Danger Zone Anatomy

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Conflict of interest

Clinical trials as principal investigator

• Skin closure device study: Zipline incision approximation vs. suture study: A multi-site prospective randomized study designed to evaluate user preferences for the Zipline 3 system vs. conventional suturing

• Laser treatment of post surgical scars: Scar analysis of post surgical wounds treated with an ablative fractional CO2 laser: A prospective randomized study designed to evaluate the optimal treatment interval post surgery as well as the histological and genetic changes that occur in scar remodeling (IRB pending)
Trials Co-Investigator

• Oncologic Trials:
  • A prospective observational study of treatment patterns and effectiveness and safety outcomes in advanced basal cell carcinoma and basal cell carcinoma nevus syndrome patients
  • In Situ, Autologous Therapeutic Vaccination Against Solid Cancers with Intratumoral Hiltonol® (Poly-ICLC)
  • The Effect of BRAF Inhibition With Vemurafenib On The Innate and Adaptive Immune Systems in Patients With Unresectable stage III or Stage IV Melanoma Expressing a V600 BRAF Mutation
  • Phase Ib/2 Multicenter, Open Label Trial to Evaluate the Safety and Efficacy of Talimogene Laherparepvec and Ipilimumab Compared to Ipilimumab Alone in Subjects with Previously Untreated
Facial Danger Zones

Dr. Brooke R. Seckel, M.D
Key Surface Markings
Sensory Nerves
Sensory Nerve Injury

- Trigeminal nerve (V)
  - Sup. Supraorbital /Supratrochlear most prone to nerve injury
    - Brow lift, post-mohs reconstruction
  - Mental nerve is also common
    - Post chin implant
  - Infraorbital not common
    - Deep midface lift
- Cervical plexus
  - Greater auricular nerve most prone to nerve injury
    - Post SMAS lift
Erb’s Point
Motor Nerve Injury

• Innervates all muscles of facial expression
• If cut anterior to the line drawn from the lateral canthus may regenerate
• Exits parotid and travels beneath the SMAS with exception
Motor Nerve Injury
Temporal nerve (VII) at zygomatic arch
Marginal Mandibular Nerve

- Emerging: inferior border of parotid gland
- Runs: 1.5 cm below inferior angle of mandible
- Superficial to facial artery
- Poor anastomosis with buccal and mental nerve
Summary: Motor Nerve Danger Zones

- Marginal mandibular nerve (VII) at anterior border of Masseter muscle at rim of jaw
- Temporal nerve (VII) at zygomatic arch
- Spinal Accessory nerve (XI) in posterior triangle of neck
Right Marginal Mandibular Nerve (VII)
lateral & upward pull on the opposite side of the mouth
& ipsilateral grimace & drool

Orbicularis oris
Depressor muscles
Left Temporal Nerve (VII) cannot elevate brow, open eye-field defect
Left Spinal Accessory Nerve (XI)
Erb’s Point: Shoulder Drop

Trapezius muscle
Anatomy: Parotid Duct
Anatomy: Parotid Duct
Anatomy: Eyelid Fat Pads
Arteries of the Face and Scalp

- External Carotid Artery
  - Facial artery
  - Labial arteries
  - Angular artery
  - Superficial temporal artery
  - Occipital artery
  - Transverse facial
Arteries of the Face and Scalp

- Internal Carotid Artery
  - Ophthalmic artery
  - Supraorbital artery
  - Supratrochlear artery
    *supplies forehead flap
  - Dorsal nasal artery
    *supplies dorsal nasal flap
ICA to ECA

Superior view
- Medial palpebral artery
- Lateral palpebral artery
- Lacrimal gland
- Supraorbital artery
- Zygomatic branches
- Posterior ciliary arteries
- Muscular branch
- Lacrimal artery
- Central retinal artery

Superficial temporal artery
- Anterior branch
- Parietal branch
- Zygomatico-orbital artery
- Angular artery
- Transverse facial artery
- Superior labial artery
- Facial artery
- Inferior labial artery

Supratrochlear artery
- Supraorbital artery
- Dorsal nasal artery
- Anterior ethmoidal artery
- Infraorbital artery
- Buccal artery
- Mental artery
Adverse Events update
Adverse Events update

Figure 1. Injection Site and Fundus Photograph

Figure 2. Diffusion-Weighted Magnetic Resonance Image of Brain and Visual Field

A. Diffusion-weighted magnetic resonance imaging of the brain demonstrated hyperintensity in the territory of the posterior, middle, and anterior cerebral artery, compatible with acute infarction. B. Visual field examination disclosed a left hemianopsia in the left eye due to right parietal and occipital lobe infarction.
FIGURE 1. Ischemic changes seen in the cornea of the right eye and blackish red appearance of nasal skin injected with the filler.

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FIGURE 3. Follow-up computed tomography taken 27 hours after intravenous tPA showed hemorrhagic transformation in the previous infarcted area (arrow) and midline shifting (dotted arrow).

FIGURE 2. A. Right ophthalmic artery occlusion observed (arrow) on brain magnetic resonance imaging at the time of admission. B. Noticeable reduction of the perfusion value in the right frontal and parietal regions (arrow) seen on perfusion magnetic resonance imaging at the time of admission.
Anatomy of the Lip

- Verminion
- Labial artery
- Orbicularis oris muscle
- Epidermis
- Hair follicle
- Subcutaneous tissue
- Sweat gland
- Salivary gland

Orbicularis oris muscle
Adverse Events update

- Blindness or stroke may occur when there is sufficient pressure and retrograde arterial displacement of injected material from the peripheral vessels into the ocular circulation.
- The anatomic sites most commonly associated with visual complications include the nose, glabella, and nasolabial fold (NLF).
- Branches of the internal carotid system (e.g. supratrochlear or dorsal nasal artery) to the ophthalmic artery, which further branches into the retinal artery.
- The signature feature of ocular embolism is immediate excruciating ocular pain and visual impairment.
  - Urgent ophthalmology Treatment of embolic blindness is usually unsuccessful; thus, prevention is of critical importance.
Reported case of blindness

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   Related citations
Reported case of blindness

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Reported case of blindness

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Reported case of blindness

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   Falzon K, Guerin MB, Fulcher T.
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