

New Insight in the Treatment of Wide Facial Pores: Review Article

Esraa Mohammad Attia Nawwar, Abdalla Hasan Kandil, Basma Magdy El-Kholy

Department of Dermatology, Andrology and Venereology department,

Faculty of Medicine Zagazig University Hospital, Egypt.

*Corresponding author:: Esraa Mohammad Attia Nawwar, Mail: drroaa.noor@gmail.com

ABSTRACT

Background: Having large face pores is a frequent cosmetic and dermatological issue for many people. Due to its complex pathophysiology and poor influence on patients' quality of life, treatment is challenging. Because of this, reducing the size of face pores is a hot topic in the cosmetics world. Skin rejuvenation, and reduction in sebum production are just a few of the treatment options available for treating facial pores. The effectiveness and safety of any of the presently offered medications or therapies have not been studied in humans in a lot of clinical studies. Hormonal medication, including cyproterone acetate, spironolactone, and combination of oral contraceptives, are among the treatment possibilities in addition to isotretinoin. Medications applied topically, such as L-carnitine, niacinamide at a concentration of 2 percent, tretinoin or tazarotene, glycolic acid and salicylic acid peels, moisturisers, and sunscreens, require formulations free of occlusive, comedogenic, and oil-free substances. Laser diodes, non-ablative radiofrequency technologies, and photodynamic therapy all showed promising results.

Objective: To make an overview of updated guidelines for treating wide facial pores.

Methods: The databases were searched for articles published in English in 3 data bases [PubMed – Google scholar and Egyptian bank of knowledge] and Boolean operators had been used such as [Wide facial pores AND Novel Treatment OR hair removal] and in reviewed articles.

Conclusion: Treatment of enlarged facial pores aims at reducing sebum production and/or reducing follicular size. The treatment options include oral and topical medication, diet modification, laser, Botulinum toxin as well as hair removal.

Keywords: Wide facial pores, Novel Treatment.

INTRODUCTION

Wide facial pores are a common dermatologic and aesthetic problem. Because of the disease's complex pathophysiology and detrimental effects on the well-being of patients, treating it is a challenging endeavour. Because of this, reducing the size of face pores is a hot topic in the cosmetics world ⁽¹⁾.

Pores on the facial skin are superficial skin structures that resemble the pilosebaceous apparatus's apertures in terms of size and shape. Empty funnel-shaped structures, which are present in all people but their size can vary, are biologically present ⁽²⁾.

Horny follicular plugs with sebaceous debris may fill these spaces, causing them to resemble a comedone-like cylindrical plug ⁽¹⁾.

Sebum production has been reduced, the skin has been rejuvenated, and facial pores have been reduced using a variety of therapeutic treatments. The effectiveness and safety of any of the presently offered medications or therapies have not been studied in humans in a lot of clinical studies ⁽¹⁾.



Figure (1): Enlarged facial pores are linked to thick hair on the nose and perinasal. pores appear as black patches (black arrows) ⁽³⁾.

Objective of the study was to make an overview of updated guidelines in Wide Facial Pores management.

Treatment of wide facial pores:

In order to reduce sebum production, renew the skin, eliminate hair, and/or reduce follicular size, the most common treatments for enlarged face pores are used ⁽¹⁾.



This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY-SA) license (<http://creativecommons.org/licenses/by/4.0/>)

The treatment modalities in the form of systemic and topical form:

Topical treatment:

As a first-line of treatment to reverse the aberrant epidermal and dermal collagen and elastin alterations associated with chronological and photoaging, topical retinoids are vitamin A derivatives. It has been found that pigmentary disorders such as hyperpigmentation can be treated with these products (retinoic acid, tazarotene, and isotretinoin anti-wrinkle) ⁽⁴⁾.

Another essential role for retinoids is the improvement of follicular keratinization in the pores of the face in treating acne-related keratinocyte dystrophy ⁽¹⁾.

Chemical peels are a type of skin rejuvenation procedure in which specific skin layers are chemically removed, resulting in new, more uniformly toned skin. Temporary breakdown and regeneration of healthy cells and a better skin matrix can be induced by it at the epidermal or dermal level ⁽⁵⁾.

It is possible to categorise chemical peels based on the degree of damage they cause; peeling of varying depths: superficial, medium, and deep ⁽⁶⁾. Copper chlorophyllin complex sodium salt (CHLcu) and tetra-hydro-jasmonic acid are two new topical medicines being researched for their ability to reduce facial pilosebaceous holes. ⁽¹⁾

An experimental topical gel with liposomal dispersions generated from the green plant pigment chlorophyllin copper complex sodium salt is being tested for use on photodamaged and ageing skin. Hyaluronidase inhibitory activity of chlorophyllin copper complex sodium salt in vitro maintains the extracellular matrix of hyaluronic acid and counteracts the structural breakdown of skin ageing ⁽⁷⁾.

An homologue of the plant hormone jasmonic acid is tetra-hydro-jasmonic acid. LR2412 is now being evaluated for the treatment of wrinkles, texture, and pores in the skin due to its high bioavailability and penetration into the epidermal and dermal layers, and potential rejuvenating effects ⁽⁸⁾. Some researchers believe that it has an effect on the dermoepidermal junction because it stimulates the production of laminin-5, collagen IV, and fibrillin ⁽⁹⁾.

Cosmetic efficacy was demonstrated in a non-inferiority trial with the use of Tetra-hydro-jasmonic acid (retinol 0.2% / LR2412 2.0%), which also contains retinol ⁽¹⁰⁾.

Also, As a cosmetic ingredient, Orthosiphon stamineus leaf extract aims at reducing skin's oiliness and improving flaws caused by too much sebum ⁽³⁾.

There should be no oils, waxes, or fatty substances in the cleansers recommended for oily skin because they could worsen the skin's oily state. Non-occlusive, noncomedogenic, and oil-free ingredients are required in the formulations of topical cosmetics like as moisturisers and sunscreens ⁽³⁾.

Oral therapies:

There are multiple therapies used for treatment of enlarged pores:

Isotretinoin (13-cis-retinoic acid) is the most potent sebum inhibitor because it reduces sebaceous gland activity and restores the normal keratinization pattern within the sebaceous gland follicle ⁽¹¹⁾.

The pilosebaceous unit's androgen-metabolizing cells, like follicular keratinocytes and sebocytes, are targeted by hormonal antiandrogen therapy, resulting in sebostasis and a reduction in sebum excretion of 12.5% to 65.5%. Sebum production can be affected by hormonal treatments such as oral contraceptives combined with spironolactone. Androgen receptor blocker and ovulation inhibitor (e.g. Cyproterone Acetate progestin) as a stand-alone medication or in conjunction with an oral contraceptive could be effective ⁽¹²⁾.

Light/Laser treatment:

Lasers, Radiofrequency, and Ultrasound Devices Thermal or ultrasonic energy can be delivered to the skin with these devices, which are considered the most recent and most powerful cosmetic therapeutic techniques. To increase skin elasticity and reduce sebum production, they work by inducing collagen fibre remodelling at pilosebaceous openings ⁽¹³⁾.

Fractional radiofrequency devices, microneedle devices, fractional erbium:YAG lasers, non ablative 1410-nm erbium-doped fibre lasers, and the non ablative 1440 nm fractional laser have all been shown to have antiaging benefits ⁽¹⁾.

The 1450-nm diode laser has a role in improvement of acne, because of its effect on sebaceous glands ⁽¹⁴⁾. It was also found that a fractional RF microneedle had an influence on sebosuppression ⁽¹⁵⁾ and also, the 800-nm diode laser is used to tailor the gold nanoparticles to absorb near infrared light, resulting in local thermal harm to the sebaceous gland ⁽¹⁶⁾.

Diet:

Sebum production may rely on substrates derived from the diet. Reactive hyperinsulinemia, elevated IGF-1 production, and hyperglycemia are all related with a high glycemic index diet. Only cheese has insulinotropic effects that are significantly more than those expected from their low glycemic indices ⁽¹⁷⁾.

Botulinum Toxin:

Sebum production and pore size reduction may be helped by intradermal injections of the botulinum toxin ⁽¹⁸⁾.

Hair removal:

In patients with thick and black facial hair, hair removal plays a function in reducing the volume of their pores. Photothermal destruction of hair follicles is the essential concept of hair removal, which can be

achieved with the following red and near-infrared wavelengths: normal mode ruby laser (694 nm), normal mode alexandrite laser (755 nm), pulsed diode lasers (800, 810nm), long-pulse Nd:YAG laser (1,064nm), and intense pulsed light sources (590–1,200 nm) ⁽¹⁹⁾.

CONCLUSION

Treatment of enlarged facial pores aims at reducing sebum production and/or reducing follicular size. The treatment options include oral and topical medication, diet modification, laser, Botulinum toxin as well as hair removal.

Financial support and sponsorship: Nil.

Conflict of interest: Nil.

REFERENCES

1. **Dong J, Lanoue J, Goldenberg G (2016):** Enlarged facial pores: an update on treatments. *Cutis*, 98 (1): 33–36.
2. **Lee C, Kim Y, Lee H et al. (2009):** Effects of Q-switched and long-pulsed 1064 nm Nd:YAG laser on enlarged facial pores. *Photodermatology, Photoimmunology & Photomedicine*, 25 (6): 328–330.
3. **Lee S, Seok J, Jeong S et al. (2016):** Facial Pores: Definition, Causes, and Treatment Options. *Dermatologic Surgery: Official Publication for American Society for Dermatologic Surgery*, 42 (3): 277–285
4. **Mukherjee S, Date A, Patravale V et al. (2006):** Retinoids in the treatment of skin aging: an overview of clinical efficacy and safety. *Clin Interv Aging*, 1: 327–348.
5. **Fischer T, Perosino E, Poli F et al. (2010):** Chemical peels in aesthetic dermatology: an update 2009. *J Eur Acad Dermatol Venereol.*, 24: 281–292
6. **O'Connor A, Lowe P, Shumack S et al. (2018):** Chemical peels: A review of current practice. *Australasian Journal of Dermatology*, 59 (3): 171–181.
7. **McCook J, Dorogi P, Vasily D et al. (2015):** In vitro inhibition of hyaluronidase by sodium copper chlorophyllin complex and chlorophyllin analogs. *Clin Cosmet Investig Dermatol.*, 8: 443–448.
8. **Alexiades M (2016):** Clinical Assessment of a Novel Jasmonate Cosmeceutical, LR2412-Cx, for the treatment of skin aging. *J Drugs Dermatol.*, 15: 209–215.
9. **Tran C, Michelet J, Simonetti L et al. (2014):** In vitro and in vivo studies with tetra-hydro-jasmonic acid (LR2412) reveal its potential to correct signs of skin ageing. *J Eur Acad Dermatol Venereol.*, 28: 415–423.
10. **Bouloc A, Vergnanini A, Issa M (2015):** A double-blind randomized study comparing the association of retinol and LR2412 with tretinoin 0.025% in photoaged skin. *J Cosmet Dermatol.*, 14: 40–46.
11. **Ganceviciene R, Zouboulis C (2010):** Isotretinoin: state of the art treatment for acne vulgaris. *Journal der Deutschen Dermatologischen Gesellschaft*, 8: 47–59.
12. **Katsambas A, Dessinioti C (2010):** Hormonal therapy for acne: why not as first line therapy? Facts and controversies. *Clinics in Dermatology*, 28 (1): 17–23.
13. **Schmults C, Phelps R, Goldberg D (2004):** Nonablative facial remodeling: erythema reduction and histologic evidence of new collagen formation using a 300-microsecond 1064-nm Nd:YAG laser. *Arch Dermatol.*, 140: 1373–1376.
14. **Kwon H, Park H, Choi S et al. (2018):** Novel device-based acne treatments: comparison of a 1450-nm diode laser and microneedling radiofrequency on mild-to-moderate acne vulgaris and seborrhea in Korean patients through a 20-week prospective, randomized, split-face study. *Journal of the European Academy of Dermatology and Venereology*, 32 (4): 639–644.
15. **Lee H, Lee E, Kang S et al. (2014):** Efficacy of microneedling plus human stem cell conditioned medium for skin rejuvenation: a randomized, controlled, blinded split-face study. *Annals of Dermatology*, 26 (5): 584–591.
16. **Paithankar D, Sakamoto F, Farinelli W et al. (2015):** Acne treatment based on selective photothermolysis of sebaceous follicles with topically delivered light-absorbing gold microparticles. *J Invest Dermatol.*, 135: 1727–34.
17. **Melnik B, Schmitz G (2009):** Role of insulin, insulin-like growth factor-1, hyperglycaemic food and milk consumption in the pathogenesis of acne vulgaris. *Exp Dermatol.*, 18: 833–41.
18. **Rose A, Goldberg D (2013):** Safety and efficacy of intradermal injection of botulinum toxin for the treatment of oily skin. *Dermatol Surg.*, 39: 443–8.
19. **Haedersdal M, Haak C (2011):** Hair removal. *Curr Probl Dermatol.*, 42: 111–21.