Botox in men

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ABSTRACT: Men have a growing interest in cosmetic dermatologic treatments. Botulinum toxin type A (BTX-A) treatment offers a minimally invasive approach to improving facial lines and is often the first cosmetic procedure chosen by male patients. In general, men can be treated with the same techniques as women, but often require more units of BTX-A. Glabellar lines in the male have been the most well-studied with a recommended starting dose of 40 U. Some men may require up to 80 U in the glabellar complex. The most common cause of an inadequate result in male patients is under-dosing. Forehead lines require care, as many men with horizontal lines have low-positioned eyebrows, and excessive relaxation of the lower frontalis muscle can drop their brows further. Special consideration should be given to the male brow when treating men. Lateral orbital lines can be treated with a starting dose of 15 U per crow’s foot. Men may need additional injections to the orbicularis oculi muscle as many men have a broad circumferential orbicularis. The lower face is amenable to BTX-A treatment in men. BTX-A can be used to reduce axillary sweating and improve armpit odor. BTX-A shows promise in treating benign prostatic hyperplasia, and may in the future become a first-line treatment.

KEYWORDS: benign prostate hypertrophy, botulinum toxin, hyperhidrosis

Introduction

There is growing interest among men in cosmetic procedures. Although most practices see a majority of women, the number of male patients who seek treatment is slowly increasing. This may be the result in part of the remarkable improvement in facial lines offered by the use of botulinum toxin type A (BTX-A). This minimally invasive cosmetic procedure ranks as the most frequent esthetic procedure performed in the United States in 2006 (1). BTX-A treatment has a high level of patient satisfaction and is among the easiest minimally invasive procedures. Many male patients who seek BTX-A treatment do so because they have been referred by a friend or family member. Many men have been encouraged to seek treatment by their wives or girlfriends who are regular users of BTX-A. The women have been pleased with the results and have felt their significant others would benefit as well. Men have also begun to appreciate the economic aspects of looking good. It is well known that better-looking individuals have a greater chance of being offered a job or advancing up the career ladder. Many cosmetic dermatologists have male patients who have commented that BTX-A treatment has helped them achieve their goals.

In terms of technique, men can be treated similarly to women with BTX-A in cosmetic areas of the face. Men, however, need higher doses of botulinum toxin in almost all treatment areas (2). This may be because men have a greater muscle mass than women. In a study published in 2000, Janssen et al. (3) studied skeletal muscle mass in 468 men and women aged 18–88 years. Men had a significantly higher amount of skeletal muscle when compared to women (33 vs. 21 kg). With a larger muscle mass, this increase may apply to memetic muscles of the face, as all skeletal muscles are subject to the hypertrophic effect of testosterone. It is a common clinical observation that larger, stronger men need more units per treatment area than a slender, smaller-boned man.
Androgens are well known to increase skeletal muscle hypertrophy (3). Androgen receptor antagonists suppress excessive induced hypertrophy of skeletal muscle (4). The relationship between androgens and the neuromuscular junction has been studied by the work of Jordan and colleagues (5). They noted that androgen receptors are enriched in the cell nucleus localized at or in the vicinity of the neuromuscular junction. It is possible that androgens may have an increase in the neuromuscular junction itself.

Noncosmetic use of botulinum toxin also shows a difference in dose needed between the sexes. Men having their masseters and temporalis treated for oromandibular dystonia need an additional 25–100%, compared to women, according to Dr Andrew Blitzer, MD, DDS (personal communication, 2007). Each muscle group treated, either cosmetically or for medical reasons, may have their own specific dose. Careful study of each muscle group in men is necessary to specifically detail ideal dosages.

**Treatment of the male glabella**

The glabella is one area in which studies have been undertaken specific to men. In a study by Carruthers and Carruthers (6), the dose–response relationship was studied between varying doses of botulinum toxin. In their study, 80 men were randomized to receive either 20, 40, 60, or 80 units of BOTOX® in the glabellar complex. Glabellar lines were evaluated at baseline and 2 and 4 weeks post-treatment. The 40-, 60-, and 80-unit doses were consistently better at improving glabellar lines than the 20-unit dose. They showed a dose-dependent responsive rate and duration of effect as assessed by a trained observer. Importantly, male subjects reported a dose-dependent relationship between their ability to frown, improved global assessment, and increased feelings of attractiveness, self-confidence, and satisfaction. There was no increase in adverse events at higher doses. What was clear from the data is that 20 units in the male glabella (7) is an inadequate dose; a starting dose of 40 units in the muscles of the glabellar complex is recommended. The author’s comment in the paper that they regularly start men at a dose approximately twice that which they use in women (60–80 U BOTOX®). FIG. 1 shows a male patient treated with 60 units of BOTOX® in the glabellar complex.

Several other caveats are important when treating the male glabella. The corrugator supercilii muscle can vary in its anatomic shape. In many men, it tends to have a rather broad course with the distal fibers of the muscle inserting into the skin far laterally. When the male patient is evaluated as to corrugator size and position, the treating physician must assess these lateral fibers and inject the toxin in such a manner that these lateral fibers will be treated. Failure to place the toxin far enough laterally will result in the male patient being able to contract the distal portion of the muscle, producing an unnatural appearance.

Treatment of the glabellar area results in a delayed effect of lifting brow position. When the glabellar complex is treated, the BTX-A diffuses into and affects the lower portion of the frontalis medially. Over time, the lateral aspect of the frontalis muscle, which has been untreated, is able to hypertrophy in response to animation and has the effect of lifting the lateral brows. Although women largely appreciate the effect, in men this brow lift can appear somewhat unnatural. As will be discussed further, men look good with horizontal brows. An unnatural high lateral eyebrow in a male patient is a visual cue that botulinum treatment has been performed. If glabellar BTX-A treatment is performed too medially, this brow lift can produce an effectively and excessively arched eyebrow, which is also unnatural in the male. Care should be taken by the treating physician to consider these possibilities and to plan accordingly.

Many men return after glabellar treatment, feeling that the treatment was ineffective. Showing
the patient their before and after photographs is usually sufficient to document that there was treatment effect; however, most causes of incomplete glabellar line treatment are the result of too low BTX-A dose used. It is our approach in men to see them back in 2 weeks after their initial treatment and to assess their muscle function. In many men, it is needed to place an additional number of units in the glabella, and it is not uncommon to use an additional 10–20 U at follow-up.

Men have to be warned that some long-standing glabellar folds at rest cannot be treated with botulinum toxin alone. Many folds will require botulinum toxin along with a filler substance (2,8). Caution must be used in injecting filler substances into glabellar lines as complications have been reported with these injections. FIG. 2 shows a male patient treated with the combination of both BOTOX® and Cosmoderm.

The male brow

Studies of iconic beauty (movie stars/classical paintings/models) have taught us that women look good with an arched brow. Men look handsome with a horizontal brow. Esthetic physicians as well as makeup artists and photographers understand the differences in the brow. The male brow is lower than the female brow and is in general not arched. This should be taken into consideration when treating men. Arching the brow of a male patient may produce a feminine or “pretty boy” appearance.

Some men may have brows that are riding in a position below the supraorbital ridge. In many of these patients, prominent horizontal forehead lines will be noted because these men are using the frontalis to elevate their brows in order to allow for a more complete field of vision. These patients can be helped with botulinum toxin. A filler substance can also be used in the male eyebrow to elevate it up and out, and thus return it to a more elevated position.

Brow-lifting techniques with botulinum toxin can be helpful in men. If one desires to elevate the medial brow, just the central portion of the glabellar complex can be treated. The present author often performs one injection into the procerus muscle. If elevation of the lateral brow is desired, botulinum toxin can be injected into the tail of the eyebrow. Here, vertical fibers of the orbicularis oculi muscle are relaxed, allowing the lateral brow to elevate. Very commonly, if the present author wishes to elevate the entire brow, both of these injections are used.

Some men may have excessively peaked eyebrows. This can occur if a too medial injection of the glabellar complex is performed, or it may be a congenital effect. One can easily correct these peaked eyebrows by placing a few units into the frontalis muscle above the area of the peaked eyebrows. It is always important to remember that men usually need more units of botulinum toxin than women.

Crow’s feet

Lateral orbital wrinkles (crow’s feet) are present in many men. These can be improved with careful use of botulinum toxin (9). When treating male patient who have crow’s feet, the present author usually begins with a starting dose of 15 U of botulinum toxin in each lateral crow’s foot (FIG. 3). Some men have a broad expanse of the lateral....

FIG. 2. A 45-year-old male patient shown in repose with glabellar rhytids shown before and after BOTOX® treatment to the glabella. Cosmoderm® was used as an intradermal filler to improve the resting vertical wrinkle.
orbicularis oculi muscle, and they may need additional units placed in more lateral sites in order to relax completely this portion of the musculature. A simple concept of following the wrinkles when treating the crow’s feet can be helpful when treating the male patient. Of course, one must keep in mind to not go too low on the crow’s feet area, which might weaken zygomaticus major and affect the man’s ability to smile. Furthermore, chasing crow’s feet wrinkles too close to the lateral lower lid can produce lower eyelid rounding, which can produce an unesthetic appearance.

Forehead wrinkles

Many men suffer from prominent horizontal forehead lines. These are formed by excessive contraction of the frontalis muscle. We can see these horizontal forehead lines in many younger men who may have a tendency towards excessive animation. Their expressive nature leads to regular contraction of the frontalis muscle, leading to hypertrophy and wrinkling of the overlying skin. Other individuals have frontalis contraction as the result of brow ptosis. In order to gain a more complete visual field, they contract the frontalis to elevate the brow, allowing full gaze. There are individuals who can benefit with a BTX-A treatment; however, older men may benefit from cutting surgery such as a surgical brow lift with or without a blepharoplasty.

Many men have a very broad flat muscle. Traditional anatomic drawings can indicate a muscle with two muscle bellies, but in many men the midline fibers overlap considerably. We have found it helpful in the male patient to consider the frontalis as a single muscular sheet that underlies the skin of the forehead. On evaluation, patients are asked to elevate their eyebrows. This leads to frontalis contraction, and we are able to see the pattern of horizontal forehead lines. FIG. 4 shows a male patient with a good result from careful frontalis treatment. A few clinical caveats are helpful. Some men can have wrinkles that extend up to the superior portion of the frontalis near the hairline or where the hairline originated. Failure to treat these superior forehead wrinkles will lead to patient dissatisfaction and an unnatural appearance. The lower 2 cm of the frontalis muscle controls eyebrow position, and it is important to keep this in mind when treating male patients. In many male patients in which we are concerned about the brow position, the present author approaches their treatment as a two-visit session.

FIG. 3. A 25-year-old male patient with lateral orbital rhytids. The patient had 15 units of BOTOX® injected in the orbicularis oculi muscle. Insets show close-up correction of the wrinkles.
In the first visit, the upper portion of the frontalis muscle is treated in an attempt to remove rhytids. Upon follow-up in 2 weeks, the brow positions are assessed, and careful treatment of the lower portion of the frontalis is undertaken. FIG. 5 shows a patient treated in this fashion. A 22-year-old man with excessive skin wrinkling of the forehead is shown in FIG. 6.

**Mid and lower face**

The male patient does not seek treatment of the lower face to the same degree as the female patient, but men can benefit from botulinum toxin of the mid and lower face. Areas that are amenable to BTX-A treatment include the nasalis muscles, perioral wrinkles, and the depressor anguli oris. Some men suffer from an excessively animated mentalis muscle, which leads to a “peach pit” chin appearance. These individuals can be treated with botulinum toxin to the mentalis. The author usually uses approximately 10 U in men to treat the mentalis. The platysma muscle can be treated in an attempt to soften platysmal bands.

FIG. 5. A man with wrinkles present in the lower forehead. Contracting images are shown 2 weeks apart. The patient had the upper two-thirds of the forehead treated in the first session, and the lower forehead was treated 2 weeks later. Note good brow position and relaxed forehead lines.
Axillary treatment in men

BTX-A blocks cholinergic nerve activity. It can be used to denervate eccrine sweat glands and thus reduce sweating. Axillary injection of BTX-A is highly effective in controlling excessive sweating found in primary axillary hyperhidrosis (10). The usual treatment protocol calls for 50 U of botulinum toxin type A to be injected in each axilla. The minor starch iodine test can be utilized before injection to document the areas of excessive sweating and also postoperatively to show the effectiveness of BTX-A for sweat reduction. The reduction in sweating can last up to 6 months and is greatly appreciated by the patient.

Of interest is the work of Heckmann et al. (11) who showed improvement of axillary odor by the use of BTX-A in normohidrotic studies. They conducted a placebo-controlled, double-blind parallel study to see if axillary body odor could be improved. Armpit odor is a complex process in which microbes present on the skin and secretion of biodegradable compounds from eccrine and axillary apocrine glands are involved. In their study, 51 healthy volunteers received 50 U of BTX-A in one axilla and placebo injections in the other. Odor quality was assessed by both treated subjects as well as by independent raters who were exposed to blinded odor samples derived from the armpit cloth of t-shirts worn by subjects. Samples from the BTX-A treated side smelled “less intense” and “better” according to self assessments. Independent raters also found that the BTX-A–treated samples has a less intense and better smell. These reductions were highly statistically significant at $p < 0.001$.

Botulinum toxin treatment of the male urinary tract

BTX-A has been used with increasing popularity among urologists. Intravesicular applications of BTX-A have been shown to be very helpful in treatment of neurogenic overactive bladder and idiopathic detrusor activity (12). BTX-A has been effective in causing a decrease in the frequency of urination and a decrease or absence of incontinence. Most of these treatments last approximately 6 months. It is anticipated that BTX-A will be approved for use in the bladder.

Of interest to men is its use in benign prostatic hyperplasia. Finding an effectively minimally invasive treatment of benign prostatic hyperplasia has been a challenge. The history of use of BTX-A

FIG. 6. Excellent results in a 22-year-old male patient with hyperdynamic lines of the forehead.
injections in the prostate goes back to 1988, when Doggweiler injected 30 rat prostates and noticed a significant reduction in total prostatic volume and weight after 1–4 weeks. In 2003, Maria et al. (13) performed a randomized, placebo-controlled study of 20 men with symptomatic benign prostatic hyperplasia. They were randomized to receive either saline or 200 units of intraprostatic BTX-A. Clinical improvement was evident by a month. By 2 months, 87% of those patients in the treatment group vs. 10% of patients in the control group reported subjective BPH symptom relief. This was highly significant at \( p = 0.00001 \). The degree of improvement was remarkable, considering that most patients were severe in their reporting of symptoms before injections and the results were sustainable up to 12 months after a single injection. No urinary incontinence or systemic side effects were reported over the 20-month follow-up period. Further studies are underway, and we may see this become a regular treatment option. Current questions include what is the optimal dosing regimen, route of injection, and location of injection.

**Conclusion**

BOTOX® is a very effective treatment for wrinkles. Men benefit from memetic muscle relaxation and usually require more units than women. The male glabella is the one cosmetic area that has been well studied. It is recommended that 40 units be used as the starting dose for the male glabella. Other areas of the male face can be treated and injections need to keep in mind the greater muscle mass in men. Reduction in sweating and decreasing axillary odor may benefit men. BTX-A is being increasingly used in the male urogenital tract.

**References**