Rhytidectomy

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Grand Rounds Presentation
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Overview

- **Anatomy**
  - Platysma
  - SMAS
  - Facial nerve
  - Facial retaining ligaments

- **Techniques**
  - SMAS lift
  - Deep-plane lift
  - Composite lift
  - Subperiosteal lift

- **Nasolabial fold**

- **Non-surgical facelift**
Anatomy

- **Platysma muscle**
  - from the lower cheek to the level of the second rib
  - Three variations of the anterior boarders of the right and left platysma muscle
    - **Type 1**: separated in the suprahyoid region and interlacing 1 to 2 cm from the chin
    - **Type 2**: intermingled at the level of the thyroid cartilage
    - **Type 3**: remained completely separated along the entire length
Laxity in the platysma in the anterior neck accounts for the paramedian vertical bands that extend from the mentum to the mid or lower neck with aging.

Ptosis of the platysma caused by gravitation gives the appearance of the broken jawline or “jowling”
Anatomy

- Superficial musculo-aponeurotic system (SMAS)
  - first described by Mitz and Peyronie in 1976
  - distinct fibromuscular layer
  - extends from the platysma to the galea
  - deep to the subdermal plexus and superficial to the major vessels and nerves
  - has fibrous septa perpendicular to skin
  - distributes and transmits forces of expression
- **Scalp**
  - galea
- **Upper face**
  - continuous with frontalis and orbicularis oculi
- **Temporal region**
  - temporoparietal fascia (superficial temporal fascia)
- **Parotid region**
  - dense fibrous layer overlying parotid gland
- **Cheek**
  - thin layer invests superficial mimetic muscles
- **Lower face**
  - continuous with platysma
Nasolabial fold
SMAS

- Areas of face that SMAS tightly adheres to underlying tissue
  - supraorbital rim
  - lateral orbital rim
  - zygomatic arch
  - pretragal
  - mastoid
- SMAS is stretched superiorly and inferiorly
- Relays contractions of facial muscles along the longitudinal network parallel to skin
- Also transmits in a perpendicular direction toward the facial skin through the fibrous septa
- Facial nerve
  - Protected by superficial lobe of the parotid gland
  - travels beneath the parotidomasseteric fascia
  - Innervates superficial facial mimetic muscles from deeper surface
Frontal branch of facial nerve
Blood supply
Patient selection

- Address aging of the lower 2/3 of the face
  - Jowling
  - Ptosis of submentum and anterior neck
  - Increased redundancy of nasolabial fold
  - “malar crescent”

- Excessive skin

- Fine lines and deep wrinkles are minimally improved with facelift
Ideal patient

- Facial aging characteristics
  - Gravitational migration of tissues
  - Increasing prominence of NLFs
  - Downward-drooping jowls
  - Laxity of submental and anterior neck tissues
    - Elastic skin
    - Distinct bony landmarks
    - Little subcutaneous fat
    - Good bone structure (hyoid)
Anatomic sites not addressed by the face lift

- Forehead
  - Ptosis and rhytids
- Eyelids
  - Fat herniation
  - Dermatocholasis
- Midface +/-
- Perioral rhytids

Adjunctive techniques
Techniques

- Subcutaneous lift
- SMAS lift
- Deep-plane lift
- Composite lift
- Subperiosteal lift
SMAS lift

- **Incision**
  - “in-the-hairline” (87%) vs. “pre-hairline” (13%)
  - “sideburn” incision (53%)
  - Pretragal (43%) vs. retrotragal (57%)
  - Postauricular “in-the-hair” (80%) vs. “at the hairline” (20%)
SMAS lift

- Flap elevation
  - Start at peri-auricular area
  - Temple: subfollicular/subcutaneous
  - Parotid: subcutaneous to a line from lateral canthus to angle of mandible
  - Posterior scalp: subfollicular/superficial subcutaneous
  - Neck: over SCM and superficial to platysma
SMAS lift

- **SMAS plication**
  - sutures that fold the SMAS onto itself to shorten it
  - pulled in posterosuperior direction
  - The first suture is applied at the jaw line and is anchored at the mastoid periosteum, or deep tissues in the pre-auricular area
- SMAS imbrication
  - Incise SMAS from malar eminence to angel of mandible
  - **Upper 1/3 incision**
    - Sub-SMAS dissection for 2cm
  - **Lower 2/3 incision**
    - Sub-SMAS / sub-platysma dissection to jowl
    - Superficial to masseteric fascia
Deep-plane lift

- Hamra in 1990
- Improve the nasolabial fold area
- Descent of the cheek fat is responsible for the increasing redundancy of the nasolabial fold with aging
- Cheek fat has to be lifted from the zygomaticus major and minor muscles
- Deep-plane facelift flap consists of skin, subcutaneous tissue, cheek fat and platysma
Deep-plane lift

- limited subcutaneous dissection approximately 2-3 cm in front of the tragus
- SMAS is incised and sub-SMAS dissection from malar eminence to jawline
- changes to the level superficial to the zygomaticus musculature when the lateral edge of the zygomaticus major muscle is reached
- extends medial to the nasolabial fold
Hamra (1990)
- Reported 403 patients who had deep-plane lift in 1990
- 4 patients with post-op hematoma of the neck requiring evacuation in the operating room
- 2 patients had pseudoparesis of the lower lip
- 2 patients had weakness of the upper lip
- All of them recovered within 6 weeks
- Advantage:
  - better address the nasolabial fold
  - traps the entire subcutaneous vascular system to give the result flap a more vigorous circulation
  - thicker flap also gives a greater tensile strength
Hamra (1992)

- based on the deep-plane rhytidectomy
- intended to improve the inferiolateral descent of the orbicularis oculi
- composite face lift flap consists of orbicularis, cheek fat and platysma en bloc
Composite lift

- Malar crescent
- Cheek depression
- Ptotic platysma muscle
- Ptotic fat
Composite lift
Composite lift
Composite lift

- Elevates the orbicularis off the malar eminence through the lower blepherooplasty incision
- Deep-plane lift
- Communication is made between the facelift flap and the previously made blepherooplasty skin-muscle flap
- Facelift flap suspend in a posterosuperior direction
- Orbicularis oculi suspend in a superomedial direction to the periosteum of the lateral orbital rim
Hamra (1992)
- 167 patients
- no nerve injury
- one patient had neck hematoma
- malar tenderness and edema may persist for several months
- repositioning in this technique must be done with extraordinary tension
Subperiosteal lift

- first published by Psillakis in 1987
- revised by Ramirez in 1990
- superior displacement of the muscles

- approaches:
  - bicoronal, transtemporal, transoral, transorbital
  - open vs. endoscope

- Advantage:
  - Tension remains in deeper tissue and less tension on skin
  - Better preserved blood supply to the flap
  - Better correction of mid-face
Subperiosteal lift

- Disadvantage:
  - Increased horizontal width of the face
  - greater swelling and ecchymosis
  - Nerve injury
    - Infraorbital nerve
    - Frontal branch of facial nerve injury
      - 105 patients by Psillakis
      - 4 out of their first 20 patients had temporary paralysis of the frontal branch
Subperiosteal lift

Temporoparietal fascia (SMAS)

Superficial layer of deep temporal fascia

Deep layer of deep temporal fascia

Frontal branch of facial nerve
Subperiosteal lift

- Ramirez (1990)
  - 28 patients
  - bicoronal incision
  - completely detach soft tissues from the zygomatic arch
  - no patient with nerve injury
  - facial edema which can take up to 6 weeks to resolve
  - mask effect which improves gradually over a 4-month period
SMAS lift vs. deep-plane lift

- Becker and Bassichis (2003)
  - 4 plastic surgeons reviewing pre- and post-op photos of 20 patients who underwent SMAS lift and 20 patients who had deep-plane lift.
  - Grade the nasolabial fold, jowl, and cheek areas from 1 to 5 (1=poor, 5=excellent).
  - Overall patients had SMAS lift had higher score than those had deep-plane lift.
SMAS vs. deep-plane lift

- Kamer and Frankel (1998)
  - Retrospective chart review
  - Compare rate of patients undergoing a tuck procedure after SMAS lift to that of patients after deep-plane lift
  - The tuck rate after SMAS lift is significantly higher than after deep-plane lift
  - Suggest deep-plane lift is more effective
National plastic surgery survey

  - Surveys to 3800 members of American Society of Plastic and Reconstructive Surgeons
  - 15% return rate
- Skin-only procedure (15%)
- SMAS lift (74%)
- Composite or deep-plane lift (9%)
- Subperiosteal lift (2%)
- Safety and training experience are the main reasons for choosing technique
- Procedures most talked about at ASPRS annual meeting are those least performed
Nasolabial fold

- Gosain et. Al (1996) – MRI study comparing the NLF in the young vs. old
  - progressive thickening and ptosis of the lower cheek/malar fat and skin
  - not the muscular plan – i.e. SMAS
- 53% from survey perform more extensive, more aggressive face lift
- 25% believe that nothing works really well for this problem
- Other alternatives to address the nasolabial fold
  - direct excision
  - defat the folds
  - fat graft the folds
  - place alloplastic implant (ex. Gore-tex)
Complications

- Hematoma (6-11%)
- Skin Slough (1.8%)
- Ear lobe deformities
- Infections (0.1%)
- Widening of scars (2.3%)
- Hairline changes
- Nerve Injury (0.1%)
Thermage

- non-surgical facelift
- non-ablative radiofrequency
- combines radiofrequency heating with cryogen cooling
- Immediate collagen contraction and long-term collagen remodeling
- approved by FDA in 2002 for treatment of facial rhytides.
Thermage

- 86 patients after one treatment to periorbital area in 6 month follow up
  - 50% (41/82) patients satisfy with the wrinkle reduction
  - Objective photographic analysis showed that 61.5% (40/65) of eyebrows were lifted by at least 0.5 mm
  - 2nd-degree burn incidence was 0.36%
Thermage

- treatment takes from few minutes to two hours depend on the area
- no down time
- only need one Thermage treatment to obtain the full benefits
- results appear gradually in 2 to 6 months
- Thermage procedures cost about $2,000; facelifts run between $7,000 and $15,000.
- the system costs between $30,000 and $40,000 to purchase.