

The science of masculine beauty: Key principles and strategies for male aesthetic enhancement

Jonathan Nevin T. Yu, MD FPDS,¹ Raphaela Martina C. Pineda, MD, DPDS,²
Katrina Ysabelle G. Sun, MD¹

INTRODUCTION

Recently, men and women have become increasingly interested in facial aesthetics. Although there is a frequent emphasis on female facial aesthetics, male facial aesthetics are gaining popularity.¹ The top five cosmetic treatments performed on men in the United States were: Botulinum toxin A injections, laser skin resurfacing, laser hair removal, filler injections, and microdermabrasion.¹ In this article for continuing medical education, we will examine the differences between male and female facial features, and the aesthetic differences between men of different ethnicities. We will also discuss skin care and nonsurgical therapies, such as neurotoxins, threads, injectable fillers, and lasers for enhancing the facial aesthetics of men.

MALE VERSUS FEMALE FACIAL ATTRIBUTES

SKIN

In general, male skin is around 25% thicker than female skin, primarily due to differences in hormone levels. Androgens, which are more prevalent in males, stimulates the production of collagen and elastin fibers, resulting in thicker and firmer skin. However, among females during menopause, the decline in estrogen levels causes skin to thin out and become more fragile. Besides this, men create more sebum than women due to androgen hormones, this also occur but more noticeably after menopause in women. Men also have collagen that is thicker than women, which makes women more prone to premature aging. Due to higher muscle mass than females, rhytides are often deeper and more severe in men. Finally, men can be ex-

pected to have more wrinkles and rougher skin (Table 1; Figure 1).²

Table 1. Gender differences in the skin

	Male	Female
Thickness	25% thicker overall	Constant thickness until menopause
Collagen	High collagen density	Less collagen density Earlier signs of premature aging
Sebum	More	Lessens during menopause
Subcutaneous fat	Less	More
Loss of collagen	Initially the same rate	Faster first 5 years of menopause
Skeletal muscle mass	More	Lesser than men
Skin elasticity	Same	Same

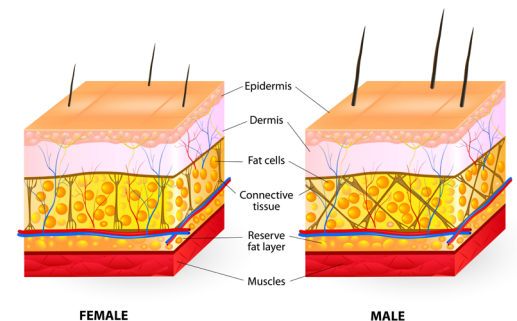


Figure 1. Female vs male skin. Differences between Male and female skin on histology. An increase in connective tissue owing to the increase in collagen bundles in male skin compared to female skin.

¹Skin and Cancer Foundation, Inc.

²Mount Sinai Department of Dermatology

Corresponding author

Jonathan Nevin T. Yu, MD, FPDS,
jonnevinyu@gmail.com

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FACIAL SHAPE

Regarding facial shape, there are numerous anatomical differences between male and female facial traits. One of the most distinguishing features between them is their facial shape.² Men have a square face with a more prominent jawline, whereas women have a rounder, softer appearance with a less prominent jawline. The upper and lower facial dimensions of men are proportionally equal. This variance is due to the influence of hormones on bone formation and muscle mass.³ Men have prominent supraorbital ridges, which may be helpful as an anatomical reference for eyebrow placement. The male eyebrow is more horizontal than the female brow and lies lower along the orbital rim. Male orbital size is often more significant than female orbital size. Due to this, men typically show more prominent periorcular alterations, particularly on the lower eyelids, which leads to the appearance of deep-set eyes. Men also have a more significant glabellar protrusion, while women's glabella stays flat. The height and width of the male forehead are more prominent than women, with a greater backward slope. A prominent mandibular ramus flexure characterizes the masculine jaw. Men also have a more pronounced, square chin that protrudes forward. The skeletal distinctions between men and women contribute to the square characteristics of the aging male face. Men often have less subcutaneous fat on their cheeks than women. As a result, male cheeks protrude anteriorly less than women (Table 2; Figure 2).² The size and shape of the nose are additional distinguishing features. Women have smaller, more delicate noses with curved bridges, whereas men have larger, more prominent noses with straighter bridges. Men's lips tend to be thicker and less curved than women's, making them a crucial component of male facial beauty.²

ASIAN MEN VS. CAUCASIAN MEN

Eye shape is one of the most noticeable variances between Asian and Caucasian men. Asian eyes are often smaller and almond-shaped, whereas Caucasian eyes are larger and rounder.⁴ The eyes, including its size, can change how the face looks overall, affecting the ideal male appearance in each culture.

Caucasian men tend to have a facial shape to be more angular and acute, with a more prominent jawline and forehead. In contrast, Asian men have flatter, broader faces with a less prominent jawline and forehead (Figure 3). Moreover, Caucasians typically have smaller faces and greater vertical height. Asians have a more prominent face with a lower vertical height that is flat or concave in the

Table 2. Gender differences in the skull

Male	Female
Larger and heavier skull	Smaller and lighter skull
Sloping, less rounded forehead (frontal bone)	Rounded forehead (frontal bone)
Prominent supraorbital ridge (brow)	Smooth supraorbital ridge (brow)
Square eye sockets (orbits)	Round eye sockets (orbits)
Blunt upper eye margins	Sharp upper eye margins
Square chin	Pointed chin
Vertical (acute) angle of the jaw	Sloping (obtuse) angle of the jaw



Figure 2. Male vs Female.

	Male	Female
Facial Shape	Squarer face	Rounder face
Eyebrows	Heavier, overhanging horizontal	Thinner, flared
Mouth	Wider	Narrower
Chin	Stronger	Softer

medial maxilla and lacks brow, nasal, and chin projection.⁵

Moreover, men's skin tone may affect their facial looks. Lighter skin tones are associated with a more feminine appearance.⁶ However, it is essential to note that there is no perfect skin tone for Asian or Caucasian men. Cultural and individual preferences for skin tone and standards of beauty may differ.

PLANNING FOR MALE AESTHETIC TREATMENTS

It is essential to understand the male aesthetic ideal when



Figure 3. Typical Asian Man vs. Caucasian Man.

	Asian Male	Caucasian Male
Eyes	Smaller, almond-shaped	Larger, rounder
Facial Shape	Flatter and broader face, less prominent jawline and forehead	More angular and acute face, more prominent jawline and forehead

planning aesthetic treatments.⁷ Clinicians must understand what makes men look and feel better to ensure success. The ideal male aesthetic is rooted in men exhibiting their motivations, goals, and concerns. It often differs significantly from women since men may have a unique perspective on what makes them look and feel attractive.

For most men, the initial consultation to discuss their concerns should be done first without outright planning for a specific procedure.⁸ The initial consultation is essential because most men must become more familiar with procedures. Many male patients usually ask their physician for help deciding what kind of treatment they need with a particular concern. They prefer straightforward treatments that give instant results, have no downtime, and treatments that allow them to return to their routine and work immediately after a procedure.

A multiracial, predominantly white male survey found that men prioritize 3 facial areas- hairline, periorbital area, and jawline.⁷ The focus of treatment in the periorbital area would commonly be the crow's feet and tear troughs. On the other hand, maintaining a masculine jawline by treating submental fullness and chin is also a priority for men. Eyelashes, lips, or perioral rhytids do not appear to be areas of concern for most men.

A common reason that men hesitate about cosmetic procedures is the fear of appearing feminized or losing their male characteristics. Some men say they are also reluctant to appear unnatural. Traditionally, male faces were considered more attractive if they were more masculine than the average. Masculine can be defined as a broader, more defined jawline, prominent chin, and lower, flatter eyebrows.⁹ However, conflicting studies have shown that male faces with feminine features are also preferred.⁴ A male with some feminine attributes shows that male facial attractiveness continuously evolves and involves striking a balance between femininity and masculinity.

Aesthetic treatments are only successful if the patient is satisfied. Primarily, we must ensure that the desired results align with the patient's goals. Male aesthetic ideals involve aiming for individualized treatment while considering gender differences that influence aesthetic concerns and desires.

MALE FACIAL AESTHETICS WITH NONSURGICAL INTERVENTIONS

SKIN CARE

Men are becoming cognizant of skincare's role in enhancing the quality and appearance of their skin, especially due to the increased use of social media and growing reliance on videoconferencing. Additionally, increasing online access to information and items enables male consumers to avoid in-person shopping. Men believe that their hectic lifestyle needs a streamlined approach to skincare that can be readily included in their shaving routine to maximize grooming time.

A good skincare routine is essential for men, albeit many frequently disregard their skin's needs. This article will discuss essential male skincare ingredients, including sunscreens, moisturizers, keratolytics, hydroxy acids, retinoids, antioxidants, and pigment-lightening agents.

A physician must emphasize adequate sun protection as a part of the male skin regimen. Men should understand that protecting the skin from cancer-causing ultraviolet rays will benefit them and help slow down the signs of photoaging. A broad-spectrum sunscreen with a minimum sun protection factor (SPF) 30 will provide adequate protection from ultraviolet (UV) A and B radiation. The Centers for Disease Control and Prevention has stated that men are 40% more likely to develop skin cancer than women.¹⁰ Additionally, the overall incidence of cutaneous malignancies such as melanoma, basal cell carcinoma, and squamous cell car-

cinoma is higher in men than in women. Gender differences in skin cancer incidence are due to sex-differing behavior patterns regarding men's vocation, making them more prone to sun exposure; therefore, sunscreen should be a vital component of their skin care.^{11,12}

An essential part of educating patients on good and healthy skin habits is the benefit of using moisturizing agents and keratolytics. Educating male patients is vital since they usually have a much oiler skin type than women. Dead skin cells can lead to comedones, and acne production formation, therefore use of moisturizers that contain keratolytics helps in exfoliating and eliminating these cells. Moreover, these creams, ointments, or gels can help soften and improve the general texture of the skin.^{12,13} When selecting a type of moisturizer for men, it is essential to select one that feels comfortable and is appropriate for the patient's skin type to maintain good habits such as regular use.

Hydroxy acids help reduce the appearance of fine lines, hyperpigmentation, and acne by exfoliation. They work by dissolving the bonds holding dead skin cells together and quickly removing them from the skin's surface. Some common hydroxy acids used in male skin care products are glycolic and salicylic. Ideally, alpha-hydroxy acids such as glycolic acid are preferred when a patient has a dry skin type since these are gentler on the skin and have the added benefit of skin lightening. Salicylic acid, on the other hand, is more suited for oiler skin types since it is fat-soluble and can penetrate deeper into the skin's pores.¹⁴

Retinoids are another essential component of a male skin care regimen. They function by increasing collagen formation, thereby reducing the appearance of fine lines and wrinkles. They also stimulate cell turnover, which helps minimize acne formation and enhance the skin's general texture and tone. It is crucial to advise patients on the correct administration of retinoids to prevent irritation.¹⁵ Patients should be instructed to apply a pea-sized amount uniformly to their entire face at bedtime. However, patients new to retinoids should begin with an application every other night and gradually increase to a daily application as their skin responds.¹⁶ Patients should be advised to avoid prolonged sun exposure during the day. Moreover, the application of a moisturizer can prevent inflammation and irritation.

Antioxidants are another vital component of the male skin care regimen. They prevent skin damage caused by free radicals from the environment, which can contribute to premature aging and skin cancer. Some examples of commonly used antioxidants in male skin care products are vi-

tamin C and E.¹⁷ Pigment lightening medications are prescribed for male patients with hyperpigmentation, which include dark patches and melasma. Hydroquinone, kojic acid, and azelaic acid are some examples that can lighten and level out the skin tone of dark spots.¹⁸

Incorporating all these essential components into a skin care regimen curated for the male patient can improve the patient's overall skin health and appearance. Dermatologists should educate male patients on the significance of skincare based on their skin type and recommend products suited to their specific needs and lifestyle.^{13,19}

NEUROTOXINS

Botulinum toxin A (BoNTA) is a popular cosmetic treatment used to improve the appearance of fine lines and wrinkles in both men and women. While BoNTA has traditionally been more prevalent among women, more men are now taking this treatment to enhance their appearance and boost their confidence. BoNTA blocks the nerve signals that cause the treated area's muscles to contract. The neurotoxin (BoNTA) binding to its receptor initiates a receptor-mediated endocytosis process, which results in the internalization of the neurotoxin.²⁰ This internalization results in the BoNTA being contained inside vesicles.²⁰ After internalization, the light chain is released from the vesicle. The light chain is then released from the vesicle and travels to the axon terminal, where it cleaves SNAP-25, the docking station for acetylcholine-containing vesicles.²¹ The cleavage of SNAP-25 inhibits the formation of the SNARE complex, and therefore the vesicle cannot release acetylcholine to initiate muscle contraction.²⁰ When these muscles cannot contract, the underlying skin remains wrinkle-free and smooth, resulting in a more youthful and rested appearance.

It is recommended to administer BoNTA to treat horizontal forehead rhytids, glabellar complex, and periorbital or periocular rhytids. Men may be more vulnerable to wrinkles in these areas due to aging, UV exposure, and frequent facial expressions due to their greater muscle mass. When injected into the jawline and neck, it can provide a more masculine, squared-off appearance and define the jawline by relaxing the muscles that pull the lower face down. While men have stronger facial muscles than women, men typically require a more significant dose than women. Standard frontalis injection dosage ranges from 20 to 30 units²² distributed throughout 9 to 13 locations.²³ Glabellar complex dosages may reach 30 units distributed between 5 injection spots, and doses for periorbital lines,

may require 9 to 12 units distributed between 3 injection points.²³ Most men have minor discomfort following the operation and can quickly resume their regular activities. Common BoNTA adverse effects include injection site pain, bruising, bleeding, edema, and erythema.²⁴ Using a thinner needle and diluting the BoNTA with saline may assist in mitigating these adverse reactions. Furthermore, headaches, lethargy, nausea, flu-like symptoms, and ptosis have been described.²⁵

The effects of botulinum toxin A typically last 3-4 months, after which the treatment must be repeated to maintain the desired results. As the muscles that cause wrinkles weaken over time, many patients eventually require fewer treatments.

INJECTABLE FILLERS

Injectable or dermal fillers are a common cosmetic treatment that restores lost facial volume due to age or other causes. Fillers such as hyaluronic acid, calcium hydroxylapatite, and poly-L-lactic acid function by restoring lost facial volume and adding volume to the treated area.²⁶⁻²⁸ By increasing the volume of the cheekbones, nose, jawline, and lips, these fillers can provide a more youthful and refreshed appearance. Men's facial structures are often more angular and defined than women's, with a stronger jawline and more prominent cheekbones.²⁶

In women, fillers are frequently used to enhance the lips and cheeks for volume and to fill in perioral and periocular rhytids. In contrast, men typically use fillers to augment the definition of the jawline and chin, filling in deeper lines and wrinkles around the mouth and nose. Enhancing the jawline and chin with fillers creates a more masculine, angular appearance.^{27,28} Another concern for men contemplating cosmetic augmentation is the cheek, given the significant paucity of subcutaneous fat in men. Overcorrection, mainly when an excessive volume is administered medially or laterally, can result in a feminine look. Care must be given when injecting men's lips, as overfilling, particularly the upper lip, is feminizing.²⁸

When injecting fillers into men, it is essential to use a smaller volume than when injecting fillers into women to avoid creating a more feminine appearance. As the goal is to enhance the masculine features of the face rather than make a softer, more feminine appearance, the filler placement must be more precise. Men may require a different type of filler than women because their skin is typically thicker and less elastic.^{29,30} For the jawline, nose, and chin,

a filler with a high ability to resist high shearing and compression is desirable.²⁹

THREADS

Thread lifting is a minimally invasive cosmetic procedure in which sutures, or threads, are used to lift and reposition the skin of the face, neck, and body.³¹⁻³⁵ The thread technique provides a more youthful and revitalized appearance without requiring invasive surgical procedures.

During a thread-lifting operation, the physician will use a small needle to insert biocompatible threads, such as polydioxanone (PDO), polylactic acid (PLLA), or polycaprolactone (PCA), into the skin.³⁴ In addition to repositioning the skin, these threads are carefully designed to dissolve over time, stimulating collagen formation in the treated areas and boosting the threads' lifting and tightening benefits.

Three types of absorbable threads are currently in use: Mono, Screw/Tornado, and Cog.³⁵ Mono threads are smooth, barbless threads. This thread is typically implanted into the face in a mesh-like pattern to achieve tighter skin effects by enhancing and stimulating collagen around the thread. Monofilament threads are frequently used on neck lines, neck laxity, the forehead, and under the eyes. These threads are intended for attachment to a subcutaneous "anchoring point." Although monofilament threads effectively stimulate collagen production and synthesis, they are helpful for skin tightening, not lifting.³⁵

Screw threads are sometimes referred to as Tornado threads. They frequently appear as single or double threads entangled around the inserting needle. These threads have a remarkable effect on the deflated areas of the skin. Intertwining threads have a more substantial impact than single threads, typically used for general face lifting.³⁵

Cog threads are monofilament threads with barbs designed to attach to the skin's underside. Typically, these barbs are cut or molded as a thread component as a support structure to lift sagging tissues. Cog threads, unlike smooth mono threads, do not require anchoring points. Collagen formation will occur around both the threads and their barbs in the case of cog threads, making them the most effective for jawline lifting and slimming.³⁵

The level at which these threads are inserted depends on the areas being treated and the desired level of lift. On the midface, for instance, where raising is needed, the needle is placed into the deep subcutaneous layer just above the superficial musculoaponeurotic system (SMAS).³³ In contrast, a jawline lift is accomplished by putting the needle

into the parotid-masseter region's subcutaneous fat toward the marionette line's origin.³⁶ Anecdotally, the entry point for women is on the zygoma or slightly above it. In men, the insertion is usually 2 cm anterior to the superior border of the tragus. Gently pulling and securing the threads creates tension that lifts and tightens the skin. The operation typically lasts between 30 and 45 minutes and can be conducted under local anesthesia, allowing the patient to return to normal activities within a few days. The results of thread-lifting might last anywhere from several months to a year, depending on the patient and threads used. PDO threads can last between 6 and 12 months, PLLA threads up to 14 to 18 months (approximately one and a half years), and PCA threads take 16 to 24 months (about 2 years) to dissolve, with collagen stimulation lasting an additional year after the PCA threads have completely dissolved.

Thread lifting is relatively safe yet contains certain dangers, as with any cosmetic operation. Infection, scarring, and thread migration are some dangers in which the threads shift from their initial position. It is vital to be familiar with the technique to minimize these dangers.

The operation is safe and may be performed under local anesthetic, making it an attractive choice for individuals seeking non-invasive cosmetic enhancement.

LASERS AND ENERGY BASED DEVICES

Men typically seek laser and or energy-based devices (EBD) treatments to treat the following conditions: photodamage, acne scarring, loose neck/submental skin, hyperpigmentation, and facial rejuvenation.³⁷ Men favor single or multiple procedures over a single day with little to no downtime compared to women.³⁷ Several devices are currently available in the market depending on the indications and technology involved.

Men who seek treatment for photodamage and facial rejuvenation using lasers/EBD typically are the ablative, non-ablative, or fractional laser type.³⁸ Ablative lasers destroy the epidermis and part of the dermis to stimulate the wound healing process to lessen superficial pigmentation and fine wrinkles. Typical devices include CO₂ (10,600 nm) and Er:YAG (2,940 nm) lasers. However, since this technology destroys the superficial to the upper layers of the skin, one expects significant downtime for male patients. Men with Fitzpatrick skin types III to VI are more prone to developing postinflammatory hyperpigmentation: thus, caution is advised when using ablative lasers.³⁸ Nonablative lasers

spare the epidermis and target the dermis to induce thermal remodeling and have little to no downtime compared to their ablative counterparts. Examples of these lasers/EBD are the intense pulse light (500-1200 nm), Erbium glass (1,540-1550 nm) Alexandrite (700-825 nm), and Nd:YAG (1064 nm) systems. Fractionated lasers can be both ablative and non-ablative types, emitting an energy beam split into columns. These columns create areas of untreated skin, which promotes faster wound healing.³⁹ The fractionated laser system has less downtime than ablative lasers and decreases the incidence of hyperpigmentation and are recommended in treating individuals with darker skin types.³⁸

Men have acne that is often longer in duration, more severe, and treated later than women. As a result, men have more severe acne scarring.⁴⁰ Lasers can be employed to smoothen out the scars and to stimulate collagen formation on the atrophic areas. Ablative resurfacing lasers selectively vaporize the skin surface to smoothen out the acne scars but with considerable downtime and an increased chance for hyperpigmentation in Asian men. Therefore, ablative and non-ablative fractional lasers were developed to mitigate untoward adverse events.⁴¹

Several energy-based devices can treat loose and saggy skin in men. A radiofrequency-based device uses a high frequency alternating current (0.3 to 10 MHz) to selectively heat dermal tissue to induce wound healing and neocollagenesis to tighten the skin.⁴² Another energy-based device, which employs microfocused ultrasound has also been shown to effectively treat saggy skin.^{43,44}

CONCLUSION

In conclusion, nonsurgical therapies, including neurotoxins, threads, injectable fillers, and the use of lasers/energy-based devices can improve the appearance of the male face. Different races have different ideas about how male faces should ideally look. For example, Western cultures often prefer angular, prominent faces, whereas Asian cultures prefer softer, rounder faces. One needs to take time with the initial male consult to balance what males perceive as ideal and what a dermatologist can achieve. Finally, a complete skincare regimen suited for a male patient's goals and lifestyle should always align with the patient's aesthetic desires.

Nevertheless, all races can benefit from these treatments, as they help mitigate signs of aging and create a youthful appearance.

CME QUESTIONS

1. Which correctly describes male skin?

- a. Skin is 25% thicker than females
- b. More subcutaneous fat than females
- c. Sebum production decreases during menopause
- d. Less dense collagen than females

2. This is a minimally invasive cosmetic procedure in which specialized sutures are used to lift and reposition the skin of the face, neck, and body:

- a. Dermal filler
- b. Neurotoxin
- c. Thread lifting
- d. Liposuction

3. Which of the following statements is correct?

- a. Women's lips tend to be thinner and less curved
- b. The upper and lower facial dimensions of males are proportionally equal
- c. Women's expression lines are more profound because they have greater muscle mass
- d. As a result of androgen hormones, women produce more sebum than men

4. Around how many months do the effects of Botulinum Toxin A typically last?

- a. 1-2 months
- b. 3-4 months
- c. 1 year
- d. 5-6 months

5. Which products are considered pigment lightening agents that can be used to treat hyperpigmentation in male patients including dark spots and melasma?

- a. Hydroquinone
- b. Kojic acid
- c. Azelaic acid
- d. All of the above

Answers to the quiz can be found on page 61.

REFERENCES

1. Plastic surgery procedural statistics from the American Society of Plastic Surgeons. January 2020. Accessed March 24, 2023. <https://www.plasticsurgery.org/news/plastic-surgery-statistics>
2. Farhadian JA, Bloom BS, Brauer JA. Male Aesthetics: A Review of Facial Anatomy and Pertinent Clinical Implications. *J Drugs Dermatol*. 2015;14(9):1029-1034.
3. Lei X, Holzleitner IJ, Perrett DI. The Influence of Body Composition Effects on Male Facial Masculinity and Attractiveness. *Front Psychol*. 2019 Jan 4;9:2658. doi: [10.3389/fpsyg.2018.02658](https://doi.org/10.3389/fpsyg.2018.02658). PMID: 30662423; PMCID: PMC6328455.
4. Fakhro A, Yim HW, Kim YK, Nguyen AH. The Evolution of Looks and Expectations of Asian Eyelid and Eye Appearance. *Semin Plast Surg*. 2015;29(3):135-144. doi:[10.1055/s-0035-1556847](https://doi.org/10.1055/s-0035-1556847)
5. Liew, S., Wu, W.T.L., Chan, H.H. et al. Consensus on Changing Trends, Attitudes, and Concepts of Asian Beauty. *Aesth Plast Surg* 40, 193–201 (2016). <https://doi.org/10.1007/s00266-015-0562-0>
6. Sebastián-Enesco C, Semin GR. The brightness dimension as a marker of gender across cultures and age. *Psychol Res*. 2020;84(8):2375-2384. doi:[10.1007/s00426-019-01213-2](https://doi.org/10.1007/s00426-019-01213-2)
7. Keaney TC. "Man-some": A Review of Male Facial Aging and Beauty. *Journal of Drugs in Dermatology : JDD*. 2017 Jun;16(6):91-93. PMID: 29028860.
8. Handler MZ, Goldberg DJ. Cosmetic Concerns Among Men. *Dermatol Clin*. 2018 Jan;36(1):5-10. doi: [10.1016/j.det.2017.09.001](https://doi.org/10.1016/j.det.2017.09.001).
9. Mastroluca E, Patalano M, Bertossi D. Minimally invasive aesthetic treatment of male patients: The importance of consultation and the lower third of the face. *Journal of cosmetic dermatology*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8361772/#>. Published July 2021. Accessed March 29, 2023
10. USCS data visualizations - CDC. Centers for Disease Control and Prevention. <https://gis.cdc.gov/Cancer/USCS/#/AtAGlance/>. Accessed March 31, 2023.
11. Roberts CA, Goldstein EK, Goldstein BG, Jarman KL, Paci K, Goldstein AO. Men's Attitudes and Behaviors About Skincare and Sunscreen Use Behaviors. *J Drugs Dermatol*. 2021;20(1):88-93. doi:[10.36849/JDD.5470](https://doi.org/10.36849/JDD.5470)
12. Oblong JE. Male skin care: Shaving and moisturization needs. *Dermatologic Therapy*. 2012;25(3):238-243. doi:[10.1111/j.1529-8019.2012.01502](https://doi.org/10.1111/j.1529-8019.2012.01502)
13. Liyanage A, Liyanage G, Sirimanna G, Schürer N. Comparative Study on Depigmenting Agents in Skin of Color. *J Clin Aesthet Dermatol*. 2022;15(2):12
14. Waller J, Dreher F, Maibach H, Weinstein G. The measurement of the relative potencies of several topical keratolytic ingredients. *Journal of the American Academy of Dermatology*. 2005;52(3). doi:[10.1016/j.jaad.2004.10.374](https://doi.org/10.1016/j.jaad.2004.10.374)
15. Kornhauser A, Coelho SG, Hearing VJ. Applications of hydroxy acids: classification, mechanisms, and photoactivity. *Clin Cosmet Investig Dermatol*. 2010 Nov 24;3:135-42. doi: [10.2147/CCID.S9042](https://doi.org/10.2147/CCID.S9042). PMID: 21437068; PMCID: PMC3047947.
16. Kafi R, Kwak HS, Schumacher WE, et al. Improvement of naturally aged skin with vitamin A (retinol). *Archives of Dermatology*. 2007;143(5). doi:[10.1001/archderm.143.5.606](https://doi.org/10.1001/archderm.143.5.606)
17. Kligman AM. Guidelines for the use of topical tretinoin (retin-A) for photoaged skin. *Journal of the American Academy of Dermatology*. 1989;21(3):650-654. doi:[10.1016/s0190-9622\(89\)70233-4](https://doi.org/10.1016/s0190-9622(89)70233-4)
18. Michalak M. Plant-derived antioxidants: Significance in skin health and the aging process. *International Journal of Molecular Sciences*. 2022;23(2):585. doi:[10.3390/ijms23020585](https://doi.org/10.3390/ijms23020585)
19. Makino ET, Jiang LI, Tan P, Cheng T, Mehta RC. Addressing Male Facial Skin Concerns: Clinical Efficacy of a Topical Skincare Treatment Product for Men. *J Drugs Dermatol*. 2018;17(3):301-306.
20. Westfall TC and Westfall DP. In Goodman & Gilman's *The Pharmacological Basis of Therapeutics*. 12th ed. Chapter 8. The McGraw-Hill Companies, 2011. ISBN 9780071624428.
21. Benedetto AV. The cosmetic uses of Botulinum toxin type A. *Int J Dermatol*. 1999;38(9):641-655. doi:[10.1046/j.1365-4362.1999.00722.x](https://doi.org/10.1046/j.1365-4362.1999.00722.x)
22. Lorenc ZP, Smith S, Nestor M, Nelson D, Moradi A. Understanding the functional anatomy of the frontalis and glabellar complex for optimal aesthetic botulinum toxin type A therapy. *Aesthetic Plast Surg*. 2013 Oct;37(5):975-83.
23. Sundaram H, Signorini M, Liew S, Trindade de Almeida AR, Wu Y, Vieira Braz A, Fagien S, Goodman GJ, Monheit G, Raspaldo H., Global Aesthetics Consensus Group. Global Aesthetics Consensus: Botulinum Toxin Type A--Evidence-Based Review, Emerging Concepts, and Consensus Recommendations for Aesthetic Use, Including Updates on Complications. *Plast Reconstr Surg*. 2016 Mar;137(3):518e-529e.
24. Rzany B, Dill-Müller D, Grablowitz D, Heckmann M, Caird D., German-Austrian Retrospective Study Group. Repeated botulinum toxin A injections for the treatment of lines in the upper face: a retrospective study of 4,103 treatments in 945 patients. *Dermatol Surg*. 2007 Jan;33(1 Spec No.):S18-25.
25. Satriyasa BK. Botulinum toxin (Botox) A for reducing the appearance of facial wrinkles: A literature review of clinical use and

- pharmacological aspect. Clinical, cosmetic and investigational dermatology. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6489637/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6489637/>. Published April 10, 2019. Accessed March 29, 2023.
26. Carruthers JDA, Glogau RG, Blitzer A; Facial Aesthetics Consensus Group Faculty. Advances in facial rejuvenation: botulinum toxin type a, hyaluronic acid dermal fillers, and combination therapies--consensus recommendations. *Plast Reconstr Surg*. 2008;121(5 Suppl):5S-30S. doi:[10.1097/PRS.0b013e31816de8d0](https://doi.org/10.1097/PRS.0b013e31816de8d0)
 27. Rho NK, Chang YY, Chao YY, et al. Consensus Recommendations for Optimal Augmentation of the Asian Face with Hyaluronic Acid and Calcium Hydroxylapatite Fillers. *Plast Reconstr Surg*. 2015;136(5):940-956. doi:[10.1097/PRS.0000000000001706](https://doi.org/10.1097/PRS.0000000000001706)
 28. Farhadian JA, Bloom BS, Brauer JA. Male Aesthetics: A Review of Facial Anatomy and Pertinent Clinical Implications. *J Drugs Dermatol*. 2015;14(9):1029-1034.
 29. Choi MS. Basic rheology of dermal filler. *Arch Plast Surg*. 2020 Jul;47(4):301-304. doi: 10.5999/aps.2020.00731. Epub 2020 Jul 15. PMID: 32718107; PMCID: PMC7398800.
 30. Molliard SG, Bétemps JB, Hadjab B, Topchian D, Micheels P, Salomon D. Key rheological properties of hyaluronic acid fillers: from tissue integration to product degradation. *Plastic and Aesthetic Research*. 2018; 5:17. <http://dx.doi.org/10.20517/2347-9264.2018.10>
 31. Cobo R. Use of Polydioxanone Threads as an Alternative in Nonsurgical Procedures in Facial Rejuvenation. *Facial Plast Surg*. 2020;36(4):447-452. doi:[10.1055/s-0040-1714266](https://doi.org/10.1055/s-0040-1714266)
 32. Hyejeong Lee, Kichan Yoon & Munjae Lee (2018) Outcome of facial rejuvenation with polydioxanone thread for Asians, *Journal of Cosmetic and Laser Therapy*, 20:3, 189-192, DOI: [10.1080/14764172.2017.1400167](https://doi.org/10.1080/14764172.2017.1400167)
 33. Santorelli A, Cerullo F, Cirillo P, Cavallini M, Avvedimento S. Mid-face reshaping using threads with bidirectional convergent barbs: A retrospective study. *J Cosmet Dermatol*. 2021;20(6):1591-1597. doi:[10.1111/jocd.14038](https://doi.org/10.1111/jocd.14038).
 34. Atiyeh, B.S., Chahine, F. & Ghanem, O.A. Percutaneous Thread Lift Facial Rejuvenation: Literature Review and Evidence-Based Analysis. *Aesth Plast Surg* 45, 1540–1550 (2021). <https://doi.org/10.1007/s00266-020-02095-1>
 35. Yongtrakul, P., Sirithanabadeekul, P., & Siriphan, P. (2016). Thread Lift: Classification, Technique, and How to Approach the Patient. *International Journal of Medical and Health Sciences*, 10, 558-566.
 36. Diaspro A, Luni M, Rossini G. Thread Lifting of the Jawline: A Pilot Study for Quantitative Evaluation. *J Cutan Aesthet Surg*. 2021 Jan-Mar;14(1):47-54. doi: [10.4103/JCAS.JCAS_41_20](https://doi.org/10.4103/JCAS.JCAS_41_20). PMID: 34084008; PMCID: PMC8149973.
 37. Crispin MK, Hruza GJ, Kilmer SL. Lasers and Energy-Based Devices in Men. *Dermatol Surg*. 2017 Nov;43 Suppl 2:S176-S184. doi: [10.1097/DSS.0000000000001274](https://doi.org/10.1097/DSS.0000000000001274). PMID: 29064982.
 38. Houreld, N. N. (2019). The use of lasers and light sources in skin rejuvenation. *Clinics in Dermatology*, 37(4), 358-364. <https://doi.org/10.1016/j.clindermatol.2019.04.008>
 39. Hantash, B.M., Bedi, V.P., Kapadia, B., Rahman, Z., Jiang, K., Tanner, H., Chan, K.F. and Zachary, C.B. (2007), In vivo histological evaluation of a novel ablative fractional resurfacing device. *Lasers Surg. Med.*, 39: 96-107. <https://doi.org/10.1002/lsm.20468>
 40. Agrawal DA, Khunger N. A Morphological Study of Acne Scarring and Its Relationship between Severity and Treatment of Active Acne. *J Cutan Aesthet Surg*. 2020;13(3):210-216. doi:[10.4103/JCAS.JCAS_177_19](https://doi.org/10.4103/JCAS.JCAS_177_19)
 41. Yu JN, Abat K. Safety and efficacy of hybrid energy and trifractional technologies in the treatment of acne scars: An open-label clinical trial. *J Cosmet Laser Ther*. 2016;18(2):60-5. doi: [10.3109/14764172.2015.1063658](https://doi.org/10.3109/14764172.2015.1063658). Epub 2016 Jan 28. PMID: 26820256.
 42. Alster TS, Lupton JR. Nonablative cutaneous remodeling using radiofrequency devices. *Clin Dermatol*. 2007 Sep-Oct;25(5):487-91. doi: [10.1016/j.clindermatol.2007.05.005](https://doi.org/10.1016/j.clindermatol.2007.05.005). PMID: 17870527.
 43. Fabi SG. Noninvasive skin tightening: focus on new ultrasound techniques. *Clin Cosmet Investig Dermatol*. 2015 Feb 5;8:47-52. doi: [10.2147/CCID.S69118](https://doi.org/10.2147/CCID.S69118). PMID: 25709486; PMCID: PMC4327394.
 44. Baumann L, Zelickson B. Evaluation of Micro-Focused Ultrasound for Lifting and Tightening Neck Laxity. *J Drugs Dermatol*. 2016 May 1;15(5):607-14. PMID: 27168269.