

Scar Revision — Surgical Treatments for Scars

Scars whether they are caused by accidents or by surgery are unpredictable. The way a scar develops depends as much on how your body heals as it does on the original injury or on the surgeon's skills. Many variables can affect the severity of scarring, including the size and depth of the wound, the blood supply to the area, the thickness and color of your skin, post injury infections and the direction of the scar. How much the appearance of a scar bothers you is, of course, a personal matter.

If your skin is cut there is a very high probability you will scar. There are three common types of scars that patients do not like. A widened or depressed scar, the hypertrophic scar and the keloid. Widened or depressed scars are more common over anatomical points that bend like elbows, knees and the trunk. A hypertrophic scar is a scar that raises up within the confines of the scar and then with treatment flattens out. Hypertrophic scars respond to treatment frequently. A keloid is a scar that grows into normal tissue. Keloids are very difficult to treat often requiring multi-modality therapy like steroid shots, surgery and radiation. Complete resolution of a keloid even following multi-modality therapy may occur on one third of the time.

While no scar can be removed completely, plastic surgeons can often improve the appearance of a scar, making it less obvious through the injection or application of certain medications or through surgical procedures known as scar revisions.

Many scars that appear large and unattractive at first may become less noticeable with the passage of time. Some can be treated with steroids to relieve symptoms such as tenderness and itching. For these reasons, many plastic surgeons recommend waiting as long as 6 months to a year or more after an injury or surgery before you decide to have scar revision. If you're bothered by a scar, your first step should be to consult a board-certified plastic surgeon. Be frank in discussing your expectations with the surgeon, and make sure they're realistic. Insurance usually doesn't cover cosmetic procedures. Check your policy or call your carrier to be sure.

Keloids are thick, itchy clusters of scar tissue that grow beyond the edges of the wound or incision. Keloids occur when the body continues to produce the tough, fibrous protein known as *collagen* after a wound has healed. Keloids can appear anywhere on the body, but they're most common over the chest, on the earlobes, and on the shoulders. They occur more often in dark-skinned people than in those who are fair complected. The tendency to develop keloids lessens with age. Keloids are often treated by injecting a steroid medication directly into the scar tissue to reduce redness, itching, and burning. In some cases, this will also shrink the keloid. If steroid treatment is inadequate, the keloid can be cut out. Immediate post operative radiation therapy to the area is helpful to prevent recurrence of the keloid. No matter what approach is taken, keloids have a stubborn tendency to recur, sometimes even larger than before. It is important to follow-up after treatment as additional steroid injections may be required. Or you may be asked to wear

a pressure garment over the area for as long as a year. Even so, the keloid may return, requiring repeated procedures.

Hypertrophic scars are often confused with keloids, since both tend to be thick, red, and raised. Hypertrophic scars, however, remain within the boundaries of the original incision or wound and do not grow out into the surrounding tissues. They often improve on their own though it may take a year or more or with the help of topical steroid applications or injections. If a conservative approach doesn't appear to be effective, hypertrophic scars can often be improved surgically. The plastic surgeon will remove excess scar tissue, and may reposition the incision so that it heals in a less visible pattern or area.

Deep burns or other injuries resulting in the loss of a large area of skin may form a scar that pulls the edges of the skin together, a process called contraction. There is often a loss of range of motion associated with a contracture. The resulting contracture may affect the adjacent muscles and tendons, restricting normal movement. Correcting a contracture usually involves cutting out the scar and replacing it with a *skin graft* or a *flap*. In some cases a procedure known as *Z-plasty* may be used to lengthen the scar area. And new techniques, such as *tissue expansion*, are playing an increasingly important role in burn contracture treatment. If the contracture has existed for some time, you may need physical therapy after surgery to restore full function.

Because of its location, a facial scar is frequently considered a cosmetic problem, whether or not it is hypertrophic. There are several ways to make a facial scar less noticeable. Often it is simply cutting out a widened or depressed scar and leaving a thinner, less noticeable scar. If the scar lies across the natural skin creases (or "lines of relaxation") the surgeon may be able to reposition it. Some facial scars can be softened using a technique called resurfacing, often done with a laser or mechanical device.

Z-plasty is a surgical technique used to reposition and lengthens a scar. It can also relieve the tension caused by contracture. Not all scars lend themselves to Z-plasty. While Z-plasty can make some scars less obvious, it won't make them disappear. A portion of the scar will still remain outside the lines of relaxation.

Skin grafts and flaps are more serious than other forms of scar surgery. They are usually performed when severe scarring is present following burns or trauma. They're more likely to be performed in a hospital as inpatient procedures, using general anesthesia. The treated area may take several weeks or months to heal, and a support garment or bandage may be necessary for up to a year.

Grafting involves the transfer of skin from a healthy part of the body (the donor site) to cover the injured area. The graft is said to "take" when new blood vessels and scar tissue form in the injured area. In addition, all grafts leave some scarring at the donor and recipient sites.

Flap surgery is a complex procedure in which skin, along with the underlying fat,

blood vessels, and sometimes the muscle, is moved from a healthy part of the body to the injured site. In some flaps, the blood supply remains attached at one end to the donor site; in others, the blood vessels in the flap are reattached to vessels at the new site using microvascular surgery.

Skin grafting and flap surgery can greatly improve the function of a scarred area. The cosmetic results may be less satisfactory, since the transferred skin may not precisely match the color and texture of the surrounding skin area. In general, flap surgery produces better cosmetic results than skin grafts in most patients.