I can tell you from my experience using lasers on patients that we are making great strides in scar treatment. Rough, bumpy, red scar tissue can often be made smooth, soft and pliable, with very little redness. Itching and tightness virtually disappear. Functionality vastly improves.

I'm most proud of the changes made in the lives of our patients. I see them gain confidence with every treatment. I see them as we achieve that final part of our mission: Healing lives.

As a burn surgeon, my care and concern for my patients doesn't stop when their initial injury is healed. I'm not satisfied until we can return them to as much of their pre-injury life as possible. I don't want them to just live after their injury; I want them to thrive. The use of lasers to revise scars goes a long way toward helping achieve that goal. ♦

SHAWN FAGAN, M.D., FACS, is the Chief Medical Officer of Burn and Reconstructive Centers of America. During his career, he had performed laser procedures on thousands of patients and authored several studies, articles, and presentations on the effectiveness of the treatment.

Pandemic doesn't stop foundation from helping patients and families



While many things have come to a near halt during COVID, the needs of burn patients and their families have continued. And so have the Burn Foundation of America's efforts to meet those needs.

Since its inception in 1988, the Burn Foundation of America (BFA) has offered support to burn patients and their families during their initial hospitalization, transition home, and follow-up treatments – absolutely free of charge. In 2019, the foundation helped more than 2,400 burn patients and their families with things like lodging, anti-scarring garments, and transportation for follow-up medical visits.

This year, the foundation has had to make social distancing and safety accommodations for COVID, including changing the way we house families and adjusting to limited visitation policies. To help bridge these gaps, the foundation provided tablets for burn patients and their families to better enable video connections.

To find out more information or to make a donation, visit www.burnfoundation.net.



Laser use offers minimally-invasive scar therapy

OVER THE PAST 80 YEARS, ACUTE BURN CARE HAS IMPROVED survival to the point that now burns larger than 95% total body surface area are survivable. Unfortunately, the long-term implications of burn injury and grafting can result in extensive scarring and contractures, which can limit a burn patient's range of motion as well hurt, itch, and disfigure. These scars occur in up to 90% of burn patients and can be physically and socially debilitating for survivors, complicating their re-integration into society.

Through the decades, reconstructive and rehabilitative techniques have been developed to limit these scars and associated injuries, including compression garments, silicone sheeting, massage, corticosteroid injections, and surgery. Due to variability in a patient's response to treatment as well as the presentation of the burn scar, there is no

standardized protocol for treatment. While surgery can excise or reshape the burn scar, the revision procedure is invasive and can itself leave its own scarring. Further, recovery is measured in weeks to months.

One of the most recent additions to the options for scar treatment is the use of lasers. Laser scar therapy is a minimally-invasive treatment with a short recovery time that can help reduce pain, pruritus, need for surgery, and burn scar thickness. Range of motion and scar color, texture, and pliability are also improved with this treatment option with little scar recurrence.

"When we review the options for a patient, we consider all the procedures available," said Dr. Benson Pulikkottil, the Medical Director of Burn and Reconstructive Centers of America at Swedish Medical Center, near Denver,

CO. "Sometimes, the best option is surgical and may require us to be more invasive. Other times, we can choose to move forward with lasers. We've seen such amazing results from lasers that it is becoming our go-to option more often. Still, no matter the direction of the treatment plan, we want to make sure we leave our patients in the best condition possible."

THE BASICS OF SCAR FORMATION

Scars develop when excessive collagen fibers are deposited irregularly during a persistent or delayed acute inflammatory phase following the burn injury. Because burn wounds, especially those related to deep 2nd-degree and 3rd-degree injuries, often take longer to heal, they are at greater risk for developing scars.

Essentially, immature collagen (type III) is over-synthesized and elastin (the protein necessary for the skin to retake its shape) is absent during the healing process. This leads to an irregular collagen structure being formed during the healing, which ultimately results in hypertrophic scars. Hypertrophic scars are the most common sequelae, with a prevalence as high as 70-90%. These scars do not grow beyond the margins of the burn wound, mature within approximately 2 years, and do not recur after excision. Widespread and linear hypertrophic scars tend to require intervention.



Linear hypertrophic scarring



Before laser treatments



After laser treatments

In an effort to determine the optimal timing for laser therapy, surgeons must first assess the impact of the post-burn scar and its impact on the quality of life of the burn survivor. This has led to the development of scar scales and questionnaires to determine the impact post-burn as well as evaluate the scar for pigmentation, pliability, pain, itching, thickness, and other variables. The Vancouver Scar Scale (VSS) and the Patient and Observer Scar Assessment Scale (POSAS) are the two most commonly used scar scales. The VSS uses the judgement of an observer to assess pigmentation, pliability, and vascularity of the scar, and the POSAS uses the patient's perception of symptoms such as pruritus and pain as factors in assessing the burn scar. Although some of the sequelae of burn scars may diminish years after injury, pain and pruritus can linger in approximately 40% of burn survivors, and patient unhappiness with appearance and function persist.

THE USE OF LASERS

Various studies, including Anderson and Parish, 1983, and Castro et al., 1983, have proven the efficacy of lasers in the treatment of various skin-related issues, including hypertrophic scars and keloids.

Lasers used to treat hypertrophic burn

scars are classified as ablative or non-ablative lasers. Both trigger thermal damage at the depths targeted, but non-ablative lasers selectively damage the dermal layer while ablative lasers damage both the dermis and epidermis of the skin. Though they have a more favorable safety profile, non-ablative lasers have demonstrably less efficacy. This quandary led to the development of fractional lasers to offset the safety profile and efficacy of the ablative and non-ablative lasers. Subsequently, lasers have been classified as either non-ablative fractional resurfacing lasers or ablative fractional resurfacing lasers. Fractional lasers create micro-wounds in a non-contiguous pattern of up to 4 mm in depth to ablate burn scar tissue through energy pulses. This ablates the excessive and disordered type III collagen permitting it to be replaced by type I collagen in a more structured pattern and stimulating local tissue remodeling. These histological changes improve the texture and pliability of the skin. In targeting a fraction of the burn scar, the treatment allows neo-epithelialization from the surrounding tissues in a non-inflammatory state to improve the surface characteristics of the skin.

Non-ablative fractional lasers create microholes to selectively thermolyze the dermis while leaving the epidermis unaffected. While these lasers operate at a lower temperature than their

ablative counterparts, they are ideal for targeting less severe hypertrophic scars and patients with facial redness, birthmarks, and rosacea. Surgeons can use ablative fractional lasers for more severe scars. The surgeons across BRCA's network use a fractional CO2 laser system, which is an ablative fractional laser, as a first line treatment for symptomatic burn scars. This system can also be used to treat wrinkles as well as scarring associated with Moh's reconstruction in our centers.

"An important part of our mission is 'Healing Lives'. The use of fractional CO2 lasers truly helps us fulfill that aspect," said Shawn Fagan, BRCA's Chief Medical Officer.

THE PATIENT EXPERIENCE

Once lasers are determined as the preferred path of treatment, a patient is brought into the burn center for a same-day procedure and then anesthetized to eliminate any procedural pain. They awake with their scars treated and dressed, and ready to resume their lives after a few days. In our experience, our patients have dramatic improvement in color, texture, pliability, joint range of motion, pruritus, and ambulation.

Dr. Derek Culnan, who used lasers extensively while practicing at the JMS Burn and Reconstructive Center in Jackson, MS, said lasers help return burn patients to a quality, comfortable, and meaningful life.

"Patients who would have required extensive reconstructions with extended recoveries are now able to have their symptoms relieved with minimally impactful, well-tolerated laser procedures," said Dr. Culnan, who recently relocated to BRCA's newest location at Chippenham Hospital in Richmond, VA. "Patients are more willing to accept these brief, low inconvenience interventions that do not set back their recoveries." ♦



“Let me tell you about the good that has come out of it”

ON A MUGGY NIGHT IN NOVEMBER 2017, STACY FRANK WAS LEFT TO DIE ALONGSIDE A MISSISSIPPI BACKROAD.

“I had second and third degree burns on 40 percent of my body. Both my arms, my chest, and up to the very bottom of my cheek from the bottom of my lip down are burned,” said Stacy. “The doctors gave me only a 20 percent chance of living.”

She’d been kidnapped and set on fire by her ex-boyfriend, a man she’d sworn would no longer hurt her family. Under the guise of taking him to a bus station so he could leave, Stacy had joined him in a car. Along the way, he stopped and asked her to drive. As she rounded the back of the car, he struck – enveloping her in fuel and fire. She hit the ground and was eventually able to snuff the flames.

“He took off in the car and left me

there,” she said. “And I took off running in the opposite direction.”

Stacy spent 5 months, including 2 in a medically-induced coma, at the JMS Burn and Reconstructive Center at Merit Health Central in Jackson, MS. During her time at the burn center, she underwent several surgeries and began the process of physical rehabilitation.

“I almost lost my right arm but, thank God, they were able to save it. And I couldn’t hardly move my thumb at all. I mean it was like barely a wiggle when I first started out,” said Stacy. “I paint as a hobby, and I was upset because I thought I wouldn’t be able to paint again. But I’m actually back to painting now.”

Three years later, Stacy is moving forward with her life and trying to get back to normal as best as she can. She is going to the gym to get her body back in shape after the coma severely weakened her muscles. She is seeing

a therapist for her PTSD. And she is undergoing laser scar revision therapy.

“I started thinking about laser therapy right about the time I got my motor skills back,” she said. “I had my skepticism about it, but it’s miraculous. I have people who come up to me who can’t even tell I’ve been burned.”

JMS and BRCA surgeons use fractional lasers – a less invasive, multi-faceted treatment that not only changes the color and texture of scars, but helps soften them as well. For Stacy, this meant the return of elasticity to stiff areas of her body, which allowed for stretching and flexibility. It saved her from invasive surgery, which would have led to more physical therapy. In addition, laser treatments softened the tissue of her right ear to the point surgeons are now formulating a complete reconstruction plan.

Laser treatments also virtually eliminated the persistent, pervasive itching that accompanied Stacy’s scars. Prior to her treatments, no cream or pill could stop the itching that flared during the day and kept her up at night.

“(Now) it’s nothing compared to what it was. It was miserable,” said Stacy.

Stacy tells new laser patients she meets at her appointments at Merit Health Central to not expect results right away. But, she says, “I recommend anybody who is thinking about having laser surgery to just try it. The change comes gradually but, eventually, the scars will start to look and feel better.”

Today, Stacy is dedicated to telling her story, visiting jails and rehabilitation centers to advocate against domestic abuse. She hopes one day to write a book to share her experience with those living in risky situations or other burn survivors.

“When people ask about it,” Stacy said, “I say, ‘Yes, it was a horrible thing that happened but let me tell you about the good that has come out of it.’” ♦



Hardy follows interest in burn care to become Inaugural BRCA Burn Fellow

DR. KADE HARDY knew where medicine would take him: Back home.

“My plan before choosing burns was to return to a small town near home in Southwest Louisiana to join a small two-man, bread-and-butter general surgery practice,” he said.

Mid-way through his fourth year of residency all that changed. After signing on for a month-long rotation in burn surgery, Dr. Hardy was hooked.

“I went home and told my wife there may be a change of plans,” he said.

He found the patient care, surgical aspects, and overall field of burn surgery to be different than anything else he had experienced in his general surgery residency.

“What turned my attention onto burn surgery were the visible injuries, variety of patients, and aspects of continuity. The patients come in with small or possibly significant burns and

there’s no need to wait on CT scans or MRIs because you can actually see most of their injuries,” said Dr. Hardy. “Burn surgery also provides me the opportunity to build a relationship with the patients who return, on most occasions, throughout the months and years for more treatment or follow-up appointments.”

Today, Dr. Hardy is the inaugural BRCA Burn Fellow at the JMS Burn Center in Augusta, GA, where he is working with the most experienced multi-disciplinary burn team in America.

“The staff at the burn center are all very knowledgeable and care deeply about their patients,” said Dr. Hardy. “It was only after a few days, that I was sure the opportunity given to me with the burn fellowship at the JMS Burn Center in Augusta was going to be an absolute blessing for me and my family.”

Education, opportunity, and experience define BRCA’s burn fellowship. In addition to treating the nation’s largest burn patient population and accessing cutting-edge burn care technology, BRCA Fellowship participants gain experience in both adult and pediatric critical care, burn reconstruction, acute burn care, wound management, and more, all while gaining exposure to diverse topical and surgical treatment interventions.

“There are only a handful of burn fellowships across the United States,” said Dr. Shawn Fagan, BRCA’s Chief Medical Officer. “We see the importance of proper training in burn care on a daily basis. We also know this may be the only exposure to burn care these surgeons will get, and that could make all the difference to the patients they see in the future.”

To find out more information on BRCA’s Burn Fellowship or to apply, visit us at www.burncenters.com or forward your CV and references to Dr. Fagan at shawn.fagan@burncenters.com.

BRCA Foundation leads efforts to improve burn education

BURN EDUCATION
at BurnCenters.Cloud-CME.com

FOUNDED IN 2018, the BRCA Foundation works to improve burn care throughout the world. Our educational and outreach efforts allow healthcare professionals to provide specialized burn care across the nation as well as helps families to avoid the heartache of a devastating fire or burn injury. Emergency management personnel, nurses, and other healthcare professionals are able to expand their knowledge of burn care through continuing education and professional conference opportunities, such as our annual JMS Burn Symposium. The

BRCA Foundation focuses on providing burn prevention and fire safety programs to children of all ages. This includes activities and lessons starring Phoenix Powers - the superhero that helps children prevent burns. The BRCA foundation was founded on three principles: education, scholarship and community outreach which remain at the forefront of all of our initiatives. ♦

For more information, visit www.burnfdn.org.

TOPICS:

- + IVF Resuscitation
- + Initial Surgical Intervention
- + Emergency Burn Care
- + Initial Burn Wound Care and Assessment
- + Electrical Burn Overview
- + Chemical Burns
- + Airway Injuries
- + Airway Assessment and Management
- + Burn Dressing Application - 4 Modules (leg, arm, torso, head)
- + The Importance of Acute Therapies
- + Burn Nutrition
- + Preventing Complications

Online burn, hand and wound education resources, including CME and CE credits, are available at burncenters.cloud-cme.com. *CME/CNE/CE credits are not available for every course offered.*

SAVE THE DATE
FEBRUARY 28 - MARCH 1, 2021



JOSEPH M. STILL
BURN SYMPOSIUM

Château Élan | Braselton, Georgia



Joseph M. Still Burn Symposium is hosted by BRCA Foundation.

For more information, visit www.burncenters.com/symposium

**BURN AND RECONSTRUCTIVE CENTERS OF AMERICA IS
THE LARGEST BURN CARE NETWORK IN THE NATION**



COLORADO
AURORA
DENVER

FLORIDA
BRADENTON
BRANDON
MIAMI
TALLAHASSEE*

GEORGIA
ATLANTA*
AUGUSTA*
VALDOSTA*

IDAHO
IDAHO FALLS

MISSISSIPPI
JACKSON*

NEVADA
LAS VEGAS

SOUTH CAROLINA
CHARLESTON*

TEXAS
PLANO
SAN ANTONIO

VIRGINIA
RICHMOND

OUR SERVICES | ADULT & PEDIATRICS



**BURN AND
RECONSTRUCTIVE
CENTERS OF AMERICA**

OUR PROVIDERS ARE AVAILABLE 24/7 FOR CONSULTATIONS, REFERRALS AND TRANSFERS | 855-863-9595 | BURNCENTERS.COM |

BURNS

- + Chemical
- + Electrical
- + Friction burn/road rash
- + Frostbite
- + Inhalation
- + Radiation
- + Thermal

HAND & EXTREMITY INJURIES

- + Complex/traumatic injuries
- + Crush injuries
- + Degloving
- + Peripheral nerve
- + Replantation

**HYPERBARIC
OXYGEN THERAPY**

- + 24/7 coverage
- + Carbon monoxide
- + Dive complications
- + Wound healing

MICROVASCULAR SURGERY

**PLASTIC & RECONSTRUCTIVE
SURGERY**

- + Breast
- + Facial
- + Laser scar therapy
- + Scar revision

**SKIN & SOFT
TISSUE DISORDERS**

- + Diabetic wounds
- + Fournier’s gangrene
- + Necrotizing fasciitis
- + Necrotizing soft tissue diseases
- + Skin sloughing disorders
- + Staphylococcal scalded skin syndrome
- + Stevens-Johnson syndrome (SJS) / Toxic epidermal necrolysis (TEN)

CRITICAL CARE

- + Adult
- + Pediatric

Services vary by location