A comparison of different anti-aging strategies

As a mild exfoliating procedure, microdermabrasion (MDA) every 1 to 3 months depending on the skin type would be a good preventive anti- aging strategy. A combination of MDA with chemical peels is helpful in photoaging. MDA is always done first followed by the peel. Several studies support the efficacy of this regime for photoageing. Superficial glycolic acid peels and 5% retinoic acid have been used. MDA can also be used as a transdermal drug delivery for various topical antioxidants

Amongst lasers, visible/ infrared lasers and fractional lasers have been used for facial rejuvenation. Light systems including intense pulse light systems (IPL), light emitting diodes (LED), photodynamic therapy (PDT) and infrared lights have been used for correcting colour and textural alterations. Radiofrequency (RF), ultrasound and plasma resurfacing technologies are non-laser systems useful in tissue tightening. Various devices have been developed which combine different technologies- the combination of electrical and optical energy techniques is termed as electrical and optical synergy (ELOS). All these technologies for non- ablative facial rejuvenation have been discussed in depth in chapter 43.

Microneedling with dermaroller or in combination with RF technology has shown good results for skin rejuvenation. [55, 56] Hyaluronic acid, vitamins and idebenone have been used as mesosolutions for preventive and therapeutic anti-aging benefits.[57] These therapies are frequently used in combination therapies.

Botulinum toxin is chiefly indicated for dynamic lines correction (by relaxing the facial muscles) whereas fillers is indicated for the correction of volume

loss which occurs with aging. For the upper 1/3 rd face, botulinum toxin is the mainstay with hyaluronic acid as a supplement. Fillers are the mainstay for mid face, whereas a combination of toxin and fillers are needed for the lower 1/3 rd face. [58] Autologous fat transfer, dermal fibroblasts and platelet rich plasma is now being used for volume enhancement in patients who do not desire artificial fillers.

Thread lifts with polydioxanone (PDO) threads are being commonly used for lifting up of facial sagging and is chiefly used for structural changes due to aging. It is frequently used in combination with other techniques.

Combination therapy is the mainstay in management of aging face. Relax, Refill and Resurface are the three main Rs for facial rejuvenation. Combination therapy of fillers and botulinum toxin is superior and frequently used in facial rejuvenation for relaxing and refilling. This combination provides a three dimensional approach to correction of aging face. Use of chemical peels and lasers, lights and radiofrequency technologies help in effective resurfacing. A systematic approach should be adopted based on the patient needs.

An algorithmic and practical approach to management of the aging face in different decades of life based on author’s experience has been outlined below. [Illustration 50. 6, 50. 7 and 50. 8]

Clinical case scenarios of aging face and the management in different age groups has been provided. [Figures 50. 5 to 50. 9]

25 to 35 years: Illustration 50. 6 a and b / figure 50. 5

Clinical scenario: Management in a 35 year old female [concerns about periorbital folds and perioral lines] Figure 50. 5

Products: Sunscreens, moisturizers

Procedures: Treatment of tear troughs, marionette and faint nasolabial folds with injectable HA [restylane]. Thread lifts across the angles of the mouth.

35 to 50 years – Illustration 50. 7 a and b/ Figure 50. 6 a and b

Clinical scenario: Management In 42 year old female homemaker with PIH to acne/ textural changes

Products: Sunscreens, appropriate face washes, topical adapalene, non HQ skin lightening agent twice daily along with azithromycin pulse doses

Procedures : Electrocautery of DPNs, Chemical peels with glycolic, salicylic and yellow peel at 2 weekly intervals, counseled for laser rejuvenation

It is important to check for volume loss begins in this decade, however different parts of the face can age at varying rates. Mid facial sag is more evident with prominent nasolabial folds in this 40 year old lady. (Figure 50. 7 a) Associated diseases such as diabetes mellitus or hypothyroidism should also be looked into, since it can hasten the aging process; as seen in this obese lady with hypothyroidism. (Figure 50. 7 b)

50 years onwards- Illustration 50. 8 a and b (figure 50. 8 and 50. 9 a and b)

Clinical scenario: Management in a 60 year old male executive (Figure 50. 8)

Products: Sunscreens, moisturizers, Skin lightening agents – initially the Kligman’s triple combination cream containing (HQ 2%, tretinoin 0. 05 and fluocinolone) on alternate night for 2 months followed by non HQ skin lightening agents.

Procedures: Chemical peels with glycolic 35 to 50%, salicylic and mandelic peels.

3 HA syringes for his tear troughs, nasolabial, marionette lines and chin fold.

6 monopolar radio frequency sittings.

Clinical scenario : Management in 50 year old menopausal home maker (Figure 50. 9)

Products: Sunscreens, moisturizer, Skin lightening cream with arbutin, niacinaminde, kojic and flavonoids

Procedures: Electrocautery of DPNs, MDA 2 sessions, followed by chemical peels – glycolic 35 to 50%, alternately in combination with lactic, salicylic, pyruvic and tretinoin

There has been tremendous advances in understanding the molecular mechanisms of aging. Knowledge about newer theories of aging and development of newer bioengineering techniques has led to a validated approach towards objective evaluation of various newer anti- aging products and procedures. Use of optical 3D skin imaging systems along with use of appropriate instrumental software has led to a standardized approach. [1]

Products: Based on the newer aging theories, innovative anti- aging cosmeceuticals such as Sirtuin activating and anti- glycation products are being developed.[59] Novel topical drug delivery systems for anti- aging products; for example; pectin micro and nano capsules of retinyl palmitate and nano lipoidal forms of isotretinoin are being developed. [60, 61]. Systemic and topical anti-oxidants are complexed with chitin nanocrystals and these have a positive influence on aging skin. [62]The interest and clinical research into the newer generation cosmeceuticals such as peptides, growth factors, cytokines and stem cells is continually increasing and controlled studies on the relevance of these emerging products are being performed. [47] Use of phytohormones and selective estrogen receptor modulators (SERMs) for skin aging is still in the nascent phase. [63, 64]

Procedures : Various devices including microneedles, microdermabrasion, electroporation, ultrasound and radiofrequency are now being used as transdermal delivery systems for the anti- aging actives. Amongst the novel use of injectables in anti- aging, mesobotox has been used for facial rejuvenation, and PRP, dermal fibroblasts, adipose tissue derived stem cells and autologous venous transplants have been used for soft tissue augmentation. [65, 66] Amongst the technology based devices, non-ablative fractional lasers and radiofrequency is being increasingly used for rejuvenation of the aging skin. Newer wavelengths are being developed; for example infrared laser at 1565nm and a new fractional 1940 nm laser consisting of thulium rod pumped by pulsed alexandrite laser.[67, 68] The shift towards combination of technologies and home based devices is seen amongst the various technology based equipment for anti- aging. RF devices

are being developed in combination with other technologies or devices such as microneedling, ultrasound, cryolipolysis, LEDs and lasers. Home based non ablative diode and radiofrequency devices are being investigated for their role in photorejuvenation. [69]

To conclude, the process of aging begins early in life. Both the patient and the dermatologist need to accept the factors which cannot be treated, identify the factors which can be treated and adopt evidence based preventive and corrective modalities for management of the aging face. It is the duty and responsibility of a dermatologist to provide appropriate anti-aging measures based on the patients' needs and at different decades of life.

Skin aging is a continuous process and begins early in life. Cutaneous aging can be classified as intrinsic and extrinsic types; both of which have classical clinical and histological manifestations. Understanding the pathomechanisms and newer concepts of skin aging has helped in designing optimal anti-aging strategies. A detailed history taking, clinical examination and needs assessment helps to formulate an appropriate treatment schedule. During evaluation of an aging face, changes in the three major characteristics-colour, textural and shape should be assessed. An objective evaluation can be done by standardized documentation and use of various grading/ rating systems. The preventive aspects include avoiding exogenous factors such as smoking, stress and UV radiation along with adoption of correct lifestyle habits in the form of regular exercise and a balanced diet. The corrective aspects include use of appropriate anti- aging products and procedures based on the age and needs of the patients. Anti- aging products include

antioxidants, cell regulators (retinods, alpha hydroxyl acids, peptides, growth factors, cytokines, stem cells) and hormone replacement therapy. The procedural modalities of treatment include basic procedures (electrocautery, microdermabrasion and chemical peels), use of technology based devices (lasers, lights, radiofrequency) and injectables (botulinum toxin, fillers, fat transfer, PRP, microneedling and mesotherapy). Combination of procedural therapies is most effective. Management of an aging skin should be done on a long-term basis and should be tailor made based on the needs assessment of an individual.