Management of the Aging Upper Face

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Introduction

- Upper third of face-brow, eyelids, orbit
- More recently extended to midface
  - Tear-trough deformity, nasal-jugal line
- Evaluate entire region
  - Useful to divide surgical management
Introduction

- Upper eyelid techniques constant, new techniques for brow
- Lower eyelid completely reevaluated
- Anatomic discussion, aesthetic considerations, techniques
Brow Anatomy

- Frontal hairline to glabella
- Three compartments
SCALP

Layers—skin, subcutaneous tissues, aponeurosis, loose areolar tissue, periosteum, SCALP
Brow Anatomy

- Galea thins laterally - incorporated into STF(TPF)
- Anatomic equivalent of SMAS,
  - ? Connection to lower face
Temporal Fascia

- Supra-zygomatic fascia
  - STF, DTF splits into SDTF, DDTF at superior helix
  - SDTF inserts lateral zygoma
  - DDTF inserts medial zygoma
Temporal Fascia

- Deep to SDTF lies superficial temporal fat pad
- Deep to DDTF lies temporalis muscle
Lateral Brow-Facial Nerve

- Inferior to zygoma facial nerve deep to SMAS, deep to OO
- Over zygoma close to periosteum, elevate SDTF
Lateral Brow-Facial Nerve

- Superiorly b/t STF and SDTF, central compartment deep to frontalis
- Elevated SDTF sup. to zygoma protects nerve
Central Brow

Muscles of facial expression

- Frontalis, occipital, corrugator supercillius, procerus
Central Brow

- Frontalis only elevator, horizontal furrows
- Corrugator, procerus, orbicularis all depress
  - Corrugator-vertical glabellar lines
  - Procerus-horizontal glabellar lines
  - Orbicularis-lateral crows feet
Central brow

Neurovascular supply

- Supratrochlear, supraorbital branches of V1
- Emerge orbit pierce periosteum ant orbital rim, deep to orbicularis, over corrugator, superficial to frontalis
Eyelid Anatomy

- Orbicularis oculi transition brow to upper eyelid
  - Orbital, palpebral, divided pretarsal, preseptal
- Orbital septum anterior/posterior lamella
- Anterior lamella-skin, orbicularis
- Posterior lamella-conjunctiva, upper/lower elevators/retractors
- Middle lamella septum/tarsus
Eyelid Anatomy
**Eyelid Anatomy-Septum/Tarsus**

- **Arcus marginalis** - confluence of periosteum and periorbita, origin of orbital septum
- **Tarsus**
  - 8-10 mm upper, 4-5 mm lower
Eyelid Anatomy-orbital Fat

- Preaponeurotic fat, deep to septum
  - Landmark for depressors, elevators
  - Upper lid two compartments
    - Medial, middle (largest)
    - Lateral occupied by lacrimal gland
  - Lower lid three
    - Medial, central, lateral
    - Inf. Oblique separates medial/central
Orbital Fat
Mid-face/SOOF Anatomy

- Lower eyelid to horizontal line through oral commissure
- Mimetic musculature
  - OO, LLSAN, LLS, LAO, ZMa, ZMi
- Originate from periosteal insertions over maxilla/zygoma
Mid-face/SOOF Anatomy

- SOOF-lower orbital rim immediately deep to OO, surrounds bodies of LLSAN, LLS, ZMa, Zmi
- Nasolabial crease muscles pierce SOOF to insert on dermis
- SOOF in continuity with SMAS
Analysis of Brow and Upper Eyelid Aesthetic Unit

Indications for intervention
- Decreased visual acuity, visual field deficit, asthenopsia, eyelid reconstruction, cosmesis

History

PE essentials
- VA, Bell’s phenomenon, lagophthalmos, VII nerve, corneal sensitivity, extraocular muscle function, lid ptosis, lacrimal gland function, photodocumentation
Ideal Aesthetic Position of Brow

- Begins medially at vertical line drawn perpendicular through alar base
- Terminates laterally at oblique line drawn through lateral canthus and alar base
- Medial and lateral brow at same level
- Medial brow club shaped, tapers laterally
- Apex on vertical line through lateral limbus
- Arches above orbital rim in women and at brow in men
Ideal Brow
Brow Aesthetics

Hyperkinetic/dynamic facial lines vs. wrinkles

Dynamic lines - BOTOX

Wrinkles surgical or skin resurfacing

Chronic corrugator hyperfunction/hypertrophy - not wholly responsive to BOTOX

Evaluate in relaxed position
  • Chronically elevated, gentle downward pressure

Position of hairline, anticipation of baldness
Upper Eyelid Aesthetics

- Excess skin, muscle, pseudoherniation of fat, ptotic lacrimal gland
- Blepharochalasis/Dermatochalasis
- Note upper eyelid fat/ accentuated by downward gaze and gentle pressure
- Skin texture, pigmentation, palpebral fissure location, skin lesions, lacrimal gland location
Operative Decisions and Techniques

- Upper eyelid surgery relatively constant
- Brow approaches
  - Internal browpexy, direct browpexy, midforehead, pretrichial, coronal, endoscopic.
Internal browpexy

- Upper blepharoplasty incision
- Dissection extended superiorly over superior orbital rim
- Laxity in lateral third of brow only
Direct Incision

- Lower incision parallel to and just at sup. border brow hair follicles
- Prevent alopecia, decreased scar camouflage
- Elderly patients, deep furrows, functional elevation,
Direct Incision

**Advantages**
- Precise brow elevation, minimal edema, ecchymoses

**Disadvantages**
- Incision difficult to camouflage,
- Depressor muscles not addressed/brow decent
- Distort existing forehead furrows
Mid-brow

- Existing horizontal furrow
- Subcutaneous dissection to avoid NV bundle
- Suspension of upper OO to upper incision periosteum
- Older men, deep furrows, male pattern baldness

Advantages
- Selective skin excision, precise elevation

Disadvantages
- Scar
Pretrichial

- Soft hairs at anterior hairline
- Beveled posterior to anterior
- Subgaleal dissection, may transect corrugator/procerus
- Excise skin and close
Pretrichial

- Females with thick hair, esp. if worn over frontal hairline

- Advantages
  - Good scar camouflage
  - Direct access to forehead muscles
  - Does not elevate and may lower frontal hairline

- Disadvantages
  - Scalp anesthesia posterior to incision
  - Noticeable scar if not precise, more challenging
Pretrichial Incision
Operative Decisions and Techniques

Coronal

- Parallels frontal hairline 5-7 cm posterior
- Dissection is same as pretrichial
- ?“Gold standard” females except if high frontal hairline
- Not ideal for males with baldness

Advantages
- Hidden incision
- Good exposure of forehead muscles

Disadvantages
- Elevated frontal hairline
- Anesthesia posterior
Endoscopic Brow Lift

**Technique**

- 3-4 incisions immediately post. to frontal hairline
- Subgaleal, more commonly subperiosteal
- Elevate entire scalp occipital insertion to brow rim
  - Scalp repositioning, no skin excision
Endoscopic Brow Lift

- Lateral and medial compartments elevated, elevate frontal branch
- Incise periosteum at superior rim
- Myectomy corrugator and procerus, care for NV bundles
- Fix scalp in new position
Endoscopic Brow Lift

Fixation method controversial
- Titanium, absorbable screws, suture, bone tunnels
- Rabbit periosteal refixation 8-12 weeks
- Reports of recurrent ptosis when removed at 2 weeks

Advantages
- Scar camouflage

Disadvantages
- Special instruments
- Technical challenge
- Longevity
  - 1-2 yr studies favorable, longer pending
Analysis of Lower Eyelid and Midface Aesthetic Unit

Traditionally thought due solely to weakening orbital septum, fat pseudoherniation

Transcutaneous, transconjunctival fat excision
Lower Lid Blepharoplasty
Lower Eyelid and Midface

**Youth**

- No signs of underlying bone
- Contour eyelid cheek complex single convex line
- Skin, OO, orbital fat one unit
- No underlying bony landmarks evident
Lower Eyelid and Midface

Aging
- Underlying landmarks separate and obvious
- Orbital fat pseudoherniation bulge above fixed orbital rim
- Ptotic midfacial fat
- Double convexity deformity-tear trough/nasal-jugal line deformity
Lower Eyelid and Midface

Conventional blepharoplasty

- Superior convexity softened
- Nothing to correct OO or malar fat pad
- Time leads to hollowing/skeletonized appearance
Other Lower Lid Considerations

- Location and quantity of fat
  - Best upward gaze

- Lateral canthal angle, rounding of lids, scleral show

- Horizontal laxity/tone of lid
  - Distraction test
    - 7 mm positive for horizontal laxity
  - Snap test
    - No spontaneous return prior to 1st blink positive for diminished tone
Operative Decisions and Techniques

Transcutaneous/transconjunctival

- **Transcutaneous**
  - Skin and muscle excised
  - Increased ectropion - vertical lid deficiency, middle lamellar scaring to lower lid retractors

- **Transconjunctival**
  - Decrease risk of ectropion
  - Combine with skin pinch or laser/chemical resurfacing

Conservatism, minimize damage to orbital septum

Lid laxity then plicate or lysis and reattachment
Nasal-jugal Line Management

Two concepts

- Fat sparing lower lid blepharoplasty
- SOOF repositioning
  - Camouflage inferior orbital rim
  - Improve nasolabial angle and cheek fat pad
Fat Sparing Blepharoplasty

- Return orbital fat and repair septum
- Fat repositioning filling periorbital depression
  - More popular
  - Transconjunctival/transcutaneous
  - Preseptal plane dissection
  - Incise arcus marginalis
  - Transpose fat over orbital rim
Fat Repositioning

Orbicularis oculi muscle
Septum orbitale
Arcus marginalis
Fat Repositioning
SOOF Repositioning

- **Subperiosteal**
  - Periosteum platform to elevate malar soft tissue
  - Zygomaticus muscles advanced upward, increased intermalar distance
  - ? Canthotomy and canthoplasty

- **Supraperiosteal/suborbicularis**
  - Several slight modifications depending on author

Fig. 2. A subperiosteal plane elevates all of the tissues of the midface including the periosteum.
SOOF Repositioning
Figure 3  (A) Cross-section of the ptotic "double-bulge" cheek. Note the depression over the orbital rim formed as the SOOF-mimetic muscle-malar fat complex descends inferiorly. (B) The MVSML. Through a transconjunctival, preseptal approach, the periorbita at the lower aspect of the inferior orbital rim is incised, and a subperiosteal dissection above the infraorbital nerve is performed. This is subsequently connected to a subperiosteal dissection performed via a gingivobuccal sulcus incision (not shown), and the cheek flap is elevated superiorly. (C) The completed MVSML. The midfacial tissues have been advanced superiorly and the periorbita imbricated, correcting the suborbital trough. Note that pseudoherniated orbital fat may also be conservatively resected at the same time.
Summary

- Gravity constant changes on facial appearance
- Our evaluation continues to evolve as well as the techniques we use
- Brow and upper eyelid
- Lower eyelid and midface
Case #1