

# Cosmetic Botulinum Toxin Injections (Advanced)

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- Standard, common off-label use of botulinum toxin A for facial aesthetic

# 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 Janeiro, 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.

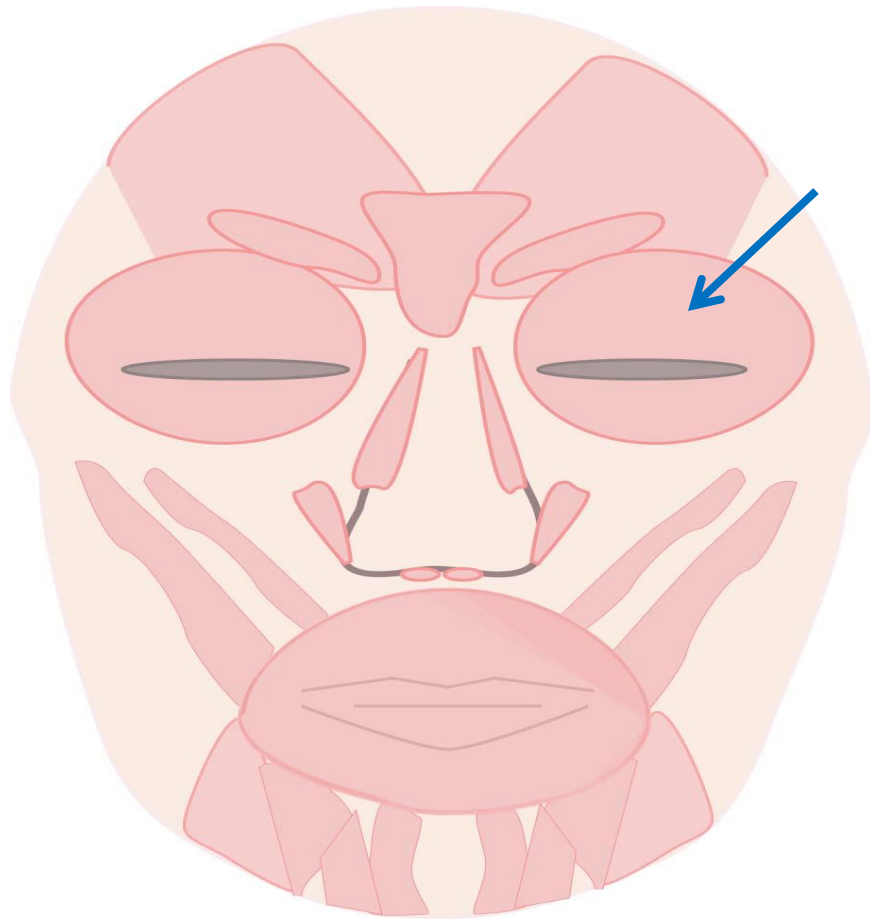
# Know Your Anatomy!

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

# 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 oculi

# Botox Eyelift

- Injection points
  - 1-3 sites at lateral margin of orbicularis oculi
  - Ask pt to close eye tightly
    - Identify superior lateral margin of orbicularis oculi
  - Inject to underside of lateral 3<sup>rd</sup> 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

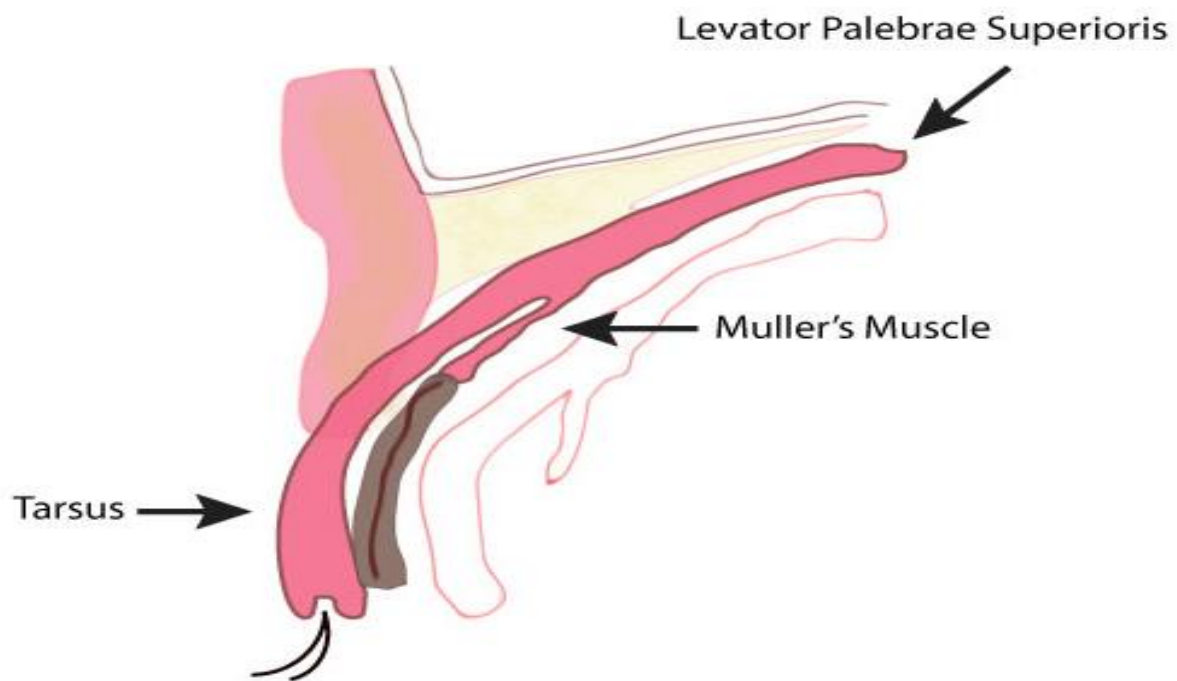
- Ptosis!

- Possible drifting of botulinum toxin into levator palpebrae superioris
    - Injection too close to frontalis

- Uneven elevation of brow

# Botox Eyelift

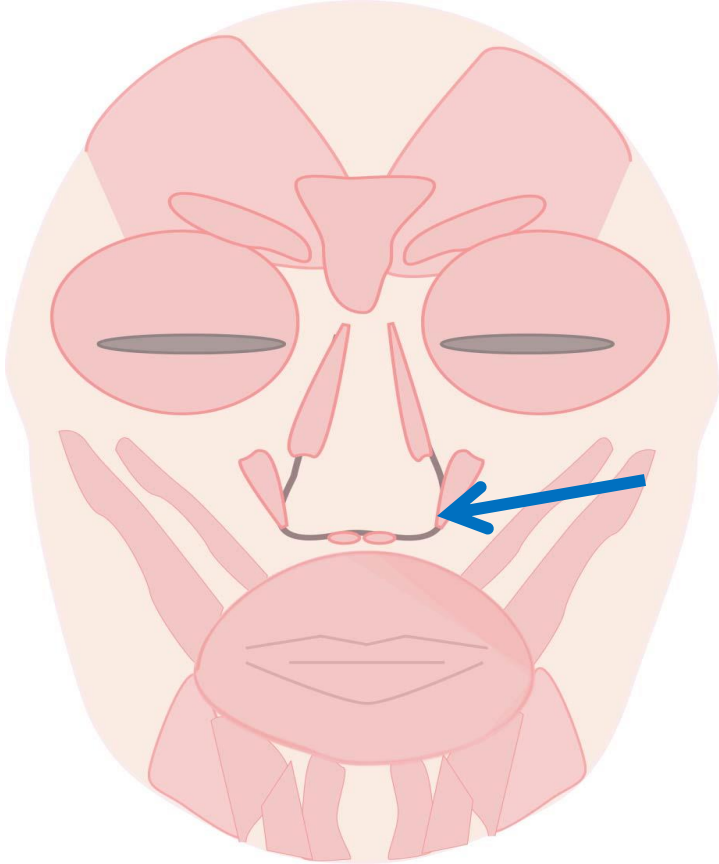
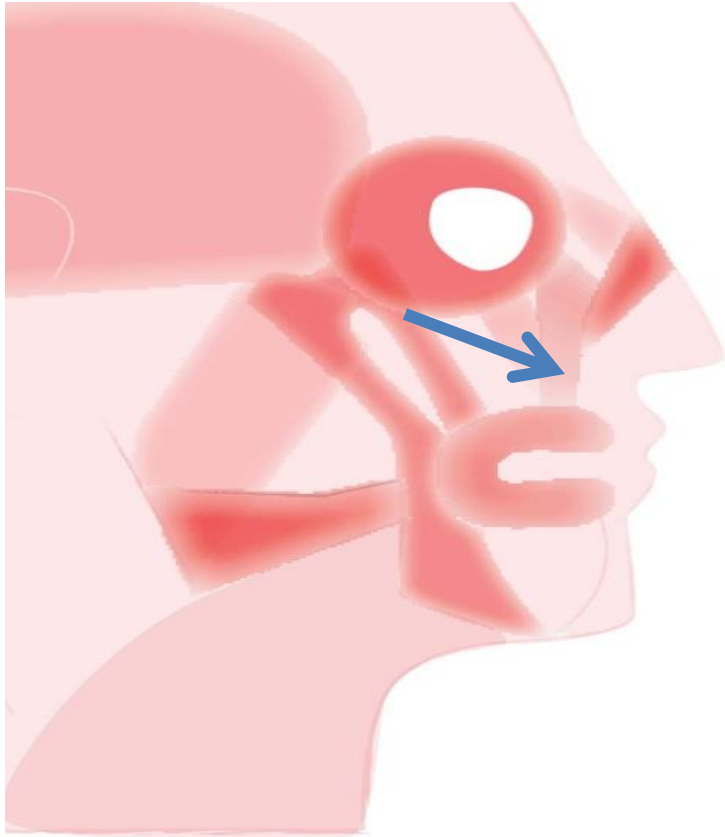
- Treatment of ptosis
  - If due to frontalis → duration of blockade
  - If secondary to weakening of levator palpebrae superioris → possibly 2-3 wks
    - Iopidine (apraclonidine 0.5 %) eye drops. 1-2 drops bid – tid until resolved. Apraclonidine is an  $\alpha_2$ -adrenergic agonist, which causes Müller muscles to contract, elevating the upper eyelid 1-3 mm.
      - Müller 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

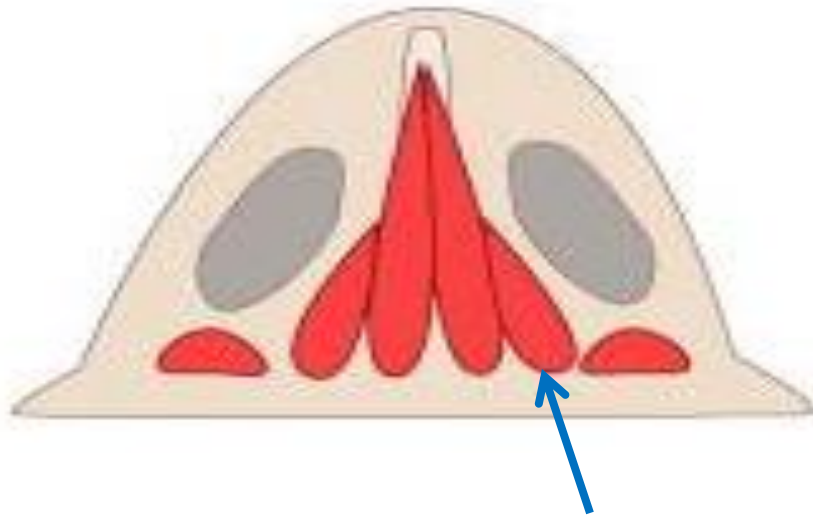


# Gummy Smile

- 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



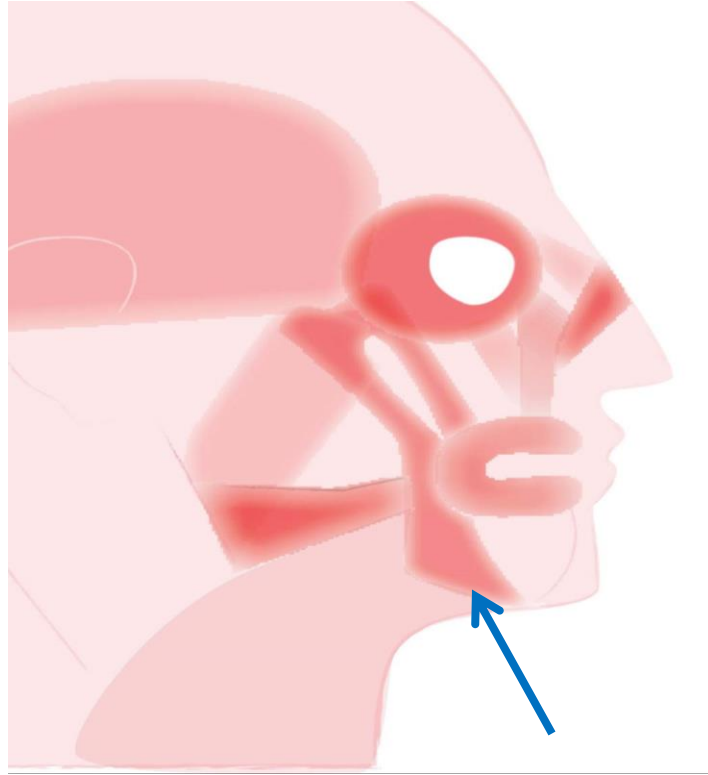


# Nasal Tip Lift

- Complications
  - Same as for upper lip perioral rhytids

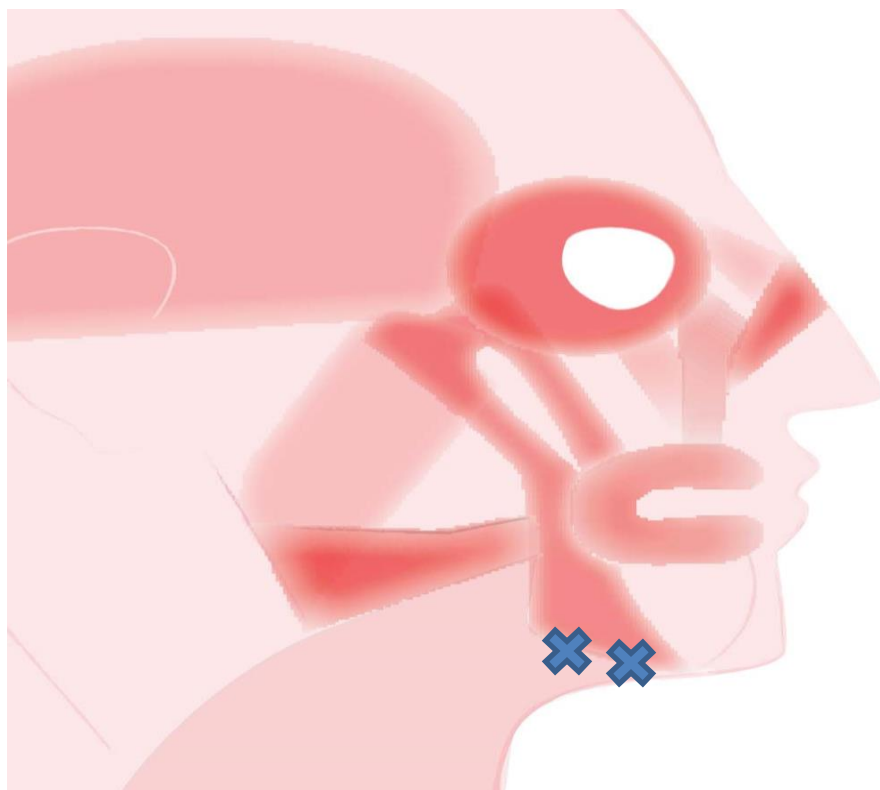
# Mouth Frown

- 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!



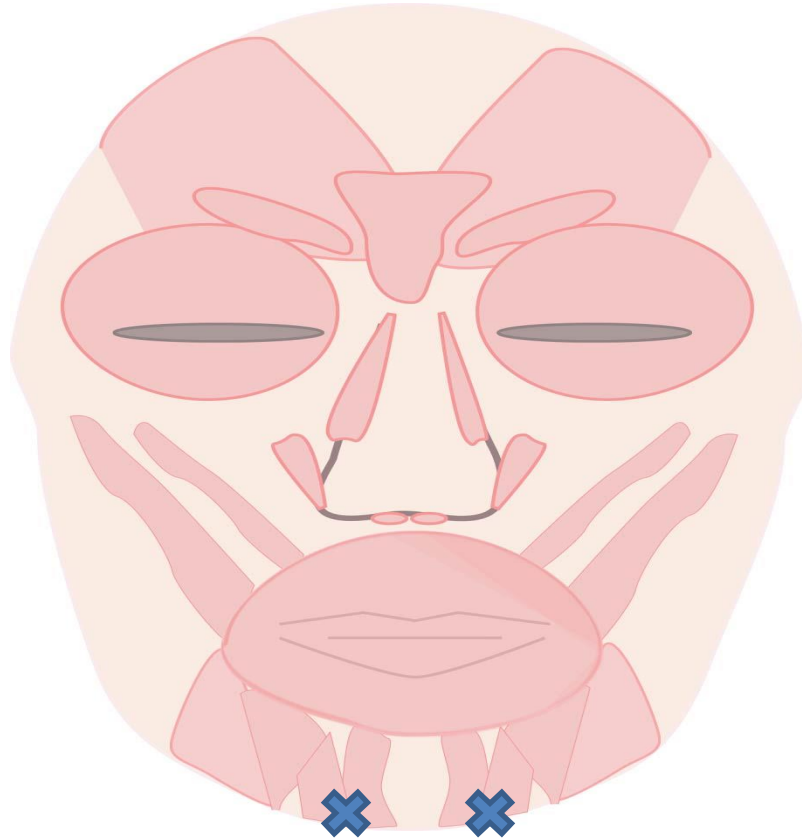
# Depressor Angular Oris

- 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





# Mental Crease

- Complications
  - Difficulty speaking, drooling, ability to make blowing or sucking motion
  - asymetry

# 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

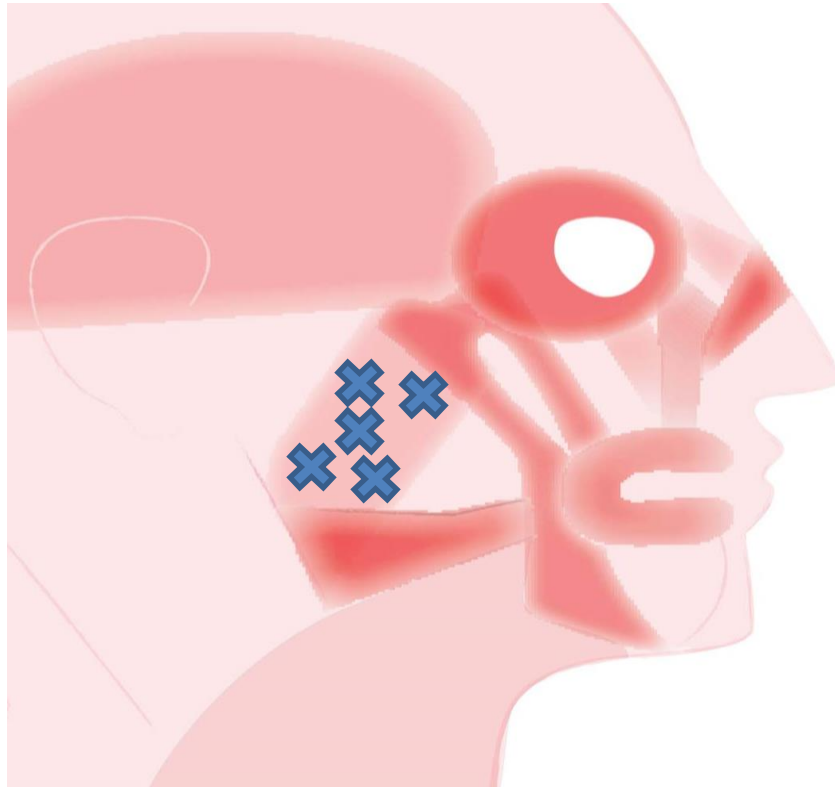
- Von Linderger → 100 units Dysport per side  
→ decrease masseter size by  $\frac{1}{2}$
- Park et al 25-30 unit botox per side
  - Average decrease masseter thickness 1.5 – 2.9 mm → approx 20% decrease
  - Verified by US & CT
  - Average duration 6-7 months

# 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

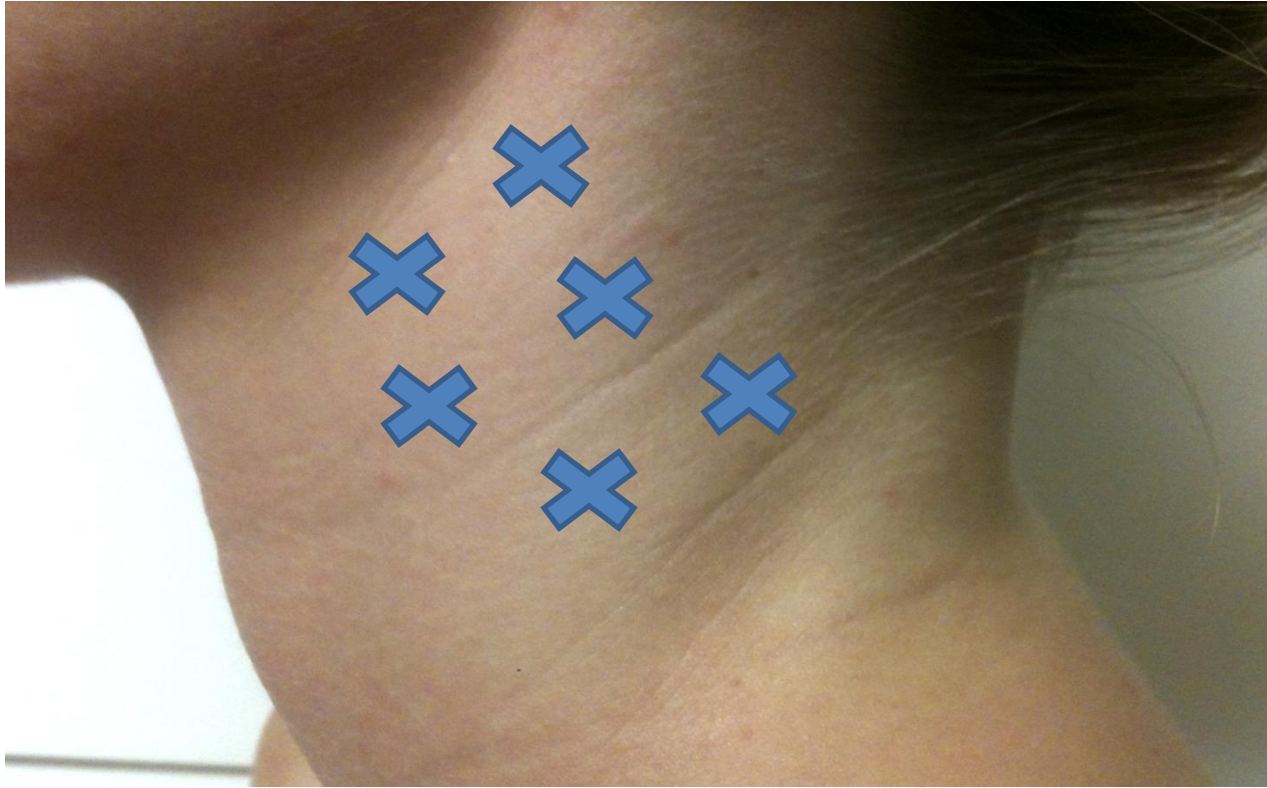




**FMX**

# Necklace Lines

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



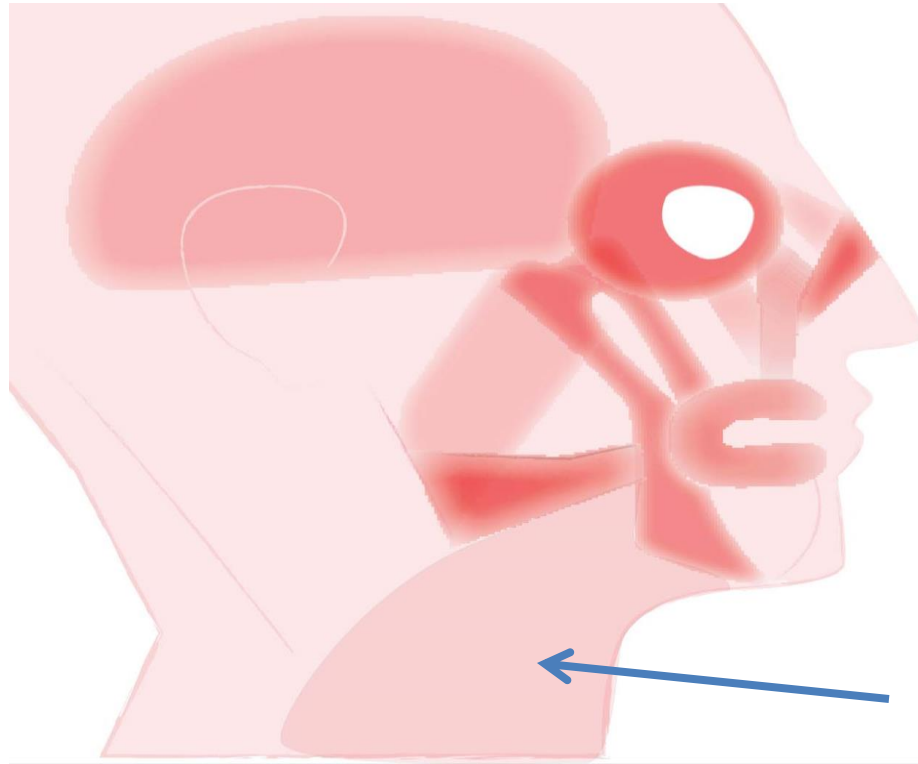
# Necklace Lines

- 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 → 6-9 mos
- Expensive
- Up to 100 units total

# Hyperhydrosis

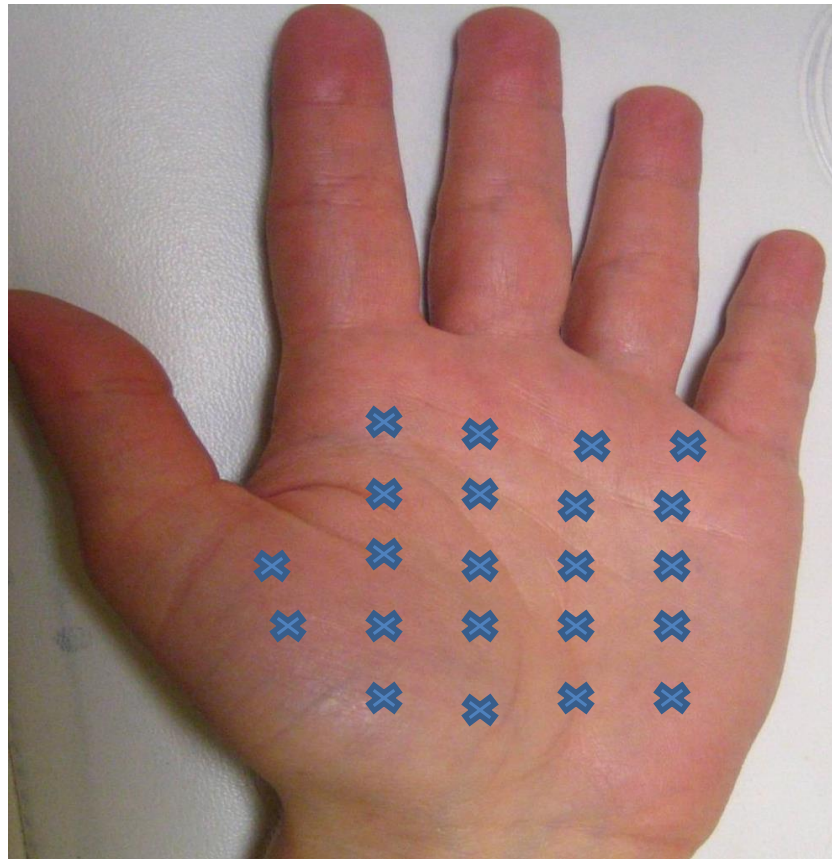
- Axilla
  - Starch Iodine test a must
  - Identify most active glands
  - How to perform Starch Iodine test
    - Paint affected area with Iodine
    - Sprinkle corn starch evenly
    - Dark areas is most active

# 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



THANK YOU !

Interested in More CME on this topic?

**[aafp.org/fmx-procedural](https://aafp.org/fmx-procedural)**