

# Wound Care & Scar Management after Burn Injury

## Burn Injury Model System Consumer Information

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Burn survivors can become frustrated that they still have issues with scarring and wounds after their initial burn injury has healed. Hypertrophic burn scars (scars in the area of the original burn that are raised) are the most common complication of a burn injury and can limit a survivor's ability to function as well as affect their body image.

It is difficult to predict who will develop scarring. Research shows that less severe burns (also called superficial partial thickness burns) that heal in less than 10 days generally have no scarring. More severe burns (also called deep partial thickness burns) heal in 14 to 21 days and put you at a risk of scarring. Burns that take more than 21 days to heal (also called full thickness burns) and burns that require skin grafting are at high risk for scarring.

### Why do scars form?

Scarring is related to age, ethnic origin, and the severity, depth and location of the burn. Scars form when the dermal or lower layer of the skin has been damaged, as in the case of a burn. The body forms a protein called collagen to help heal the damaged skin. Normally the collagen fibers are laid down in a very organized manner, but in hypertrophic scars these fibers are created in a very disorganized manner, which gives the new skin/scar a different texture and appearance.

Scar healing can take a long time. Scarring usually develops within the first few months after the burn, peaks around 6 months and will resolve or "mature" in 12-18 months. As scars mature they fade in color, become flatter, softer and generally less sensitive.

### What are hypertrophic burn scars?

Hypertrophic scars:

- Stay within the area of the original burn injury.
- Develop within the first few months after the injury.
- Often have a deep red to purple color and are raised above the surface of the skin.
- Can be warm to the touch, hypersensitive and itchy.
- Are more prominent (noticeable) around joints where skin tension and movement are high.

### Common problems with hypertrophic scars

- Scars across joints can cause a decrease in your ability to move. These are called contractures.

- Itching can lead to scratching and skin breakdown.
- People with visible scars may feel self-conscious around others and avoid social situations. This can lead to isolation, depression and lower quality of life.
- Scars can be dry and result in cracking or breakdowns in the skin (ulcerations).
- Scars are more sensitive to sun and chemicals.

## Contractures

Contractures can affect your ability to move and take care of yourself. If your contractures involve your legs, you may have difficulty squatting, sitting, walking or climbing stairs. If your contractures involve your trunk and arms, you may have difficulty with self-grooming, eating, dressing and bathing as well as working with your hands. Some contractures are unavoidable, but many can be prevented with active involvement in your rehabilitation program. Here are a few reminders:

- Stretching should be performed a minimum of 5-6 times per day. To make stretching easier, first moisturize your scars with a moisturizer recommended by your doctor.
- Your therapist may make a cast or splint to help position your scar in a stretched position. It is important that you wear the cast or splint as prescribed and tell your therapist if it becomes painful or causes skin irritation.
- Do as much for yourself as possible such as getting dressed and self-grooming. It may take longer than you are used to, but movement and activity will improve your ability to move and take care of yourself.

## Itching

Burns can damage or destroy the oil glands that normally keep skin from getting too dry. Partial thickness burns have few oil glands and full thickness burns or skin grafts have no oil glands. The lack of oil glands leads to dry itchy scars.

Many patients experience intense itching after their burn. Studies have shown that the larger the burn, the more likely that itching will be a problem.

**Ask your doctor for recommendations on what moisturizer is best for you.** Moisturizers with a high water content—such as those that come in a bottle—generally soak into the skin faster and will need to be applied more frequently. Moisturizers that come in a tube or jar are generally thicker and have less water, so they need to be applied less frequently. Be sure to avoid products that you may be allergic to, such as perfumed lotions.

- Moisturizers can be applied to all healed areas frequently throughout the day.
- Moisturizers should be applied in thin layers and massaged in gently while the scars are more fragile. As your scars mature, you can begin to add more pressure to help your scars loosen so that they are not so stiff.
- Try to avoid soaking in a hot bath tub or using perfumed soaps as these will further dry your skin and add to your itching.
- Itching may be relieved somewhat with pressure garments and topical or oral antihistamines. Talk to your doctor about how to use antihistamines safely.
- You should never use mineral oil, Vaseline or antibiotic ointments to moisturize your skin. These can lead to allergic reactions and skin breakdown.

## Sun exposure

You should avoid exposing your healing scars to sunlight. Scars that are discolored and have not matured burn easily. If you go out in the sun, we recommend:

- Planning activities in the early morning or late evening when the sun is the least intense.
- Use a sunscreen with an SPF of at least 15 or wear protective clothing to minimize the exposure of your skin.
- Reapply your sunscreen every couple of hours that you are outside.

## Treatment of hypertrophic scars

You will need to work closely with your doctor and therapy team to make sure your scars heal as completely as possible. A strong commitment

is required from you and your family member to follow through with the treatment plan to ensure the best scar result.

No single treatment is ideal for treating scars. For many years, custom pressure garments were thought to be the best treatment for hypertrophic scars, but recent research has shown that pressure garments do not make any difference in how well scars heal.

- If you and your medical team decide to use **custom pressure garments**, they should be worn 23 out of 24 hours/day. Even though the use of pressure garments may not improve your scar, they can decrease itching and protect the skin from injury. Some burn survivors also feel that the pressure garments look better than the scars themselves.
- **Silicone gel sheets** are pieces of thin, flexible medical grade silicone that are placed over the scars and may decrease itching and dryness. They are generally durable and comfortable to wear. They can be worn alone or underneath pressure garments, splints or casts. Some people find they are sensitive to silicone, so check your skin frequently for irritation or rashes.
- Your therapists may recommend **custom-made inserts** to be worn under gloves, compression bandages or custom garments to increase pressure on the scar and improve healing. These inserts can be made from a variety of substances, ranging from soft foam to a rubber consistency.
- **Massage can help soften and desensitize the scar.** When combined with stretching, massage can make the scar looser, softer and more comfortable. Talk to your therapists to learn about specific massage techniques.
- **Surgical treatment** is also an option if scarring prevents you from performing certain activities. It is important to stay in contact with your treating burn physician for evaluation.

### Scar tissue wounds

Scar tissue is fragile and easily damaged or injured. Once your primary burns have healed, your healed skin is vulnerable and you may experience skin breakdowns or wounds. Rubbing

can create blisters. Bumping your skin can create skin tears or ulcerations. Sometimes you may not even notice that your scar tissue has been damaged, so it is important to check your skin often. These wounds generally become less frequent over time as your scars mature and become more resistant to injuries.

### Blisters

- Blisters are most commonly caused by a shearing or rubbing force on the scar. Blisters can develop from clothes that fit too tightly, rubbing while putting on your pressure garments, or rubbing a burn that itches.
- Blisters should be pierced and drained as soon as you notice them. Use a sterile needle to make a small hole, drain onto a piece of gauze and then put a little antibiotic ointment on the area.
- If a blister opens up, you might need to bandage it with a non-stick dressing. *Adaptic* or *Xeroform* are two commonly used non-stick dressings that you can find at most pharmacies.
- Do not use adhesive bandages or tape that is difficult to take off because your skin might tear when trying to remove it.

### Skin Tears

- Skin tears happen most often when you bump into something such as a doorway, a counter top or a piece of furniture. They can also be caused by scratching.
- If the area bleeds, put firm pressure over the wound for about 5 minutes until the bleeding stops.
- Wash the area gently and thoroughly with mild soap and water.
- Use a small amount of antibiotic ointment and a non-stick dressing such as *Xeroform* or *Adaptic*, and allow the wound to heal.
- If the surrounding area becomes red and warm, you might have an infection. Contact your physician for further evaluation.

### Ulcerations

- Ulcerations are breakdowns in the skin that usually occur across bands of scar tissue around your shoulder, the front of your elbow and the back of your knee.

- These areas can be difficult to heal since physical movements such as exercise can cause the wound to continuously crack open or get bigger.
- Keep the wound covered with a thin film of antibiotic ointment, especially when you are exercising and stretching.
- If the wound continues to crack open, enlarge or deepen, your health care provider may recommend a splint or cast so the wounded area is kept still for a day or two.

### Allergic skin reactions

- Be sure to let your doctor know if you have any skin allergies.
- Allergic skin reactions can be caused by changing the type of lotion or soap that you use or by the elastic in your compression garments.
- If you have an allergic skin reaction, discontinue all soaps, lotions and ointments for 2-3 days.
- Once the reaction has gone away, soaps and moisturizers may be reintroduced one at a time.

### What can you do?

- Be actively involved in your recovery by asking questions and participating in decision-making about your care. Take a list of questions or concerns to your medical appointments for your health care provider to address.
- Always keep your skin clean and well moisturized.
- Keep up your exercise program as recommended by your doctor.
- Massaging your scars with lotion will keep them moist, make them less sensitive and make your stretching easier. It may also prevent skin breakdown.
- It is important to follow your providers' instructions for using pressure garments, inserts, splints or silicone gel sheets. If they do not fit properly or cause problems such as pressure or skin breakdown, let your health care provider know right away.

The healing process can often seem long and frustrating for a burn survivor and his or her

family. If you have concerns or questions about your healing process or treatments, contact your health care providers.

**Additional Resources for garments and scar products:** For more information regarding compression garments, wound care and scar management products, please contact your doctor or therapist so that they can make recommendations based on your specific needs.

### References

- Anzarus, A., Olson, J., Singy, P., Rose, B., Tredget, E. (2009). The effectiveness of pressure garment therapy for the prevention of abnormal scarring after burn injury: a meta-analysis. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 62.77-84.
- Durani, P., McGrouther, D.A., Ferguson, M.W.J. (2009) Current scales for assessing human scarring: A review. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 62.713-720.
- Edwards, Jacky. (2005) The use of silicone gel in hypertrophic scar management. *Journal of Community Nursing*, 19.12.18-20.
- Esselman, Peter C. (2007) Burn Rehabilitation: An Overview. *Archives of Physical Medicine and Rehabilitation*, 88.2. S3-S6
- Gabriel, Vincent. (2011). Hypertrophic Scar. *Physical Medicine and Rehabilitation Clinics of North America*, 22,301-310.
- Urioste, S., Arndt, K., Dover, J. (1999). Keloids and Hypertrophic Scars: Review and Treatment Strategies. *Seminars in Cutaneous Medicine and Surgery*, 18.2.159-171.
- Williams, F., Knapp, D., Wallen, M. (1998). Comparison of the characteristics and features of pressure garments used in the management of burn scars. *Burns*, 329-335.

### Source

Our health information content is based on research evidence whenever available and represents the consensus of expert opinion of the Burn Injury Model System directors.

### Authorship

*Wound Care and Scar Management after Burn Injury* was developed by Sandra Hall, PT, Karen Kowalske, MD, and Radha Holavanahalli, PhD, in collaboration with the University of Washington Model Systems Knowledge Translation Center.

### Disclaimer

This information is not meant to replace the advice from a medical professional. You should consult your health care provider regarding specific medical concerns or treatment.