

# Recommendations

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## Standard guidelines of care for acne surgery

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### ABSTRACT

Acne surgery is the use of various surgical procedures for the treatment of postacne scarring and also, as adjuvant treatment for active acne. Surgery is indicated both in active acne and post-acne scars. **Physicians' qualifications:** Any Dermatologist can perform most acne surgery techniques as these are usually taught during postgraduation. However, certain techniques such as dermabrasion, laser resurfacing, scar revisions need specific "hands-on" training in appropriate training centers. **Facility:** Most acne surgery procedures can be performed in a physician's minor procedure room. However, full-face dermabrasion and laser resurfacing need an operation theatre in a hospital setting. **Active acne:** Surgical treatment is only an adjunct to medical therapy, which remains the mainstay of treatment. Comedone extraction is a process of applying simple mechanical pressure with a comedone extractor, to extract the contents of the blocked pilosebaceous follicle. Superficial chemical peel is a process of applying a chemical agent to the skin, so as to cause controlled destruction of the epidermis leading to exfoliation. Glycolic acid, salicylic acid and trichloroacetic acid are commonly used peeling agents for the treatment of active acne and superficial acne scars. **Cryotherapy:** Cryoslush and cryopeel are used for the treatment of nodulocystic acne. Intralesional corticosteroids are indicated for the treatment of nodules, cysts and keloidal acne scars. Nonablative lasers and light therapy using Blue light, non ablative radiofrequency, Nd:YAG laser, IPL (Intense Pulsed Light), PDT (Photodynamic Therapy), pulse dye laser and light and heat energy machines have been used in recent years for the treatment of active inflammatory acne and superficial acne scars. Proper counseling is very important in the treatment of acne scars. Treatment depends on the type of acne scars; a patient may need more than one type of treatment. Subcision is a treatment to break the fibrotic strands that tether the scar to the underlying subcutaneous tissue, and is useful for rolling scars. Punch excision techniques such as punch excision, elevation and replacement are useful for depressed scars such as ice pick and boxcar scars. TCA chemical reconstruction of skin scars (CROSS) (Level C) is useful for ice pick scars. Resurfacing techniques include ablative methods (such as dermabrasion and laser resurfacing), and nonablative methods such as microdermabrasion and nonablative lasers. Ablative methods cause significant postoperative changes in the skin, are associated with significant healing time and should be performed by dermatosurgeons trained and experienced in the procedure. Fillers are useful for depressed scars. Proper case selection is very important in ensuring satisfactory results.

**Key Words:** Acne scars, Scar revision, Laser resurfacing, Dermabrasion, Subcision

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Evidence - Level A- Strong research-based evidence- Multiple relevant, high-quality scientific studies with homogeneous results, Level B- Moderate research-based evidence- At least one relevant, high-quality study or multiple adequate studies, Level C- Limited research-based evidence- At least one adequate scientific study, Level D- No research-based evidence- Based on expert panel evaluation of other information

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## INTRODUCTION

Acne is a common disorder affecting the pilosebaceous unit, clinically characterized by the presence of comedones, inflammatory papules, pustules and sometimes, nodules and cysts arising commonly during adolescence and causing great psychosocial stress.<sup>[1,2]</sup> Unfortunately, acne scarring is common and occurs early in the course of the disease. It is one of the most common causes of facial scarring and treating acne scars is one of the most challenging cosmetic procedures. Acne surgery is mainly indicated for the treatment of acne scars. However, it can also be used as an adjuvant therapy to medical treatment for the treatment of active acne. Understanding the basic pathogenesis of acne and the various types of acne scars is essential to optimize surgical treatment in acne. As there is no single, ideal procedure; multiple techniques are often required in combination to get the best results.

### Definition

Acne surgery is the use of various surgical procedures for the treatment of postacne scarring and as adjuvant treatment for active acne.

### Rationale and Scope

These guidelines identify the indications for surgical treatment in acne, various procedures that can be utilized, methodology, associated complications, and expected results.

### Indications of Acne surgery

- A. Active Acne
- B. Post-acne scars

## PHYSICIANS' QUALIFICATIONS

### 1. General

The physician should

- a. Be a trained Dermatologist.
- b. Have knowledge of the skin and subcutaneous tissue, including structural and functional differences, and variations in skin anatomy of the facial cosmetic unit.
- c. Understand the basic pathogenetic mechanisms of acne and post-acne scarring.
- d. Know all aspects of wound healing.
- e. Be well versed in all aspects of medical therapy of treatment of acne and postoperative complications such as prolonged erythema, postinflammatory hyperpigmentation, impending scarring etc.

### 2. Specific

The physician should have

- a. Appropriate hands-on training and experience in chemical peeling, cryotherapy, intralesional therapy, punch excision techniques, elliptical excision and resurfacing techniques. Dermabrasion for the whole face is a major procedure and needs proper training in an approved centre under an experienced dermatosurgeon.
- b. Hands-on training and experience in the use of Er:YAG laser, CO<sub>2</sub> laser and nonablative lasers is desirable.

## COUNSELLING

Proper counseling is extremely important and should include the following:

- Evaluation of psychological aspects and judging the motivation and expectations of the patient.
- Imparting realistic expectations to the patient.
- Explanation of the nature of treatment, expected outcome and to downplay the degree of improvement expected.
- Information about time taken for recovery of normal skin and importance of maintenance regimens.
- Discussion of side effects, likely complications, particularly pigmentary changes.

It is important to ensure proper counseling to bring down expectations of the patients who are often misled by the media.

## RECOMMENDATIONS

**A. Active Acne:** Surgical treatment is only an adjunct to medical therapy, which remains the mainstay of treatment. The aim of treatment is a quicker resolution of lesions, thus reducing inflammation and minimizing scarring. However, some experts believe scarring may increase if not done with due precautions.

Grade 1: Predominantly comedonal acne  
Comedone extraction  
Superficial chemical peels

Grade 2: Predominantly inflammatory papules  
Cryotherapy  
Laser and light therapy

Grade 3: Predominantly inflammatory pustules  
Cryotherapy

## Nonablative lasers and light therapy

Grade 4: Nodulo-cystic acne

Incision/drainage of cysts with phenolisation

Intralesional corticosteroids

Cryotherapy

## COMEDONE EXTRACTION: (LEVEL D)<sup>[3,4]</sup>

It is a process of applying simple mechanical pressure with a comedone extractor, to express the contents of the blocked pilosebaceous follicle.

After cleansing with spirit, the comedone extractor is centred over the comedone and firm downward pressure is applied along the direction of the hair follicle to express the contents.

For closed comedones, the top of the lesion is first pierced with a 21 G needle to make extrusion less traumatic.

Undue force, which could increase inflammation and lead to potential scarring, should never be applied.

## SUPERFICIAL CHEMICAL PEELS: (LEVEL B)<sup>[4-7]</sup> *also see guidelines on chemical peels*

Superficial chemical peeling is a process of applying a chemical agent to the skin so as to cause controlled destruction of the epidermis leading to exfoliation, followed by resurfacing, without causing scarring. Peeling of the skin leads to reduction in comedones and postinflammatory pigmentation as well as improvement of superficial scars.

Peeling agents used in acne:

1. Salicylic acid 20-30% is the peeling agent of choice in acne as it has keratolytic and anti-inflammatory properties. As it is lipophilic in nature, it can easily penetrate the pilosebaceous apparatus.

**Advantages:** It is safe as it is self-neutralizing and dermal penetration is minimized. It forms a pseudo-frost, which is easy to visualize, making it easy to apply evenly. It is effective in all grades of active acne because of its comedolytic and anti-inflammatory properties.

**Disadvantages:** It can cause salicylism if applied on large areas (such as the back) leading to systemic absorption. It is contraindicated in pregnancy and in patients allergic to aspirin.

2. Glycolic acid 20-35%

**Advantages:** It is well tolerated and does not produce systemic toxicity. It is an effective peeling agent even when used in lower concentrations and has a long shelf life.

**Disadvantages:** There is great patient variability in terms of reactivity and efficacy; it is difficult to obtain a standardized solution. Sometimes, there is difficulty in judging the end point as there is no frosting, while erythema can be hard to appreciate in dark-skinned patients. Application for proper duration (usually three minutes) is therefore important. Dermal wounds, pigmentation and scarring can occur at higher concentrations. It is expensive and has to be neutralized with sodium bicarbonate.

3. Trichloroacetic acid 10-15%

**Advantages:** It is inexpensive, stable, easily available and easy to prepare. The peel depth correlates with the intensity of the frost and the end point is easy to judge. There is no systemic toxicity and no need of neutralization.

**Disadvantages:** Higher concentrations  $\geq 35\%$  can cause scarring. Postinflammatory hyperpigmentation is common, particularly in dark-skinned patients and hence, patients should be warned about this side effect.

4. Jessner's solution containing resorcinol 14 g, salicylic acid 14 g, lactic acid 14 g and ethanol added to make 100 mL.

## CRYOTHERAPY (LEVEL C)<sup>[8]</sup>

Cryoslush and cryopeel are used for the treatment of nodulocystic acne. In the cryoslush method, solid carbon dioxide is crushed and a few drops of acetone are added to make a paste. This paste is rapidly applied to the lesions with a gauze ball for 2-10 seconds. Superficial peeling is achieved due to epidermal necrosis, which causes desquamation of comedones, resolution of inflammatory papules, pustules, nodules and cysts. In the cryopeel method, a spray of liquid nitrogen is used for 2-3 seconds, instead of a CO<sub>2</sub> slush. However, pigmentary changes are commonly observed, particularly in darker skinned patients. Persistent erythema and scarring may also occur.

Indian patients, particularly those from south India, tend to be dark-skinned and hence, this procedure should be used carefully only after proper counselling of the patient.

## INCISION/DRAINAGE/ASPIRATION OF CYSTS (LEVEL D)

Aspiration of cysts, with or without phenolisation, is indicated for a quicker resolution of cystic lesions in order to minimize scarring. After surgical cleansing, the cysts are drained by making a fine nick with a no. 15 surgical blade. The walls of the cysts are cauterized with 88% phenol applied on a fine swab stick and neutralized with povidone-iodine. Intralesional and perilesional triamcinolone acetonide 5-10 mg/mL is injected to reduce fibrosis and scarring.

## INTRALESIONAL CORTICOSTEROIDS (LEVEL C)<sup>[9]</sup>

Intralesional corticosteroids are indicated for the treatment of nodules and cysts. They reduce inflammation, cause rapid involution and minimize scarring. Injection triamcinolone 10 mg/mL is diluted with lignocaine 1% or sterile water for injection to constitute 2.5-5 mg/mL after surgical cleansing. A no. 26 needle is introduced in the lesion at the non-dependent part and a small quantity is injected into the lesion and perilesional tissue. If the cyst is tense, the contents are drained by aspiration or incision and drainage before injecting. If there is incomplete resolution, intralesional injection may be repeated after three weeks. Complications are uncommon and include hematoma, infection, atrophy or hypopigmentation.

## NONABLATIVE LASERS AND LIGHT THERAPY (LEVEL B)<sup>[10-12]</sup>

Blue light, nonablative radiofrequency, Nd:YAG laser, IPL (Intense Pulsed Light), PDT (Photodynamic Therapy) and Pulse dye laser are the newer treatments available for the treatment of active acne. Other light-based systems such as light and heat energy machines, have also been used to treat active acne. These are new treatments, expensive and useful only in selected patients.

## POSTACNE SCARS

Scarring due to acne is common, depending on the severity of acne and delay in appropriate treatment. Acne scars are polymorphic and different type of scars can occur in the same patient. The morphology of each scar must be assessed, and treatment designed according to the types of scars, overall appearance and expectations of the patient. The patient must be adequately counseled that the goal of treatment is improvement rather than perfection, as deep acne scars cannot be entirely eliminated.

## CLASSIFICATION OF ACNE SCARS<sup>[13-17]</sup>

1. Macular-Erythematous: Erythematous macules due to resolving inflammatory acne lesions
  - Hyperpigmented: Hyperpigmented macules due to postinflammatory hyperpigmentation. They are more common in darker skinned patients and in those who pick their lesions (acne excoriee).
2. Depressed-Ice pick: These are sharp, deep, depressed scars, wider at the surface and narrow at the base.
  - Rolling: These are distensible, depressed scars with gentle sloping edges.
  - Boxcar: These are shallow or deep, punched out scars, wide at the surface and the base.
3. Elevated-Hypertrophic: These are elevated, fibrotic scars, more common in males and frequently seen in the mandibular area of the face and back.
  - Keloidal: These are keloids developing in acne lesions. They are seen more often in males, on the back and chest.
  - Papular: These scars are raised, papular and fibrotic, most commonly seen on the chin and nose.
  - Bridging scars and sinus tracts: These are multiple linear scars, joined together by epithelial tracts containing foul-smelling products of sebum.

## PREOPERATIVE ASSESSMENT

- a. History should include detailed general medical history. Specific history should include herpes simplex, recent isotretinoin treatment in the last six months (in patients in whom resurfacing and deep peels are planned), keloidal tendency, current medications, previous surgical treatment, immunocompromising conditions, smoking and degree of sun exposure.
- b. Examination should include general physical examination. Cutaneous examination should include skin type, presence of keloid or hypertrophic scar, presence of infection and activity of acne.
- c. Preprocedure recommendations are essential at least 2-4 weeks prior to the procedure, particularly in cases in whom resurfacing is planned with laser/deep peels:
  - Control active infection if any. Antiviral therapy with acyclovir or famciclovir beginning two days prior to the procedure and continued for 7-10 days until complete healing, may be required in patients with a history of herpes simplex. Preprocedure treatment with sunscreens, topical retinoid, hydroquinone and glycolic acid, is mandatory in patients with a

tendency for pigmentation.

- d. Documentation should include a consent form and photographs. Photography is mandatory in all patients in whom resurfacing is planned with laser and dermabrasion, chemical peels and also with other procedures.

## TREATMENT

### 1. Subcision (Level B)<sup>[18]</sup>

The principle of this procedure is to break the fibrotic strands, which tether the scar to the underlying subcutaneous tissue. It is useful mainly for rolling scars. The scars are marked with a marking ink or pen. Local infiltration anesthesia with 2% xylocaine is desirable. A no. 18 or 20 gauge needle (or nokor needle if available) is inserted adjacent to the scar with the bevel upwards parallel to the skin surface, into the deep dermis and moved back and forth and in a fan-like motion under the scar, to release fibrous bands. Individual depressed scars are treated using multiple puncture sites. Hemostasis is achieved by applying pressure. Care is taken to avoid the preauricular, temporal and mandibular areas in order to avoid injury to branches of the facial nerve and major vessels. Postoperative hematoma is a common complication after this procedure and may need application of ice and administration of non-steroidal antiinflammatory drugs (NSAIDs).

### 2. Punch excision techniques (Level B)<sup>[17,19]</sup>

These techniques are utilized for depressed scars such as ice pick and boxcar scars. According to the diameter of the scar, a biopsy punch of appropriate size is used to excise the scar.

- i. Punch excision and closure: If the scar is > 3.5 mm in size, it is excised and sutured after undermining, in a direction parallel to the relaxed skin tension lines.
- ii. Punch incision and elevation: If the depressed scar has a normal surface texture, it is incised up to the subcutaneous tissue and elevated to the level of the surrounding skin.
- iii. Punch excision and grafting: Depressed pitted ice pick scars up to 4 mm in diameter, are excised and replaced with an autologous, full-thickness punch graft. The donor site is commonly the postauricular region or the buttock. Care should be taken to avoid cobblestoning, which is a common complication.

These punch excision techniques are followed by resurfacing

to achieve optimum results.

**TCA chemical reconstruction of skin scars technique (Level C):**<sup>[20-22]</sup> Recently, the application of trichloroacetic acid (95%) has been advocated for the management of ice pick scars. In this technique, 95% TCA is applied with a toothpick on the ice pick scar and pressed against the floor of the scar for one full minute. This produces necrosis of the floor, which heals and results in elevation of the floor.

### 3. Resurfacing Techniques: Ablative

- i. Dermabrasion
- ii. Laser abrasion
- iii. Medium-depth chemical peels

**Recommendation:** All the ablative resurfacing techniques are associated with considerable morbidity, significant healing time and potential complications of pigmentary dyschromias in patients of dark skin. These techniques need considerable skill, both in their practice and in the management of the side effects. Hence, they should be undertaken only by a dermatosurgeon who has received proper training and has experience in these techniques, in a patient who has been counseled properly and is well motivated.

#### *Dermabrasion (Level B)*<sup>[23,24]</sup>

Dermabrasion is a sequential planning of the skin to the desired level, from the epidermal to dermal layers, using an electrical dermabrader. A manual dermabrader may be used for spot dermabrasion only. Re-epithelization takes place from the wound margin and appendageal remnants of the sebaceous glands, sweat glands and hair follicles. As the face is rich in these glands, it is best suited for dermabrasion, and healing is faster than in non-facial areas.

While spot dermabrasion can be done under local anesthesia in the physician's office, full-face dermabrasion needs an operation theatre facility in a hospital setting with access to emergency resuscitation.

After adequate counseling, patient evaluation, informed consent and priming of the skin, dermabrasion is carried out with an electric dermabrader for more even dermabrasion. Anesthesia may be topical or infiltrative using 1% lignocaine with adrenaline.

After surgical cleansing, the scars are marked, the skin is stretched and dermabrasion is done to the level of the base of the scars. The maximum level up to which dermabrasion can be done to prevent scarring is the junction of the upper

and mid-reticular dermis. This is seen as larger bleeding points, firmer surface and breaks in parallel lines and ridges.

Mechanical dermabrasion with a manual dermabrader can be used to feather the edges and at uneven places. Homeostasis is achieved with pressure and by ice-cold saline sponges. It is always better to under-abrade than over-abrade. Nonadherent dressings are used and are changed after one week.

Crusting takes 7-10 days to subside, depending on the depth of dermabrasion.

Infections, persistent dyschromias, hypo- or hyperpigmentation, erythema and scarring can occur as complications.

The use of dermabrasion has declined with the advent of laser resurfacing. However, the highly predictable results, minimal morbidity, and cost-effective equipment that require hardly any maintenance ensure that dermabrasion still plays an important role as a resurfacing tool. Proper patient selection and surgical skill are important prerequisites for a successful cosmetic outcome.

*Laserabrasion (Level A)<sup>[25-27]</sup> for details also refer to guidelines on CO<sub>2</sub> laser*

The lasers used for ablative resurfacing are the CO<sub>2</sub> laser (10,600 nm, scanned, superpulsed or ultrapulsed modes), Er:YAG laser (2940 nm) and a combination of the two. These high-energy pulsed lasers emit short pulses of light to remove thin layers of the skin precisely in a single pass, with minimal damage to surrounding tissue. The CO<sub>2</sub> laser removes approximately 30-50 microns leading to epidermal ablation, thermal dermal contraction, and stimulation of new collagen along with dermal remodeling. To reduce complications of pigmentary changes, especially in darker skin, single or few passes are done and the eschar is left in place as a natural dressing. Healing occurs in 7-10 days.

The Er:YAG laser causes less thermal damage, removes 2-5 microns of tissue per pass and hence, requires two to three passes to ablate the epidermis. It also causes less collagen shrinkage and more bleeding. The advantage is that it causes less erythema and pigmentary changes, with a quicker recovery time as compared to the CO<sub>2</sub> laser.

Full-face resurfacing in dark-skinned patients (such as those encountered in south India) is associated with a significant

risk of postoperative pigmentation, which may persist for several weeks. Proper counseling of the patient is therefore essential.

The techniques of subcision, punch excision techniques and resurfacing are sequentially combined to give optimal results. More often, resurfacing is done 6-8 weeks after punch excision techniques.(Level C). However, the procedures may also be combined in a single session to shorten the total duration of treatment (level D).

*Medium-depth chemical peels*

Medium depth and deep phenol peels, though useful for acne scarring, are not recommended for dark skins, type IV-VI due to a high risk of prolonged or permanent pigmentary changes. Hence they are better avoided. (See chapter on chemical peels)

*Radiofrequency machines too have been used for resurfacing, although the advent of laser machines has resulted in the infrequent use of this technique for this purpose.*

#### **4. Resurfacing techniques-nonablative or minimally ablative**

- i. Microdermabrasion
- ii. Nonablative lasers and light therapy systems

*Microdermabrasion (level B)<sup>[28,29]</sup>*

Microdermabrasion is a superficial, office-based, minimally invasive technique of mechanical abrasion of the skin using a pressurized stream of abrasive particles such as aluminum oxide crystals. It may also be performed with a disposable or reusable diamond tip. There is superficial wounding of the skin, followed by epithelialization, stimulation of epidermal cell turnover and it may also cause stimulation and remodeling of dermal collagen. It is mainly indicated for the treatment of superficial acne scars and is ineffective for deeper scars. It is contraindicated in the presence of active infection and concurrent dermatoses on the face. The patient must be adequately counseled regarding the limitations of the procedure, the need for multiple sittings and expected outcome and complications. Contact lenses should be removed and eye protection is important to prevent stray particles from entering the eyes. After degreasing and cleansing the skin, the machine parameters are set with pressure levels from 10-30 mm of Hg depending on the thickness of the epidermis, the depth required and number of passes planned. The key to effective microdermabrasion is stretching the skin under tension for effective abrasion and achieving a vacuum to aspirate the epidermal debris

and used crystals. The handpiece is then moved over the treatment area in a sweeping, outward motion covering each cosmetic unit. Thicker skin over the forehead, nose and chin can be treated more aggressively, while delicate areas such as eyelids should be avoided. A second pass of treatment can be done in a direction perpendicular to the first pass, except on the neck where treatment should be in a vertical direction. The desired endpoint is erythema while focal acne scars are treated more aggressively. The area is wiped with wet gauze to remove residual crystals and a moisturizer or topical antibiotic is applied. Treatment is repeated weekly until the desired result is obtained. Erythema, edema, infection, purpura, pigmentary changes and scarring can occur. If eye protection is not adequate, eye complications such as conjunctival congestion, crystals adherence to the cornea, and superficial punctate keratopathy can occur. Thus, microdermabrasion is a safe procedure particularly in darker skin and requires no downtime. It has the limitations of requiring multiple sittings with maintenance therapy and the inability to improve deeper scars.

#### *Nonablative resurfacing lasers (Level B)<sup>[30-35]</sup>*

Nonablative resurfacing lasers cause dermal wounding and remodeling without epidermal damage. They may be used for atrophic acne scars; however, multiple treatments are required and clinical efficacy is variable. These lasers include 1320 nm Nd:YAG laser, (Cooltouch, ICN Pharmaceuticals, Costa Mesa, CA, USA), 1064 nm Nd:YAG laser (Softlight, Thermolase London, UK), 1450 nm Diode laser (Smooth Beam Diode, Candela Wayland, MA, USA), 585 nm flashlamp-pumped pulsed-dye laser (ICN Pharmaceuticals) and 1540 nm Er:glass laser (Aramis-Quantel, Clermont-Ferrand, France). They are used with a cooling system to prevent epidermal damage. They may be used in combination with other modalities like microdermabrasion and ablative resurfacing procedures.

These machines are new and still need proper evaluation.

#### **5. Soft Tissue Augmentation (Level B)<sup>[36]</sup> (see guidelines on fillers for details)**

The popularity of soft tissue augmentation with dermal fillers and autologous fat implantation is increasing because of minimal downtime, immediate results and availability of an array of newer agents. It is mainly indicated for the treatment of soft atrophic acne scars with loss of dermal tissue. Dermal fillers placed under the scars, elevate them and bring the surface of the scars in level with the surface of surrounding skin.

#### **6. Intralesional steroids and cytotoxics (Level B)**

Intralesional triamcinolone 10-20 mg/mL with or without

cytotoxics, like 5-fluorouracil, is indicated for the treatment of hypertrophic scars and keloids. These are repeated at 3-4 weekly intervals until resolution; care is taken to avoid atrophy.

#### **7. Silicon gel sheeting (Level C)**

Silicone dressings are chemically and biologically inert; silicon sheets or gels are found to be useful in flattening keloids and hypertrophic scars, reducing discoloration and making scars cosmetically acceptable.

#### **8. Scar revisions<sup>[37,38]</sup>**

In selected cases, when scarring is linear and extensive, scar revision techniques such as Z, M and Y plasty may be useful. These need to be performed by a dermatosurgeon properly trained in performing these procedures.

#### **Postoperative care**

The aim of good postoperative care is to prevent or minimize complications and ensure early recovery. Preventive actions must be taken promptly to avert progression to a potentially disastrous situation, which may lead to an unacceptable aesthetic or functional result. This is most important in ablative resurfacing procedures, particularly in darker skinned patients, where pigmentary alterations are common. Supportive medical therapy and a careful maintenance program are essential to maintain results of surgical treatment in most patients.

### **COMPLICATIONS**

The aim of surgical treatment in acne is to improve the cosmetic appearance with minimal complications. Proper patient selection involves the detection of both physical and psychiatric conditions, which may interfere with a desirable cosmetic outcome. Complications include conditions such as active herpes simplex, immunosuppressive conditions, which may predispose to infection and delay healing, as well as patients with unrealistic expectations or uncooperative patients who do not follow treatment regimens. Adequate counseling, priming the skin and supportive medical therapy, apart from good intra- and postoperative care are essential for satisfactory surgical outcomes.

### **EVOLVING TREATMENTS**

Newer peels like mandelic acid and pyruvic acid peels, nonablative lasers and phototherapies including photodynamic therapy show promising results. Fractional photothermolysis has been recently used for the treatment of acne scars.<sup>[39]</sup>

## CONCLUSION

Acne surgery involves the use of appropriate surgical interventions for treatment of active acne as well as improving cosmetic outcomes in postacne scarring. In active acne, surgical intervention is used as an adjunctive to medical therapy. The treatment of postacne scars involves a multimodal approach as different types of scars may exist in an individual. Each scar and each patient must be evaluated and treated accordingly. The main goal of treatment is to achieve maximal improvement rather than perfection. For superficial scars, noninvasive or minimally invasive techniques such as microdermabrasion, superficial chemical peels or the newer nonablative lasers, are better treatment options. For deeper scars, a combined approach with subcision, punch excision techniques in conjunction with resurfacing procedures, are essential to achieve optimum results. Many complications can be prevented by thorough preoperative evaluation, sound surgical technique, and careful follow-up care. Good patient rapport and effective communication with patients are invaluable.

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