

Aesthetic Applications of Botulinum Toxin A in Asians: An International, Multidisciplinary, Pan-Asian Consensus

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Background: Botulinum toxin type A remains the most popular nonsurgical aesthetic treatment worldwide. Previous consensus statements have focused on Caucasians and on Koreans as generally representative of Asians. However, indications and dosages vary among different ethnic groups. This publication reports the results of a multidisciplinary, pan-Asian consensus focusing on incobotulinumtoxinA.

Methods: A consensus group of plastic surgeons and dermatologists from Asia, Europe, and the United States convened for a live meeting in Asia, followed by a questionnaire-based Delphi procedure. Treatment of Asians in both their native countries and countries of migration was discussed.

Results: For most items, the group achieved a majority consensus. A number of treatment indications, strategies, and dosages were identified in Asians, which are distinct to those previously described for Caucasians due to differences in facial morphotypes, anatomy, and cultural expectations. The group also formulated position statements for intradermal botulinum toxin type A (“mesotoxin”), body shaping with the calves as a paradigm, and reduction of parotid glands. While Asians have previously been considered a homogeneous group for the purposes of aesthetic treatment, this publication considers regional variations. A new classification of Asian facial morphotypes is proposed to aid treatment planning and implementation.

Conclusions: This is the first pan-Asian consensus for aesthetic use of botulinum toxin type A. Its unique objective is to optimize treatment safety and efficacy for patients of complete or part-Asian ancestry in all regions. The recommendations for incobotulinumtoxinA may be extended with care to other botulinum toxin formulations. (*Plast Reconstr Surg Glob Open* 2016;4:e872; doi: 10.1097/GOX.0000000000000507; Published online 7 December 2016.)

The use of injectable botulinum toxin type A for aesthetic purposes has evolved rapidly over the past 2 decades. Previous consensus publications have provided guidelines for various formulations of botulinum toxin type A.¹⁻⁷ Most of these

publications focused on Caucasian subjects. A recent publication⁸ offered consensus recommendations from a group of Korean dermatologists. For this publication, an international group of plastic surgeons and dermatologists with expertise in injectables,

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from different Asian countries and also from 2 other continents with significant Asian populations, discussed aesthetic applications of botulinum toxin type A for Asian subjects and provided consensus recommendations.

Objectives and Statement of Need

The aims of this publication are to enable practitioners for the following:

- To understand current, evidence-based, and experiential approaches to optimize botulinum toxin treatment outcomes for subjects of Asian ancestry from different regions of Asia and other countries in which they reside.
- To recognize factors that influence patient counseling and planning of botulinum toxin treatment in Asian subjects, including key anatomical

and functional considerations, specific factors related to age and gender, cultural ideals, and emerging trends.

- To perform individualized pretreatment assessment, including analysis of facial morphotypes and target muscles, and implement effective strategies for site-specific treatment of Asian subjects with botulinum toxin, including selection of appropriate dosages and injection techniques.
- To apply the above principles to pan-facial treatment with botulinum toxin to improve the proportions, shape, and contour of the youthful or aging Asian face.

Novel features of this publication include the following:

- Use of muscular and/or bony landmarks to identify optimal toxin injection points. Soft tissue landmarks, which have been advocated in a previous Korean consensus document,⁸ may be less consistent and hence less accurate.
- Distinction of toxin injection strategies for infraorbital rhytids from those for infraorbital eye opening.
- Anatomically-based toxin injection strategies to achieve a preferred eyebrow shape in Asian females, including brow elevation, while avoiding the arched, “Samurai eyebrow” that is considered undesirable to Asians.
- Anatomically-based injection strategy to target the lower rather than the upper portion of depressor anguli oris. This reflects pilot data from Korean cadaver dissections, showing a tendency for the modiolus to have a lower position than in Caucasians, and is with the aim of minimizing unwanted spread of toxin to other muscles controlling mobility of the mouth.
- Proposal of a new, 3-point, pan-Asian classification of facial morphotypes to guide optimal treatment strategies with injectables.
- Position statements for the following emerging treatment indications in Asia, with the caveat that further data are required to assess safety and efficacy from an evidence-based perspective: intradermal botulinum toxin (“mesotoxin”), body shaping, and injection of the parotid glands.

Consensus Group and Methodology

A meeting of 8 core aesthetics specialty experts from North America, Taiwan, South Korea, Singapore, Italy, and Germany (H.S., P.-H.H., N.-J.H., C.H.H., W.W., D.C., M.K., K.S.) was convened in Singapore on July 27, 2013. Participants were selected based on their experience in aesthetic use of botulinum toxin type A and in treating Asian subjects. The meeting was de-

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signed according to accepted guidelines for consensus initiatives⁹ and was accompanied by a pre-meeting questionnaire. Based on this questionnaire and the meeting proceedings, initial consensus recommendations were formulated. These recommendations were reviewed and revised in a Delphi-like procedure by the whole Pan-Asian Aesthetics Toxin Consensus Group, comprising the 8 faculty who were present at the live meeting, and 1 from China (Y.W.). The article was subsequently reviewed by a panel of 3 experts in the field of botulinum toxin type A: Drs. Benjamin Ascher (France), Derek Jones (United States), and Berthold Rzany (Germany). A majority consensus was achieved in 61 out of 84 (73%) of the investigated categories. Within these categories, a mean percentage expert consensus of 78% was observed.

Overview of Botulinum Toxin Type A Products

Several botulinum toxin type A formulations are approved for aesthetic use in Asia and elsewhere. A number are listed in Table 1.

The dosage units and dose-response curves of different formulations are not directly comparable. However, dosing ratios exist that have been applied to daily practice. From a number of consensus and review publications, as well as a comparative clinical trial, clinical equivalence has been suggested at a unit ratio of 1:1 for aesthetic use of incobotulinumtoxinA and onabotulinumtoxinA.^{3,7,10} If extrapolating units of onabotulinumtoxinA or incobotulinumtoxinA to abobotulinumtoxinA, a ratio of 1:2.5 is considered appropriate, based on available data and clinical experience.^{11,12} The recommended doses within this document refer to incobotulinumtoxinA. The Pan-Asian Aesthetics Toxin Consensus Group considers it reasonable to extend these recommendations with care to other botulinum toxin type A formulations.

GENERAL CONSENSUS RECOMMENDATIONS FOR BOTULINUM TOXIN TYPE A TREATMENT

Patient-Tailored, Anatomically Appropriate Assessment and Treatment Planning

There is significant variability in the shape and function of many target muscles, between different populations, and even between individuals within one population. Determination of botulinum toxin type A injection sites should be based on muscular and bony landmarks rather than cutaneous ones. For instance, the eyebrows are a particularly unreliable cutaneous landmark, especially in women due to their propensity to modify eyebrow shape, eg, by tweezing or plucking. Treatment strategy should be based on the subject's muscle mass, muscle shape, pattern of muscle activity, and what is aesthetically appropriate in the context of overall facial structure. Examination of the overlying soft tissues—fat and skin—is useful as an adjunct. Dosages are adjusted according to muscle activity and muscle mass, whereas muscle shape influences injection site placement.

Asian Facial Morphotypes

Despite some informative publications on facial canons,^{13–16} facial types and aesthetic ideals for Asian subjects remain incompletely defined and are sometimes mistakenly presumed to be homogeneous. Asians are a notably heterogeneous group, and therefore cannot be treated as a uniform population. To guide patient-tailored treatment with toxin and fillers, we propose a new classification of 3 Asian facial morphotypes (Table 2). This is a consolidation of the varied morphotypes of Asian patients, with a focus on characteristics that are relevant to injectables treatment. In contrast to previous classifications, it is an integrative, pan-Asian classi-

Table 1. Botulinum Toxin Type A Products Available In Asia

US FDA-approved Generic Name	Brand Name (Manufacturer)	Approved In
AbobotulinumtoxinA	Dysport (Ipsen, Boulogne-Billancourt, France; Medicis/Valeant, Bridgewater, N.J.)	Asia and elsewhere
IncobotulinumtoxinA	Azzalure (Galderma, Lausanne, Switzerland) Xeomin/Xeomeen/Bocouture/XEOMIN Cosmetic; botulinum toxin type A [150 kDa] free from complexing proteins (Merz Pharmaceuticals GmbH, Frankfurt, Germany)	Asia and elsewhere
OnabotulinumtoxinA N/A	Botox/Vistabel (Allergan, Irvine, Calif.) Nabota (Daewoong Pharmaceutical, Seoul, South Korea) Evolus (Alphaeon, Newport Beach, Calif.)	Asia and elsewhere Asia, Latin America (and under investigation elsewhere)
N/A	Neuronox/Botulift/Cunox/Meditoxin/Siax (Medytox, Seoul, South Korea)	Asia, Latin America (and under investigation elsewhere)
N/A	Prosigne (CBTX-A; Lanzhou Biological Products Institute, Lanzhou, China)	Asia
N/A	Regenox/Botulax/Zentox (Hugel Pharma, Seoul, South Korea)	Asia (and under investigation elsewhere)

Table 2. New Classification of 3 Asian Facial Morphotypes and Recommendations for Appropriate Treatment Strategies with Botulinum Toxin Type A

Facial Subtype	Asian Facial Type I—"Northern"	Asian Facial Type II—"Intermediate"	Asian Facial Type III—"Southern"
Regions where these facial types are typical Image	Mongolia, some parts of Korea, Northern China	Southern China, Hong Kong, Taiwan	Malaysia, Indonesia, Vietnam, and other Southeast Asian countries
Palpebral fissure	Narrow	Wider than Type I	Widest of the 3 facial types
Supratarsal crease	No	Either present or absent	Present
Medial epicanthal fold	May be present	Usually absent	Absent
Nasal dorsum	Highest and longest of the 3 facial types	May be slightly lower and wider	Flat and short
Nasal ala	Narrow with narrow ellipsoid nostrils	Intermediate in width	Widest of the 3 facial types with wide, round nostrils
Mid face	Medial malar area tends to be flatter than the lateral malar area	Less flattening of the medial malar area than Type I	Medial and lateral malar areas tend to have some convexity
Zygoma	Prominent	Varies in prominence	Not prominent
Mandible	Prominent mandibular angle, giving a square face or square jaw	Some degree of taper from the maxilla to the mandible can give a narrower appearance to the lower face in comparison to Type I (a round face with small chin and chubby cheeks)	Tapering from maxilla to mandible gives a narrow appearance to the lower face, due to a less prominent bony mandibular angle (oval facial shape)
Skin type	Usually fair	Fair or with intermediate pigmentation	Usually more pigmented than the other 2 facial types
	Fitzpatrick skin phototype II-III	Fitzpatrick skin phototype II-IV	Fitzpatrick skin phototype III-IV

(Continued)

Table 2. (Continued)

Facial Subtype	Asian Facial Type I—“Northern”	Asian Facial Type II—“Intermediate”	Asian Facial Type III—“Southern”
Strategy with Botulinum Toxin Type A	<p>Avoid eyebrow arching (“Samurai eyebrow”), which is aesthetically displeasing when the face is wide</p> <p>Avoid reduction with botulinum toxin type A of the “charming roll” (pretarsal orbicularis oculi muscle bulge), which widens appearance of the narrow palpebral fissure without supratarsal crease, and hence increases apparent size of the eyes. The “charming roll” is commonly enhanced with filler</p> <p>Reduce width of the face</p>	<p>Avoid eyebrow arching (“Samurai eyebrow”), which is aesthetically displeasing when the face is wide</p> <p>If the palpebral fissure is narrow and without a supratarsal crease, avoid reduction with botulinum toxin type A of the “charming roll” (pretarsal orbicularis oculi muscle bulge). This may be enhanced with filler</p> <p>Reduce facial width, if aesthetically appropriate</p>	<p>Subtle eyebrow arching may be aesthetically appropriate, because the face tends to be narrower than for Type I</p> <p>When an eye-opening effect is desired, increase apparent size of the eyes by slightly lowering the inferior ciliary margin to widen appearance of the palpebral fissure with a supratarsal crease. Must be balanced with desire for a “charming roll”</p>
Upper face	<p>Reduce prominence of zygoma and mandibular angle to give the face a tapered “V” shape</p> <p>Botulinum toxin to reduce activity of the nasal dilators is not popular, because the base of the nose is relatively narrow</p>	<p>Reduce prominence of the zygoma and mandibular angle, if appropriate, to give the face a tapered “V” shape</p> <p>In general, strategies are intermediate between those for Types I and III</p>	<p>Reduce prominence of base of the nose, which tends to be wide</p> <p>Botulinum toxin to masseter, temporalis, and parotid gland is not popular because the zygoma is smaller and the face is already tapered</p>
Upper face	<p>When injecting frontalis with botulinum toxin, avoid restriction of treatment to the medial portion of the muscle, as this can produce brow arching</p> <p>Botulinum toxin injected into orbicularis oculi at the uppermost point of the lateral canthal rhytids can also provide brow shaping and elevation</p>	<p>When injecting frontalis with botulinum toxin, avoid restriction of treatment to the medial portion of the muscle, as this can produce brow arching</p> <p>Botulinum toxin injected into orbicularis oculi at the uppermost point of the lateral canthal rhytids can also provide brow shaping and elevation.</p>	<p>Botulinum toxin injected into orbicularis oculi at the uppermost point of the lateral canthal rhytids can provide brow shaping and elevation</p> <p>Small doses of botulinum toxin to the pars orbitalis of orbicularis oculi superior to the uppermost point of the lateral canthal rhytids may also be appropriate. This injection point is typically at the hairline of the brow</p> <p>When “charming roll” is not desired, small doses of botulinum toxin can be injected at and/or close to inferior ciliary margin for eye opening</p>
Middle and lower face	<p>Avoid botulinum close to inferior ciliary margin, as it may obliterate the “charming roll”</p> <p>Botulinum toxin type A may be injected to temporalis to reduce upper facial width</p>	<p>If “charming roll” is desired, avoid botulinum toxin close to the inferior ciliary margin</p>	<p>Botulinum toxin to masseter often not indicated</p>
Middle and lower face	<p>Botulinum toxin to masseter is typical to reduce width of the middle and lower face</p>	<p>Botulinum toxin to masseter when reduction of middle and lower facial width is desired</p> <p>Botulinum toxin to reduce activity of the nasal dilators only if base of the nose is wide</p>	<p>Botulinum toxin to the nasal dilators, when aesthetically appropriate, to narrow base of the nose</p>
Middle and lower face	<p>Botulinum toxin to parotid, if considered appropriate. Further studies are needed to determine long-term safety of this treatment</p>	<p>Botulinum toxin to parotid, if considered appropriate. Further studies are needed to determine long-term safety of this treatment</p>	<p>Botulinum toxin to parotid typically not indicated</p>

Individual patients, including patients of part-Asian ancestry, may manifest characteristics of different morphotypes in the upper, middle, and lower one-thirds of the face.

fication, encompassing North and South Asians rather than addressing subpopulations such as Han Chinese. Patients originating from the Indian subcontinent or Middle East are not included, because their morphotypes and treatment do not fall within the scope of this publication. Additional, novel features of our classification include specific descriptions of the nasal dorsum for each facial type and a focus on mandibular prominence, which we feel is more accurate and of more value to treatment planning than the previously described lower facial width or facial “chubbiness.” Botulinum toxin injection strategy can be guided by the predominant facial type, in the context of overall facial morphology, geographic and cultural beauty ideals, and what is deemed attractive by the individual patient. For patients who manifest different morphotypes in the upper, middle, or lower one-thirds of the face, the predominant morphotype of a specific facial area may be considered when addressing it. Examples of different treatment strategies according to these distinct facial types are detailed in the relevant consensus recommendation sections below.

Aesthetic Ideals among Asians

For optimal treatment planning and outcomes, clinicians must acknowledge and address both the commonalities and variations in Asian ideals of beauty. A square or long female face is often considered to be unattractive.¹⁷ Traditionally, a round, full “moon” face was the hallmark of beauty, and many older individuals from Taiwan and China still consider this a sign of good fortune.^{18,19} In modern times, the ideal has shifted: Asian women who seek to modify their congenital characteristics with botulinum toxin type A most commonly wish to achieve a more pronounced taper from maxilla to mandible. This decreases prominence of the lower one-third of the face and imparts a ‘V’ shape in front profile. However, some specific geographic considerations are also germane. Although a more slender face is favored by many Taiwanese and Chinese,^{20,21} a face that is perceived as too narrow is deemed undesirable.²⁰ The Korean ideal is notable for some unique features, including fuller, oval-shaped cheeks and a small chin with a 0.8–0.9 length ratio of glabellar to nasolabial angle to resemble a “baby” face.²² Through widespread media dissemination, this ideal has significantly influenced Japan, parts of China, and other Asian countries. The aesthetic ideals of Asian immigrants may be impacted by cultural overlays of the Asian or non-Asian countries in which they reside. Counseling of patients should therefore be based on their expressed desires, in the context of geographic and age-appropriate norms, and what is practically feasible given their baseline facial morphotypes.

Comparison of Asian and Caucasian Anatomy

Like others with Fitzpatrick skin phototypes III and above, Asians have been described as developing fewer age-related rhytids compared with the Caucasians. On the anecdotal basis of cadaver dissections, this has been attributed to a thicker dermis, increased fat above and deep to the superficial muscular aponeurotic system, and dense fat and fibrous connections between the superficial muscular aponeurotic system and deep parotidomasseteric fascia.²³ Some members of the consensus group noted that considerations such as cumulative sun exposure and other aspects of lifestyle may also be relevant.

The mass of some muscles, such as the corrugators, tends to be lower in Asians than in Caucasians; the corrugators also tend to be shorter, narrower, and less hyperdynamic. These differences are considered to have a genetic basis,²⁴ and perhaps also a cultural one due to variations in the frequency of specific facial expressions such as frowning.²⁵ In contrast, Asians tend to have more developed masseter muscles than most Caucasians. Therefore, compared with Caucasian subjects, lower or higher doses of botulinum toxin type A may be appropriate for Asian subjects, depending on the facial area.


CONSENSUS RECOMMENDATIONS BY FACIAL AREA FOR TREATMENT WITH INCOBOTULINUMTOXINA

In all facial areas, primary treatment with botulinum toxin type A is indicated when excessive muscular contraction is the primary cause of what is observed and is to be addressed. When volume loss is the primary cause, injection of soft tissue fillers is the appropriate first intervention.²⁶ Target muscles, aims, and considerations for specific facial areas are discussed below. Injection points, recommended dosage ranges, and the level of agreement (consensus definition) are provided in Tables 3–17. Levels of agreement were categorized as follows: ≤50% of experts agreed = no consensus; >50–75% of experts agreed = majoritarian agreement; >75–95% of experts agreed = consensus; >95% of experts agreed = strong consensus. The results are calculated as a percentage of the number of completed questionnaires for each category.

Glabellar Rhytids: Procerus, Corrugator Supercilii, Depressor Supercilii

Lower doses of botulinum toxin are appropriate for the many Asians who have a lower muscle mass and less hyperdynamic activity than Caucasians. If injection into the lateral aspect of shorter and narrower corrugator supercilii muscles is not indicated, this results in a 3-point injection pattern to the glabella, rather than the traditional 5-point pattern.

Table 3. Consensus Recommendations for Treatment of Glabellar Rhytids with IncobotulinumtoxinA in Asian Patients

Glabellar Rhytids: Procerus, Corrugator Supercilii, Depressor Supercilii						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	1 IP into the procerus muscle and 2 IPs into the corrugator muscle (consensus)	3-point rather than 5-point injection pattern for Asian females 2 additional IPs could be appropriate for Asian males (subjects with higher muscle mass) Occasionally, 0.5 U into the frontalis on each side can prevent “Samurai eyebrow”	2–4 U (consensus)	6–25 U depending on no. of IPs	3 IPs with a typical total dose of 12 U, ie, 4 U per IP; with more IPs used, the dose per IP decreases (typical dose with 5–8 IPs is 10–20 U)	Intramuscular (consensus)


Color coding of injection points shows those points which are standard (green), those which are often used in addition (yellow), and those which are only used occasionally (white).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 4. Consensus Recommendations for Treatment of Horizontal Forehead Rhytids with IncobotulinumtoxinA in Asian Patients

Horizontal Forehead Rhytids: Frontalis						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	2 rows with 6 IPs (majoritarian agreement)	6 IPs per row (majoritarian agreement)	0.1–5 U, ie, microdrop-let injection technique with low dose per IP	2–32 U depending on individual forehead width and muscle mass and preferred injection techniques	12–14 IPs with a typical total dose of 6–7 U, ie, 0.5 U per IP	Intracutaneous (consensus)

Green dots show those points which are standard.

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 5. Consensus Recommendations for Eyebrow Shaping Using IncobotulinumtoxinA in Asian Patients

Eyebrow Shaping: Medial and Lateral Brow Depressors—Procerus, Corrugator Supercilii, Depressor Supercilii, Portions of Orbicularis Oculi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
No pattern image available	No universal injection scheme identified; combination treatment (eyebrow plus horizontal forehead lines or glabellar frown lines) used by majority (67%) of experts	The majority treated in combination with the glabellar or forehead treatment, with the remainder performing a solo brow injection	0.5–2 U (no consensus reached due to high variability of injection pattern used)	0.5–2 U per side (solo brow injection); 9–13 U per side (combination of indications)	Solo brow injection: 1 IP with a typical total dose of 0.5–2 U per side; combination of indications: 4 IPs per side with a typical total dose of 10–12 U, ie, 2.5–3 U per side	Intramuscular/subdermal or intracutaneous (majoritarian agreement)

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

Table 6. Consensus Recommendations for Treatment of Lateral Canthal Rhytids with IncobotulinumtoxinA in Asian Patients


Lateral Canthal Rhytids (Crow’s Feet): Orbicularis Oculi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 3 IPs per eye (strong consensus); optional: 1–2 additional IPs above and/or below the 3 IPs per side or additional IPs lateral to the basic IPs	3–4 IPs per eye (majoritarian agreement)	2–4 U (majoritarian agreement)	Between 4–16 U per eye	3 IPs with a typical total dose of 6–9 U per eye side, ie, 2–3 U per IP	Intracutaneous (majoritarian agreement)

Color coding of injection points shows those points which are standard (green), those which are often used in addition (yellow), and those which are only used occasionally (white).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts. IP, injection point.

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Table 7. Consensus Recommendations for Treatment of Infraorbital Rhytids with IncobotulinumtoxinA in Asian Patients


Infraorbital Rhytids: Orbicularis Oculi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	1 row with at least 2 IPs per eye (consensus); optional: 1 additional IP per eye	2–3 IPs per eye (majoritarian agreement)	0.5–1 U (majoritarian agreement)	1–2 U (majoritarian agreement)	2 IPs with a typical total dose of 1–2 U, ie, 0.5–1 U per IP	Intracutaneous or intramuscular/subdermal (consensus)

Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts. IP, injection point.

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Table 8. Consensus Recommendations for Infraorbital Eye Opening with IncobotulinumtoxinA in Asian Patients

Infraorbital Eye Opening: Pretarsal Portion of Orbicularis Oculi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	1 IP per eye on the mid-pupillary line, 2 mm below the cilium	1 IP per eye	0.5–1 U	0.5–1 U	1 IP per side with a typical dose of 0.5–1 U	Intracutaneous or intramuscular/subdermal

Green dot shows the standard injection point.

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts. IP, injection point.

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Horizontal Forehead Rhytids: Frontalis

The current trend for administering lower doses of botulinum toxin to the frontalis, due to its marked responsiveness, is magnified in Asians, many of whom have a lower muscle mass and less hyperdynamic activity than Caucasians.

Eyebrow Shaping: Medial and Lateral Brow Depressors—Procerus, Corrugator Supercilii, Depressor Supercilii, Portions of Orbicularis Oculi

The aim of all treatment of the eyebrows with botulinum toxin type A is to preserve or restore a natural-looking position. Female eyebrow “lifting”

Table 9. Consensus Recommendations for Treatment of Transverse Nasal Rhytids with IncobotulinumtoxinA in Asian Patients

Transverse Nasal Rhytids (“Bunny Lines”): Nasalis and Levator Labii Superioris Alaeque Nasi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 2 IPs (strong consensus)	2 IPs, 1 per side (majoritarian agreement); additional IPs can be used as appropriate	0.5–5 U	3–4 U (majoritarian agreement)	2 IPs with a typical total dose of 3–4 U, ie, 1.5–2 U per IP	Intramuscular (majoritarian agreement)


Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 10. Consensus Recommendations for Treatment of Nasal Flare IncobotulinumtoxinA in Asian Patients

Nasal Flare: Dilator Naris Portion of Nasalis						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 2 IPs (strong consensus) with additional IPs on the bridge of the nose or above the basic IPs if required; 2 experts do not treat this indication and a further 2 experts prefer the use of fillers	Up to 4 IPs (no consensus reached due to high variability and few evaluable data)	0.5–2 U (no consensus reached due to high variability and few evaluable data)	1–6 U	2 IPs with a typical total dose of 2–4 U, ie, 1–2 U per IP	Variable injection depths: intramuscular, subdermal, intracutaneous (no consensus reached due to high variability and few evaluable data)


Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 11. Consensus Recommendations for Nasal Tip Elevation with IncobotulinumtoxinA in Asian Patients

Nasal Tip Elevation: Depressor Septi Nasi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	1 IP at subnasale (strong consensus); 2 experts do not treat this indication and a further 2 experts prefer the use of fillers	1 IP (strong consensus)	0.5–4 U (no consensus reached due to high variability and few evaluable data)	1–16 U	1 IP with a typical total dose of 2–4 U	Intramuscular or subdermal


Green dot shows standard injection point.

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 12. Consensus Recommendations for Treatment of Excessive Gingival Display with IncobotulinumtoxinA in Asian Patients

Excessive Gingival Display (“Gummy Smile”): Levator Labii Superioris Alaeque Nasi						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 2 IPs (strong consensus) with additional IP on each side as appropriate, about 1 cm lateral to standard IP	2 IPs, 1 per side (consensus)	1–2 U (consensus)	1–2 U (majoritarian agreement)	2 IPs with a typical total dose of 2–4 U, ie, 1–2 U per IP	Intramuscular (consensus)


Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 13. Consensus Recommendations for Treatment of Oral Commissures (“Marionette Lines”) with IncobotulinumtoxinA in Asian Patients

Oral Commissures (“Marionette Lines”): Depressor Anguli Oris						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	2 IPs (strong consensus)	1 IP per side (consensus)	2–4 U per side (majoritarian agreement)	2–4 U per side (majoritarian agreement)	1 IP per side with a typical total dose of 2–3 U per side	Subdermal or intramuscular (consensus)


Green dots show standard injection points.

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 14. Consensus Recommendations for Treatment of “Cobblestone Chin” with IncobotulinumtoxinA in Asian Patients

“Cobblestone Chin”: Mentalis						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 2 IPs (majoritarian agreement) with occasional extension of basic scheme to 4 IPs (2 additional IPs above basic IPs)	1–2 IPs (majoritarian agreement)	2–4 U (consensus)	2–16 U	2 IPs with a typical total dose of 8 U, ie, 4 U per IP	Intramuscular (consensus)


Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 15. Consensus Recommendations for Treatment of Square Jaw with IncobotulinumtoxinA in Asian Patients

Square Jaw: Masseter						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	At least 3 IPs (majoritarian agreement); the IP should be at least 1 cm inside the anterior margin of the masseter muscle	3–5 IPs per side (consensus)	4–6 U (majoritarian agreement)	20–40 U per side (consensus)	3–5 IPs per side with a typical total dose of 20–25 U per side, ie, about 5 U per IP	Intramuscular deep level (strong consensus)

Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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with botulinum toxin has been described extensively in publications with a Caucasian focus.^{27–31} However, prominently arched brows can make Asian faces look especially unnatural—due, in part, to their relatively greater width. The preferred brow shape for the Asian female is flatter and lower in the lateral two-thirds than has been traditionally advocated for Caucasians. Asians particularly dislike lateral brow arching, which is characterized as the ‘Samurai eyebrow’ and considered to convey anger.

Lateral Canthal Area (“Crow’s Feet”): Orbicularis Oculi


The recommended injection pattern depends on whether orbicularis oculi alone is the cause or zygo-

maticus is also being recruited. The general trend toward lower doses of botulinum toxin is again exemplified in Asians with lower muscle mass.

Infraorbital Rhytids: Orbicularis Oculi

Chinese patients, and some other patients of Asian descent, quite commonly seek reduction in infraorbital rhytids. If they wish to retain the pretarsal muscular bulge (“charming roll”), injection points should not be placed too close to the lower ciliary margin. The medial infraorbital area should be treated with caution and with low doses to avoid lower eyelid edema.⁶ Rhytids in this area can be injected subdermally with less than 0.5 U incobotulinumtoxinA at the junction of the preseptal and orbital portions of orbicularis oculi in the medial can-

Table 16. Consensus Recommendations for Treatment of Perioral Rhytids with IncobotulinumtoxinA in Asian Patients

Perioral Rhytids: Orbicularis Oris						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	2–4 IPs into the upper lip just above the vermillion border (consensus); the basic injection scheme can be extended with 2–4 additional IPs on the lower lip just below the vermillion border	2–6 IPs (consensus)	0.5–1 U (consensus)	1–8 U	4–6 IPs with a typical total dose of 2–3 U, ie, about 0.5 U per IP	Experts used variable injection depths: intracutaneous preferred, intradermal ideal (no consensus reached due to high variability)


Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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Table 17. Consensus Recommendations for the “Nefertiti Neck Lift” and Treatment of Platysmal Bands with IncobotulinumtoxinA in Asian Patients

“Nefertiti Neck Lift” and Platysmal Bands: Platysma						
Application Scheme			Dosing of IncobotulinumtoxinA			Target Tissue
Injection Pattern	Basic Injection Scheme*	No. of IPs	Dose per IP	Total Dose Range	Typical Dose Range	Injection Depth
	No basic injection scheme identified due to high variability of injection patterns used by experts	3–20 IPs (no consensus reached as experts preferred an individualized approach according to subject presentation)	2–4 U (consensus)	4–60 U (no consensus reached as experts preferred an individualized approach according to subject presentation)	3–4 IPs per band or 10–12 IPs per side with a typical total dose of 12 U per band or 20 U per side; upper total dose limit should generally not exceed 60 U for safety reasons	Intramuscular (majoritarian agreement)

Color coding of injection points shows those points which are standard (green) and those which are often used in addition (yellow).

*Basic injection scheme: the minimum common injection pattern (reflecting highest consensus) given by the majority of experts.

IP, injection point.

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thal line. As with all patients, the infraorbital area should not be injected if skin elasticity is poor, as this may result in aesthetic or functional impairment, eg, scleral show.

Infraorbital Eye Opening: Pretarsal Portion of Orbicularis Oculi

This procedure removes the pretarsal muscular bulge (“charming roll”). It is therefore contraindicated in Koreans and other Asians who consider the “charming roll” a hallmark of female beauty, and wish to retain it or enhance it with fillers. Injection of low doses of botulinum toxin to remove the pretarsal bulge and slightly lower the inferior ciliary margin is appropriate in patients with Type III (“Southern”) Asian faces who request it. It widens the palpebral aperture and, hence, appears to enlarge the eyes. This may be considered desirable in Southern Asian cultures, and also in Asian immigrants who have adopted the beauty norms of the non-Asian countries in which they reside.

Transverse Nasal Rhytids (“Bunny Lines”): Nasalis and Levator Labii Superioris Alaeque Nasi

It is beneficial to treat the nasalis and levator labii superioris alaeque nasi in conjunction with the glabella muscles, if there are significant wrinkles on the dorsum of the nose during animation. Rhytids caused by overcontraction of nasalis can be completely removed with botulinum toxin. However, activity of levator labii superioris alaeque nasi and the medial band of the orbicularis oculi cannot be fully obliterated, as this will cause aesthetic and functional impairment.

Nasal Flare: Dilator Naris Portion of the Nasalis

It is beneficial to treat other portions of nasalis in conjunction with the dilator naris if this is indicated

by the pattern of muscular overcontraction during animation.

Nasal Tip Elevation: Depressor Septi Nasi

It is appropriate to treat the nasalis or levator labii superioris alaeque nasi in conjunction with the depressor septi nasi, if significant overactivity of all of these muscles during animation is the primary cause of nasal tip drooping.

Excessive Gingival Display (“Gummy Smile”): Levator Labii Superioris Alaeque Nasi

When primary treatment with botulinum toxin is indicated, the convergence point of levator labii superioris, levator labii superioris alaeque nasi, and zygomaticus minor can be targeted. As in all patients, care should be taken with placement of injection sites and dosage to avoid facial asymmetry or aesthetic impairment—in this case, of the smile.

Oral Commissures (“Marionette Lines”): Depressor Anguli Oris

The modiolus, the point at which several facial muscles (including the depressor anguli oris) converge, was found to be lower than the intercheilion horizontal line in almost 60% of an 8-cadaver Korean dissection series (Table 13).³² Based on this, it is recommended that botulinum toxin should be injected into the lower part of the depressor anguli oris to minimize the risk of unwanted spread to other muscles responsible for movement of the corners of the mouth. As for all patients, care should be taken to avoid inadvertent targeting of depressor labii inferioris.

“Cobblestone Chin”: Mentalis

In many Asians, mentalis hyperactivity is secondary to congenital, bony retrusion of the chin (Table 14). This can worsen with age and as volume loss occurs. As for all patients, care should be taken to avoid inadvertent targeting of depressor labii inferioris.

Square Jaw: Masseter

Injection of botulinum toxin type A for square jaw has been an established paradigm in Asia for more than 10 years (Table 15).³³ Appropriate subjects for treatment have significant masseteric muscle volume, rather than bony prominence of the mandibular angle. Factors that contribute to masseteric hypertrophy include jaw clenching and bruxism, and habitual chewing of gum or hard, dried food.³⁴ One-sided chewing can lead to asymmetric masseteric hypertrophy. Bilateral injection of the masseter muscles decreases their prominence and produces tapering of the lower face. Repeated, high-dose injections over several years can result in chronic muscular atrophy. Muscle volume is a key determinant of botulinum toxin dose, together with regional and cultural variations in the degree of taper that is considered attractive. Lower facial shape can be improved even in individuals who start with a normal muscle thickness of 0.8 cm.³⁵

When targeting the masseters, both the onset and peak of effect become apparent significantly later than with other muscles. A decrease in masseteric volume typically starts to become apparent 2 weeks post injection, and the effect continues to develop over the ensuing 1–3 months.^{36,37} The peak of muscle atrophy is usually reached by 3 months after injection. Muscle volume is usually restored to some extent at 6 months³⁶ and may approach its pretreatment state by 10–12 months after injection. Variation in the duration of effect depends on the individual's personal habits, such as bruxism, unconscious jaw clenching, and excessive chewing. There are reports of results lasting for more than 1 or 2 years, even after only 1 session of botulinum toxin type A treatment.³³ This extended duration of effect has been noted particularly in subjects who have the acquired form of masseteric hypertrophy, avoid excessive chewing, and do not have the habit of jaw clenching. In a proportion of subjects, mild temporary muscular weakness following treatment may manifest as difficulty in chewing; this generally passes and chewing returns to normal force within 3 months.³⁸

Perioral Rhytids: Orbicularis Oris

As in all patients, careful placement of injection sites and low doses of botulinum toxin are advised

(Table 16). Treatment should be performed with caution in Asian patients with a congenitally long philtrum and protruding upper lip, as it may lead to further elongation of the philtrum.

“Nefertiti Neck Lift” and Platysmal Bands: Platysma

Small cadaver dissection series have provided an anatomic rationale for the anecdotal observation that Asians are less likely than Caucasians to develop platysmal bands (Table 17).²³ Targeting the portion of platysma that is close to the mandibular insertion (“Nefertiti neck lift”) is popular in Asian subjects.³⁹ Some members of the consensus group noted anecdotally that Asians are quite likely to possess the palpable muscle mass in this area that is a predictor of favorable response.

POSITION STATEMENTS

The Pan-Asian Aesthetics Toxin Consensus Group formulated position statements for the following emerging treatment indications, with the caveat that further data must be accrued to fully assess safety and efficacy from an evidence-based perspective.

Intradermal Botulinum Toxin (“Mesotoxin,” “Dermotoxin,” etc.)

Injection of botulinum toxin type A in the dermal-subdermal layer⁴⁰ has been reported anecdotally to produce improvement in skin texture and turgor, and reduction in sebum production and pore prominence.^{41–43} The reported presence of intracutaneous acetylcholine receptors, eg, on sebaceous glands,⁴⁴ provides a possible mechanism for the observations of improved skin texture.⁴⁰ Recently, the reduction of sebum production in patients with oily skin following intradermal botulinum toxin type A injection was objectively demonstrated.⁴⁵

The consensus group discussed the possibility that needle insertion into the skin, rather than botulinum toxin itself, might be sufficient to produce at least some of the beneficial effects.⁴⁶ They considered it debatable whether the postulated effects are truly due to an intradermal mechanism of action or to the spread of botulinum toxin to underlying and adjacent muscles. From an evidence-based perspective, large, placebo-controlled trials would be required to evaluate the efficacy of intradermal botulinum toxin injection. Because toxin spreads in a 3-dimensional manner from its point of injection, effects on the musculature or the skin cannot be considered in isolation. Intracutaneous injection of botulinum toxin type A has been described as a strategy to preferentially target the superficial portions of the underlying muscles, and hence to achieve efficacy without impairment of function.²⁶

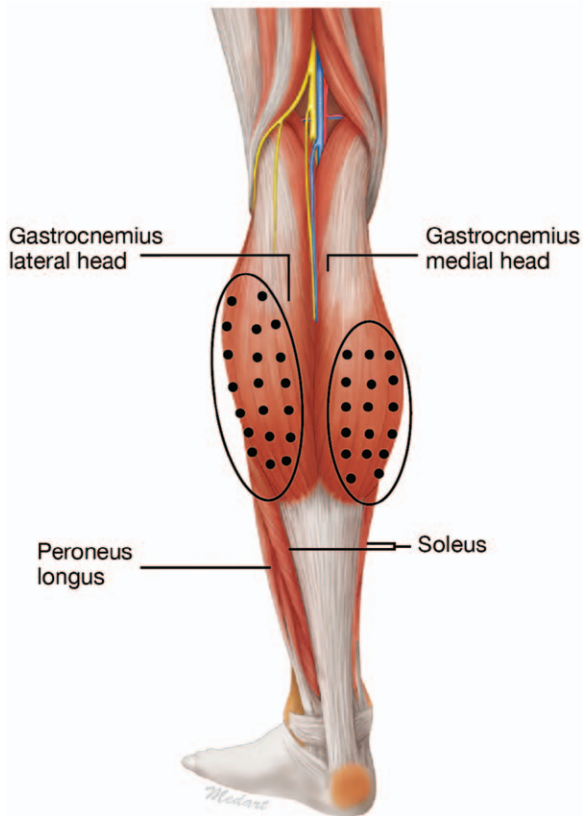


Fig. 1. Suggested injection sites of the gastrocnemius muscles for calf shaping according to the position statement. A total of 15–25 IPs are commonly used with a dose of 4 U per injection point and a total dose of 60–100 U for the head of each gastrocnemius muscle. The injection level should be intramuscular. Reproduced with permission from Seo K, *Botulinum Toxin for Asians*; Jeju, South Korea: Jeju, Korea: Seoul Medical Publishing Ltd.; 2014.

Body Shaping

Although the popularity of body shaping with botulinum toxin type A is reportedly increasing in Asian subjects, it is still dwarfed by facial use. The most commonly described treatment is injection of the calves.⁴⁷ Asians tend to have short legs relative to their torsos.⁴⁸ Thick calves further accentuate this physical disproportion, and women dislike the stocky, inelegant appearance this gives them.⁴⁸ Injection into upper body muscles, such as the deltoids, has also been described to decrease circumference of the upper arms.⁴⁷

The aim of injecting botulinum toxin type A into the calves is to produce atrophy. Based on clinical experience, 60–100 U incobotulinumtoxinA is typically injected into the head of each gastrocnemius at up to 25 injection sites (Fig. 1). For the upper arms, 50 U incobotulinumtoxinA are typically injected into each deltoid and 50 U incobotulinumtoxinA into the upper part of each trapezius.



Fig. 2. Suggested parotid gland injection sites for gland reduction according to the position statement. A total of 4–6 IPs with a dose of 4–6 U per IP is suggested giving a total dose of approximately 30 U (20–40 U) depending on the volume of the parotid gland. The level of injection is intraglandular. IP, injection point. Reproduced with permission from Seo K, *Botulinum Toxin for Asians*; Jeju, Korea: Seoul Medical Publishing Ltd.; 2014.

As with treatment of the masseters, onset of atrophy becomes apparent 1–2 weeks post injection and reaches maximum effect by 2–3 months. The muscle returns to approximately half its original volume after 5–6 months and approaches its previous state approximately 10–12 months after injection. If the subject avoids active exercise of the treated muscle, a return to pretreatment muscle volume can be prevented. Clinical experience indicates that repeated injections over several years can also result in chronic muscular atrophy. The consensus group added the caveat that it does not consider functional impairment to be an acceptable result of cosmetic treatment with botulinum toxin.

Reduction of the Parotid Glands

Enlarged parotid glands can contribute to a square-shaped lower face.⁴⁸ Because acetylcholine acts as the neurotransmitter in salivary glands as it does in the neuromuscular junction, it can be blocked by botulinum toxin type A.⁴⁹ Injection of an enlarged or protruding parotid gland can reduce the width of the lower face, as an adjunct to treatment of the masseter muscles.^{50,51} Injection of the parotid gland seldom results in a dry mouth, as the majority of salivary production (71% in one report⁵²) comes from the submandibular gland. The most protruding part of the parotid gland around the mandibular angle is the preferred injection site. Based on clinical experience, 4–6 injection points are typically used for the parotid gland with

a dose of 4–6 U incobotulinumtoxinA per injection site (Fig. 2). Injection of botulinum toxin in very thin subjects with an obvious submandibular salivary gland can improve lines on the neck.

CONCLUSIONS

Given the rapid rise in demand for cosmetic procedures in Asia and the global migration of Asians, these recommendations are germane to physicians throughout the world. When planning and implementing treatment with botulinum toxin type A, it must be understood that anatomic and cultural differences exist not only between Asians and Caucasians, but also among Asians. In addition, it is important to appreciate that Asians seek botulinum toxin treatment for cosmetic enhancement and for rejuvenation. The aim of these consensus recommendations is to provide guidelines for optimal treatment of Asians across a full range of indications.

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