

Review Article

Expert opinion on pre and post procedure care in aesthetic dermatology

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ABSTRACT

In clinical practice, the number of aesthetic dermatology procedures carried out in India is increasing. Nonsurgical or minimally invasive cosmetic dermatology encompasses a variety of procedures, such as chemical peels, laser therapies, dermal fillers, derma rollers and microneedling radiofrequency, which are known to be safe and effective. Despite enormous advances in the field of aesthetic dermatological procedures, many clinicians seem to have limited knowledge about the potential benefits and risks associated with aesthetic procedures. To ensure successful outcome of an aesthetic procedure and to minimise complications, one should be aware of the pre- and post-procedural care involved. This review summarized expert opinion on pre and post-procedural care needed with chemical peels, laser therapies, dermal fillers, derma rollers and microneedling radiofrequency.

Keywords: Aesthetics, Chemical peels, Laser, Dermal fillers, Derma roller, Microneedling radiofrequency

INTRODUCTION

Cosmetic preparations such as powders or creams were traditionally designed to enhance personal appearance by direct application onto the skin. Advances in technology, coupled with increased knowledge of skin physiology, have driven cosmetics into a novel era of dermocosmetics comprising of scientifically designed products for management of an array of skin phenotypes and disorders. This revolution has given rise to modern cosmetics and occupied a major place in the therapeutic armamentarium of dermatologists. Dermocosmetic products alone or as an adjunct to pharmacological treatment are frequently included to improve photoprotection, dry or aged skin and inflammatory skin diseases.¹

In order to garner expert opinion on pre and post-procedure care associated with several aesthetic dermatological procedures in India, expert group meetings including 62 dermatologists were conducted across different cities in India. Panel discussions were conducted and consensus substantiated supported by literature evidence were achieved and compiled into a consensus document.

Aesthetic procedures in dermatology

Dermatological procedures are life-enhancing rather than life-saving.² In former times, dermatological treatment options were limited to surgical interventions, such as facelifts to re-drape and lift lax skin, deep ablative laser resurfacing and dermabrasion to improve texture, wrinkles and hyperpigmentation. For advanced facial

aging, surgery intervention is still an option. However, there has been a trend away from invasive one-time procedures, which radically alter appearance and have greater risks, toward minimally invasive, nonsurgical procedures. Aesthetic procedures are minimally invasive, can reliably achieve good outcomes and have minimal recovery times. The most commonly done aesthetic procedures are botulinum toxin injections, dermal filler injections, laser hair reduction, chemical peels, laser skin resurfacing and intense pulsed light photorejuvenation.³

Consensus point 1

The expert panel agreed that botulinum toxin injections, laser hair removal, fillers, microdermabrasion and chemical peels are the most commonly performed

aesthetic procedures. In clinical practice, females are more inclined towards seeking cosmetic procedures than men. People between the ages of 35 and 50 years account for the majority of aesthetic procedures in India.

Procedures in aesthetic dermatology

Chemical peels

Chemical peeling involves application of chemical agents to the skin, resulting in meticulous destruction of a part or entire epidermis, with or without the dermis, leading to exfoliation, removal of superficial lesions, followed by regeneration of new epidermal and dermal tissues.⁴ Alpha hydroxy acids and beta hydroxy acids are the common agents used in chemical peels. Parameters defining peel types are mentioned in Figure 1.^{3,5}

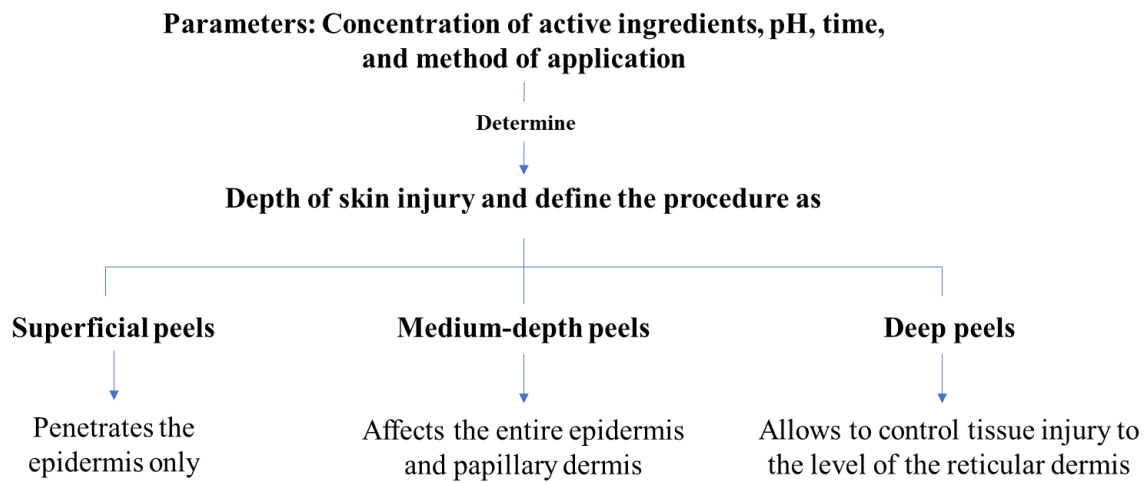


Figure 1: Parameters defining types of peels.

Depth of chemoexfoliation is cumulative dose-dependent; as application of a monolayer allows for a superficial level of anticipated exfoliation, while with subsequent multiple layers resulting in additive deeper peeling.⁵

Investigations required before chemical peeling

Various host factors can affect the outcome of chemical peeling.⁶ Therefore, a complete history and focused physical examination, concentrating on the patients' subjective areas of concern, including use of concomitant medications and history of scarring or hyperpigmentation need to be investigated before performing the procedure.⁵

Consensus point 2

Experts specified parameters like level of sun exposure, history of herpes simplex virus (HSV), administration of isotretinoin, in addition to the above-mentioned host factors to be considered before chemical peeling. A

detailed cutaneous examination, pigmentation, keloid or hypertrophic scar, infection and pre-existing inflammation should also be assessed.

Indications

The indications for a chemical peel are mainly cosmetic and should therefore, be tailored to each patient's specific concerns such as aesthetic improvement of skin, ability to tolerate the post-procedural recovery period and Fitzpatrick skin type. Indications for chemical peels can be classified into pigmentary disorders, inflammatory disorders, chronoaging and pre-cancerous lesions.⁵

Consensus point 3

Indications for chemical peel include pigmentary disorders such as melasma, post-inflammatory hyperpigmentation, freckles, lentigines, acne such as superficial acne scars, post-acne pigmentation,

comedonal acne, acne excoriee and acne vulgaris; ageing skin changes such as photoaging, fine wrinkling, dilated pores, and scars and benign epidermal growths such as seborrheic keratoses, warts and milia.

The most commonly used superficial and medium depth peeling agents for the treatment of acne include salicylic acid, α -hydroxyl acids and trichloroacetic acid. Gel-based peels, pyro peels and mandelic acid peels are good options for treatment of sensitive skin. Combination of peeling agents enhances peel depth without the need for using a single peeling agent of higher concentration. Chemical peels in combination with other aesthetic procedures like dermabrasion, laser resurfacing, botulinum toxin injections and fillers can avoid demarcation lines.

Pre and post-procedure care

An important adjunctive measure for achieving good results with chemical peeling include priming or preparing the skin before a peel. It provides better and consistent penetration of the peeling agent by reducing seborrhea and thinning the stratum corneum, accelerating re-epithelialization and decreasing wound healing time. Moreover, patients should be advised to use sunscreen before and after the peel during the daytime and to apply a moisturizer at night.⁷

Consensus point 4

Experts agreed that pre-peel priming should be performed for at least 2-4 weeks before procedure and should be stopped 1 week before the peeling session, as it increases peel efficacy and reduces post-inflammatory hyperpigmentation risk.

Priming includes application of topical agents such as broad-spectrum sunscreens containing hydroquinone (2% or 4%), tretinoin 0.025%, adapalene 0.1%, glycolic acid 6-12%, kojic acid and azelaic acid. In patients who have a history of HSV, antivirals (acyclovir or famciclovir) can be prescribed, initiating 2 days pre-procedure and continuing for 7-10 days until complete re-epithelialization occurs. Thermal spring water is also effective in post-management care of chemical peels. Both pre and post-peel facial scrubs, depilatory creams, waxing, bleaching, microdermabrasion and laser hair removal should be avoided for at least 1 week before and after the procedure.

Complications and contraindications

The essential parameters involved for satisfactory cosmetic results are proper patient selection, adequate counselling, priming the skin and supportive medical therapy, in addition to good intra- and post-operative care. The preferred method to avoid complications is to identify patients at risk and use lighter peels. Patients with a history of post-inflammatory hyperpigmentation,

keloid formation, heavy occupational exposure to sun, uncooperative patients and patients with sensitive skin who are incapable of tolerating sunscreens, hydroquinone are at a higher risk of complications.^{4,18}

Consensus point 5

Swelling, erythema, pain and burning, pruritus, ecchymoses, blistering or infection are the complications that are common for a few days or weeks following the procedure. Deep peeling causes keratocoagulation and exfoliation down to the mid-reticular dermis, as a result of which, both bacterial and candida superinfections of the wound site and potential HSV reactivation are serious potential complications. If there is any suspicion of candida superinfection, oral antifungals should be initiated at the earliest.

Lasers

Rapid advances in laser technology have translated into encouraging results for skin resurfacing, pigmentation, tattoos, vascular lesions and hair reduction. The demand for laser surgery has escalated significantly among patients and dermatologists alike, due to the relative ease with which lesions are removed and low incidence of adverse post-operative events.⁸ Advantages of lasers include the ability to provide noncontact surgery as lesion vaporization occurs devoid of any physical contact between the skin and the device. This guarantees sterilization and helps avoid possible infections.⁹ Among the dermatologic lasers, CO₂, erbium and holmium lasers are the most commonly used. Other vital dermatological lasers are the, neodymium-doped yttrium aluminum garnet (Nd: YAG), argon, alexandrite, diode, krypton, ruby and copper vapor lasers.¹⁰

Investigations required before laser treatment

Assessment of complete and detailed history such as a history of any photosensitising drugs, keloid and hypertrophic scars, recurrent HSV, history of recent sun exposure, should be obtained to rule out associated illness. Female patients should undergo proper evaluation to rule out an underlying cause of hirsutism. Generally, no investigations are necessary in most patients; however, specific tests, namely, complete blood count, fasting blood sugar, urine analysis, serum luteinizing hormone, follicle stimulating hormone and prolactin levels, dehydroepiandrosterone sulfate, free testosterone and whole abdomen ultrasound may be performed in consultation with a gynecologist or endocrinologist in few patients.¹¹

Consensus point 6

Experts agreed that medical history should be reviewed, physical examination should be conducted, and patients' expectations should be discussed before starting the procedure. In patients with a history of herpes infections,

antiviral medication before and after laser treatment should be prescribed to prevent viral infection. An oral antibiotic may be prescribed to prevent bacterial infection. Patients should be advised to apply a topical retinoid for about four weeks pre-procedure to accelerate wound healing.

Indications

Clinical indications for lasers include treatment of benign vascular and pigmented lesions, unwanted hair, tattoos, hypertrophic scars, keloids, rhytides and dermatologic diseases such as psoriasis and vitiligo.¹²

Consensus point 7

Treatment of vascular lesions: The most commonly used vascular lasers are potassium titanyl phosphate (KTP, 532 nm), pulsed dye laser (PDL, 585-595 nm), diode (800-810, 940 nm) and Nd:YAG (532 and 1,064 nm). In most patients, treatments are well tolerated and the common adverse events are erythema, edema and crusting.

Hypertrophic scars, keloids and striae: PDL treatment of hypertrophic scars has reported improvement in erythema, texture, pliability and pain, with minimal side effects. For resistant keloids and actively proliferating hypertrophic scars, adjunctive therapies to PDL such as intralesional corticosteroids or 5-fluorouracil are useful. Adverse effects after PDL treatment are relatively mild, manifested by purpura and temporary dyspigmentation.

Striae distensae are common atrophic lesions associated with obesity, pregnancy, puberty and exogenous steroid use. Low-fluence PDL treatment, fractional ablative and nonablative lasers are effective in successfully treating striae.

Pigmented lesions: Cutaneous pigmented lesions are common targets of laser and intense pulsed light (IPL) treatment. For lightening and eliminating benign epidermal and dermal pigmented lesions and treating amateur, professional and traumatic tattoos, Q-switched lasers are highly effective. For sensitive skin, IPL treatment is effective with good post-operative management.

Hair reduction: Ruby laser (694 nm), alexandrite laser (755 nm), diode laser (800 nm), Nd:YAG laser (1064 nm), IPL without heat (550-1200 nm), light and heat energy LHE (400-1200 nm) are laser systems available for hair reduction. This technique should be used with caution in patients with tans or dark skin.

Skin resurfacing: Carbon dioxide (CO₂) laser and erbium-doped YAG (Er:YAG) laser system are used for facial rejuvenation of photodamaged skin. Compared to CO₂ laser systems, Er:YAG laser system creates a little thermal reaction in the skin, while tissue tightening is not as dramatic as that seen after CO₂ laser treatment.

Moreover, the minimal thermal injury created by Er:YAG laser irradiation results in faster post-operative healing and fewer adverse effects. Fractional laser induces thermal damage without affecting neighboring tissue. Adjacent unaffected tissue acts as a medium for healing and epidermal repair via migration. As a result, fractionated photothermolysis reduces complications and lessens recovery time seen with the above-mentioned resurfacing lasers.

Pre and post-procedure care

Patients should be subjected to a detailed counselling with respect to the course of the lesions, various treatment options, possible results, cost, requirement for multiple treatments and possible post-operative complications.¹³ Post-treatment patients should also be advised to avoid sun exposure and to use sunscreens whenever required.¹¹ Thermal spring water after superficial procedures such as photodynamic therapy and more aggressive laser resurfacing and medium or deep chemical peel procedures, reduce inflammation and irritation and improve patient discomfort. The therapeutic benefits of water include reduction in sensitivity of cells, lowering of reactivity threshold, and anti-inflammatory properties.¹⁴

Consensus point 8

Experts agreed that patient counselling about possible and immediate perifollicular erythema and edema as transient or temporary side effects is essential. As a result, post-procedure, topical steroid creams can be prescribed to minimize erythema and swelling. Sunscreen lotion with a detailed instruction guide should be provided. For patients with sensitive skin, skin hydration should be given prime importance; post-procedure, barrier repair cream, niacinamide and sunscreens can be helpful.

Complications and contraindications

Appropriate patient selection and tailoring of treatment based on skin type, remain the most important factors for effective and well tolerated laser therapy.¹¹ Burns, scarring, dyspigmentation, ocular injury and infection can occur as a result of any laser therapy. Patients with darker skin type are at increased risk of dyspigmentation and should be counselled about the risk. HSV reactivation is observed post-laser treatments, particularly in resurfacing of the perioral skin, suggesting the need for antiviral prophylaxis.¹⁵ Absolute contraindications for laser treatment include active local infection, photo-aggravated skin diseases, and medical conditions, while relative contraindications include unstable vitiligo, psoriasis, keloid and keloidal tendencies and patients on high-dose isotretinoin.¹³

Consensus point 9

According to the expert panel, laser treatment has to be performed cautiously only after proper patient counselling. Patient on long-term drugs e.g. minocycline and isotretinoin, which cause the skin to be more light sensitive, should be subjected for laser treatment only after proper counselling. Injury in the treatment area, superficial cuts and patients with unrealistic expectations are contraindicated in laser therapy.

Botulinum toxin

Botulinum toxin is a potent neurotoxin obtained from *Clostridium botulinum* that acts at the neuromuscular junction by obstructing the release of acetylcholine, causing temporary chemical denervation. Botulinum toxin injection has rapidly become the treatment of choice for age related facial changes. Injection of small quantities into precise overactive facial muscles results in localized muscle relaxation, with smoothing of skin and reduction of wrinkles.³ Botulinum toxin injection is used off-label for the treatment of alopecia, bullous skin disorders, palmar and plantar hyperhidrosis and hypertrophic and keloidal scarring.¹⁶

Investigations required before botulinum toxin procedure

Table 1 enlists medical parameters reviewed before treatment with botulinum toxin. Laser treatments are deferred in pregnant or breastfeeding patients.¹⁷

Table 1: Medical parameters reviewed before botulinum toxin injection.¹⁷

Medication usage
Allergies
Other planned procedures
Previous use of neuromodulator or filler treatments
Previous hypersensitivity reactions to botulinum toxin or any components in the formulation
Infection at the proposed area of injection
Myasthenia gravis or other neuromuscular disorders
Other conditions for which there are contraindications, warnings or precautions to botulinum toxins

Consensus point 10

Experts emphasized that patients taking blood thinners, garlic pearls, or ginkgo biloba should discontinue their usage several days before the injection to reduce the risk of bleeding or bruising.

Indications

Botulinum toxin is indicated for glabellar frown lines, Crow’s feet, horizontal forehead creases, mouth wrinkles, nasolabial folds, neck smoothing and chest/cleavage wrinkles.¹⁸

Consensus point 11

Experts stated that botulinum toxin injection is indicated for all wrinkles produced due to persistent muscular contractions. A patient may have more than one type of wrinkle and may, therefore, require combination treatment with other modalities such as fillers, peels, laser resurfacing and thread lift.

Pre and post-procedure care

Patients are advised to avoid nonessential over-the-counter medications or supplements (e.g. fish oil and vitamin E oil) that may affect blood clotting, for 1 week before treatment, in order to reduce the risk of bruising and ecchymosis. Nonessential use of aspirin and other nonsteroidal anti-inflammatory drug should also be stopped a week before the procedure.¹⁷ Patients should be educated to remain in an upright position for 3-4 hours to avoid potential diffusion.^{18,19}

Consensus point 12

Experts highlighted the need to select patients carefully, manage their expectations and ensure their awareness of potential complications during the pre-treatment phase. In order to reduce bruising risk, patients should be advised to avoid medications that inhibit clotting. Post-procedure, clinicians should instruct patients not to massage the treatment area.

Complications and contraindications

Complications associated with cosmetic botulinum toxin injections occur rarely. Ecchymosis and purpura, the most common complications can be minimized by compressing ice on the injection sites before and after botulinum toxin injection.¹⁸

Use of botulinum toxin injections are contraindicated in certain conditions enlisted in Table 2.¹⁸

Table 2: Contraindications for botulinum toxin injections.

Contraindications
Myasthenia gravis
Amyotrophic lateral sclerosis
Multiple sclerosis
Eaton Lambert syndrome
Women who are pregnant and breastfeeding
Neonate and children
Patients with focal and systemic infections
Patients who are hypersensitive or allergic to botulinum toxin injections
Patients who had previously undergone lower eyelid surgery

Consensus point 13

Experts reported pain, edema, erythema, ecchymosis, headache and short-term hypoesthesia as the common sequelae that occur at any site because of botulinum toxin injection. Apart from the above-mentioned contraindications, botulinum toxin should be avoided in patients taking aminoglycoside antibiotics as these can interfere with neuromuscular transmission.

Fillers

Dermal fillers are injectable products that restore soft-tissue volume temporarily.³ They are vital in the management of ageing skin.²⁰ Dermal fillers vary with respect to composition, duration of action, palpability, ease of administration and complications, all of which significantly affect treatment results.³

Investigations required before filler procedure

A complete medical history of the patient is essential and should include details of cosmetic treatments and allergic reactions to any substance, including anesthetics.^{21,22} In order to avoid any possible infection or hypersensitivity, treatment should not be performed in the immediate period following other routine medical procedures. Dental procedures should be undertaken at least 2 weeks pre- or post-treatment to reduce the risk of hematogenous bacterial spread. Using chlorhexidine mouthwash prior to perioral injections can lower oral bacterial flora for 8 hours and minimize contamination risk.²²

Consensus point 14

Completed medical history should be documented before commencing the procedure. Risk of bruising is higher in patients with bleeding disorders, uncontrolled hypertension or in patients on anticoagulants like aspirin, clopidogrel or warfarin.

Indications

Facial rejuvenation is the main indication for dermal fillers, and other indications are correction of volume deficiencies, improving facial contours, jaw line contour, improving tear trough and treatment of marionette lines. Use of dermal fillers, often in combination with botulinum toxin injections, yields satisfactory results with a very low incidence of side effects. Patients with early signs of aging can be considered as ideal subjects.²¹

Consensus point 15

Experts agreed on the above-mentioned indications for dermal filler procedure. Besides, the most commonly used fillers in clinical practice are hyaluronic acid (HA)-based fillers. HA-based hydrogel fillers correct soft-tissue volume defects because of their hydrophilic nature and water absorption properties. The percentage and type of

HA cross-linking, patients’ metabolic rates, and dynamic nature of recipient sites will determine how long the HA fillers will last.

Combination of fillers with botulinum toxin injection is a rejuvenation paradigm. Because hyperactive muscles play a prominent role in producing wrinkles, it is effective to relax the muscles first with botulinum toxin injection and administer fillers 2 weeks later. Radiofrequency is a common modality used for non-ablative skin rejuvenation. Efficacy of a filler (either HA- or non-HA-based) is unaltered when non-ablative radiofrequency is performed over the areas treated with the filler.

Pre and post-procedure care

Prior to the procedure, clinicians should manage patient expectations, so that patients do not envisage any unrealistic outcomes. Caution should be exercised when confronting an individual who exhibits signs of underlying mental disturbance.²² Post-procedure, patients should be advised to avoid exertions, travel and makeup for ~24 hours.²³

Consensus point 16

Experts opined that patients should be made aware of the limitations and risks of dermal fillers. In treating active inflammatory dermatitis, clinicians must make a judgment based on the severity of the condition and its proximity to the treatment area. Cold compress and oral supplements such as arnica or topical products can be employed post-procedure to reduce adverse effects such as bruising. Patients should be encouraged to return in 2 weeks for follow up evaluation.

Complications and contraindications

Temporary fillers are associated with fewer complications and transient adverse effects compared to semipermanent and permanent fillers. Adverse effects are due to injection related or filler material-related and may appear either immediately or later (Table 3).²⁴

Table 3: Early and late complications of dermal fillers.

Early complications	Late complications
Hypersensitivity reactions	Implant migration
Haematomas and ecchymoses	Telangiectasia
Infections (reactivation of herpes simplex)	Granulomas
Non-hypersensitivity-related swelling acneiform eruptions	Lipoatrophy
Erythema (transient or permanent)	Hypertrophic scarring
Skin necrosis	Sterile abscess
Embolism (blindness)	

Active skin infection, active localized or generalized infection, allergy/hypersensitivity, autoimmune conditions, immune compromised patients, conditions potentially causing a Koebner response, systemic infections, active anticoagulant medication and hemostatic or coagulation disorders make the patient an unsuitable candidate for dermal filler treatment.²²

Consensus point 17

Experts acknowledged the above-mentioned complications of dermal fillers and added that patients with unrealistic expectations are a major contraindication. To minimize the incidence of complications, proper patient selection, proper technique and right choice of fillers are important.

Dermaroller

Dermaroller or microneedling, also known as collagen induction therapy, is a process involving repetitive puncturing of the skin, with sterilised microneedles. Dermaroller promotes a wound healing cascade with mild temporary damage to the epidermis. It is a relatively simple and cost-effective procedure and is well tolerated with therapeutic benefits. Dermaroller is a hand-held device with roller of 24 circular arrays. Every array has 8 steel microneedles with a total of 192 needles in one dermaroller.²⁵

Indications

Acne scars, alopecia, striae, melasma and actinic keratoses are the indications for dermaroller.²⁵ For skin rejuvenation, percutaneous collagen induction leads to an overall youthful appearance of the skin by reducing fine lines, wrinkles, pore size and elasticity.²⁶

Consensus point 18

In favor with the indications listed above, experts mentioned that the effects of dermaroller can be enhanced when the procedure is combined with topical anti-aging vitamin C serum and tretinoin application. Dermaroller improves scar appearance, skin texture, and overall patient satisfaction. It is also effective in pigmentary disorders, including melasma, vitiligo and periorbital hyperpigmentation.

Pre and post-procedure care

Microneedling is a well-tolerated and well accepted technique by patients. It can be performed on all skin types and on skin areas not suitable for peeling or laser resurfacing, such as areas adjacent to the eyes.²⁷ Patients must be counselled about the expected outcomes, delayed response and need for multiple sittings, prior to the procedure. Transient erythema may be seen after treatment, lasting for 2-3 days.²⁶ Photoprotection for a

week is advised and local antibiotic creams can be prescribed, if required.²⁷

Consensus point 19

Experts opined that the skin should be prepared, pre-operatively, to augment dermal collagen formation, with vitamin A and C formulations twice a day for a month. Microneedling can be amalgamated with other acne scar treatments like subcision, chemical peels, microdermabrasion and fractional resurfacing, thereby intensifying the benefits to patients. Patients should be informed to use sunscreen (sun protection factor [SPF] >30) meticulously and to apply moisturizers with vitamins A, C and E to prevent sun damage.

Experts highlighted that there is no downtime and the patient can go back to work the very next day. Multiple treatment sittings over a period of 3-8 weeks are required to reflect the desired effect on the skin.

Complications and contraindications for dermaroller

With dermaroller, the common adverse events are potential erythema and irritation, which usually subside within a few hours. Other events reported are post-inflammatory hyperpigmentation, aggravation of acne, reactivation of herpes, systemic hypersensitivity, allergic granulomatous reactions and local infections, following the use of nonsterile instruments.²⁶

Patients with active acne, herpes labialis or any other local infection such as warts, chronic skin disease such as eczema and psoriasis, blood dyscrasias, extreme keloidal tendency and patients on anticoagulant therapy, chemo/radiotherapy are contraindicated for dermaroller.²⁶

Consensus point 20

Experts opined that dermaroller is well-tolerated by patients, and there are usually no post-treatment sequelae except slight erythema and edema lasting for about 2-3 days. The expert panel agreed to the above-mentioned contraindications for dermaroller.

Microneedling radiofrequency (MNRF)

MNRF is a unique technology that induces dermal remodelling by using radiofrequency energy directly into various depths of skin.²⁸ Microneedles penetrate into skin with minimal injury to the epidermis and once within the dermis, radiofrequency energy is distributed through needles. Heat generated by the resistance offered to the passage of radiofrequency energy causes dermal remodelling, neolastogenesis and neocollagenogenesis ensuing skin rejuvenation.²⁹ MNRF minimizes heat damage to the epidermis and employs radiofrequency heat only on the target lesion, which minimizes scarring and shortens recovery time.²⁸

Indications

MNRF is indicated for various skin cosmetic areas such as wrinkles, acne scars and photoaging.²⁸

Consensus point 21

MNRF on facial skin rejuvenation offers clinical improvement on wrinkle, skin laxity and skin texture, with minimal side effects and has good tolerability. MNRF is effective in improving acne scars and facial pores. In moderate inflammatory acne, MNRF helps in reducing lesion count and sebum secretion. In addition, MNRF treatment in patients with moderate to severe striae distensae provides optimal clinical results with minimal side effects.

Pre and post-procedure care

Prior to MNRF treatment, patients with a history of HSV may be given valacyclovir 1 gm orally every 12 hours on the day of treatment. Post-procedure, the patient should be advised to avoid washing their face for a day and to apply topical antibiotics for 2-3 days.³⁰

Consensus point 22

In addition to the above-mentioned points, experts emphasized on the significance of avoiding prolonged direct exposure to sunlight and application of sunscreen with SPF >30. To decrease the intensity and duration of post-treatment erythema, light-emitting diode treatment can be performed immediately after fractional radiofrequency microneedle treatment.

Complications

Common side effects of MNRF include mild pain and temporary erythema during and after the procedures. The risk of post-inflammatory hyperpigmentation is minimal, and if it occurs, it is resolved within 4 weeks. Compared to conventional fractionated lasers, the incidence of side effects with MNRF treatment is lower.³⁰

Consensus point 23

Experts stated that in clinical practice, in order to decrease the intensity and duration of post-treatment erythema, light-emitting diode treatment can also be performed immediately after MNRF treatment.

Ingredients or cosmeceuticals used post-procedure

Cosmeceuticals denote a new category of products positioned between cosmetics and pharmaceuticals that are envisioned for the enhancement of both health and beauty of the skin.³¹ Like cosmetics, cosmeceuticals are meant for topical application, but unlike cosmetics they contain potent ingredients. Cleansers, moisturizers, sunscreens, antioxidants, anti-inflammatory agents,

pigment lightening agents and products aiding in collagen repair, exfoliation, and hydration/barrier repair are the commonly used cosmeceutical products. These agents possess desirable properties of good efficacy, safety, formulation stability, novelty and ability to metabolize within the skin.³²

Consensus point 24

Cosmeceuticals can be used as adjuvant therapy to chemical peels, lasers and injectables; thereby, reducing post-procedural healing time. Topical sucralfate can be used for deeper peels, erythema, and dryness and also in patients with impaired skin barrier function. Cosmeceuticals containing both antioxidants and anti-inflammatory agents help reduce redness and inflammation, and various barrier repair moisturizers are the recommended post-procedural products.

The overall appearance of the skin can be restored by improving skin barrier integrity. The ingredients recommended in barrier repair moisturizers or creams are epidermal lipids such as ceramides and HA, which act as humectants and occlusives for patients with dry skin. Some of the ingredients that can aid in reducing redness and inflammation include vitamin B, C and E. Vitamin B3 or niacinamide, an effective skin lightening compound that inhibits melanosome transfer from melanocytes to keratinocytes, is used in the formulations of skin whitening agents. Additionally, polyphenolic flavonoids (soy and green tea) and organic ingredients (caffeine, feverfew and liquorice) can decrease inflammation. Application of preparations such as skin repair creams or face wash containing Brahmi extract is beneficial in repairing the skin by facilitating healing activity and decreasing skin scarring. Moreover, preparations containing bisabolol are highly valued because of their antibacterial, anti-inflammatory, skin-smoothing and wound healing properties. Skin repair creams containing an extract of rhealba oat plantlet are effective in offering anti-inflammatory and barrier repairing properties.

Topical HA would be a beneficial add-on in an anti-wrinkle regimen, especially in patients who are averse to needles. Additionally, it would be effective for patients who receive an injectable filler and botulinum toxin injection regimen as these patients will be able to target wrinkles simultaneously with both topical cosmeceuticals and injectables.

Experts highlighted the use of paraben-free face wash with pH 5.5 in post-procedural care. Formulations containing sodium hyaluronate possess wound healing, anti-inflammatory and moisturizing properties, which enhance skin rejuvenation. Yeast β -glucan is another promising ingredient due to its pluripotent properties. It is a suitable wound healing agent with great stability and offers a broad range of biological activities including anti-inflammatory activity.

Role of sunscreens

During the post-operative phase, sun avoidance is critical because of the sensitivity of the resurfaced skin to the effects of UV light. Protection from the sun will also lower the risk of post-inflammatory hyperpigmentation. Pigmentation is mostly caused by UVA light; therefore, a sunscreen containing UVA-blocking elements is essential.³³

Consensus point 25

Experts stated that consideration should be given to sunscreens formulated with silicone bases as these are less occlusive and less irritating compared to preparations containing paraffin, petrolatum or mineral oil. Silicone bases minimize post-operative acne and milia formation. Patients should be educated to apply a tinted sunscreen with anti-red tints, which may reduce the appearance of erythema. Photoprotective effects of sunscreens can be enhanced by applying topical formulations containing vitamin C.

Nutritional supplements in skin care

The connection between nutrition and skin is difficult to substantiate in dermatology. The body requires nutritional building blocks for synthesis and repair of body tissues, especially tissues with a high metabolic turnover rate such as skin, hair, and nails.³⁴ Numerous skin protective nutraceutical elements such as flavonoids, phenolic acids, stilbenes, proanthocyanidins, curcumin, epigallocatechin gallate, vitamin C, vitamin E, carotenoids, coenzyme Q10, α -Linolenic acid, eicosapentaenoic acid and docosahexaenoic acid and minerals like copper, selenium and zinc are available. For different pathologic processes, a given nutraceutical can be beneficial via different modes of action.^{35,36}

Consensus point 26

Experts stated that nutrition affects health and skin condition. Patients who consume a healthy balanced diet are more likely to obtain adequate amounts of required nutrients to achieve skin benefits. However, if diets are deficient of key nutritional components, supplementation may be beneficial. It is important for clinicians to discuss the benefits and consequences of nutraceuticals with patients and to mention the importance of a recommended daily allowance, as most things consumed in excess have the potential to cause adverse effects.

General precautions

Failure to distinguish between medicine and beauty is evident in the proliferation of nonmedical facilities that offer cosmetic surgery services. Delivery of healthcare in salons, spas, and health clubs only increases consumer confusion about the medical nature of cosmetic dermatology procedures. For example, laser hair removal,

non-ablative laser resurfacing, chemical peeling and injectables including botulinum toxin and collagen therapy are now being administered in the retail environment. Although these procedures are generally safe in trained hands, there is a risk of side effects even under ideal circumstances.³⁷

Consensus point 27

Experts mentioned that visiting a salon for beauty enhancement methods such as facial, clean-up and waxing, is not recommended within a month of performing a filler procedure and 10-14 days after chemical peeling or botulinum toxin injection. Shaving practices should be stopped 24 hours pre-procedure and can be initiated 12 hours post-procedure.

CONCLUSION

Aesthetic dermatology is becoming a vital and popular branch of medicine. There is an increasing demand for aesthetic procedures, irrespective of age and gender. Proper care of the skin prior and post-procedures can undoubtedly enhance skin improvement and minimize relative complications. This expert consensus highlights that appropriate care via optimal usage of cosmeceuticals in conjunction with aesthetic procedures can serve to enhance the overall response of the skin, along with quicker healing, shorter recovery times and fewer complications.

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