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Hand burns occur commonly either as part of more extensive burn injuries or in isolation. Optimal management requires careful examination, appropriate wound care, timely surgical excision if warranted, and aggressive range-of-motion therapy.	
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Hand burns, in particular, are one of the leading causes of hand injury in children and can result in significant impairment of hand function. Appropriate initial management of hand burns in children is imperative to optimize function and minimize long-term scarring, and it is for this reason that the American Burn Association advocates referral of pediatric hand burns to a verified burn center.	
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The pathophysiology of true frostbite reveals that the direct injury produced during the initial freeze process has a minor contribution to the global tissue damage. However, rapid rewarming to reverse the tissue crystallization has essentially been the lone frostbite intervention for almost half a century. The major pathologic process is the progressive microvascular thrombosis following reperfusion of the ischemic limb, with the cold-damaged endothelial cells playing a central role in the outcome of these frozen tissues. Newer interventions offer the opportunity to combat this process, and this article offers a scientific approach to frostbite injuries of the upper extremities.	

The Use of Skin Substitutes in Hand Burns

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Richard Benjamin Lou and William L. Hickerson

Several skin substitutes are available that can be used in the management of hand burns; some are intended as temporary covers to expedite healing of shallow burns and others are intended to be used in the surgical management of deep burns. An understanding of skin biology and the relative benefits of each product are needed to determine the optimal role of these products in hand burn management.

Scar and Contracture: Biological Principles

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Peter Kwan, Keijiro Hori, Jie Ding, and Edward E. Tredget

Dysregulated wound healing and pathologic fibrosis cause abnormal scarring, leading to poor functional and aesthetic results in hand burns. Understanding the underlying biologic mechanisms involved allows the hand surgeon to better address these issues, and suggests new avenues of research to improve patient outcomes. In this article, the authors review the biology of scar and contracture by focusing on potential causes of abnormal wound healing, including depth of injury, cytokines, cells, the immune system, and extracellular matrix, and explore therapeutic measures designed to target the various biologic causes of poor scar.

Rehabilitation of the Burned Hand

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Marilyn L. Moore, William S. Dewey, and Reginald L. Richard

Successful outcomes following hand burn injury require an understanding of the rehabilitation needs of the patient. Rehabilitation of hand burns begins on admission, and each patient requires a specific plan for range of motion and/or immobilization, functional activities, and modalities. The rehabilitation care plan typically evolves during the acute care period and during the months following injury.

Reconstruction of the Pediatric Burned Hand

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Robert L. McCauley

Though the hand constitutes only 3% of the total body surface area, a burned hand is a major injury. Reconstruction of the burned hand is key to the overall rehabilitation of the burned patient. Whether an isolated injury, or part of burns to a large overall body surface area, loss of the hand represents a major functional impairment. The American Burn Association recognizes the importance of the burned hand by designating it a major injury. In addition, loss of the hand constitutes a 57% loss of function for the whole person. Thus, successful management of the burned hand is important.

Microsurgical Reconstruction of the Burned Hand

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Yvonne L. Karanas and Rudolf F. Buntic

Although most thermal injuries to the hand can be successfully managed with excision and grafting, deeper injuries may require microsurgical techniques to provide stable, durable coverage and the optimal functional result. In delayed reconstruction, thin pliable flaps can be used to resurface the hand or allow for contracture releases. Proper patient and procedure selection are critical to the success of microsurgical reconstruction.

Outcome Assessment After Hand Burns 557

Karen Kowalske

Overall outcome following hand burns is closely related to the depth of injury. Although even full-thickness burns tend to result in favorable outcomes, injuries to the deeper structures may result in some degree of impairment. Reviewing the existing literature on hand burns clearly demonstrates the need for validated measurement tools for the evaluation of hand burn outcomes.

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