

# HANDS

There is little doubt that no part of the body will tell the story of your age more readily than your hands. The hands suffer more environmental damage, are more exposed to more harsh chemicals and often have the least protection than the rest of your body. Dryness, poor skin texture, age spots, uneven skin tone, visible veins, fine lines and wrinkles can all add to the general age of your hands. To date, there have been very few successful treatments for hand rejuvenation and most therapeutic options have tended to be a combination of RF devices such as Thermage or Polaris, fractionallised resurfacing type lasers, chemical peels and microdermabrasion to try and smooth out the wrinkles. This is usually followed by a combination of topical bleaching agents, Retin-A and IPL to try and deal with the pigmentation and then a plethora of volume fillers to improve deep wrinkles, and cover visible veins, tendons and other hand structures. These soft tissue volumisers have included Sculptra, Restylane, Matridex, Juvederm and fat grafting.

## *Why is there a problem at all?*

The underlying problem is the fact that our hands receive so much exposure to the elements and hence are one of the first places to start showing visible signs of aging. Natural ageing and exposure to sunlight are the main causes this appearance

in ageing hands. The more common visible signs of ageing on the skin include darkened spots (a.k.a. "age spots") and precancerous growths. In deeper tissues, a loss of fatty tissue also occurs, making our hands look bony. The irony is there has been a paradigm shift within the past few years from horizontal and diagonal pulling of underlying tissues especially in the face to subcutaneous volumisation of the tissues. This has led, (especially in Europe) to many innovations in voluminous dermal filling, especially with the newer compounds such as Sub-Q, Radiesse and even Macrolane. However, despite these advances in techniques regarding facial and body rejuvenation, there has been little advances in making hands look younger and many patients focus on their ageing hands as an area of significant concern.

## *Is hand rejuvenation necessary?*

To some, cosmetic hand rejuvenation may sound like an unnecessary procedure. However, our hands are the tools we use to do just about everything and in reality no woman wants to betray her true age with a simple hand shake or casual gesture. It is analogous to a person wearing nice shoes and this is why hand rejuvenation has become a popular way to wage the ongoing war against ageing.

## *What are the signs?*

The most common signs of ageing in the hands are skin related. Within this category, age spots and discoloration from sun damage, scarring from old injury, loss of fatty tissues, and enlarged veins can all make hands look older than the rest of our bodies. However, hands also age with time and certain tell tale signs are obvious to the interested observer.

At birth and throughout childhood, the back of the hand consists of a thickened, fibrous fatty layer of tissue underlying the skin. The inner layer of the skin is thick and has a few hair follicles. The outer layer of the skin has a visually smooth contour and uniform pigmentation. With ageing, there is loss of the fibrofatty tissue and thinning of the skin with breakdown of the collagen matrix. The skin loses resilience as a result of trauma and sun exposure. Skin pigmentation abnormalities develop after ultraviolet sun rays damage the basal layer of the epidermis. The veins of the hand lose elasticity, becoming dilated and prominent. With this damage comes thinning of the skin, resulting in a bony appearance as well as unsightly age spots that can potentially lead to premalignant and malignant lesions.

## *Hand ageing over the years*

A recent study of ageing hands performed by Drs Jakubietz and Kloss from the Department of Hand, Plastic and Reconstructive Surgery

# ON

by Dr Patrick Treacy







in St. Gallen, Switzerland showed that by the third decade no major ageing changes have occurred in the hand. It is apparent the bony framework and structures underneath the skin are largely hidden beneath a supple soft tissue envelope. It is apparent that wrinkles are very few and only are seen during hand movement. It is during the fourth decade that we actually see the first signs of ageing. This seems to start as crinkles of the fourth web space where one dominant wrinkle develops and is paralleled by small crinkles. This wrinkle does not extend very far. A slight loss of elasticity becomes apparent by incomplete emptying of veins on the back of the hands during finger movement. By the fifth decade: the wrist shows parallel transverse wrinkles when it is not moving. It is in this period that solitary age spots can also be found. Another wrinkle can now also be seen in the third web space and deepens to cross the tendons on the back of the hand. The skin thins significantly in the sixth decade. The pads on the front of the hand begin to lose volume and become flat with skin redundancy. Veins do not empty during hand movement and appear tortuous. The central tendons become visible from the knuckles to the wrist. By the seventh decade: most people now have more than 10 confluent age spots. Previously obliquely oriented wrinkles have now straightened out. The area around the knuckles on the back of the hand is by now completely covered with wrinkles. The first web space shows longitudinal wrinkles. The finger joints show multiple parallel wrinkles. By the eighth decade most people show osteoarthritic changes in the joints of their hands. The skin has a paper-thin quality and the muscles have diminished.

#### *What can be done?*

In keeping with other parts of the body the general feeling now is that in both men and women, volume restoration of the hands can provide a plumper, more youthful appearance by reducing skin laxity and wrinkling. Hand augmentation can also reduce the prominence of underlying structures such as bones, tendons, and veins. The ideal filler for this purpose has to effectively add bulk and volume but still be durable enough to withstand repeated dynamic motion. The hyaluronic acid fillers (in my experience) are limited in their ability to maintain any volume for a period of longer than about 3 weeks and hence are only a temporary measure. Some physicians feel autologous

fat grafting is a good strategy to overcome this but the technique requires several visits and injections, and necessitates the removal of fatty tissue from another site on the body (donor site). Furthermore, results of autologous fat grafting may not be predictable.

The ideal filler should also be safe and not form granulomatous lumps. One such filler is calcium hydroxylapatite (Radiesse®). This article looks at this compound and how it can provide a novel technique that optimises hand augmentation. Although Radiesse is FDA approved for facial aesthetic use in the United States, its use for hand augmentation is considered off-label and has not been reported with any side effects in the literature until now.

#### *What is Radiesse?*

Radiesse in the form of porous calcium hydroxylapatite has been used in otolaryngology, dentistry and radiology for many years. It is approved in the United States for cosmetic use, it is being used off-label by an increasing number of dermatologists and plastic surgeons for hand augmentation. All preliminary clinical and histological studies to date have shown safety, efficacy and durability in various aesthetic applications including the nasolabial folds and HIV lipodystrophy.

Soft-tissue augmentation in the body began as far back as the advent of free-fat grafting in 1893. It became popular in the United States after approval by the (FDA) of bovine collagen injections in 1982. The introduction of hyaluronic acid fillers for cosmetic enhancement firstly in Europe in 1996 and later to America in 2005 saw a massive explosion in popularity. Since then, newer materials have been developed and used. One of these materials Radiesse is presently gaining widespread acceptance among cosmetic dermatologists and plastic surgeons. At first glance, the main constituent in Radiesse (CaHA), which is also the main mineral component of bone and teeth, might appear to be an unlikely candidate for facial or hand soft-tissue augmentation. At the present time, the compound is approved by the FDA for craniofacial surgery and for facial soft-tissue augmentation. To date, multiple studies have documented its safety, efficacy, and longevity in tissue. The compound has been used in reconstructive and orthopaedic surgery and dentistry for more than 15 years. New bone deposition has been observed with the use of hydroxylapatite



near the skull, and posttraumatic or congenital facial bony deficiencies have been corrected using this material. It is composed of CaHA microspheres with a diameter between 75 µm and 125 µm. A novel use of the compound has been vocal fold augmentation for insufficiency due to cancer or paralysis of the vocal cords.

The first mention of Radiesse being used in hand soft tissue augmentation was in a paper by Dr. Mariano Busso and Dr. David Applebaum in Boca Raton in 2007. Dr Busso was quoted as saying "The hand has remained a considerable treatment challenge, as new soft tissue fillers have arrived in the aesthetic marketplace. The challenge has been the result of the multiple visits required for treatment in, for example, autologous fat grafting and the simple management of pain in the innervated areas of the hand between the bones. The paper introduced a novel, noticeably less painful approach to treatment of the hand with Radiesse®.

#### *The Radiesse technique*

The compound is first prepared by adding local anaesthetic to the compound prior to injection. This results in a homogenous admixture of Radiesse and anaesthetic. The mixing technique renders the filler less cohesive and provides a smoother flow during injection. A bolus of the mixture is injected into the skin, using tenting, and then spread throughout the hand. The result of this approach – mixing anaesthetic with CaHA – is treatment that is easier to massage and disseminate, less painful to the patient than

conventional hand injection, and characterized by less swelling and bruising, with minimal post-treatment downtime.

The mixture is injected as a bolus (0.5–1.4 ml) to an area between the second and fifth bones of the back of the hand. The other margins for injection are the knuckles and the wrist. The layer where the filler mixture is introduced is medically called the areolar plane and it lies between the subcutaneous layer and superficial fascia. I mention that for other doctors who may want to learn the technique. I had to show the technique to 250 doctors at the F.A.C.E. conference in London this year and the lecture can be found on YouTube if you put 'Radiesse hands' into their search engine. For the benefit of doctor and client it takes approximately 1.3 ml of Radiesse to fill this space on the back of one hand. Immediately after injection, the injection site should be gently massaged until the filler has been evenly spread. To allow for more even distribution, the patient should make a fist of the newly injected hand as the physician manipulates the injected area. In general, no massage by the patient is required. Patients may experience some temporary swelling; bruising should be minimal to nonexistent. Patients can resume their activities of daily living the next day. A follow-up office visit in 2 weeks provides an opportunity to express any concerns about the treatment and discuss other problems the patient may be having. There is minimal to no downtime along with no post-treatment restrictions. The price of augmenting both hands is about €900 and the results may last as long as two years.