Before analysing the use of chemical denervation products such as Botox to assist patients in reducing the visible appearance of skin ageing, it is worthwhile considering the signs of skin ageing. In addition, this article will take into consideration the muscles that will need to be treated in order to lessen the ageing effect of these lines or rhytids.

Wrinkles and frown lines develop as a result of using facial muscles repeatedly throughout a lifetime, with the skin creasing in areas of greatest use. Added to this, the ageing process causes the slow down of collagen and elastin production in the skin, so that as we get older these lines become permanent and are present even when we are not frowning. In today’s society, rife with baby boomers, it seems that the elixir of youth is more sought after than ever before, as well as being more attainable than ever before. According to Singh and Kelly (2003), the ‘elixir of youth’ is Botox, a purified crystalline form of the exotoxin type A produced by the bacterium Clostridium botulinum.

A simple and unobtrusive procedure, Botox is used mainly in the upper one-third of the face and around the eyes to relax muscles temporarily. It can also be used to reduce the appearance of smokers’ lines around the mouth and relax the platysma bands on the neck.

In addition, the use of Botox results in the prevention of premature wrinkles and the smoothing out of frown lines and wrinkles already present on the face and neck. Botox can also be used to treat medical conditions such as migraines and excessive sweating, particularly under the arms (Corcoran Flynn, 2007).

In the beginning
Botox was initially used as a treatment for patients with eye squints to weaken the overactive eye muscle. Since then, it has been used in a variety of therapeutic areas such as blepharospasm associated with dystonia, multiple sclerosis, migraines, persistent headaches, stroke, facial spasm, Parkinson’s disease and cerebral palsy, to name but a few.

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Cause and effect
By reducing the movement of the muscles in these areas, the skin stops being creased and is allowed to recover, causing the lines to soften or even fade away. In the areas treated, the muscles are temporarily inactivated (always reversible), during which time the patient can break the subconscious habit of overusing these muscles. Depending on each individual and the dose used, the response to treatment can vary from a relaxation of the muscles to an inability to move them.

Side effects of this treatment are rare but occasionally a temporary drooping of the eyelid can occur. This may last a few weeks, but will always resolve. Special eye drops can be prescribed during this time to help lift the lid back into the normal position.

The full effects of the treatment can be noticed in three to 14 days. Depending on the area treated, dose used and how the patient responds to Botox, repeat treatments will be required around every four to six months. These will maintain and potentially improve upon the initial cosmetic look achieved. For the first couple of years, twice yearly treatments are required in order to re-educate the facial muscles. Thereafter, treatments become less frequent until a yearly maintenance treatment is normally all that is required.

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As previously outlined, botulinum toxin is a chemical produced by the botulinum bacteria. Botox is a protein derivative of the toxin that, when injected into a muscle, causes it to become weakened or inactive. Until recently, there have been many myths surrounding Botox, the main one being whether it is toxic. Botulinum toxin/Botox is a substance used in such small, diluted doses that it is in no way toxic. To put it in context, if you went to hospital after having a cardiac arrest you would be given many drugs in their diluted form. These same life-saving drugs, if not diluted, could potentially kill you. In terms of administration, Botox is administered via the same type of needles that diabetic patients use every day to inject themselves with insulin.

**Treating the signs of ageing**

In order to assist patients in lessening the visible appearance of skin ageing, it is necessary to outline how and where these signs of skin ageing become apparent, and to which muscle or muscle group we owe the pleasure of these ageing signs. The use of chemical denervation products to reduce ageing primarily corresponds to the treatment of lines and wrinkles, which are also known as rhytids.

Wrinkles or rhytids appear in different anatomical areas and we must understand the action of the muscles, and indeed which muscles are involved in their formation, in order to lessen these rhytids.

According to Loos and Maas (2003), contraction of the frontalis muscles results in skin buckling and rhytid formation in a transverse direction. The vertical pull of the frontalis muscle elevates the brows. Transverse rhytids in the forehead are addressed by directly treating the frontalis muscles. Loos and Maas (2003) point out that the paired frontalis muscle has a distinct midline separation. The action of the frontalis elevates the brows. In order to reduce these lines successfully, one needs to relax the frontalis muscle; this is achieved by injecting doses into the actual muscle, ensuring that injections are 2cm above the brow margin.

It is paramount to ensure that no brow ptosis ensues due either to malpositioning of injections sites or over-dosage and, as a result, over-relaxation of the frontalis muscle. Brow ptosis is caused by the unopposed depressor activity of the corrugator muscle, procerus muscle and obicularis oculi muscles. Chemical denervation therapy effectively treats overactive muscles and softens the lines that result from these hyperactive muscles. Botox inhibits the release of the neurotransmitter acetylcholine from the nerve terminals.

Accoridng to Loos and Maas (2003), the transverse and vertical rhytids that lie between the brows in the glabellar region are successfully relaxed with Botox by injecting the procerus and corrugator muscles, respectively. By injecting the procerus muscle, the visible signs of ageing are greatly reduced in this area. The corrugator supercilii muscles displace the eyebrows inferomedially and so result in vertical lines in the glabellar region.

Crow’s feet or lateral orbital lines are due to the action of the underlying orbicularis oculi muscle; blinking and squinting cause the overlying skin to wrinkle. In treating lateral orbital lines or crow’s feet, it is important to focus on the chemical denervation of the orbital portion of orbicularis oculi (there are three parts to this muscle: orbital, lacrimal and palpebral). Thus the point of injection is approximately 1cm lateral to the lateral canthus, according to Loos and Maas (2003). Of course, it is important to avoid any blood vessels and because the skin is so thin in this area, the injection depth is very superficial – just 1mm below the skin surface is sufficient.

It is also possible to treat lower eyelid lines by using tiny amounts of Botox (a maximum of one or two units) while ensuring not to inject medial to the mid papillary line. It is beneficial to perform the snap test before treatment to ensure that patients predisposed to ectropion do not receive treatment in this area.

‘Bunny’ lines can also be treated with Botox; these lines form over the top of the nose and are due to the contraction of the underlying transverse nasalis muscle. According to Janlaza and Cheney (2000), the transverse nasalis muscle is a paramedian muscle whose fibres course in a superomedial direction from its origin on the maxilla, over the nasal bridge to fuse with its contralateral muscle and the aponeurosis of the procerus muscle. During treatment of bunny lines the practitioner must insert the needle into the superior portion of the muscle. Injections placed too low can result in paresis of the levator labii superioris alaeque nasi and levator anguli oris, manifesting with ipsilateral lip ptosis and an asymmetric smile, according to Carruthers and Carruthers (2001).

Another visible sign of ageing is the appearance of marionette lines descending from the corners of the mouth; these are as a result of hyperactivity of the depressor angularis oris muscle at its medial insertion, and this contraction results in the corner of the mouth turning down in a sad, disapproving expression. According to Carruthers and Carruthers (1998), the injection technique focuses on targeting the muscle at a point 1cm lateral and 1cm inferior to the oral commissure on both sides of the mouth.

Yet another visible sign of ageing is the appearance of smokers’ lines periorbitally due to the effect of overuse of the orbicularis oris muscle during, for example, inhalation of a cigarette. In addition, lines rising in particular from the upper lip towards the nasal septum can be present in patients with long-term chronic sun damage and females who have used waxing on their upper lip. According to Fagien (1999), it is possible to selectively denervate the muscles superficially close to the vermilion ridge, causing lip creases to relax. Care must be taken not to over-treat this area, because the result can lead to speech or drinking impairment.

Platysma bands on the neck also appear as we age. The platysma is a small, thin muscle that spans the entire anterolateral aspect of the neck. The treatment of vertical platysma lines and the horizontal rhytids found between the borders of the sternocleidomastoid muscles is a more advanced Botox technique, and should remain the remit of the very experienced practitioner only.

**Botox for men**

Botox for men is one of the fastest growing cosmetic procedures on the market today. As discussed earlier in the article, Botox is used for the reduction or elimination of facial wrinkles caused by dynamic or hyper-functional muscles (muscles that get a lot of use). Those are the wrinkles that form when you contract your facial muscles to form a frown, squint, grimace, smile or other type of expression, resulting in those tell-tale lines around your eyes, mouth or nose, and across your forehead. Botox can be very effective in temporarily getting rid of some, but maybe not all, of the facial wrinkles.

According to Corcoran Flynn (2007), Botox is a very effective treatment for wrinkles in men. Men benefit from mimetic muscle relaxation and generally require more units than women. It is recommended that 40 units be used as starting dose for the male glabella. Carruthers and Carruthers (2005) also carried out a double blind study relating to the ideal dose for treating male glabellar lines.
and recommended a starting dose of 40 units in the muscles of the glabellar complex. Also noted by Corcoran Flynn (2007) was the beneficial reduction in sweating and the directly related decrease in odour.

A man who has pronounced lines between his brows may be perceived as angry or stressed, even when he isn’t. For this reason alone it is not surprising that men are attending for Botox treatments. In addition, this cosmetic non-surgical treatment requires little time away from the office.

In the past, there has been a social stigma attached to men seeking cosmetic treatment. However, in today's society seeking advice and treatment to improve your looks is no longer the preserve of women and cosmetic procedures among men are on the rise. When it comes to Botox treatment, around 15% to 30% of patients are male, but the exact number is dependent upon location. It is now the most popular non-surgical procedure among men.

Men often require more units of Botox than women, which is probably because men have a greater muscle mass than women; this is reflected in the price of Botox treatment for men. It has also been observed that larger, stronger men need more units per treatment area than smaller-framed men. The most common cause of inadequate results in male patients is as a result of the practitioner not using a sufficient number of Botox units, which may lead to the patient requiring subsequent Botox injections.

The motivation behind seeking Botox treatment varies between individuals. Some men seek Botox treatment in the belief it will boost their chances on the singles scene and experience a confidence boost as a result of the procedure. But for many men Botox is seen as a career investment. The most commonly treated area in men is the frown lines between the eyes. Removing these lines can give a person a more ‘approachable’ appearance, which can be a career advantage for many men, whether they are a salesman who needs to appear more friendly or a lawyer who needs to make a good impression in the court room.

A lock on the future

In conclusion, the use of chemical denervation products to assist patients in lessening the visible appearance of skin ageing is on the increase. Whether you care to call the visible signs of ageing lines, wrinkles or rhytids, it seems that, according to Singh and Kelly (2003): ‘Those who have tasted the heady mixture that locks youth into place find it all too addictive, and develop a pathological preoccupation of chasing a desire to become eternally youthful’ but ‘for those with a well balanced sense of self and social functioning Botox can be a psychological benefit’. 

References


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