



Published in final edited form as:

J Burn Care Res. 2017 ; 38(3): 146–147. doi:10.1097/BCR.0000000000000548.

Scar Management Following Burn Injury

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Abstract

At the 2016 State of the Science meeting, clinicians and burn survivors met to discuss the advances in scar prevention, evaluation and treatment. While emerging evidence exists to support pressure garment treatment of scars and the use of silicone gel, further research is necessary to better delineate indications duration and efficacy of established therapies and to develop and test badly needed new treatments. More accurate and objective assessment of burn depth would assist in the prevention and identification of wounds requiring customized surgery. Laser treatment of scar while rapidly gaining popularity, still lacks high quality evidence as to its efficacy. The psychological impact of burn scars on the recovering patient is poorly appreciated and increased interaction with our patients is needed to more fully understand and address the impact on health related quality of life of their burn scars.

During a working group meeting at the 2016 American Burn Association's State of the Science conference, the topic of *Scar Management* was thoroughly reviewed. A panel of multidisciplinary burn care providers, scientists, and survivors shared their thoughts and prospective.

SCAR PREVENTION

The first topic the group entertained was preventing burn hypertrophic scarring. The gap of a consensus plan on the operative management was identified. A primer of operative management of burns would include guidelines for timing of intervention postinjury and additionally a prioritization by body site. Since the amount and severity of scar is thought

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Adapted from the 2016 State of the Science Meeting, Progress in Burn Research Acute & Rehabilitative Care, held February 22—23, 2016, at the Mandarin Oriental Hotel, Washington, DC.

to be a function of initial burn depth, deeper burns should be excised and grafted early. Despite this, very few centers are using objective measurements of depth such as LASER Doppler flowmetry despite its widespread availability. Guidance on graft type and excisional technique would be needed—or at best pros and cons for techniques based on anatomic site. Further the group identified a need for guidance in postoperative dressings and implications for scar formation. Specifically, negative pressure wound therapy may have advantages, allowing for early mobilization while maintaining adequate opposition of split thickness skin grafts but data are scarce.

The early usage of compression therapy was generally accepted as standard by the group; however, no written guidelines exist to describe standard of care and appropriate duration of therapy. A 12-year within-wound study demonstrated that pressure therapy was of benefit to moderate and severe scar.¹ Timing, duration of therapy, and pressure amount is without guidelines or consensus—and a position statement would be helpful to guide clinicians.

SCAR EVALUATION

Objective quantification of scar pathology and phenotype is lacking. Scar scales are helpful and easy to conduct; however, based on a review from 2010, conclusions about their validity still exist.¹ Research has been performed using ultrasound as an imaging modality to grade scar severity.² Similarly, perfusion has been purported as a useful metric to use for determining scar severity.³ Like with most complex cutaneous lesions, a multimodal device would be beneficial, allowing the capture of information about the extracellular matrix, pigmentation, vascularity, pliability, and cellular content. Importantly, burn survivors commented that no matter the score it was hard to capture the individual patient's perception of scar burden. There is also a need for a patient-reported scar outcome measure.

TREATMENT OF SCAR

There is little evidence in the literature to support interventions to treat scars. Although compression has demonstrated evidence in preventing scar formation,⁴ there is a need to better assess its efficacy as a treatment modality once the scar has formed. Given the challenges of compliance with compression treatment regimens, there is a need to establish additional evidence-based treatment options for burn scars. All other treatment options to date have not been assessed with rigorous research studies—randomized controlled multicenter clinical trials are needed to further clinical care. The only other treatment that has been examined in detail in the literature is silicone. A recent systematic review demonstrated modest evidence for the use of silicone gel and gel sheets in treating scars.⁵ For the most severely debilitating scars, surgical revision is offered; however, the planning and selection of procedure is determined on a case-by-case basis without consensus guidelines.

Other treatment options currently in clinical use but in need of further research include LASER ablation, topical or intradermal pharmacotherapy (eg, corticosteroids), cutaneous radiation, systemic pharmacotherapy (eg, interferon α), massage, and acupuncture. LASER, in particular, has become an increasingly common treatment modality. This is an example

where the literature has not caught up to clinical practice and therefore well-designed clinical trials are needed. In addition, burn survivors reported a desire for the scientific community to explore the usage of complementary medicine approaches, including massage and acupuncture for treatment of scars.

PSYCHOSOCIAL IMPLICATIONS OF SCAR

The burn survivors and clinicians in our workgroup emphasized the need to extend investigation of scars to include their psychosocial impact. This is an area without much current literature. There are needs on multiple fronts. Education is needed in the inpatient and outpatient setting to explain to patients and their families what scars are, why they form, how to prevent and treat them, and how to manage their potential psychosocial impact. The Phoenix Society has pioneered efforts to support burn survivors in three major clinical areas—peer support, body image, and social skills—and all of these initiatives apply to the psychosocial impact of scars. To best address these issues for burn survivors, increasing partnerships are needed between burn centers and the Phoenix Society. Shared knowledge, treatment approaches, and resources ultimately benefit burn survivors. The psychosocial impact of scars highlights the resources needed for the long-term care of burn survivors and the challenges they face in accessing these resources. Counseling, psychological support, and educational resources are often not supported by insurers. Geography is another obstacle some survivors face in accessing support.

The psychosocial impact of scars is hard to study as there are many different aspects of a burn that affect one's psychosocial state and therefore it is difficult to determine the explicit contribution of scarring. Additionally, burn survivors in our workgroup noted that there are individual psychosocial responses to scars that are not necessarily generalizable. Such varied responses to scarring may foster investigation into the factors that contribute to vulnerability as well as resiliency in order to optimize recovery. Overall, research is needed to examine the psychosocial impact of scars and interventions to help survivors manage their psychosocial impact.

ACKNOWLEDGMENTS

The 2016 State of the Science Meeting, Progress in Burn Research Acute & Rehabilitative Care (February 22–23, 2016, Mandarin Oriental Hotel, Washington, DC) was made possible through the support of the American Burn Association, the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), and Shriners Hospitals for Children. NIDILRR is a center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this publication do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.

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