

ACNE SCARS AND THEIR TREATMENT

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What is Acne?

Acne is a very common skin ailment affecting almost 80% of people during their teens and twenties. It is characterized by increased sebum or oil secretion (seborrhea), causing different lesions such as blackheads and whiteheads (comedones), pimples (papules/pustules), nodules (large papules) and in some cases scarring. Although many people recuperate from acne without any permanent effects, some people are left with disfiguring acne scars. There are some topical skin care products and medications that can improve mild scarring, but most acne scars are treated with a combination of surgical procedures and skin resurfacing.

Where does acne occur commonly?

Acne affects areas with the highest concentration of sebaceous glands like face, the upper part of the chest, and the back.

At what age is acne common?

Acne occurs most commonly during adolescence, and often continues into adulthood.

What are acne scars?

Acne scars are the result of inflammation within the dermis portion of the skin caused by acne. The scar is created by the wound trying to heal itself resulting in too much collagen in one spot. After an acne lesion has healed, it can leave a pinkish/reddish/brownish/blackish mark on the skin. This is actually not a scar, but rather a post-inflammatory change. The redness or blackening is seen as the skin goes through its healing course, which takes about 6-12 months. If no more acne lesions emerge on that area, the skin can heal normally. Any color change or skin defect still present after 1 year is considered to be a permanent defect or scar.

How is acne scar caused?

Scars result from a wound or injury. Scars are part of the skin's normal healing process. Generally, superficial wounds heal without scarring. It is when the dermis is damaged that scars form on the skin.

Acne scars are most often the product of an inflamed lesion, such as a papule, pustule, or cyst. Inflamed blemishes occur when the follicle, or pore, becomes engorged with excess oil, dead skin cells, and bacteria. The pore swells, causing a break in the follicle wall. If the rupture occurs near the skin's surface, the lesion is usually minor and heals quickly. More serious lesions arise when there is a deep break in the follicle wall. The infected material spills out into the dermis, and destroys healthy skin tissue.

To repair the damage done to the dermis, the skin forms new collagen fibers. Collagen is the fibrous protein that gives the skin its strength and flexibility. Unfortunately, the finished "repair job" never looks as smooth and flawless as before the injury.

As the wound heals, the body sometimes produces too much collagen, which creates a mass of raised tissue on the skin's surface. This type of scarring is called hypertrophic, or keloid, scarring.

More commonly, acne causes atrophic, or depressed, scars. Atrophic scars develop when there is a loss of tissue. Ice pick and boxcar scars are two examples of atrophic scars.

Inflammation is the single greatest gauge of scar development. The greater the inflammation on the skin, the more likely scarring is to occur. Deep breakouts that take a long time to heal also increase the chance of scarring. Blackheads, whiteheads, and other non-inflamed blemishes typically don't cause scarring because these types of lesions don't injure skin tissue.

Can we prevent acne scars?

Best way to prevent acne scar, is to treat acne early and properly. Other than that a few simple measures may help:

1. Use of effective sunscreens
2. Using tretinoin under the advice of a dermatologist. This speeds up the skin's remodeling process and helps heal post-inflammatory changes.
3. Using Alpha-Hydroxy Acids (AHAs) and under the advice of a dermatologist.
4. **Picking at scabs should be avoided at all costs.** Scabs form to guard the healing procedure that is going on below them. Pulling a scab off before it is ready hampers the healing and remodeling process which in turn lead to formation of scar.

What are the different types of acne scars?

There are several classifications of acne scars. To put it simply:

1. *Ice pick scars*: Deep pits that are the most common and a classic sign of acne scarring.
2. *Box car scars*: Angular scars that usually occur on the temple and cheeks, and can be either superficial or deep, these are similar to chickenpox scars.
3. *Rolling scars*: Scars that give the skin a wave-like appearance.
4. ***Hypertrophic scars*: Thickened, or keloid scars.**

How are these scars treated?

The treatment can vary depending on type of scar, and the treating dermatologist. Broadly the following schedule is followed:

1. Ice-pick scars

Ice-pick scars are slim, pointed scars that make the skin appear it has been punctured with an ice-pick. They are usually narrower than 2 mm and extend into the deep dermis or subcutaneous layer. Ice-pick scars are usually treated with TCA CROSS technique. In this, trichloroacetic acid is applied to the floor of the scar, resulting in gradual filling up of the depth.

2. Boxcar scars

Boxcar scars are round to oval depressions that have sharp vertical edges. Unlike ice-pick scars they do not get thinner to a point at the base. Shallow boxcar scars are 0.1-0.5 mm in depth and can

usually be treated with conventional skin resurfacing techniques such as fractional laser or microdermabrasion. Deep boxcar scars are >0.5 mm in depth and require full-thickness treatment techniques.

3. **Rolling scars**

Rolling scars occur as a result of tethering of otherwise normal-appearing skin to the subcutaneous tissue below. This process gives the skin a rolling, undulating or wave-like appearance.

Conventional skin resurfacing techniques do not work on rolling scars. They must be corrected by breaking up the subcutaneous fibrous bands, by a process called subcision.

4. **Hypertrophic scars**

Hypertrophic scars are raised and lumpy. They are likely to appear on the back and chest, but can also appear on the neck and face. They are often the result of more severe acne lesions, such as cysts or nodules. Hypertrophic scars generally stay within the boundary of the original wound, and may decrease in size as time goes on. Keloid Scars (a type of hypertrophic scarring), on the other hand, may scar beyond the original wound site. They can be corrected by local injection of steroids

How to correct acne scars?

There are many procedures that can be used to correct acne scars. Each procedure has its own risks and benefits, and several procedures are normally combined to create the smoothest appearing skin.

- **Dermal Fillers**

There are many types of dermal fillers that can be injected into acne scars to raise the surface of the skin and give a smoother look. Examples of dermal fillers are fat, bovine collagen, human collagen, hyaluronic acid derivatives, and polythethyl-methacrylate microspheres with collagen. The injection of these materials does not everlastingly correct acne scars, so further injections are required.

- **Punch Excision**

This technique of surgically correcting acne scars is used on deep scars such as ice-pick and deep boxcar scars. This procedure uses a punch biopsy tool which is basically a round, sharp tool that comes in diameters ranging from 1.5 mm to 3.5 mm. The size of the tool is matched to the size of the scar to include the walls of the scar. Under local anesthesia the scar is excised with the punch tool and the skin edges are sutured together. The newly produced scar eventually fades and may not be noticeable. If it is noticeable, it is more amenable now to resurfacing techniques.

- **Punch Excision and Punch Replacement**

With this method the scar is excised with the punch tool as above. Instead of suturing the skin edges together, the defect is filled with a punch skin graft usually taken from behind the ear. With this procedure a color and texture difference may be noticeable, but a skin resurfacing technique can be used 4-6 weeks after the grafting to correct this difference.

- **Punch Elevation**

This method of surgically correcting acne scars is used on deep boxcar scars that have sharp edges and normal appearing bases. The same punch tool as above is used to excise the base of the scar leaving the walls of the scar intact. The excised base is then elevated to the surface of the skin and attached with sutures, steri-strips, or skin glue called Dermabond. This method lessens the risk of color or texture

differences as can be seen with graft replacement, and lessens the risk of producing a visible scar as can be seen when wound edges are sutured.

- **Subcutaneous Incision or Subcision**

Subcutaneous incision, also known as Subcision, is used to break up the fibrous bands that cause rolling scars. Subcision is performed under local anesthesia by inserting a specially beveled needle under the skin so that it is parallel to the skin surface. Staying in the plane between the dermis and the subcutaneous tissue, the needle is gently advanced and retracted in a piston-like motion cutting the tethering bands. This procedure causes bruising which fades after about 1 week. The risks of subcision include bleeding and the formation of subcutaneous nodules. Bleeding can be controlled with proper use of anesthetics and bandaging, and the subcutaneous nodules can be treated with injection of corticosteroids into the nodule.

- **Laser Resurfacing**

Laser resurfacing has become a popular treatment for many skin defects. The most popular laser types used for resurfacing of acne scars are the carbon dioxide (CO₂) and Erbium:YAG (Er:YAG) lasers. Lasers work by essentially burning the top layers of skin to a specific depth. The skin then heals replacing the burned layers with newer appearing skin. Recently a new type of laser called fractional laser has become available and this is safer than conventional lasers.

- TCA CROSS as described above is application of trichloroacetic acid for ice pick scars.
- Other techniques include microdermabrasion, which is described separately.