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Botulinum Toxin for Men: Treating the 'Brotox' Boom

Dr David Jack examines the increase in male aesthetic treatments and details the relevant anatomy to be aware of when treating men with botulinum toxin

Since the conceptualisation of botulinum toxins types A and B (BTX-A/BTX-B) as treatments for cosmetic enhancement in 1990,[1] their use has grown exponentially making botulinum toxin one of the most requested and accessible cosmetic treatments available around the world.[1] As in the realms of beauty and fashion, the male market for aesthetic treatments was traditionally seen as an afterthought, lagging behind in terms of revenue and importance when compared with that of the female. Between 2000 and 2014 however, the American Association of Plastic Surgeons reported an increase of 67% of men undergoing minimally invasive non-surgical cosmetic procedures and, within this, an increase of 337% of men undergoing botulinum toxin treatments.[2] This significant statistic highlights and supports the recent observations in the media that male patients are gaining significant interest in these treatments. Indeed, more than 400,000 men underwent botulinum toxin treatments in 2014 in the US alone. Interestingly, over the same time period, the report found a substantial decrease of 48% of men undergoing surgical cosmetic procedures.[2] In my clinic I personally have noticed a change in the number of males enquiring about and undergoing botulinum toxin treatments in the last few years, in line with this recent statistical data. Although there is yet to be a significant demographic study on this, in my observation, the majority of these patients are high performing professionals aged between 35-60 who are choosing to invest in themselves, but are not keen on the idea of surgical interventions to maintain their appearance.

Given the increase in uptake of these cosmetic non-surgical interventions by men in recent years, it is important for any aesthetic practitioner to have a good understanding of the specific treatment goals and aesthetic anatomical nuances when treating male patients with botulinum toxin treatments. In this article, I will outline the gross anatomical differences when comparing male and female faces, the different treatment goals, and I will also suggest ways to optimise neurotoxin treatment of the male face. In addition, I will outline the treatment of axillary and palmar hyperhidrosis, an important secondary usage of botulinum toxin by aesthetic medicine providers.

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Male facial anatomy

Regardless of gender, less than 15% of human faces are considered to be symmetrical,[3] and all faces can be considered to have 'imperfections' in one or more feature if viewed from an idealistic standpoint. Regardless of this, ideal 'attractiveness' in males when compared to females can be associated with certain specific facial features,[4,5] thus allowing targeted aesthetic interventions to enhance these features without resulting in feminisation. Developmentally, all faces begin as female. During development and puberty, aside from facial hair growth, higher androgen levels in males stimulate masculinisation of the facial soft tissues and bony structures, with development of bulkier mid-face components and squarer jawlines synonymous with a masculine appearance. Dr Mauricio de Maio, an acclaimed plastic surgeon, considered by many to be the authority on non-surgical facial treatments, described a hierarchy of three groups of facial features that confer masculinity on a face.[5] The first and most important features in men include the nose, the chin and jawline, and the zygomatic arches. In males, attractiveness is associated with a strong chin, which may even over-project the lower lip, in contrast to females, where higher cheekbones and a chin slightly posterior to the lower lip, are desirable features. The second group of masculinising characteristics includes the supraorbital ridges, premaxilla and the contours of the temporal region. Frontal bossing and prominent supraorbital ridges give the male eyes a deeper appearance compared to females. According to Dr de Maio, the eyes, eyebrows, lips, perioral and nasolabial areas form the third group of characteristics. These features confer individuality and dynamic harmony to the face. Whilst each of the individual features in each group are important targets for any treatment, it is of course essential to consider the face as a whole when planning any aesthetic intervention. Treating one area without considering the others, and indeed the impact of one treated area on another area, can upset the overall harmony of the face as a whole.

Botulinum toxin-A

Botulinum toxin-A is one of eight-genetically distinct cytoplasmic exotoxins produced by the gram-positive obligate anaerobic bacillus Clostridium botulinum. This toxin acts at the level of the cholinergic neuromuscular junctions and nicotinic/muscarinic receptors of the sympathetic and parasympathetic nervous systems to block the release of acetylcholine, and, thus, block the stimulation of the targets of motor and other autonomic nerves. In low doses, the BTX-A does not exhibit systemic effects so can be safely injected for local effects including blocking of muscle action

potentials and reduction in local sweat production. The US Food and Drug Administration approved BTX-A in 2002 for the temporary treatment of dynamic glabellar lines for cosmetic purposes, and in 2013 for the treatment of lateral canthal lines.[6] This was followed in 2006 by approval in the UK for treatment of glabellar lines and in 2014 for lateral canthal lines by the MRHA.[7] Off label use of BTX-A for other dynamic facial lines has also been well documented over the last 20 years and has allowed specific informal guidelines to be developed for treatment of a variety of aesthetic and functional purposes. Anecdotally, males presenting to clinics tend to seek botulinum toxin treatments for two main purposes: treatment of upper face static lines, and treatment of axillary and palmar hyperhidrosis. Treatment of dynamic lines, when static lines are not present, does not seem to be a particular concern in male patients.

Applied anatomy: the use of botulinum toxin in male patients

Ideal facial anatomy in males

In men, the aesthetically ideal face has a muscular and overhanging horizontal brow. Male eyes are generally narrower and less open than females. Hypertrophy of the orbicularis oculi pars palpebris is also a common feature, together with some upper lid skin excess and slight closure of the eyelids.[4,5] The latter feature is generally compensated for by excessive frontalis contraction at an earlier stage than in females, making the development of horizontal forehead lines generally an earlier feature in males.[4,5] Often, the male frontalis contains strong central muscle fibres where often an aponeurosis exists in females. The treatment of the male upper face with BTX-A therefore needs to be carefully performed in order to maintain the expected low brow position without over-relaxing or high arching of the lateral brow, but also to prevent excessive eyelid heaviness. Lateral canthal treatments should also not be overdone, which could risk feminising the male eye area by excessive opening and flatness. In addition, the higher male muscle bulk may result in an increased dosage requirement when compared to females and differences in skin quality will also affect this. Patients with thick, deeply furrowed sebaceous skin require generally much higher doses than those with thinner, dryer skin.[8]

Injection techniques

Dosing for male facial treatments using botulinum toxin can be more difficult than female patients, particularly for practitioners with less experience of treating males than females. Most experienced practitioners therefore advocate an approach of using a standard recommended dose (as recommended by the manufacturers) and then 'topping-up' as necessary with additional small doses, ten days to two weeks post treatment, should the results not be satisfactory. In general, the higher muscle bulk in males results in a higher dosage requirement than their female counterparts. Suggested recommendations for doses of botulinum toxin for the upper face are 10-40 Speywood units for the glabella complex, 10-30 units for the lateral canthal area and 6-15 units for the frontalis.[9] The higher the concentration of dilution used, the less risk of diffusion of product and therefore more accurate placement of injections.[10] A suggested dilution of 1.25ml 0.9% saline for 50U Allergan Botox (botulinum toxin type A) or 2.5ml for 100U is the generally accepted standard for the upper face.[11] In men particularly, the aim of botulinum toxin treatments should be to relax static facial lines, without complete paralysis of the treated areas, which in itself is a decidedly feminising feature.

Botulinum toxin treatments to the glabellar region involve three to five dosage points placed along the corrugator supercilli and procereus muscles. I personally inject this area using deep injections to the medial part of corrugators at the level of the supercilliary arch with a higher dose than the lateral part, which is injected superficially with a lower dose approximately 1cm above the medial supraorbital rim. The location of the injection can be

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Hyperhidrosis

In addition to its cosmetic uses, primary axillary and palmoplantar hyperhidrosis may be safely and effectively treated with botulinum toxin via its inhibition of acetylcholinergic transmission at postganglionic sympathetic presynaptic nerve terminals. This troublesome condition is estimated to affect around 3% of men[15] and can cause significant psychological distress and expense to individuals affected as a result of soiling of clothing, loss of work and loss of confidence. The use of botulinum toxin A has been shown to be effective for a mean duration of 6.7 months in patients treated in the axillary region,[16] with some patients reporting symptom control for up to 12 months from a single treatment.[17] In my clinic hyperhidrosis treatments with botulinum toxin are the second most requested treatment by males, and given the simplicity and effectiveness of this treatment, patients usually have good levels of satisfaction as a result of the treatment. Generally a slightly lower concentration of dilution can be used to increase the diffusion of botulinum toxin in the area when compared to treatments in the face[11] and a suggested dose of 50-75 units per axilla is recommended. The incidence of adverse effects in the treatment of hyperhidrosis is extremely low but could include bruising and eczema with high doses.[17] In palmar hyperhidrosis I tend to use 50 units per palm, injected intradermally following topical local anaesthesia. In patients with low pain thresholds, median and ulnar nerve blocks may sometimes be required for anaesthesia in this area, although this should only be performed by those experienced in administering these blocks. Grip weakness has been reported in patients undergoing botulinum toxin treatments for palmar hyperhidrosis but this is rare and transient[17] in those affected, usually lasting only for a few weeks post treatment.

Lateral orbital injections sometimes require much higher doses in males than females, given the significant strength of the male orbicularis oculi

judged in the individual by asking the patient to frown and the lateral extent of the superficial insertion of the corrugator can be demonstrated. The procereus is injected in either one or two places (two if it is a very long procereus) in a mid-depth injection (not to bone) into the belly of this muscle. Some practitioners advocate the upward direction of the needle point away from the globe of the eye when injecting the corrugator muscles[12] to avoid downward diffusion of neurotoxin, decreasing the risk of lid ptosis.

Treatment of the forehead is generally simple with six to eight injection sites placed in the frontalis muscle spaced 1.5-2cm apart across the forehead, 1.5cm or more above the level of the supraorbital ridge, including the lateral part of frontalis at the level of the hairline to prevent overarching of the lateral eyebrows. Over-treatment of this area may result in brow ptosis so the standard dose and top up at two weeks approach is strongly advocated for this area.

Lateral orbital injections sometimes require much higher doses in males than females, given the significant strength of the male orbicularis oculi. Injections are placed in the lateral parts of the muscle, at a distance of 1cm lateral to the orbital rim, generally in three sites, avoiding injection of the zygomaticus muscle (which could result in smile asymmetry if treated). The landmarks to restrict inadvertent treatment of these lateral oral levators are to avoid injecting in the area medial to an imaginary vertical line running through the lateral canthus and below the level of the superior zygomatic arch.[13] Injections in the lateral canthal area should be superficial, just deep to the dermis. Elongated and deep crow's feet may also be treated by additional injections in the temporal area.[14]

Lower face treatments in males

Treatment of the lower face with botulinum toxin is increasing in popularity, particularly in females with strong platysmal bands to perform a 'Nefertiti lift' and for jawline reduction. In males, these treatments can also improve the appearance of the lower face in patients with strong platysmal bands. Male treatments, similar to the upper face, have a higher dosage requirement generally, especially in those with high muscle bulk. Masseteric debulking for jawline reduction and bruxism treatments with botulinum toxin, involving injections into the body and insertion of the bilateral masseter muscles, are popular in female patients as they can improve the silhouette of the face and result in a more tapered feminine jawline. In men seeking treatments for bruxism, it is important to consider the effect such treatments will have on the jawline, as over treatment may result in narrowing and therefore feminisation of the lower face.

Summary

The male market for aesthetic non-surgical treatments is increasingly important in the world of medical aesthetics. Indeed, demand for non-surgical interventions has increased exponentially over the past decade with botulinum toxin treatments dominating this trend.[2] It is important for practitioners in this field to understand the gross anatomical differences in male and female facial anatomy to tailor these cosmetic treatments to the male face to provide enhancement without feminisation (unless this is required). A number of key anatomical features contribute to the 'ideal' masculine face and judicious placement and dosage of botulinum toxin injections are important to maintain this masculinity. The treatment of hyperhidrosis with botulinum toxin is an additional important aspect of treatment of the male patient in the treatment range of the modern aesthetic clinic. In the coming years, it is likely that an increasing number of treatments designed specifically for men will appear in the field of medical aesthetics so understanding not only the anatomical, but also the aspirations, of this patient group is of utmost importance to maintaining a sustainable patient base.

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