Laser Surgery for Traumatic Scars

Iris K. Rubin, MD

- Medical Director, Dermatologic and Vascular Laser
- Surgery Program, Children’s National Health System
- Assistant Clinical Professor of Dermatology, George Washington University
Traumatic Scars in Children

Functional impairments
Disfiguring, don’t look “normal”
A reminder of the unfortunate event that caused the scar
Source of potential psychosocial distress, affecting self esteem and quality of life
Facial scars particularly problematic
Laser For Traumatic Scars

Addresses functional, aesthetic outcome
Improves texture, pliability, pigmentary abnormalities, erythema, and hypertrophy
Improves symptoms, including pruritus
Reports improved range of motion
Best implemented in conjunction with current modalities
Lasers For Burn Scars

Anderson RR et al. *JAMA Dermatol.*, 2014;150:187-93
Fractionated Lasers: An Innovation in Laser Technology

- Pixilated pattern of injury
- Microscopic treatment zones
- Zones of normal tissue between MTZ promotes faster wound healing
- Ablative fractionated lasers help scars by removing portion of scar tissue, and stimulating dermal collagen remodeling
Laser for Hypertrophic Burn Scars

Prospective study 147 burn patients
Lasers implemented primarily pulsed dye laser, fractionated CO₂ laser
Vancouver Scar Scale decreased 10.43 to 5.16

Fractionated CO2 and “Laser Assisted Corticosteroid Delivery”

Series 15 patients with hypertrophic scars from burns, trauma, or surgery

Same session fractionated CO2 followed by immediate application of triamcinolone 10mg/ml or 20mg/ml

Enhanced drug delivery via ablative channels

Average overall improvement 2.73/3, based on photos baseline and 6 months

Fractionated CO2 and “Laser Assisted Corticosteroid Delivery”

Improved Mobility and Grip 10 Days Post Ablative Fractional Laser

Increased Range of Motion, Healing of Erosion Overlying Contracture

Collagen Remodeling Post Fractional CO2 Laser in Mature Burn Scars

• Biopsy before and 2 months after 3 treatments
• **Collagen type I/III profile resembling nonwounded skin**
• Improved collagen architecture

Source: Ozog DM et al. JAMA Dermatol 2013;149:50-7
“Laser scar therapy, particularly fractional ablative laser resurfacing, represents a promising and vastly underused tool in the multidisciplinary treatment of traumatic scars”

“Changes to existing scar treatment paradigms should include extensive integration of fractional resurfacing and other combination therapies guided by future research”
Fig. 1 – (A) This photo shows a 15-year-old boy 16 months after deep second degree flash burns to the face after a gasoline explosion. Notice the diffuse erythematous and raised hypertrophic facial scars. At this point he began laser treatment. (B) The patient is shown 4 years later after 13 pulsed dye laser treatments; the hypertrophy and erythema have almost completely resolved.
Who Can Be Treated

Any site
Any skin type
Stable epithelialized wound desirable
Questions: irubin@childrensnational.org
Thank you for your attention!