

TREATING SKIN AGING

What causes skin to age?

Skin aging involves two processes, intrinsic “chronological” aging & extrinsic “photoaging.” While intrinsic aging is largely caused by genetic factors, the effects of gravity, facial expression and hormonal changes are also important. Although skin may appear superficially unblemished, it is thin, wrinkled and loses elasticity, causing it to sag. The effects of intrinsic aging are predominantly treated surgically. Extrinsic photoaging is caused primarily by sun damage. Free radicals generated by UVA (315-400nm) and UVB (280-315nm) light are believed to be responsible for the majority of cellular damage observed in this form of aging. This cell damage includes DNA mutations, structural and enzymatic protein alterations, lipid peroxidation and activation of metalloproteinases, which break down collagen in the dermis. These cellular changes cause skin to appear dull, thick, leathery, wrinkled, rough and sallow. Other observable features may include telangiectasia, mottled hyperpigmentation and premalignant or malignant skin lesions. The effects of photoaging can be managed with at-home topical skin products, office treatments (such as Botox and fillers), and/or skin resurfacing (chemical peels, lasers and/or intense pulsed light).

Sunscreens

The most fundamental part of preventing and treating skin aging is sun protection. Sunscreens and other barrier methods of avoiding sun exposure – such as hats, protective clothing, driving gloves and avoiding the midday sun – are essential for minimizing extrinsic photoaging. It is futile to spend time and money in an effort to treat the effects of aging if one isn’t using a broad-spectrum sunscreen daily in conjunction with other methods of avoiding sun exposure. It is important to remember that sun damage can occur in the absence of sunburn. There are two categories of sunscreen – chemical and mineral. Chemical sunscreens are filters. Chemicals are absorbed into the skin before acting to prevent sun damage from within. Mineral sunscreens such as titanium dioxide and zinc oxide are considered superior, because they sit on the surface of the skin and act as a physical barrier against the sun’s rays. These minerals are inert and therefore are used in sunscreens for children or for people with sensitive skin, because they are much less likely to cause irritation or allergy. There are also a number of invisible zinc sunscreens commercially available. The main problems with mineral sunscreens are that they are often thick and uncomfortable to wear, and they give rise to an unattractive whitish sheen when applied to skin. When choosing a sunscreen preparation it is important to make sure it is truly broad spectrum (that is, it covers both the UVA and UVB spectrums). Look for the words “Broad Spectrum” on the bottle as these words are regulated by the FDA. Although most sunscreens cover UVB (evidenced by an SPF of 15, 30 or higher), not all cover UVA. Some

ingredients that block UVA rays include titanium dioxide, zinc oxide, avobenzone (Parsol 1789), and ecamsule (Mexoryl SX).

At-Home Treatments

Topical retinoids - Tretinoin (Retin-A, Renova), adapalene, & tazarotene

Tretinoin is a hormone that binds to retinoic acid receptors on skin cells and exerts many effects. It is a prescription medication approved by the Food and Drug Administration (FDA) in 1971 to treat acne because of its proven comedolytic activity. It was discovered, however, that the drug also improves skin texture, color and leads to partial reversal of photoaging when used over an extended period of time. Tretinoin exfoliates (removes top layers of skin cells) the skin, helps even out pigmentation and minimizes fine lines by plumping collagen and through many of its other histological effects. Histological changes observable in the epidermis include thinning of a thickened stratum corneum, reversal of atypia and uniform dispersion of melanin. Dermal changes include increased collagen synthesis and angiogenesis. Clinically observable changes in skin texture and pigmentation may be evident after 1-2 months of daily use. Improvement in fine wrinkling and pore size may be evident after six months of daily use. In addition, human studies have found tretinoin to be noncarcinogenic and can prevent the formation of UV-induced lesions. It can be considered for chemo prevention in patients at high risk of basal or squamous cell carcinoma. Tretinoin or Retin-A should not be confused with retinol widely available in over-the-counter preparations. Evidence for the efficacy of these substances is questionable. However, there are other topical retinoids and retinoid analogues such as adapalene and tazarotene which may work as well or better than tretinoin. Tretinoin should not be used during pregnancy because it is potentially teratogenic. Other risks of tretinoin include sun sensitivity and possible irritation. This temporary irritation usually lasts about six weeks, depending on the amount of damaged skin present. A person who has extensive sun damage may peel beyond the usual six weeks. Tingling or slight stinging upon application, temporary increased redness and intermittent peeling of skin is common. Acne can actually flare initially, because retinoids tend to reveal what's hiding under the surface. With prolonged use, though, acne and enlarged sebaceous glands can be minimized. To help minimize irritation, patients should use the smallest amount possible and keep away from eyes, corner of nose and mouth. If burning, discomfort, itching, or excessive bothersome peeling occurs, take one to two nights off of the retinoid. Moisturize during the break and then resume the retinoid. Patients should avoid missing more than two days of the retinoid, to minimize the duration of the irritation phase. If facial waxing is desired, patients should discontinue total use of the retinoid for five to seven days prior to waxing and resume the day after to prevent a burn effect. Also be cautious when using pore strips in conjunction with a retinoid. To avoid preventable irritation, decrease the duration of application of the pore strip to the minimal duration recommended in the package insert.

Alpha hydroxy acids

Alpha hydroxyl acids (AHA), such as glycolic acid and lactic acid, are primarily used as chemical exfoliants. In low concentrations they cause desquamation of the stratum corneum by disrupting cellular adhesion, while higher concentrations cause epidermolysis. Long-term use of these substances leads to increased collagen and elastin synthesis, and increased glycosaminoglycan concentration in the dermis. Clinically, concentrations less than 10% improve skin texture and pigmentation, while higher concentrations lead to improvement in fine wrinkling. AHA are considered safe in pregnancy and cause less skin irritation than tretinoin. They are available over the counter in concentrations of 2-20%. Many AHA products available from pharmacies display the AHA concentration on the label (eg Neostrata). Concentrations of 20-70% are used in office "peels". They may be used alone or in combination with tretinoin and depigmenting agents. Side effects of AHA's include mild irritation and sun sensitivity.

Depigmenting agents

Depigmenting agents block melanin production, reducing the intensity of lentigos, freckles and melasma. Patients need to be informed that results may not be apparent for several months, and pigmentation may return within six months of discontinuing treatment. Patients should avoid sun exposure when using these substances.

The most commonly used depigmenting agent, hydroquinone, is available in over-the-counter concentrations of up to 2%. Concentrations of 4% or over require prescription. Hydroquinone can sometimes irritate and redden the skin. It is possible that the irritation associated with hydroquinone can over stimulate the higher concentration of melanocytes found in dark skin types and can ironically lead to hyperpigmentation (dark spotting). Another rare side effect of hydroquinone is exogenous ochronosis, which is an irreversible blue-black color to the skin. So if any worsening of color, one should stop hydroquinone and call for re-evaluation. Consider taking a few month break from hydroquinone every few months as there have been reports of this decreasing the incidence of side effects.

Kojic acid – a by-product of the rice wine industry – also blocks melanin production. It is not commonly used in commercial preparations, because it tends to be chemically unstable. Both hydroquinone and kojic acid are more effective when used in combination with tretinoin or glycolic acid.

Mechanical Exfoliants

Exfoliation involves the removal of the most superficial layer of the epidermis, the stratum corneum. This layer is acellular, giving the skin a dull appearance. There are two types of exfoliants – chemical exfoliants (such as tretinoin, AHA's and chemical peels discussed above) and mechanical exfoliants (which include scrubs and microdermabrasion). Chemical exfoliants seem to have superior results to mechanical ones.

Other cosmeceuticals

There are countless other cosmeceuticals. Many of the active ingredients used in these products could prove to be effective in the future, but high quality trials are required to establish their efficacy. Although some substances that are known to be beneficial in wound healing are also used in cosmeceuticals, there may be no correlation between their role in wound healing and their efficacy in treating aging. Other substances that are useful in vitro become unstable and ineffective when exposed to light and air.

Examples of cosmeceuticals that may prove to be beneficial include retinols, copper, growth factors, vitamins C and E, amino acids, Coenzyme Q10, hyaluronic acid, carotenes, alpha lipoic acid and other antioxidants. As these substances are not harmful and may yet prove to be effective, patients may want to use these in conjunction with sunscreen and other evidence-based cosmeceuticals.

Office Procedures

Botox is a popular injection that can be done during any office visit to block the nerve impulses to temporarily paralyze muscles that cause wrinkles in the upper face. Fillers such as Restylane, Juvederm or Radiesse are half hour procedures to inject materials to temporarily fill in wrinkles of the lower face. Chemical peels, lasers, and/or intense pulsed light can sometimes add to the effect of a good at-home topical regimen.

Plastic Surgery

A face lift or blepharoplasty (cosmetic eye surgery) is surgery that is best preferred by a board certified plastic surgeon.

Summary

At night, in order to reverse some of the effects of photoaging, patients are commonly treated with a retinoid (commonly tretinoin), glycolic acid or depigmenting agents, either alone or in various combinations. It is also imperative that all patients use a sunscreen every morning. The brand does not matter as long as it says "broad spectrum" and has an SPF of 30. In addition, some patients pursue Botox injections, injections of fillers, peels, laser, and/or plastic surgery.

Your Treatment

Night: Tretinoin ("Retin-A" or "Renova") or adapalene – pea-sized bit to whole face

Morning: Lotion with sunscreen

- Consider taking a few month break from hydroquinone every few months as there have been reports of this decreasing the incidence of side effects. Often a cheaper way to buy cosmetic prescription medicines is to go on the website Goodrx.com and look for the best discount card for a pharmacy near you. Discount cards/coupons cannot be used with government insurance (Medicare or Medicaid). If you have Medicare or Medicaid, you can ask the pharmacist not to

use your insurance and to just use the coupon, or you can go to a pharmacy that does not have your insurance information to use the coupon.

BOTOX® Cosmetic (Botulinum Toxin type A)

In an effort to reduce the appearance of fine lines and wrinkles, many people are turning to BOTOX® Cosmetic. The cosmetic form of botulinum toxin, simply called BOTOX® Cosmetic, is a popular non-surgical injection that temporarily reduces or eliminates frown lines, forehead creases, and crows feet near the eyes. The toxin blocks the nerve impulses, temporarily paralyzing the muscles that cause wrinkles while giving the skin a smoother, more refreshed appearance. BOTOX® Cosmetic has also been shown effective in relieving migraine headaches, excessive sweating, and muscle spasms in the neck and eyes.

The Benefits of BOTOX® Cosmetic:

In clinical trials, nearly 90% of men and women surveyed rated the improvement in the appearance of frown lines between their brows as moderate to better 1 month after treatment. Results vary. Results can last on average 4 months.

BOTOX® Cosmetic has been used to treat a million people in the United States since it was approved by the Food and Drug Administration (FDA) in 2002 for the temporary treatment of moderate to severe frown lines in people ages 18-65.

The American Society for Aesthetic Plastic Surgery ranked BOTOX® Cosmetic as the most popular of all physician-administered cosmetic procedures in 2002 and 2003.

What are the Side Effects of BOTOX Cosmetic?

There are very few side effects associated with BOTOX® Cosmetic injections. Small bruises or red marks at the sites of the injection may appear but usually fade within a few days. Mild headaches and nausea, though rare, have been reported by patients who receive forehead injections. Some injections can cause mild muscle aches. It is also possible for an adjoining muscle to experience weakness, although this is usually temporary (one to three weeks).

Swelling, though rare, may occur in the area around the injection. If the swelling lasts more than a few hours, simple massage should help reduce it. (Caution: DO not massage the area in the hours immediately following your injection, since this could cause the toxin to spread to adjacent muscles).

After the treatment, you should refrain from vigorous activities for four hours to prevent the toxin from moving to an unwanted area in rare cases. BOTOX® Cosmetic injections around the eye area can cause the eyelid to droop, though this will wear off in two or three weeks. Also, don't

massage the area for four hours, but do make expressions that move those muscles.

The BOTOX® Cosmetic Procedure:

For any BOTOX® Cosmetic procedure, your doctor might have you apply ice to the area a few minutes before treatment. This is for two reasons; it causes the vessels in the skin to constrict which helps reduce bruising, and it helps decrease the small amount of pain associated with multiple injections. Ice can be beneficial for the same reasons after the BOTOX® Cosmetic treatment.

Once seated upright, the doctor will have you contract the muscle in the area being treated so that he or she can better target the injection into the muscle. Thus, if you're receiving injections for wrinkles between the eyes, you will be asked to frown.

On average, you'll receive three to ten tiny injections per area. With each injection you will feel a needle prick, then a mild stinging or burning for a few seconds as the toxin flows in to the muscle. Again, depending on the area being treated, you may be asked to gently press a gauze pad against the injection site and/or hold to it for a few minutes.

The whole process takes about ten minutes. As soon as the series of injections is completed, you can go back to your regular activities. As stated above, the doctor will probably ask you to refrain from bending or lying down for approximately four hours after the injections until the toxin has had time to attach to the nerve-muscle connection. You will be asked not to rub the area in order to prevent the toxin from spreading to adjacent muscles.

How Long Does Botox® Cosmetic Last?

Depending on the area being treated, one series of injections generally lasts three to six months (someone new to procedure will be closer to three months), although in some cases the improved appearance can last up to a year. As the toxin wears off, your wrinkles will gradually return, but they won't be any worse than before the treatment. With repeated injections, the effects generally tend to last longer. There is some evidence that after prolonged treatment the affected muscles may become permanently weakened, so fewer treatments will be needed.

What kind of appointment do I need?

Any regular 15 minute appointment will do. However, if you specify you are calling for a 15 minute cosmetic appointment, we will try to make sure we get you in right away!

Instructions for Dermal Fillers (Restylane and Juvederm)

- 1) Dermal fillers soften facial wrinkles, especially of the lower face. Fillers do not get rid of the wrinkles completely, but most people feel there is a natural-appearing lessening or softening of their wrinkles. Fillers today are made of the same materials we have deeper in our skin. So they are generally very safe. Some people have wrinkles that are deeper than others and can benefit from more filler, but unfortunately more material does cost more money.
- 2) A 30-minute procedure appointment is needed for filler injection(s) - call 847-499-5500 and make sure to specify that you need a 30 minute procedure appt. (If you do not specify, you most likely will be given a 15 minute appt which is unfortunately not enough time to do the procedure.) You can arrive 30 minutes earlier than your appointment for a numbing cream, but you must inform scheduling staff to put this in scheduling note. (Some people elect not to arrive early for a numbing cream. Some have their doctor prescribe a numbing cream to apply at home and others go without numbing as the procedure is just tiny pin pricks and there is a numbing medicine in the filler.)
- 3) After your treatment, you will have some redness and swelling. This is normally less than seven days but could be as long as two weeks. Cold compresses may be used immediately after the treatment to reduce this. (Wrap an ice pack in a towel and apply no more than 20 minutes per hour.) Make up can be used to conceal. If the redness and swelling last longer than two weeks or seems excessive, contact the doctor. Also, contact the doctor if any scabbing. Rarely, there have been reports of a filler blocking the flow of a blood vessel causing the skin to break down and scab. Although this is rare, there are treatments that can be done in the office to try to reverse this. Even more rarely, a filler can go into a blood vessel and cause blindness. Nowadays, we use a different sort of needle (a cannula) in riskier areas to make this rare risk even rarer.
- 4) Do not massage the injection sites. The area can be gently washed.
- 5) Sun protection is important as any healing skin takes up sun more.
- 6) Avoid exercise and alcohol for six hours after treatment.
- 7) You can take Tylenol after procedure if needed for pain, but it is not usually needed. However, avoid taking aspirin, non-steroidal anti-inflammatory medications (like Motrin), St. John's Wort, high doses of vitamin E, or alcohol for two weeks before procedure as this can increase the risk of bruising. (Tylenol is ok within the two weeks before the procedure.)
- 8) Bruising may occur after procedure. You can use make up to conceal this.
- 9) If you have previously suffered from a facial cold sore, there is a risk that the punctures could trigger a recurrence. Speak to the doctor about a medication that may minimize recurrence.

10) Two weeks after procedure is a good time to judge your results. If you have any questions/concerns especially at that time, please call the doctor. The results should last at least six months. Most people's results last 9-12 months. We can do a touch-up at any time.

Chemical Peels

Uses for Chemical Peels:

Actinic keratoses (pre-cancerous skin lesions)

Aging skin

Hyperpigmentation/sun spots

Melasma

Superficial scars

Sun damaged skin

Fine wrinkles

What is a chemical peel?

A chemical peel is a technique used to improve the appearance of the skin on the face, scalp, neck or hands. A chemical solution is applied to the skin that causes it to exfoliate and eventually peel off. The new, regenerated skin is usually smoother, more even in color, less sun damaged, and less wrinkled than the old skin. The new skin is also temporarily more sensitive to the sun. There are three basic types of chemical peels:

Superficial or lunchtime peel: Alpha-hydroxy acid or another mild acid is used to penetrate only the outer layer of skin to gently exfoliate it. The treatment is used to improve the appearance of mild skin discoloration and rough skin as well as to refresh the face, neck, chest or hands.

Medium peel: Glycolic or trichloroacetic acid is applied to penetrate the out and middle layers of skin to remove damaged skin cells. The treatment is used to improve age spots, fine lines and

wrinkles, freckles and moderate skin discoloration. It also can be used to smooth rough skin and treat some precancerous skin growths, i.e. actinic keratoses.

Deep peel: Trichloroacetic acid or phenol is applied to deeply penetrate the middle layer of skin to remove damaged skin cells. The treatment removes moderate lines, age spots, freckles and shallow scars. Patients will see a dramatic improvement in skin appearance. The procedure is used on the face and only can be performed once.

What should first be done before considering a chemical peel?

A thorough evaluation by a dermatologic surgeon is imperative before embarking upon a chemical peel.

Who is not a candidate for a chemical peel?

Generally light-haired and fair skinned people are the best candidates for chemical peel. The procedure does not work as well on dark-skinned patients. The procedure is not recommended for individuals with infections, active skin disease, cut or broken skin, sunburns/suntan, or active Herpes simplex 1 sores. Other contraindications include patients who are:

Nursing or pregnant.

Have taken Accutane in last six months.

Have psoriasis, eczema, dermatitis or rosacea.

Have used Retin-A, Renova, prescription skin care products, products that contain ascorbic acid, bleaching or skin-lightening agents or other acid-based products in the last 48 hours.

Are chemical peels painful?

Chemicals peels sting but do not cause a great deal of pain. The gentlest peels use alpha-hydroxy, glycolic, lactic or fruit acids are also gentle. They may cause stinging, redness, irritation and crusting but as the skin begins to adjust all these problems will lessen.

Trichloroacetic acids are used for stronger peelings. They help wrinkles, superficial blemishes and pigment problems. Phenol is the strongest of all treatments and removes deep lines and wrinkles on the face. These type of treatments sting more than those with the gentler acids. After the treatment there may be redness, swelling and irritation but the use of creams and gels will reduce these effects. Also the doctor may prescribe medicines that will help relieve the problems after the peel.

What are the complications or potential side effects of a chemical peel?

Temporary or permanent change in skin color, particularly for women on birth control pills, who subsequently become pregnant or have a history of brownish facial discoloration.

Scarring

Reactivation of cold sores

What can I expect after having a chemical peel?

All peels require some follow-up care.

Superficial peels require one to seven days to heal. Treated skin will initially be red and may scale. Lotion or cream should be applied until the skin heals, followed by daily use of sunscreen. Makeup can usually be worn the next day.

Medium peels require seven to 14 days to heal. Treated skin will initially be red and swollen. Swelling worsens for the first 48 hours. Eyelids may swell shut. Blisters may form and break. Skin crusts and peels off in seven to 14 days. Skin must be washed gently one to two times per day, followed by application of plain Vaseline. Antiviral medication is taken for one to two weeks. Avoid all sun exposure until healing is complete. Camouflage makeup may be worn after five to seven days. A follow-up appointment will be necessary to monitor progress.

Deep peels require 14 to 21 days to heal. The treated area may be bandaged. Skin may be soaked four to six times daily, followed by ointment or plain Vaseline application for the first 14 days. Antiviral medication is taken for 10 to 14 days. Avoid all sun exposure for three to six months. Camouflage makeup may be worn after 14 days. Several follow-up appointments will be necessary to monitor progress.

Sun exposure and smoking after a chemical peel must be avoided because they can cause unwanted side effects, including infection and scarring.