

FACIAL AESTHETICS FOR MALES: A FOCUS ON MINIMALLY-INVASIVE PROCEDURES

XXXXXXXXXX



UWE WOLLINA, MD, is Head of the Department of Dermatology and Allergology, Academic Teaching Hospital Dresden-Friedrichstadt, Dresden, Germany; **ALBERTO GOLDMAN, MD**, Clinia Goldman, Porto Alegre, RS, Brazil

email: wollina-uw@khdf.de

ABSTRACT

The approach to male facial aesthetics is different to that of females. Anatomical, physiological, and psychosocial factors are significant factors to consider, having an impact on aesthetic procedures performed for males. In this article the authors focus on minimally-invasive techniques including radiofrequency, fractional photothermolysis, botulinum toxin A and dermal fillers. Techniques and special needs for the male patient are discussed for the upper-face, mid-face and lower-face. There should be a balance in the improvement of attractiveness and masculinity.

ALTHOUGH THE FOCUS IN AESTHETIC medicine is on females, the market for male aesthetics is growing. For both genders, the numbers for minimally-invasive procedures are growing faster than the classical invasive procedures such as face lift, for example.

The approach to male aesthetics requires a specific approach. This is caused by differences in anatomy, physiology, psychology, and sociology. In this article, the authors will discuss some important issues to consider for common minimally-invasive aesthetic procedures for younger males (aged between 30 and 50 years).

Male facial anatomy

The male facial anatomy differs in detail from the female

counterpart. The bony structures such as the orbital rim, glabella, cheek bones, and chin tend to be more prominent. The glabella width is also a consequence of the strength and volume of the procerus muscle involved in flaring nostrils and increased air intake during physically-demanding activities. The shape of the male orbit and brows makes the eyes appear smaller. The forehead also has an increased backwards slope from the brows to the hairline.

Male noses are rated optimal when their final aesthetic line below nasion on the lateral view is straight [AQ: I'm not sure what you're trying to say here?], in women it can be also concave. A strong lateral columella appearance is considered as a negative factor for male noses. The optimal male upper-lip and philtrum are broader¹.

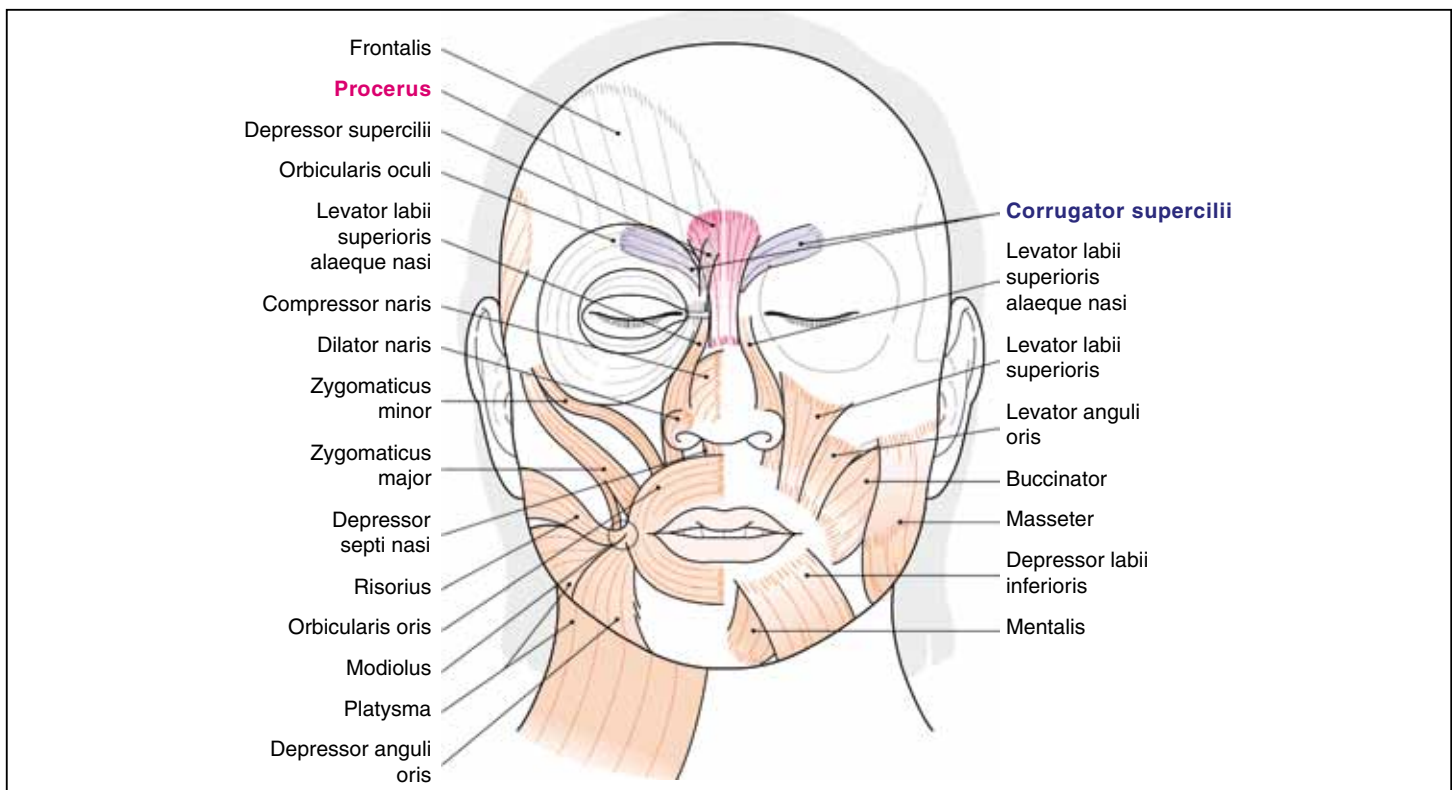
Often, the male venter frontalis musculi occipitofrontalis and masseter muscles are strongly developed. The subcutaneous fat tissue is characterised by a criss-cross pattern of connective tissue fibres preventing adipose tissue herniation².

The impact of testosterone on hair and sebaceous gland development is clearly demonstrated by the male beard and androgenic alopecia, and a tendency for sebaceous gland hypertrophy. Testosterone also has a deep influence on facial masculinity, a characteristic of sexual dimorphism. The abundance of hair follicles ▷

KEYWORDS

male facial aesthetics, gender issues, attractiveness, masculinity, minimally invasive procedures





and sebaceous glands is responsible for a faster skin recovery after ablative procedures³.

Facial attractiveness

Facial attractiveness is an important factor in social interaction, often being perceived as successful, intelligent, and socially desirable. The rating of attractiveness may be influenced by the gender of the rater and his/her age⁴. The stereotypical deduction of personality as a result of outer traits, including facial attractiveness, is known as the halo effect⁵.

Comparing antique with contemporary faces [AQ2: do you mean old versus young?], the optimal contemporary male face will have a higher lower facial height (48%) against the total [AQ3: insert 'average?'] facial height⁶. Increased perceived male facial attractiveness is found in dolichocephalic (i.e. 'long-headed') males with a narrower and lower jaw (not square), and a wider and fuller lower-lip⁷.

Masculinity and attractiveness are two significant components of male facial aesthetics. Features of high masculinity are cheekbone-jaw prominence. The perception of dominance, social boldness, and physical strength has been related to these anatomic features^{8, 9}. According to some studies extremes of masculinity may reduce attractiveness^{10,11}.

The upper face

The major targets of the upper face are horizontal and glabellar folds caused by the hyperkinetic muscles. The injection of botulinum toxin A is a safe and easy way to reduce mimic facial wrinkles. On the European and

South American markets, onabotulinum toxin A (Botox, Vistabel; Allergan), abobotulinumtoxin A (Dysport, Azzalure; Ipsen) and incobotulinum toxin A (Xeomin, Bocouture; Merz) are available. The products Botox/Vistabel and Xeomin/Bocouture are dose-equivalent. One unit of Dysport/Azzalure translates into 2-3 units of Botox¹².

As a result of a greater muscle mass, males often need higher doses of botulinum toxin treatment compared with females. A strong procerus muscle will result in a deep horizontal fold of the bridge of the nose. A dose-response study performed for male glabella lines clearly demonstrated that doses of 20 units onabotulinum toxin A were inadequate¹³. The average dosage for this area in males was 60 units¹³. The corrugator supercilii muscle tends to insert more laterally in males. This should be evaluated before treatment so that treatment to the lateral fibres is not omitted when injecting botulinum toxin A. The natural position of the male brows is horizontal and arching is usually unwanted since it feminizes appearance (Figure 1)¹⁴.

To achieve optimal results, deep glabellar folds should be targeted using a combined approach (i.e. botulinum toxin and a dermal filler). This will not only provide a better appearance, but a significantly longer-lasting effect. In a study with adult females, the combination achieved a 32-week effect compared with 18 weeks when treated with a hyaluronic acid filler alone¹⁵. To avoid intravascular injection the authors prefer the retrograde linear threading¹⁶.

The horizontal lines are caused by the venter frontalis musculi occipitofrontalis. In some younger males, strong



Figure 1 40-year-old before (A) and after (B) treatment to the glabellar and frontal wrinkles with botulinum toxin A injection (Dysport)

muscles in combination with a thicker forehead soft tissue layer can lead to deep lines. The frontal region should be better treated together with the glabella to achieve optimum results. The main adverse effect is a brow ptosis, especially in males; therefore, injections should preferably target the upper proportion of the forehead, and leave some minor activity in the lower part. The lower 2cm of the frontalis muscle control the brow position and are a no-go area for botulinum toxin treatment. These rules will prevent a mask-like appearance and a brow ptosis¹⁷. Crow's feet are the result of lateral orbicularis oculi muscle movement. In some males, the lateral part will expand more laterally and should be considered as an injection site⁴.

Periorbital hyperpigmentation (dark circles) can be differentiated into vascular, constitutional, postinflammatory types, as well as shadow effects. It is quite common in patients of Asian origin. The shadow type is more often seen in males owing to the particular orbital anatomy with deep seated eyes¹⁸. Depending on the underlying pathologies, a variety of treatment options such as the fractional 1550nm erbium-doped fibre laser, 1064nm Nd:YAG laser, chemical peels or even topical formulations of *Pfaffia paniculata*, *Ptychopetalum olacoides* B., and *Lilium candidum* L.-associated compounds have been used to improve periorbital hyperpigmentation^{19,20}.

The mid-face

The mid-facial region is an area in which dermal filler injections become more important than botulinum toxin. Sculpting of the mid-face includes the perioral region with tear through deformity, nasolabial folds and cheeks. Fine wrinkling of the lower-lid can be smoothed with superficial injections of small doses of botulinum toxin. This can be combined with either radio frequency or laser treatment to induce collagen neof ormation, and improving skin laxity as a result²¹⁻²³.

The tear through deformity can be treated with dermal filler injections (mostly hyaluronic acid) or autologous adipose tissue transfer. When using a calcium hydroxylapatite biostimulator (i.e. Radiesse; Merz Aesthetics) for aesthetic purposes, the lower orbital rim must be acknowledged as a natural barrier or border that

should never be crossed. For calcium hydroxylapatite, serial puncture technique with deep seated microdroplets of $\leq 0.1\text{mL}$ aliquot are administered²⁴. To avoid persistent malar oedema, small volume injections should be placed supraperiosteally, otherwise they could impede the lymphatic flow above the malar septum²⁵.

Persistence of hyaluronic acid fillers is a function of the concentration, cross-linking and percentage elasticity (i.e. the proportion of elasticity in a cross-linked hyaluronic acid formulation). Persistence is related to a reduction in wrinkle severity and an increase in volume²⁶.

The nasolabial folds are the most popular indication for dermal filler injections (Figures 2 and 3). The folds



Figure 2 33-year-old before (A) and after (B) treatment to the nasolabial fold with hyaluronic acid (Esthéis Basic - Anteis, Switzerland)

Figure 3 38-year-old showing an improvement in skin quality and smoothing of the nasolabial fold with a liquid lift (Belotero Basic 1ml, Merz, Germany). (A) before and (B) after two procedures 1-year apart



should be considered together with the cheek bone area for the best results²⁷. Volume loss in the malar fat pad will aggravate the nasolabial folds. The authors therefore recommend starting any mid-face sculpting on the cheek bones with a liquid lift. When using a hyaluronic acid filler, monophasic and highly cross-linked products are preferred. Shear forces can decrease viscosity in dermal fillers. Higher shear forces are expected in areas with significant muscle movement. As a liquid lift to the cheek bones reduces the appearance of nasolabial folds indirectly, persistence of augmentation will last longer compared with injections along the nasolabial folds alone^{28,29}.

Hollowing of the cheeks is a consequence of loss of malar fat pad, as well as laxity of associated fibrous septae and the superficial musculoaponeurotic system (SMAS). The therapeutic targets are therefore volume and laxity. To improve volume loss, hyaluronic acid fillers are administered using a fanning technique, beginning with the deep subcutaneous layers. Other options are cross-hatching or serial puncture injections. The latter is preferred for calcium hydroxylapatite. The tower technique with a combination of perpendicular deposit

and layering procedures has recently been suggested for hyaluronic acid fillers³⁰. As male facial skin tends to be thicker, some males are more easily treated using a 25 rather than 27 gauge needle or cannula. Other authors prefer supraperiostally deposition of calcium hydroxylapatite of short (0.3-0.5cm) strands in a retrograde technique for 3D volumisation³¹.

Volume loss is a significant feature of HIV-associated lipoatrophy, stigmatising affected males (and females). Correction of volume loss to the cheeks with a durability of more than 12 months has been achieved with large particle biphasic hyaluronic acid filler (Restylane SubQ; Q-Med, A Galderma Division)³², poly-L-lactic acid³³, and calcium hydroxylapatite³⁴. Independent from the reasons for volume substitution in males, a round facial appearance should be avoided as this would reduce facial attractiveness.

Although some degree of collagen formation has been proven following treatment with dermal fillers, more advanced skin laxity will benefit from combined procedures. Laxity can be further improved by serial application of radio frequency and fractionated lasers. A more recent technology is subcutaneous laser

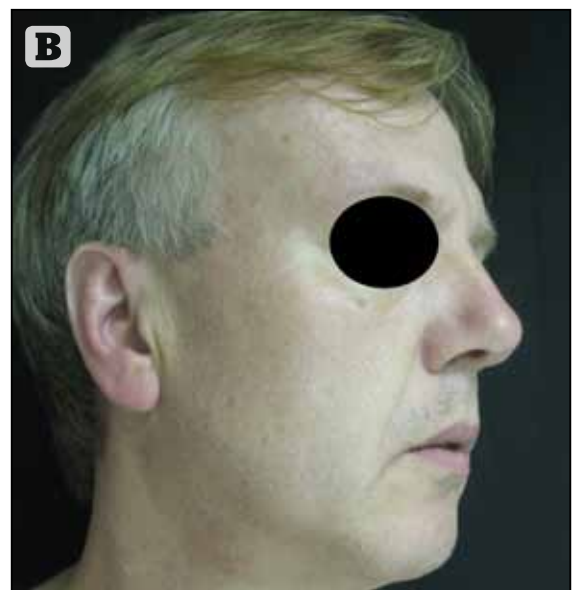


Figure 4 48-year-old neck lipodystrophy and flaccidity in the lower third of the face and cervical region (A). Six months after subdermal laserlipolysis (B) (Smartlipo, Deka, Italy)

[AQ4: is figure 5 in the correct sequence?]

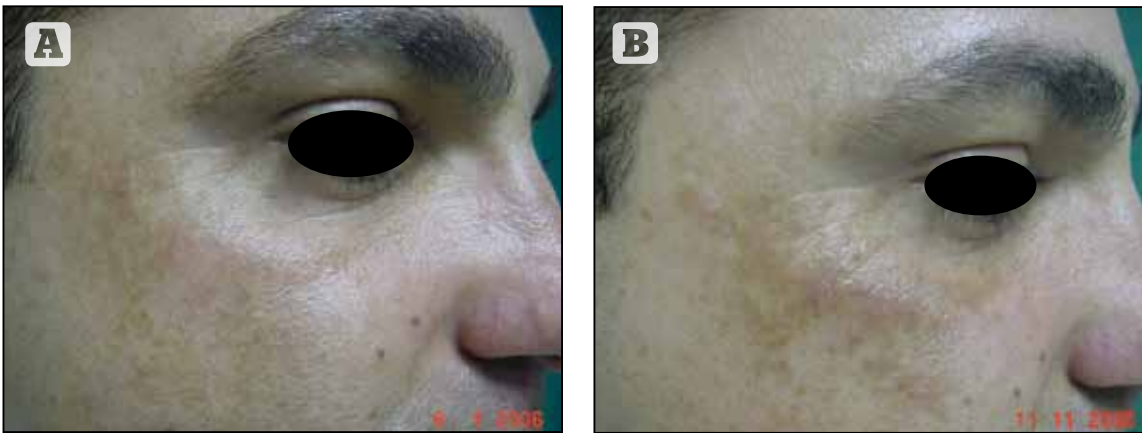


Figure 5 40-year-old with melasma, (A) before and (B) following improvement with (trichloroacetic acid) TCA peel

application³⁵.

Lower face and submental area

Marionette lines and a dimpled chin are more common indications for botulinum toxin use. The injection technique for both does not differ to that used in females. A combination with dermal filler placement is useful in marionette lines, but the effect duration is shorter than for glabellar lines since the perioral musculature cannot be completely relaxed³⁴.

The jaw line is an important measure of facial aesthetics in males, influenced by body weight, platysma anatomy and strength, and sagging. With the authors' technique to correct the down-turn of the lateral corners of the mouth, a shaping of the jaw line is also possible in younger, non-obese males. Injections are administered using a 30G needle with the patient in a supine position. Three to four injections are placed on both sites of the medial part of the platysma (each receiving 5 units of Vistabel/Bocouture or 15 units of Dysport/Azzalure). The depressor anguli oris is treated with superficial injections of the bony insertion point with approximately the same dose³⁶.

The submental fat pad and skin laxity have been improved by subdermal laser lipolysis alone, or combined liposuction and subdermal laser (Figure 4)³⁷⁻³⁹.

Adjuvant whole-face procedures

Chemical peels are used as whole face procedures in males as in females. In the authors' experience, males prefer superficial peels because of reduced downtime. Superficial peels include α -hydroxy acids (glycolic acid, lactic acid), β -hydroxy acids (salicylic acid, capryloyl salicylic acid), and Jessner solution (a combination of resorcinol, salicylic acid, lactic acid, and ethanol). β -Hydroxy acids have the advantage that they do not require a neutralising agent. Deeper peels like trichloroacetic acid peel (TCA) need more experience. Peels can be used to treat acne, hyperpigmentation, and photodamage (Figure 5)⁴⁰⁻⁴³.

Another technology for full-face procedures is microdermabrasion (Figure 6). The primary target is the stratum corneum. It can be used in addition to lasers, or in conjunction with dermo-cosmeceuticals⁴⁴.

Fractional photothermolysis is another technology that can be used for partial or full-face procedures⁴⁵. The target chromophore is tissue-bound water. Photothermolysis is available for different laser types, such as CO₂ (10 600nm), Er:YAG (2940nm), and yttrium-scandium-gallium-granat (2790nm) (Figure 7)⁴⁶. The principle immediate effect comprises microscopic thermal ablation zones, whereas the delayed induction of collagen and hyaluronic acid is dependent on laser wavelength, spot density, pulse duration, cutaneous hydration, and cooling. The coverage of fractional photothermolysis should be less than 50% of the area to avoid unwanted adverse effects. Pre- and postoperative

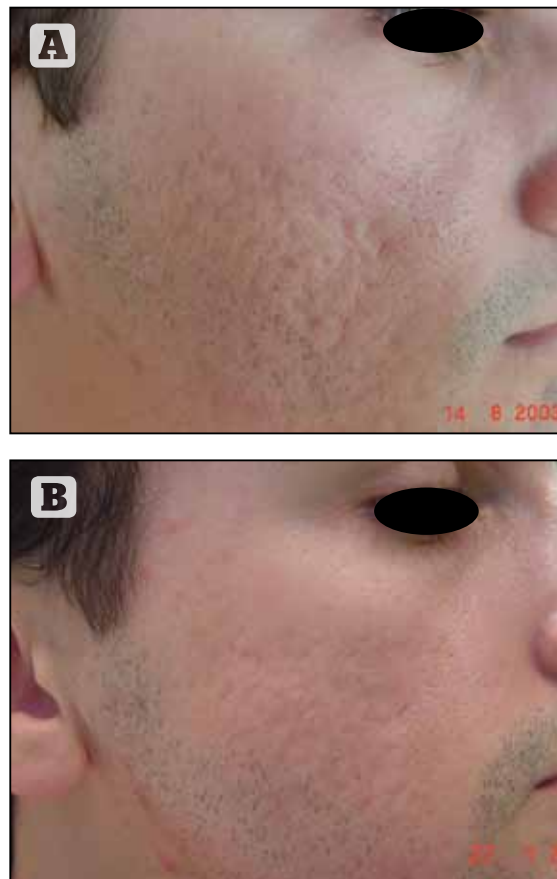


Figure 6 31-year-old with acne scars. Before (A) and after (B) four sessions of microdermabrasion

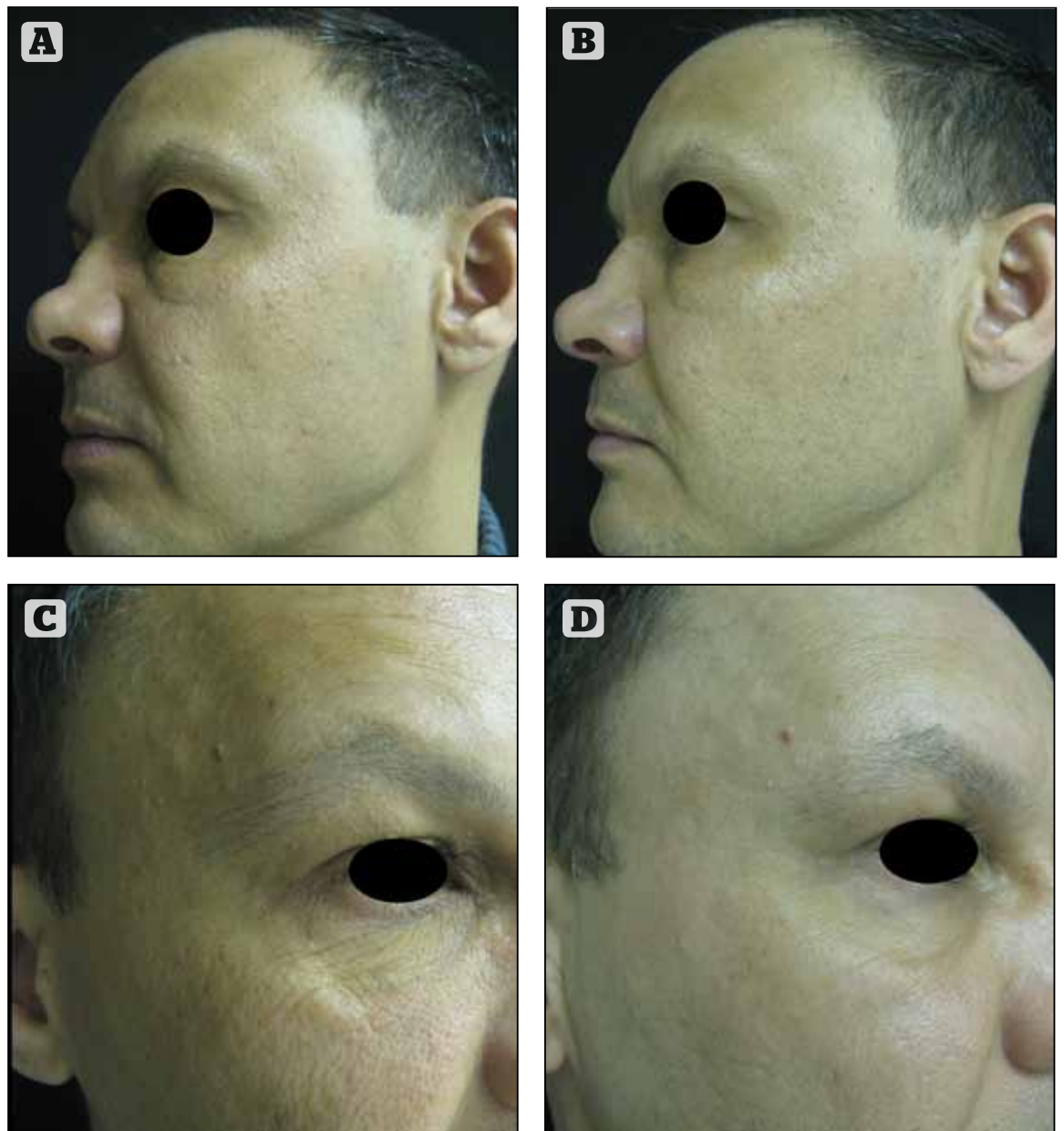


Figure 7 48-year old acne scars, porous skin, and flaccidity. (A) and (C) before procedure. (B) and (D) result after two sessions of CO2 fractional laser (SmartXide Dot, Deka, Italy). Improvement in the skin texture and quality, mouth commissure and nasolabial fold can be seen

care is essential to achieve optimum results. More details can be found in a recent consensus paper on this topic⁴⁷.

Conclusions

Men have become more interested in minimally-invasive aesthetic procedures in last decade. The attempt to gain optimum results, however, has gender-specific features. The interaction between attractiveness and masculinity needs particular awareness. Men want to remain as natural as possible when considering aesthetic improvement.

Declaration of interest Uwe Wollina has received honoraria for workshops and lectures from Allergan and Merz. Alberto Goldman has nothing to declare.

Figures [AQ5: are all figures the authors' own?]

Key points

- XXXXXX
- XXXXXXXX
- XXXXXX
- XXXXXXXX
- XXXXXXXX

References

1. Springer IN, Zernial O, Nölke F et al. Gender and nasal shape: measures for rhinoplasty. *Plast Reconstr Surg* 2008; 121(2): 629-37
2. Peterson JD, Goldman MP. Laser, light, and energy devices for cellulite and lipodystrophy. *Clin Plast Surg* 2011; 38(3): 463-74
3. Walrath DE, Turner P, Bruzek J. Reliability test of the visual assessment of cranial traits for sex determination. *Am J Phys Anthropol* 2004; 125(2): 132-7
4. Foos PW, Clark MC. Adult age and gender differences in perception of facial attractiveness: beauty is in the eye of the older beholder. *J Genet Psychol* 2011; 172(2): 162-75
5. Thorndike EL. A constant error on psychological rating. *J Appl Psychol* 1920; 4: 25-9
6. Mommaerts MY, Moerenhout BA. Idea proportions in full face front view, contemporary versus antique. *J Craniomaxillofac Surg* 2011; 39(2): 107-10
7. Windhager S, Schaefer K, Fink B. Geometric morphometrics of male facial shape in relation to physical strength and perceived attractiveness, dominance, and masculinity. *Am J Human Biol* 2011; 23(6): 805-14
8. Fink B, Neave N, Seydel H. Male facial appearance signals physical strength to women. *Am J Human Biol* 2007; 19(1): 82-7
9. Pivonkova V, Rubesova A, Lindova J, Havlicek J. Sexual dimorphism and personality attributions of male faces. *Arch Sex Behav* 2011; 40(6): 1137-43
10. Rennels JL, Bronstad PM, Langlois JH. Are attractive men's faces masculine or feminine? The importance of type of facial stimuli. *J Exp Psychol Hum Percept Perform* 2008; 34(4): 884-93
11. Sharabi SE, Hatfeh DA, Hollier LH Jr. Facial attractiveness: Is the whole more than the sum of its parts? *Aesthet Surg J* 2010; 30(2): 154-60
12. Hessel C, Hessel D, Porto MD, Schilling J, Siega C. Botulinum toxin type A for aging face and aesthetic use. *Dermatol Ther* 2011; 24(1): 54-61
13. Carruthers A, Carruthers J. Prospective, double-blind, randomized, parallel group, dose-ranging study of botulinum toxin type A in men with glabella rhytids. *Dermatol Surg* 2005; 31(10): 1297-303
14. Flynn TC. Botox in men. *Dermatol Ther* 2007; 20(6): 407-10
15. Carruthers J, Carruthers A. A prospective, randomized, parallel group study analyzing the effect of BTX-A (Botox) and nonanimal sourced hyaluronic acid (NASHA, Restylane) in combination compared with NASHA (Restylane) alone in severe glabellar rhytides in adult female subjects: treatment of severe glabellar rhytides with a hyaluronic acid derivate compared with the derivate and BTX-A. *Dermatol Surg* 2003; 29(8): 802-9
16. Goldman A, Wollina U. Facial rejuvenation for middle-aged women: a combined approach with minimally invasive procedures. *Clin Interv Aging* 2010; 5: 293-9
17. Wollina U, Konrad H. Managing adverse events associated with botulinum toxin type A: a focus on cosmetic procedures. *Am J Clin Dermatol* 2005; 6(3): 141-50
18. Ranu H, Thng S, Goh BK, Burger A, Goh CL. Periorbital Hyperpigmentation in Asians: An Epidemiologic Study and a Proposed Classification. *Dermatol Surg* 2012; [Epub ahead of print]
19. Moody MN, Landau JM, Goldberg LH, Friedman PM. Fractionated 1550-nm erbium-doped fiber laser for the treatment of periorbital hyperpigmentation. *Dermatol Surg* 2012; 38(1): 139-42
20. Eberlin S, Del Carmen Velazquez Pereda M, de Campos Dieamant G, Nogueira C, Werka RM, de Souza Queiroz ML. Effects of a Brazilian herbal compound as a cosmetic eyecare for periorbital hyperchromia ('dark circles'). *J Cosmet Dermatol* 2009; 8(2): 127-35
21. Wollina U. Treatment of facial skin laxity by a new monopolar radiofrequency device. *J Cutan Aesthet Surg* 2011; 4(1): 7-11
22. Bonan P, Campolmi P, Cannarozzo G, Brusolino N, Bassi A, Betti S, Lotti T. Eyelid skin tightening: a novel 'Niche' for fractional CO₂ rejuvenation. *J Eur Acad Dermatol Venereol* 2012; 26(2): 186-93
23. Choi YJ, Lee JY, Ahn JY, Kim MN, Park MY. The safety and efficacy of a combined diode laser and bipolar radiofrequency compared with combined infrared light and bipolar radiofrequency for skin rejuvenation. *Indian J Dermatol Venereol Leprol* 2012; 78(2): 146-52
24. Graivier MH, Bass LS, Busso M, Jasin ME, Narins RS, Tzikas TL. Calcium hydroxylapatite (Radiesse) for correction of the mid- and lower face: consensus recommendations. *Plast Reconstr Surg* 2007; 120(6 Suppl): 555-66S
25. Funt DK. Avoiding malar edema during midface/cheek augmentation with dermal fillers. *J Clin Aesthet Dermatol* 2011; 4(12): 32-6
26. Santoro S, Russo L, Argenzio V, Borzacchiello A. Rheological properties of cross-linked hyaluronic acid dermal fillers. *J Appl Biomater Biomech* 2011; 9(2): 127-36
27. Monheit GD, Prather CL. Hyaluronic acid fillers for the male patient. *Dermatol Ther* 2007; 20(6): 394-406
28. Wollina U, Goldman A, Berger U, Abdel-Naser MB. Esthetic and cosmetic dermatology. *Dermatol Ther* 2008; 21(2): 118-30
29. Wollina U, Goldman A. Minimally invasive aesthetic procedures in young adults. *Clin Cosmet Investig Dermatol* 2011; 4: 19-26
30. Bartus CL, Sattler G, Hanke CW. The tower technique: a novel technique for the injection of hyaluronic acid fillers. *J Drugs Dermatol* 2011; 10(11): 1277-80
31. Goldie K. New techniques of 3D vectoring using atraumatic cannulae. *Prime* 2011; 1(4): 24-34
32. Skeie L, Bugge H, Negaard A, Bergersen BM. Large particle hyaluronic acid for the treatment of facial lipotrophy in HIV-positive patients: 3-year follow-up study. *HIV Med* 2010; 11(3): 170-7
33. Borelli C, Kunte C, Weisensteil P, Thoma-Greber E, Kortling HC, Konz B. Deep subcutaneous application of poly-L-lactic acid as a filler for facial lipotrophy in HIV-infected patients. *Skin Pharmacol Physiol* 2005; 18(6): 273-8
34. Redbord KP, Busso M, Hanke CW. Soft-tissue augmentation with hyaluronic acid and calcium hydroxyl apatite fillers. *Dermatol Ther* 2011; 24(1): 71-81
35. Goldman A, Wollina U, de Mundstock EC. Evaluation of tissue tightening by the subdermal Nd: YAG laser-assisted liposuction versus liposuction alone. *J Cutan Aesthet Surg* 2011; 4(2): 122-8
36. Goldman A, Schavelzon DE, Blugerman GS. Laser lipolysis: liposuction using Nd-YAG laser. *Rev Soc Bras Cir Plast* 2002; 17: 17-26
37. Goldman A, Wollina U. Elevation of the corner of the mouth using botulinum toxin type a. *J Cutan Aesthet Surg* 2010; 3(3): 145-50
38. Goldman A, Schavelzon DE, Blugerman GS. Laser lipolysis: liposuction using Nd-YAG laser. *Rev Soc Bras Cir Plast* 2002; 17: 17-26
39. Alexiades-Armenakos M. Combination laser-assisted liposuction and minimally invasive skin tightening with temperature feedback for treatment of the submentum and neck. *Dermatol Surg* 2012; [Epub ahead of print]
40. Oresajo C, Yatskayer M, Hansenne I. Clinical tolerance and efficacy of capryloyl salicylic acid peel compared to a glycolic acid peel in subjects with fine lines/wrinkles and hyperpigmented skin. *J Cosmet Dermatol* 2008; 7(4): 259-62
41. Merinville E, Byrne AJ, Rawlings AV, Muggleton AJ, Laloef AC. Three clinical studies showing the anti-aging benefits of sodium salicylate in human skin. *J Cosmet Dermatol* 2010; 9(3): 174-84
42. Levesque A, Hamzavi I, Seite S, Rougier A, Bissonnette R. Randomized trial comparing a chemical peel containing a lipophilic hydroxy acid derivative of salicylic acid with a salicylic acid peel in subjects with comedonal acne. *J Cosmet Dermatol* 2011; 10(3): 174-8
43. Dréno B, Fischer TC, Perosino E et al. Expert opinion: efficacy of superficial chemical peels in active acne management - what can we learn from the literature today? Evidence-based recommendations. *J Eur Acad Dermatol Venereol* 2011; 25(6): 695-704
44. Zhou Y, Banga AK. Enhanced delivery of cosmeceuticals by microdermabrasion. *J Cosmet Dermatol* 2011; 10(3): 179-84
45. Manstein D, Herron GS, Sink RK, Tanner H, Anderson RR. Fractional photothermolysis: a new concept for cutaneous remodeling using microscopic patterns of thermal injury. *Lasers Surg Med* 2004; 34(5): 426-38
46. Paasch U, Haedersdal M. Laser systems for ablative fractional resurfacing. *Expert Rev Med Devices* 2011; 8(1): 67-83
47. Grunewald S, Bodendorf MO, Elsner J et al. Ablative fractional laser treatment - practical recommendations. *Kosmet Med/Cosmet Med* 2012; 33: 8-14