Cosmetic Botulinum Toxin Injections (Advanced)

Tam Nguyen, MD, FAAFP
Mason Dang, MD
ACTIVITY DISCLAIMER

The material presented here is being made available by the American Academy of Family Physicians for educational purposes only. Please note that medical information is constantly changing; the information contained in this activity was accurate at the time of publication. This material is not intended to represent the only, nor necessarily best, methods or procedures appropriate for the medical situations discussed. Rather, it is intended to present an approach, view, statement, or opinion of the faculty, which may be helpful to others who face similar situations.

The AAFP disclaims any and all liability for injury or other damages resulting to any individual using this material and for all claims that might arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by a physician or any other person. Physicians may care to check specific details such as drug doses and contraindications, etc., in standard sources prior to clinical application. This material might contain recommendations/guidelines developed by other organizations. Please note that although these guidelines might be included, this does not necessarily imply the endorsement by the AAFP.
DISCLOSURE

It is the policy of the AAFP that all individuals in a position to control content disclose any relationships with commercial interests upon nomination/invitation of participation. Disclosure documents are reviewed for potential conflict of interest (COI), and if identified, conflicts are resolved prior to confirmation of participation. Only those participants who had no conflict of interest or who agreed to an identified resolution process prior to their participation were involved in this CME activity.

All individuals in a position to control content for this session have indicated they have no relevant financial relationships to disclose.

The content of my material/presentation in this CME activity will not include discussion of unapproved or investigational uses of products or devices.
Mason Dang, MD

Program Director, American Board of Aesthetic Medicine; Medical Director, Aesthetic Arts MD

Dr. Dang is board certified in anesthesiology and specializes in aesthetic medicine and anti-aging medicine in a private practice in San Diego, California. His areas of expertise include use of botulinum toxin, dermal fillers, facial contouring, laser and light therapies, chemical resurfacing, and sclerotherapy. Dr. Dang frequently lectures and teaches hands-on courses at various national and international conferences. In April 2014, Dr. Dang presented at the XI Congresso Mundial Medicina Estetica in Rio de Janerio, Brazil. Dr. Dang has presented workshops on aesthetic medicine at FMX since 2012.
Tam Nguyen, MD, FAAFP

Physician, Washington Township Medical Foundation (WTMF), Fremont, California.

Dr. Nguyen is a graduate of Pennsylvania State University College of Medicine in Hershey. He completed his residency at Family Practice at San Jose-O'Connor Family Medicine Residency Program. He practices inpatient and outpatient family medicine at WTMF. His topics of specialty include dermatology and diabetes. Dr. Nguyen instructs physicians of various specialties on aesthetic procedures, including the use of botulinum toxin, lasers, liposuction, and nonsurgical facial reconstruction. He also consults with providers on how to establish an aesthetic practice. Dr. Nguyen believes family medicine's most critical challenge is caring for the uninsured and underinsured.
Learning Objectives

1. Demonstrate proficiency in using saline injections for essential treatment areas typically treated with botulinum toxin.
2. Compare and contrast botulinum toxin treatment outcomes, safety, risks, complications, costs and benefits, among other factors that may be applicable to your practice.
3. Relate the mechanism of action of botulinum toxin injections to patients.
4. Analyze the cause and effect of muscle denervation and possible reinnervation related to short-term and long-term usage of botulinum toxin injections.
Know Your Anatomy!

- Muscles work in opposition
- Botox eyelift
- Gummy smile
- Nose tip lift
- Mouth frown
- Hyperhydrosis
- Masseter facial shaping
Botox Eyelift

• Targeted muscle
  – Lateral Superior Orbicularis Occuli
  – Function → closure of eyelids
  – Muscle of opposition
    • Frontalis
    • Levator palpebra superioris
    • Muller muscle
  – Eyelift → unopposed frontalis action
Botox Eyelift

• Glabellar injection may create brow lift
• Medial brow depressor
  – Corrugator
  – Medial orbicularis occuli
Botox Eyelift

• Injection points
  – 1-3 sites at lateral margin of orbicularis occuli
  – Ask pt to close eye tightly
    • Identify superior lateral margin of orbicularis occuli
  – Inject to underside of lateral 3rd of brow (above orbital rim)
  – Inject laterally
  – Dermal injection preferred
Botox Eyelift

• Dosage
  – 1-2 units per site
  – Max 4-6 units
Botox Eyelift

• Complications
  – Ptosis!
    • Possible drifting of botulinum toxin into levator palpebrae superioris
    • Injection too close to frontalis
  – Uneven elevation of brow
Botox Eyelift

• Treatment of ptosis
  – If due to frontalis → duration of blockade
  – If secondary to weakening of levator palpebrae superioris → possibly 2-3 wks
    • Iopidine (apraclonidinede 0.5 %) eye drops. 1-2 drops bid – tid until resolved. Apraclonidine is an α2-adrenergic agonist, which causes Müller muscles to contract, elevating the upper eyelid 1-3 mm.
      – Muller muscle → smooth muscle with sympathetic innervation
        → apraclonidine stimulates sympathetic nerve
Gummy Smile

• Anatomy
  – Elevation of upper lip
    • Levator labii superioris
    • Zygomaticus
Gummy Smile

• Injection Points
  – Bilateral corner of nasal alae → single site
  – Upper lip 2-4 sites

• Dosage
  – 2 units to levator labii superioris
  – 2 units per site to upper lip → max 8 units
Gummy Smile

- Complication
  - Decrease ability to make blowing or sucking motion
  - Slurring of speech
  - Droopy upper lip
  - Flat mid face
Nasal Tip Lift

- Nose tip pulled inferior by
  - Depressor septi nasi muscle
    - Origin → incisi fossa
    - Attachment → nasal septum and back part of alar
Depressor Septii Nasi
Nasal Tip Lift

• Injection Points
  – 2 sites

• Dosage
  – 2-4 units
Nasal Tip Lift

• Complications
  – Same as for upper lip perioral rhytids
Mouth Frown

- Downward pull of bilateral corner of mouth by Depressor Anguli Oris
- Muscle of opposition Zygomaticus
Depressor Angular Oris

• Injection Points
  – Ask pt to tense lip downward
  – Feel for muscle
  – Inject inferior/posterior portion of muscle at mandible
    • Depressor anguli oris overlies depressor labii inferioris → asymmetrical paresis!
Depressor Angular Oris

• Dosage
  – 2-4 units
  – 1-2 sites per side
Mental Crease

- Mentalis muscle responsible
- Do not inject at crease
  - Weakening of orbicularis oris or lip depressor → crease may be worse
- Do not inject to midline
  - 2 separate bands of muscle
- 2-4 units each side of midline just anterior to bony prominent
Mental Crease

• Complications
  – Difficulty speaking, drooling, ability to make blowing or sucking motion
  – asymmetry
Masseter Reduction

- Originated from Korea
- Alternative to mandible shaping
- Slim down lower lateral maxillary area
- Enhanced cheek bone
- Good for women with square facial feature
- Treatment of night grinding
Masseter Reduction

• Von Linderg → 100 units Dysport per side → decrease masseter size by $\frac{1}{2}$

• Park et al 25-30 unit botox per side
  – Average decrease masseter thickness 1.5 – 2.9 mm → approx 20% decrease
  – Verified by US & CT
  – Average duration 6-7 months
Masseter Reduction

• Masseter serve in chewing function and some speech
Masseter Reduction

- Technique
  - Identify masseter
  - Ask pt to clench down
  - Draw line
  - 4-5 sites
Masseter Reduction

• Dosage
  – 25-30 units per side
  – Start with 25 see back in 3wks
  – Consider increase in dose if no effect
Masseter Reduction

• Complications
  – Trouble eating
  – Difficulty talking
Necklace Lines

• Occur due to subcutaneous muscular aponeurotic system attachments
• 1-2 units per injection point
• 30 units per session maximum
• Dermal injections
  – Venous perforator subcutaneously
  – Underlying muscle of deglutition
Necklace Lines

• Complications
  – Difficulty swallowing!
Platysmal Bands

- Appearance due to decrease skin elasticity with aging
- Platysma muscle separate anteriorly
Platysmal Band

Platysma
Platysmal Band

- Gold standard is still rhytidectomy
- Inject along platysmal band
- 2 units per site
- Maximum 30 units
- Muscle of deglutition & neck flexion underlying platysma
Platysmal band

• Complications
  – Dysphagia
  – Neck weaknesses
Hyperhydrosis

• Problematic for public figures
• Duration with botox $\rightarrow$ 6-9 mos
• Expensive
• Up to 100 units total
Hyperhydrosis

• Axilla
  – Starch Iodine test a must
  – Identify most active glands
  – How to perform Starch Iodine test
    • Paint affected area with iodine
    • Sprinkle corn starch evenly
    • Dark areas is most active
Hyperhydrosis

• Axilla
  – Technique
    • Mark area identified with Starch Iodine test
    • Injection points are 1-2 cm apart
  – Dosage
    • 2 units per injection point
    • 50-100 units per axilla, palm or sole
    • Total of 100-200 units for both injection site.
Hyperhydrosis

• Palm and sole of feet are performed the same way.
• Ice very effective for anesthesia
Hyperhydrosis

• Onset
  – 1-2 weeks

• Duration
  – 3-9 months
Hyperhydrosis

• Complications
  – Hand and/or finger weakness
  – Foot weakness
  – Bruising
Videos

• Platysmal band: [https://youtu.be/tUYOHF6UzEk](https://youtu.be/tUYOHF6UzEk)

• Masseter: [https://youtu.be/F1eDyvjvo9k](https://youtu.be/F1eDyvjvo9k)

• Gummy smile: [https://youtu.be/GhbnMbn1Grs](https://youtu.be/GhbnMbn1Grs)
THANK YOU!