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COSMETIC INJECTABLE TREATMENTS IN SKIN OF COLOUR

Introduction

The patient population seeking aesthetic procedures is becoming increasingly more diverse. According to the American Society of Plastic Surgery, there has been a 50% increase in people of colour (POC) undergoing minimally invasive cosmetic treatments over the last decade.[1,2] This is likely due to the increasing awareness, acceptance, and availability of aesthetic procedures, as well as demographic shifts. It is estimated that more than 20% of Canadians are POC.[3] In addition, POC account for an increasing share in the national population: it is projected that POC will account for 33% of Canada's population by 2036.[4]

As the racial and ethnic diversity of cosmetic patients increases, it is imperative for dermatologists to understand functional and anatomical differences, aesthetic preferences, and necessary adaptations in cosmetic techniques for this patient population. This article aims to review some of the literature for POC cosmetic treatments, provide clinical pearls, and review an approach to patient care.

This paper defines POC as darker skin individuals with a range of Fitzpatrick phototypes IV to VI; this definition encompasses but is not limited to various races including Asians, African Americans, Latinos, and Indigenous people.

Functional & Anatomic Differences

POC patients are distinguished by their dark skin tones, conferred by an increase in size and concentration of melanosomes throughout the epidermis.[5] Eumelanin is predominant in POC. This provides sun protective factor (SPF) of 13.4, compared to 3.4 in lighter skin individuals.[6] POC also have smaller but more compact collagen bundles, and increased fibroblasts.[7,8] These factors collectively result in decreased and delayed photoaging in POC.

There are significant anatomic variations between POC and non-POC patients. For example, African American patients tend to have increased facial convexity, bimaxillary protrusion, and increased mid-face soft tissue fullness.[9] In contrast, East Asians have a generally flat central profile with increased bitemporal and bizygomatic width.[10] In addition, it is crucial to appreciate that there is considerable intra-racial anatomical variations.

Patient Approach

The first step is to appropriately identify POC. Physicians should directly ask patients about their racial and ethnic background at the first consultation. In addition, patients who are bi- or multiracial should be asked if they identify with a particular race.

At present, the Fitzpatrick phototype classification is used to classify POC. This system is based on one's response to ultraviolet (UV) exposure.[11] However, it does not encompass anatomic differences. For example, a South Asian patient from India and a Latino patient from Mexico may both tan easily in response to UV exposure and be classified as Fitzpatrick IV. However, each will have different facial anatomy and patterns of aging. Practitioners should thus move beyond the Fitzpatrick scale and use specific descriptor terms, which are identified in collaboration with the patient.

Culture and racial variations in anatomy impact aesthetic preferences. POC patients come from various cultures. Beauty standards vary across the globe. The aesthetic preferences for POC will often thus differ from Western standards of beauty. In addition, differences in anatomy may prompt aesthetic trends. For example, East Asians are described as having a flat central facial profile due to retrusion of the underlying skeletal frame.[10,12] These patients often seek midline soft tissue filler treatments, such as nonsurgical rhinoplasties, to address mid-face structural deficits. In contrast, prominent cheeks are not considered beautiful in various East Asian countries.[13]

To avoid broad generalizations, patients should be consulted on their individual goals, as some patients may wish to deviate from standards of beauty inherent to their race.

Practitioners must develop strong cultural competencies to be able to identify POC and better understand their aesthetic goals. In addition, a deep appreciation of inter-racial and intra-racial anatomic variations is imperative for the delivery of safe treatment.

Neuromodulators

Neuromodulators are widely considered the pillars of dynamic wrinkle reduction. It is often the introductory, or "gateway," treatment for facial rejuvenation. It is the most sought after minimally invasive procedure.[14] In Canada, there are 4 approved formulations of botulinum toxin-A for cosmetic purposes: abobotulinumtoxinA (Dysport), incobotulinumtoxinA (Xeomin), onabotulinumtoxinA (Botox), and prabotulinumtoxinA (Nuceiva).

Botulinum toxin-A can be used effectively and safely in POC, according to clinical trials and post-marketing experience.[15,16] However, anatomical differences, aesthetic preferences, and overall use of botulinum toxin-A may vary for POC. Dosing for the glabellar area requires assessment of the following: degree of static and dynamic rhytids; size, position, and dynamics of the glabellar complex muscles; and position of the medial eyebrows. The corrugator muscles of East Asians are smaller, narrower, and are less dynamic compared to Caucasian counterparts. As such, lower-than-standard doses of botulinum toxin-A are recommended for East Asian patients.[16]

In contrast, East Asians are more likely to have increased masseter muscle mass, leading to a square-shaped appearance. Off-label botulinum toxin-A injections are more commonly utilized by East Asians for shaping the lower face.[16] Dosing will be dependent upon the size of the masseters; amount of facial tapering; presence of jowls and lower face sagging; and, cultural preferences.[17]

The efficacy, duration of effect, and adverse events of botulinum toxin-A has been compared between POC and Caucasian patients. The onset of effect for abobotulinumtoxinA in the glabellar region was the same for POC and Caucasian patients. However, the 30-day response rate was higher for POC.[18] This suggests that less treatment adjustments are necessary when treating POC with abobotulinumtoxinA.[18] Similar increased duration of effect for POC have been described for 30 units of onabotulinumtoxin A injected into the glabellar complex.[19] In contrast, there is a reported 5.9% decrease in response for skin of colour (SOC) when treated with prabatolinumtoxinA, as compared to Caucasian subjects.[15]

Soft Tissue Fillers

Soft tissue fillers are used for voluminization, contouring, and/or definition. There are currently 13 approved fillers for treatment of the cheeks, nasolabial folds, lip, chin, and dorsal hands.[20] Hyaluronic acid fillers are the most commonly-injected fillers in general.

Biostimulatory fillers, such as poly-L-lactic acid and calcium hydroxyapatite, induce delayed fibroplasia leading to dermal tightening.[21] POC generally have increased and more compact collagen bundles. This

provides a scaffold for voluminization. Biostimulatory fillers thus may be preferred in SOC patients. In addition, SOC patients achieve desired results with fewer biostimulatory filler treatments.[22]

POC, in general, tend to experience mid-face aging with gravity-induced descent of the malar fat pads and underlying bone resorption, development and increased prominence of nasolabial folds, and infraorbital hollowing.[20] Hyaluronic acid fillers have been shown to safely and effectively improve moderate-to-severe nasolabial folds in POC.[23-25] The same is true of undiluted calcium hydroxyapatite.[26]

There is a common misconception that POC patients, in particular African Americans, do not seek lip filler treatment. In their youth, African Americans tend to voluminous lips, with a 50:50 ratio of their upper and lower lip.[9] With aging, African Americans experience upper lip volume loss and preservation of the lower lip. African Americans thus tend to seek volume restoration at a later age, compared to Caucasian counterparts who aim to increase lip volume at an earlier age.[27]

Adverse Effects & Best Practices

Some clinicians may believe that POC cannot undergo cosmetic treatments due to an increased risk of hyperpigmentation or keloid scar formation. This myth has been dispelled by clinical trials and case reviews.[26,28,29] While transient hyperpigmentation has been described, no studies have reported permanent pigment changes or scarring for POC undergoing cosmetic treatments. To reduce the risk, it has been suggested to minimize the total number of punctures. For filler, mid-dermal placement of fillers is ideal to avoid injury to the epidermal-dermal junction.[26,30]

With regards to neuromodulators, there does not appear to be any significant difference in the rates of complications between SOC and non-SOC patients,[15,18] although, there is a greater reported incidence of eyelid ptosis, eyelid edema, or eyelid sensory disorder (pressure, heaviness, sensation of droopiness) in East Asians.[31] This may be attributable to differences in eyelid anatomy or increased awareness. East Asian patients should thus be informed of the risks of eyelid ptosis, edema, or sensory disorder prior to treatment with botulinum toxin-A.

For fillers, the Tyndall effect can occur if fillers are placed too superficially, especially in the periorbital area due to the thin nature of the skin. POC may be at lower risk of Tyndall effect due to thicker skin properties.[32] Nonetheless, superficial placement of fillers should be avoided.

The most dangerous and feared complications – necrosis, stroke, and blindness – result from direct intra-arterial injection of filler. Interestingly, a higher incidence of blindness occurs in East Asian countries including Korea (40%) and China (19%).[33] This may be due to the increased use of fillers to address central retrusion. The associated techniques require injections into danger zones, including the nose, glabella, and forehead – all of which are the most-injected locations leading to blindness.[33] Anatomic variations may also play a role: a recent cadaveric study showed 60% of East Asian cadavers had a single oblique vessel for the dorsal nasal artery, in contrast to bilateral vessels.[34] Direct injections to high risk areas, such as the nasal tip and glabella, should be avoided, and filler should be placed at the periosteal level.[35]

Summary

POC are increasingly seeking minimally invasive cosmetic procedures. Dermatologists must be aware of variations in anatomy, aesthetic preferences, and technique for the best and safest outcomes.

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