

# Postburn Upper Extremity Occupational Therapy



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## KEYWORDS

• Upper extremity • Burns • Occupational therapy • Splinting • Edema • Hand • Scar management

## KEY POINTS

- The potential complications after an upper extremity burn injury can lead to loss of range of motion, joint contractures, and devastating functional limitations.
- A comprehensive occupational therapy program is essential in helping patients to regain optimal function after an upper extremity burn injury.
- Edema management, splinting, exercise, scar management, and activities of daily living are key elements of an occupational therapy treatment plan to achieve ideal postburn outcomes.
- Patient and family training is a vital component to successful carryover and recovery of function after an upper extremity burn.
- The pediatric burn patient population has additional considerations to be taken into account when treatment planning.

## INTRODUCTION

An upper extremity burn injury can lead to life-long functional limitations due to the many potential challenges encountered throughout recovery.<sup>1</sup> The unique anatomy of the upper extremity leads to specific concerns and considerations throughout rehabilitation.<sup>2</sup> Early occupational therapy (OT) interventions are essential to achieve best functional outcomes, particularly because the hand is among the most common areas for scar contracture development after a burn.<sup>3</sup> The potential complications after an upper extremity burn injury can lead to loss of range of motion (ROM), joint contractures, and devastating functional limitations. A comprehensive OT program is essential to help patients regain optimal function.

## INITIAL ASSESSMENT

A patient with an upper extremity burn should be assessed within 24 hours of a hospital admission

by an occupational therapist with burn-specific training. This initial assessment includes evaluation of upper extremity edema, ROM, strength, sensation, burn depth, total burn surface area (TBSA), mechanism of injury, and functional status. This physical assessment is completed in conjunction with obtaining social history, previous medical history, prior functional status, and identification of patient goals. Current cognitive status, caregiver support, and surgical plans are equally important factors to consider upon initial assessment and will directly impact OT goals. This information is compiled to create a therapy treatment plan of care with the intent to return the patient to a preinjury level of functional independence.

## TREATMENT

### *Edema Management*

Edema is a common problem after a burn injury and should be one of the first areas assessed. Extra fluid accumulates in the affected upper

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extremity, causing discomfort, ROM limitations, and increased risk of infection.<sup>1</sup> Patients with partial-thickness and full-thickness burn injuries are especially at risk for the development of persistent edema.<sup>4</sup> Edema should be evaluated and treated in the acute phase and continually re-evaluated throughout all phases of burn recovery (Fig. 1).

Assessment of acute edema includes a description of the areas affected and a general description of edema severity. Generally, if edema remains after 48 to 72 hours, detailed measurements may be taken to monitor progress. Bilateral proximal upper extremity edema is measured with use of a soft measuring tape, with measurements taken circumferentially at specific intervals. More specifically, the hand can be measured using the figure-of-8 method to more accurately record hand edema<sup>5</sup> (Fig. 2). Measurements are reassessed periodically to track progress throughout recovery to assess the effectiveness of OT edema management interventions.

Treatment of edema in an affected upper extremity is acutely managed with supportive positioning and elevation to promote fluid reduction. The goal is to elevate the arm above heart level as tolerated. Elevation of the upper extremity can be achieved by a variety of supports. For example, a foam wedge arm support can be used to position the arm and hand in the appropriate position. Alternatively, an intravenous (IV) pole with a stockinette to suspend the upper extremity can be used to promote fluid reduction (Fig. 3).

After the acute phase of edema, after 72 hours, the use of compression may be initiated for edema



**Fig. 1.** Extra fluid accumulates in the affected extremity, causing discomfort, ROM limitations, and increased risk of infection. (From Moore ML, Dewey WS, Richard RL. Rehabilitation of the burned hand. *Hand Clin* 2009;25(4):530; with permission.)



**Fig. 2.** The figure-of-8 method should be used to specifically record hand edema.<sup>3</sup> Measurements are reassessed periodically to monitor progress.

management.<sup>2</sup> Compression can be achieved with the use of edema gloves or self-adherent elastic wraps applied to edematous digits and/or hands (Fig. 4). Another option is the use of elasticized tubular bandages to provide even, continuous compression to affected upper extremities. After application of any type of compression, careful monitoring of the patient's tolerance must be observed to ensure patient's skin integrity is maintained. Compression should not limit a patient's participation in active use of the upper extremity.



**Fig. 3.** An IV pole with a stockinette can be used to suspend the upper extremity to promote fluid reduction.

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