Surgical Danger Zones of the Head & Neck
Howard Steinman, M.D.
Irving, TX

Disclaimers
No Conflicts of Interest

Anatomic Facial Danger Zones
- Vessels - Fillers
- Muscles - Botulinum
- Nerves - Surgery

Filler Danger Zones
Vascular occlusion / compression
- Glabella
  supratrochlear artery
- Lip
  labial artery
- NLF
  angular artery

Vascular Occlusion / Compression
- Can occur with any type of filler
Glabella

- Occlusion or compression of supratrochlear arteries
- "watershed" region
- minimal collateral circulation

Inject above or below muscle!

14 hours after injection of HA filler in the glabella

Nasolabial Fold – Angular Artery


Cohen J: J Drugs Dermatol 2009;8:13
37 y/o woman, 4 days s/p injection of HA gel

Vascular occlusion of the terminal branch of the angular artery (white arrow).

Labial Artery
Occlusion Treatment Protocol

- Massage / tap area
- Hot/warm water compresses
- If used hyaluronic acid filler, inject hyaluronidase


Nitroglycerine paste under occlusion -12 h on and 12 h off

Low molecular weight heparin SC -up to 14 days

Diligent wound care and observation


Botulinum Danger Zones

- Lateral orbital rim
- Zygoma
- Oral commissure
- Chin
- Neck

Danger Zone Considerations

- Dosage
- Volume
- Diffusion

Dermatol Surg 2007;33:S37–S43
Crow’s Feet
- Stay 1 cm lateral to orbital rim following curve or rim
- 10 – 15 units per side
- Inject 2.5 to 5 U per site

BoTnA: Crow’s Feet
- Diplopia
- Ectropion
- Epicanthal fold distortion

Lateral rectus muscle
Zygoma

- Do not go too low into zygoma (<0.5 – 1.0 cm)

Avoid affecting lip elevator muscles
Botulimum Danger Zones
Central & Lateral Chin

Inject Depressor Anguli Oris to Raise Oral Commissure
Superior portion largely aponeurotic

Much of the DAO Overlies Depressor Labii
Depressor Anguli Oris

Superior portion largely aponeurotic

Inject just lateral to a line drawn through the NLF to jawline

Mentalis

Consensus Recommendations:
Treating Dimpled Chin

Injection sites and dosage of botulinum toxin type A for dimpled chin.
Plast Reconstr Surg 2004;114(6 suppl):1S-22S
BTX Injection of Platysma

Pre BTX injection

2 weeks post BTX injection

Platysma Muscle

Extremely Thin

Danger Zone Considerations

- Placement
- Dosage
- Volume
- Diffusion

Botox: Platysmal Bands Complications

- Dysphagia: muscles of deglutition
- Neck weakness: “floppy neck syndrome”
- Dry mouth: salivary glands
- Voice change

Nerves

Motor

- Temporal branch facial nerve
- Marginal mandibular nerve
- Accessory nerve

Facial Danger Zones: Avoiding Nerve Injury in Facial Plastic Surgery
Brooke R. Seckel
Quality Medical Publishing, Inc.
Nerves

**Temporal Branch of VII**

- Located beneath superficial temporal fascia

**Temporal Branch of VII**

1. Line from 0.5 cm below tragus to 2.0 cm above lateral eyebrow. Draw second line on zygoma to lateral orbital rim. Connect two lines
2. Draw line from tragus to lateral canthus. Draw second line from tragus to highest forehead crease (some say frontal hairline)
Marginal Mandibular N. VII

- Beneath SMAS
- Very superficial
- Paresis of lip depressors

ENT Training:

Two cm below entire mandibular rim

Marginal Mandibular N. VII

Draw line 2.0 cm lateral to oral commissure
Drop line from this point to mid-mandible
Draw circle 2 cm around this point

ENT Danger Zone
Spinal Accessory Nerve (XI)

NOT covered by platysma (SMAS)

XI Nerve

Posterior Neck Triangle

SAN Damage

Symptoms
- Shoulder pain (the most common presenting symptom)
  - can radiate to the neck, upper back & ipsilateral arm.

SAN Damage

Signs
- Diminished strength when raising arm overhead putting weight on shoulder
- Muscle atrophy
- Winged Scapula

Winged Scapula

Erb’s Point

- SAN at greatest risk
- traverses posterior border of sternocleidomastoid muscle
- into posterior triangle of neck

Know The Danger Zones

DANGER
ENTER WITH CAUTION
Thank You