REVIEW

Medical and aesthetic procedural dermatology recommendations for transgender patients undergoing transition

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Transgender individuals may transition to their identified gender through social, hormonal, and procedural methods by using a multidisciplinary team of health care providers, including dermatologists. In this review, we discuss the medical and aesthetic dermatologic needs related to the transitioning of transgender patients and provide therapeutic and procedural recommendations. In addition to routine cutaneous conditions, dermatologists may need to treat hormonal therapy—related complications. Acumen for genital dermatology and familiarity with gender reassignment surgery is important for the dermatologist caring for a transgender patient. From a structural standpoint, transgender beauty poses a unique aesthetic task. We identify key differences in the facial structure and physique of males versus those of females. Dermatologists may have a tremendous impact on the lives of transgender individuals who seek to realize their gender identity. (J Am Acad Dermatol https://doi.org/10.1016/j.jaad.2018.05.1259.)

Key words: aesthetic dermatology; affirmation; gender; injectable filler; neurotoxin; transgender; transgender dermatology.

A transgender individual is one whose gender identity does not conform to his or her biologic sex. Approximately 1.4 million people in the United States identify as transgender.[1] Transgender patients face health care barriers such as social stigmatization or discrimination, economic marginalization, and lack of access to providers knowledgeable and culturally competent in transgender health.[2] Transgender individuals may transition to their identified gender through social, hormonal, and procedural methods by using a multidisciplinary team of health care providers, including dermatologists.[3] A recent article highlighted the importance of dermatology-specific knowledge of transgender health and identified transgender skin care as a significant gap in dermatology education.[4] Therefore, high-quality informational content and increased training in transgender dermatologic care in a variety of formats could benefit our specialty by increasing awareness and by improving access to educational content. Herein, we discuss the medical and aesthetic dermatologic needs related to the transitioning of transgender

Abbreviations used:

AGA: androgenetic alopecia
FTM: female-to-male
LHR: laser hair reduction
MTF: male-to-female

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Funding sources: None.
Conflicts of interest: None disclosed.

The contents do not represent the views of the US Department of Veterans Affairs or the US Government.

Accepted for publication May 28, 2018.

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Published online January 21, 2019.
0190-9622
Published by Elsevier on behalf of the American Academy of Dermatology, Inc.
https://doi.org/10.1016/j.jaad.2018.05.1259

patients and provide therapeutic and procedural recommendations to meet those needs.

MEDICAL DERMATOLOGIC NEEDS OF THE TRANSGENDER PATIENT

The transition process for transgender patients is individualistic and determined by patient wishes, accessibility to resources, financial status, and psychologic factors. Therefore, the patient's care should incorporate his or her unique circumstances and goals. Clinicians and staff should consult with transgender patients regarding their preferred name and pronouns, which help patients feel welcome, respected, and more willing to seek care, discuss difficult issues, and consider recommendations.

CAPSULE SUMMARY

- Transgender individuals may transition to their identified gender through hormonal and procedural methods by using a multidisciplinary health care team, including dermatologists.
- We review the unique transition-related medical and aesthetic dermatologic needs of transgender patients.
- Dermatologists may have a tremendous impact on the lives of transgender individuals who seek to realize their gender identity.

HORMONAL THERAPY

Hormonal therapy is often the first medical step that initiates the process of feminization for male-to-female (MTF) transgender patients or masculinization for female-to-male (FTM) transgender patients. Hormonal supplementation induces notable changes in skin anatomy and physiology. Feminizing hormones via estradiol and antiandrogen agents induce fat redistribution that results in a female contour, with extra adipose deposition in the face, chest, hips, and buttocks.[5] Breast development, decreased hair diameter, and reduced body hair also occur. Feminizing hormones may improve acne, enhance skin quality, and produce neocollagenesis.[5,6] Masculinizing androgen therapy alters physique and overall body fat, stimulates male pattern hair growth, increases hair shaft diameter, and inhibits menstruation.[5]

Hormone therapy may result in undesirable cutaneous effects. Estrogen and antiandrogenic treatment decreases sebum production, which may lead to generalized xerosis, eczematous changes, and pruritus.[6] Increased nail fragility has also been reported.[5] Conversely, testosterone therapy increases sebum production and worsens acne vulgaris.[5] Testosterone-induced inflammatory acne may lead to disfiguring scars.[7-9] Androgenic therapy may trigger male pattern alopecia, hypertrichosis, thickened facial skin texture and quality, and subcutaneous fat loss.

Recommendations. Dermatologists may need to treat hormonal therapy–related complications. For the generalized xerosis, eczema, and pruritus resulting from feminizing hormones, moisturizers or topical steroids can be used. Treatment for testosterone-induced acne can be challenging and persistent owing to the prolonged androgen exposure. Transgender men requiring isotretinoin often encounter a psychologic barrier when forced to register as a biologic female in the iPLEDGE program because of the teratogenicity associated with isotretinoin.[10-13]

PROCEDURAL DERMATOLOGIC NEEDS OF THE TRANSGENDER PATIENT

Gender reassignment surgery

Acumen for genital dermatology and familiarity with gender reassignment surgery are important for the dermatologist caring for a transgender patient. Vaginoplasty involves construction of a neovagina by using penile and/or scrotal skin and removal of the testicles.[14] Phalloplasty commonly involves creation of a neourethra and neophallus by using skin flaps from the forearm or anterolateral thigh.[14] Dermatologic conditions, such as condyloma acuminata, squamous cell carcinoma, and lichen sclerosus occurring internally and externally in the neovagina may arise, potentially owing to the high prevalence of human papillomavirus infection with low rates of human papillomavirus vaccination, postoperative complications resulting in chronic inflammation, and new environmental conditions.[15-18]

Recommendations. Dermatologic examinations of internal and external genitalia are appropriate for transgender individuals. Treatment of genital lesions may be difficult because of altered anatomic structures and potential complications that may impair functionality of the neovagina.[15-17]

Injection of foreign material

Cosmetic complications of injection of foreign material by unlicensed practitioners disproportionately affect the MTF transgender community. In 2011, up to 22% of MTF transgender adults in New York City underwent this illegal practice of introducing unapproved, inexpensive material such as silicone,

paraffin, and oils into the face, breasts, buttocks, and thighs for body contouring.[19] Patients may be reluctant to disclose a history of injections of foreign substance and may be unaware of the specifics of the procedures performed.[19]

Nonsterile technique, injection of unspecified materials, or injection of large amounts of medical grade silicone into the subcutaneous space may lead to disfiguring and potentially life-threatening complications, including biofilm formation, foreign body reactions, and infection.[20] Migration of material to distant locations may cause functional compromise, sterile cellulitis, or panniculitis with granulomas or draining ulcers.[21-23] Foreign body emboli that can induce local necrosis, stroke, or pulmonary embolism are a significant problem and their incidence is rising.[24]

Recommendations. Treatment may often require prolonged follow-up and may include long-term administration of systemic immunosuppressives and antibiotics, intralesional steroids, surgical excision, lasers, and liposuction.[25-27] Upon resolution of these complications, dermatologists can provide safe US Food and Drug Administration—approved alternatives to these practices of injecting foreign material and help diagnose and manage complications.

AESTHETIC DERMATOLOGY BEYOND THE GENDER BINARY

Aesthetic modification of the transgender patient has historically been performed by nondermatologists via costly, invasive, and permanent surgical procedures. However, minimally invasive dermatologic procedures may yield excellent outcomes for transitioning patients, who may prefer temporary and reversible treatments over surgical methods while transitioning. In a survey-based assessment of 327 transgender individuals, facial modification was often a greater priority than other procedures,[28] making treatment with fillers, neuromodulators, and energy-based devices ideal owing to its safe and minimally invasive approach. Patients must be counseled that maintenance is required for retention of physical changes.

From a structural standpoint, transgender beauty poses a unique aesthetic task. Opposing aesthetic goals and biologic phenotype mandate divergence from the conventional approach of restoring and enhancing gendered features. It is therefore important to first understand the key differences in facial structure and physique of males and females before attempting to masculinize or feminize a transgender patient.

FACIAL DIFFERENCES BETWEEN MALES AND FEMALES

Baseline and iatrogenic hormonal variation exerts great influence on cutaneous composition.[29] Testosterone yields a denser collagen network and thicker skin, with more visible pores and higher secretion of sebum and sweat.[30-33] Estrogen in women up-regulates endogenous cutaneous antioxidants, resulting in less oxidative stress and fewer signs of aging than in men.[34,35]

Upper part of the face

The upper, middle, and lower parts of the face have distinct masculine and feminine features that, when taken in composite, affect our perception of gender.[36] The male cranium is roughly 20% larger in size, with a broader forehead that flattens above the eyebrows and slopes posteriorly toward the hairline (Fig 1, *A*).[37,38] Conversely, the female forehead is rounder and exhibits a mild forward projection (Fig 2, *A*).[37,39] The female orbit is ovoid versus the larger, rounder foramen in males (Figs 1, *B* and 2, *B*). The male eyebrow is flatter, superimposed on a prominent supraorbital ridge and flanking a strong glabellar complex centrally.[40] The female brow arches in the lateral third aspect over a subtle supraorbital ridge.[41-45] Aging of the upper part of the face differs, with males experiencing greater bone recession of the inferomedial orbit, significant soft-tissue atrophy, infraorbital fat pad enlargement, and greater eyelid descent.[46,47]

Midface

The midface differs most prominently in skeletal shape and fat volume. The dorsal male nose is broad and straight, whereas the female nose is narrow.[48] A distinct aspect of the female nose is the supratip break, which is an inflection point on the dorsum before the nasal tip elevates.[48] The nasolabial angle in women is 95 to 100 degrees versus 90 to 95 degrees in men, resulting in further elevation of the female nasal tip and more nostril show.[48] Females have greater midface fat content subcutaneously, resulting in a less angular, rounder, and fuller appearance.[49-51] Localization of this fat volume differs as well. The male cheek shows anteromedial fullness, producing a broader malar prominence over a wider frontal and zygomatic process. The female cheek is better defined, with greater anterior projection and a superiorly placed apex that is inferolateral to the lateral canthus.[52]

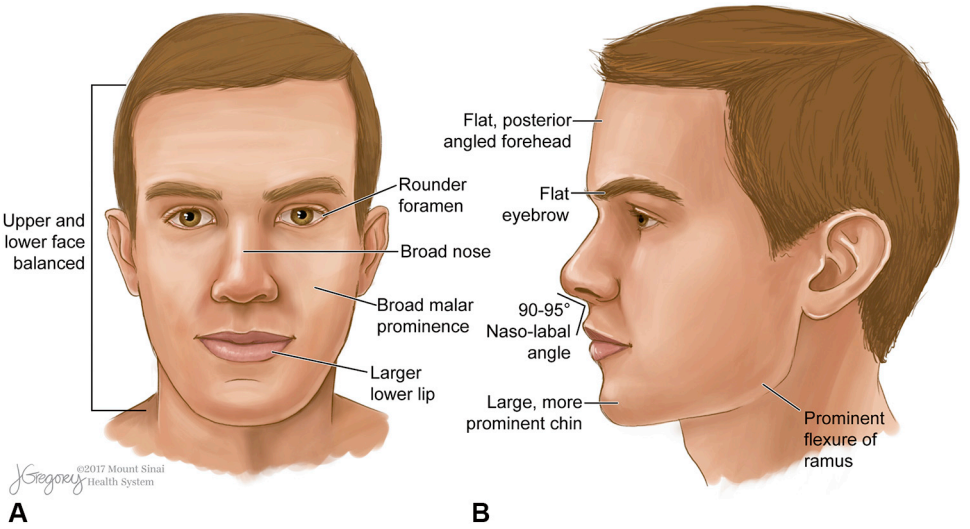

Fig 1. Composite of masculine facial features. **A**, Anterior view of the male face. The broader nose and malar prominence, rounder eye foramen, and larger lower lip convey a sense of the male sex. The face as a whole is balanced when separated into lower and upper hemispheres. **B**, Lateral view of the male face. This orientation displays the broader and flatter forehead and eyebrows, along with the larger chin and more acute nasolabial angle. (Copyright of Mount Sinai Health System. Printed with permission of Mount Sinai Health System.)

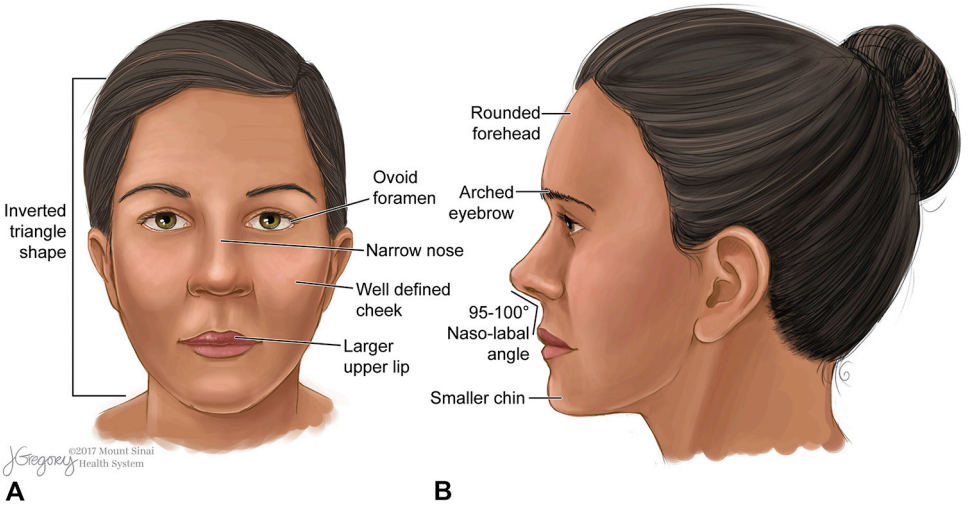

Fig 2. Composite of feminine facial structures. **A**, Anterior view of the female face. The narrower nose, defined cheekbones, ovoid eye foramen, and smaller lower lip express the physicality of the female sex. The lower part of the face is tapered compared with the upper part, leading to an inverted triangular shape. **B**, Lateral view of the female face. The arched forehead and eyebrows, along with the smaller chin and upturned nasolabial angle, are better seen in this positioning. (Copyright of Mount Sinai Health System. Printed with permission of Mount Sinai Health System.)

Lower part of the face

The lower part of the face exhibits key structural differences, including in the lips, jaw, and chin.[53] In men, the lips are flanked by larger masseter muscles and a broader mandible anterolaterally, with a prominent flexure at the mandibular ramus.[54,55] The male chin is wider, larger, and more protrusive than the female chin.[54] These features create a square-shaped angularity that balances the upper and lower parts of the facial proportions in men.[54] Conversely, the female face has a tapered silhouette with a more prominent upper part of the face and a more diminutive chin and jawline, resulting in an inverted triangle–shaped composite structure.

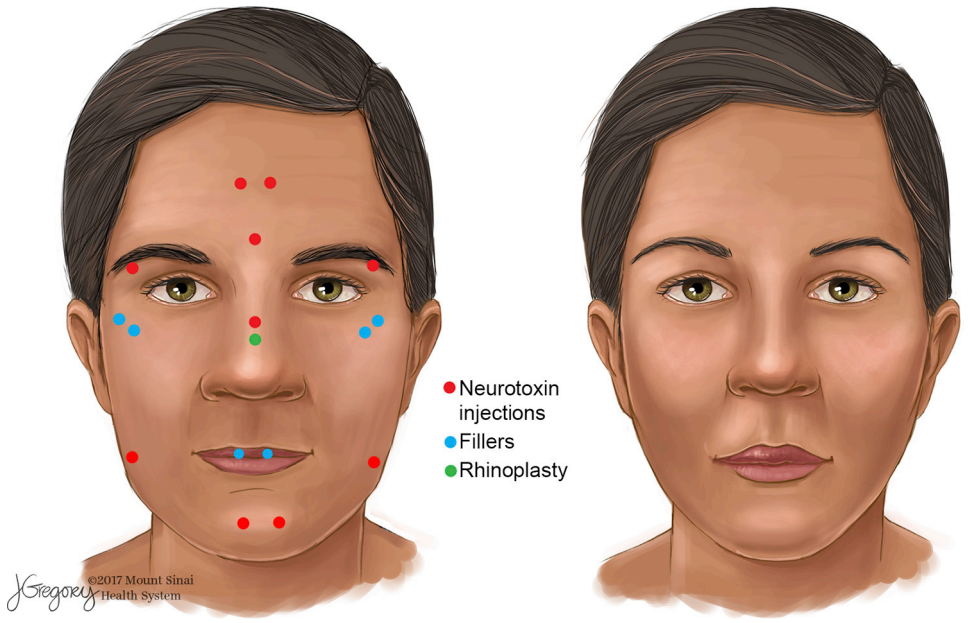

Fig 3. Dermatologic procedures applicable to the male-to-female transgender transition. Neurotoxins (*red*) may be injected into the glabella to reduce central fullness. Injection into the medial frontalis and superiolateral orbicularis oculi will create a feminine eye arch, and repeated injection of the masseter and mentalis will atrophy the jawline and create an inverted triangular face shape. Fillers (*blue*) can be used to create a more voluminous forehead, cheek, and upper lip. Rhinoplasty (green) and neurotoxins may allow for a narrower, upturned nose structure. (Copyright of Mount Sinai Health System. Printed with permission of Mount Sinai Health System.)

Procedural recommendations for facial transformation with fillers and neurotoxin. By understanding the distinguishable aspects of the male versus female face, a dermatologist can help transgender patients achieve their aesthetic goals. An important caveat, however, is that although neurotoxins and fillers may assist in modest reshaping and sculpting of facial features, patients should be educated that dramatic change in the skeletal structure of the face requires surgery. The following recommendations for facial transformation with fillers and neurotoxin should be individualized, as substantial variability and differences in facial characteristics exist among individuals and among different ethnicities.

Upper part of the face. In the upper part of the face, MTF patients may require neurotoxin in the glabella to atrophy the procerus over time, reducing central fullness (Fig 3). Additional neurotoxin placement in the medial frontalis and superolateral orbicularis oculi within the browline, in the inferior orbital grove, and/or 1 mm below the ciliary margin of the lower eyelid can open the eyes, raise the brows, and create a feminine arch. Conversely, in FTM patients, injection of neurotoxin into the medial and lateral frontalis will drop the arched brow for a flatter, more masculine look (Fig 4). MTF patients may require higher dosing of neurotoxins for a sufficient paralytic effect owing to the difference in muscle mass between sexes.[56-60] Soft-tissue filler can be effectively used in the upper part of the face for reflation of the forehead to achieve a softer, more feminine look in MTF patients (Fig 3).[61] Older MTF patients with age-related periorbital changes may benefit from filler to enhance temporal fossa volume. Conversely, augmentation of the supraorbital ridge to create a more prominent browline can be considered in the FTM patient (Fig 4). It is important to note that some of these filler approaches are off-label. Explicit understanding of relevant anatomy and slow injections of small volumes could be used to avoid unintentional vascular compromise, decrease risk of infection, and reduce risk of bruising. Use of a cannula may possibly reduce, but not eliminate, the risk of unintentional injection into a vessel.[62]

Midface. The midface can be restructured with focused filler placement. In MTF patients, overall larger filler volumes and placement lateral on the zygomatic arch inferolateral to the lateral canthus can approximate the female apex and provide a contoured, volumized cheek (Fig 3). The addition of poly-L-lactic acid, hyaluronic acid, or calcium

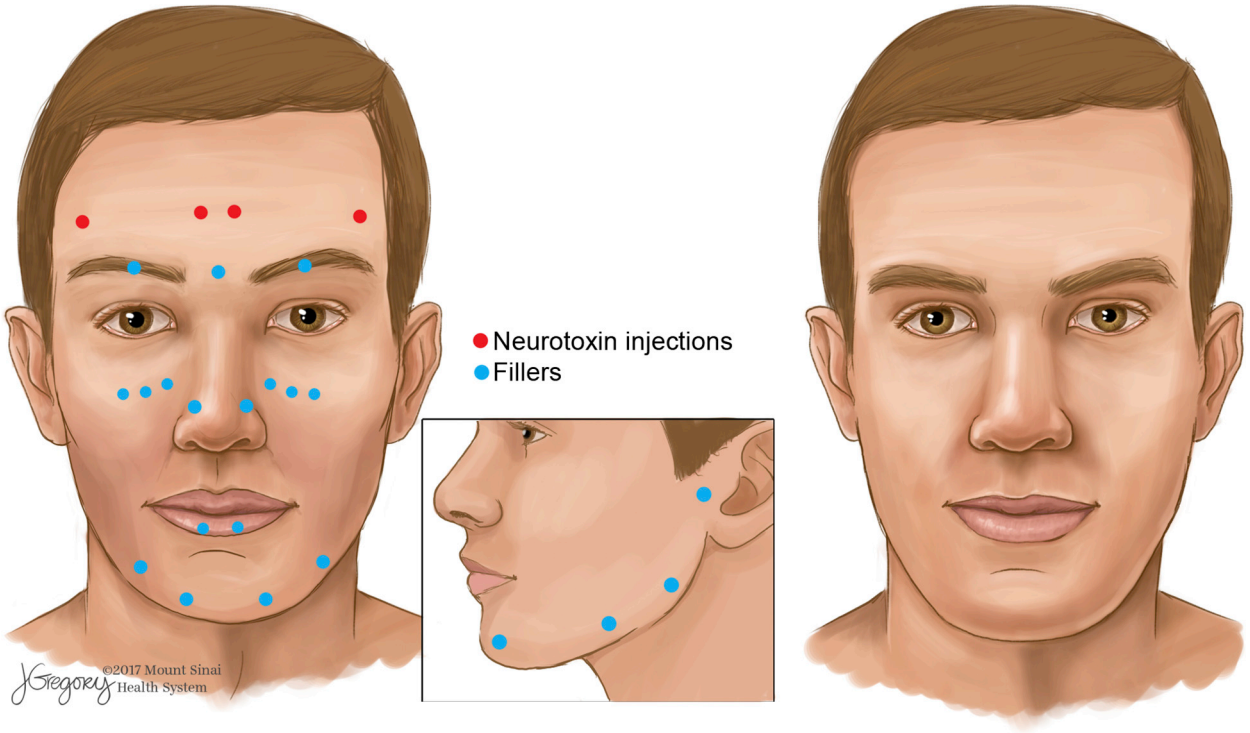

Fig 4. Dermatologic procedures pertinent to the female-to-male transgender transition. Neurotoxins (*red*) may be injected into the medial and lateral frontalis to create a flatter, masculine eyebrows. Fillers (*blue*) can be used to subtly project the male brow anteriorly, widen the nose and malar prominence, and increase the size of the lower lip. They may also be used to balance the lower part of the face with the upper part, by augmenting the chin, jawline, mandibular angle, and preauricular area. (Copyright of Mount Sinai Health System. Printed with permission of Mount Sinai Health System.)

hydroxyapatite fillers globally may stimulate collagen growth gradually. Use of the "smile-and-fill" technique of injecting filler into the subcutaneous tissues of the malar cheeks while the patient is smiling can help avoid the overfilled appearance of the midface at rest and preserve dynamic facial movements.[63] FTM patients may benefit from filler placed uniformly along the zygomatic arch and inferior to the malar prominence to widen the malar base and minimize anterior projection of the apex (Fig 4).

For the nose, surgical rhinoplasty is the most definitive solution for MTF patients desiring a slender, upturned feminine nose, whereas nonsurgical rhinoplasty with fillers placed at various points along the dorsum may be used in FTM patients desiring a broader dorsal nose.[64] Neuromodulators placed in the depressor septi muscle nasi can also aid in upturning the noses of MTF patients. Traditional microneedling alone or in combination with laser/light therapies such as radiofrequency may reduce pore size for MTF patients.

Lower part of the face. In the lower part of the face, soft-tissue fillers in the upper and lower lips of MTF patients and in the lower lip only of FTM patients will contribute to an overall feminine or masculine look, respectively.[65] To soften the jawline in MTF patients, neurotoxin injections to the masseter and mentalis will gradually cause atrophy, further offsetting the appearance of a masculine jawline and simulating the feminine heart-shaped face (Fig 3).[66,67] In FTM patients, filler augmentation of the chin, jawline, mandibular angle, and preauricular area will accentuate a more prominent and angular lower part of the face (Fig 4).[68,69] Deoxycholic acid injections, cryolipolysis, or liposuction for submental fullness will further define the jawline and chin.[70]

FACIAL AND BODY HAIR

The presence or absence of facial and body hair is a classic characteristic of sex. Androgens play a key role in creating the differences in hair growth patterns between men and women. High levels of androgen produce increased hair growth of the beard, chest, back, abdomen, axillary, and extremities.

A unique indication for hair reduction in transgender individuals is before genital gender-affirming surgery with phalloplasty or vaginoplasty in FTM or MTF patients, respectively. Hair growth of hair-bearing skin flaps used in the construction of the neourethra or neovaginal cavity may promote postoperative urinary retention, obstruction, or infections.[71] Thus, hair removal and prevention of hair regrowth before genital gender-affirming procedures is essential to avoid hair-related postoperative complications.

Recommendations. Laser hair reduction (LHR) with a neodymium-doped yttrium-aluminum-garnet, diode laser, alexandrite laser, or intense pulsed light source may be used to eliminate male pattern hair growth in MTF patients and for preoperative preparation for genital gender-affirming procedures.[14] LHR may be superior to electrolysis because of its greater efficacy, faster procedure times, and infrequent adverse effects.[71,72] However, electrolysis reduction of hair may result in longer durable periods of unwanted hair removal. Multiple LHR sessions may be required to achieve desired hair reduction. In our experience, LHR treatment in patients who are undergoing hormone therapy may be difficult because of the recurrent hair growth stimulated by hormone therapy. Furthermore, light color hair, such as white, blonde, or red hair, can be challenging to treat with LHR. Lighter hair can be treated with regular sessions of dermaplaning, which is achieved by gliding a 1-sided No. 10 surgical steel scalpel blade across the skin to exfoliate the epidermis and remove vellus hair.[73] Intense pulsed light with lower filters at higher fluences can also be beneficial for blonde and red hair. Electrolysis may be the most effective treatment option that works independently of hair color. FTM patients may acquire the appearance of male pattern body hair with medical tattoos or stippled micropigmentation.[74] Hair transplant surgery may help with hair restoration for MTF patients.[75] Topical bimatoprost may be used to stimulate eyelash or eyebrow growth for MTF and FTM patients, respectively.

AGA

MTF patients with androgenetic alopecia (AGA) must reckon with both reduced quality of life associated with AGA in all persons and the psychosocial effect that it has on gender perception.[76] Similarly, testosterone administration in FTM patients may trigger AGA years after initiation of treatment.[9]

Recommendations. Standard AGA treatments, including topical minoxidil and oral finasteride, should be considered in conjunction with hormonal therapy in MTF patients.[77] Finasteride is safe to use with estradiol and spironolactone if a baseline prostate-specific antigen level is within normal limits, and it may augment their feminizing effects.[78] Nonsurgical alternatives for AGA include platelet-rich plasma and microneedling.[79-81]

The safety and efficacy of finasteride in testosterone-induced AGA is unclear, as it may counteract the androgenic effects intended by hormonal therapy.[82] In a study of 10 FTM transgender patients, testosterone-induced AGA behaved clinically as male pattern AGA and responded satisfactorily to finasteride, 1-mg daily for 12 months, without significant adverse effects, changes in serum testosterone levels, or changes in secondary physical features.[83] It is recommended that the desired secondary sex characteristics be acquired before finasteride treatment is started.[83,84]

BODY CONTOURING

In the upper portion of the torso, men store fat in the anterior aspect of the chest whereas women store adipose tissue in the breasts and along the inferolateral pectoralis. The lower portion of the male torso is defined by the golden, or Adonis, ratio of 1.618:1, which represents the ideal proportion between shoulder and waist width in males and approximates a V-shaped torso, with wide shoulders tapering toward the hips. The female torso is curvilinear, with its widest point centering on the hips. Flank adiposity widens waist circumference in women and softens the chiseled abdominal musculature in a man.[85]

Recommendations. Surgical procedures such as mastectomy or breast augmentation can be important steps in the transitioning process. Less invasive options include liposuction and lipofilling (autologous fat grafting), and minimally invasive options include cryolipolysis, radiofrequency, and ultrasound devices. All of the aforementioned options may be used as introductory or complementary procedures to maximize or maintain surgical results. Of note, noninvasive fat reduction with energy devices is unlikely to meet the demands of gender reassignment and should be considered only in select patients with appropriate expectations. Emphasis must be placed on the more subtle outcomes achieved by minimally invasive devices and realistic expectations set beforehand.

CONCLUSION

Herein, we have provided guidance on using pharmacologic and procedural tools based on the reviewed medical literature and our experience. Dermatologists may have a tremendous impact on

the lives of transgender individuals who seek to realize their gender identity.

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