



Rejuvenation of the Aging Forehead

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Introduction

- ❖ First forehead lift performed by Luxor in 1906
 - Not reported in literature until 1931
- ❖ Uncommon procedure until 1970's until several large series by Brennan and Pitanguy described importance of forehead with relation to face



Introduction, continued

- ❖ Brennan and Pitanguy
 - Described aging forehead
 - ◆ Ptosis, beginning in lateral eyebrow
 - ◆ Rhytids
 - forehead, temporal and glabellar
 - ◆ Bony structures
 - supraorbital rim and frontal bone



Forehead in Youth

- ❖ Minimal laxity
- ❖ No rhytids
- ❖ Hairline irregular
- ❖ Brow elevated
- ❖ No fatty deposits



Eyebrow Position

❖ Brennan's "Ideal" Eyebrow

– Women

- ◆ Club shaped medially in vertical line with nasal ala
- ◆ Tapers laterally to line defined from ala through lateral canthus
- ◆ Maximal height over lateral limbus

– Men

- ◆ Lies over supraorbital rim



Anatomy

❖ Bony Structures

- Primarily defined by supraorbital rims and frontal bone

- ◆ Supraorbital rim more prominent in males, particularly laterally

- “masculinization” when prominent laterally in females

- ◆ Frontal bones more prominent in males

- “frontal bossing”



Anatomy, continued

❖ Blood supply

- Internal carotid artery

 - ◆ supraorbital and supratrochlear aa via ophthalmic

- External carotid artery

 - ◆ Superficial temporal aa

 - ◆ Zygomaticotemporal aa

 - often accompanies frontal branch



Anatomy, continued

❖ Sensation

– Lateral

- ◆ Lacrimal (V1), zygomaticofacial (V2) and zygomaticotemporal (V3)

– Medial

- ◆ Supraorbital and supratrochlear (both V1)
 - identify supraorbital notch preoperatively



Anatomy, continued

❖ Scalp

- Skin, including epidermis and dermis
- Subcutaneous fatty layer
- Galea, which encloses frontalis m
 - ◆ posterior galea to septum and periosteum
 - ◆ anterior galea to dermal layer
- Subgaleal plane
- Periosteum



Rhytids

- ❖ Skin lines over active musculature
- ❖ Usually perpendicular to action of muscles
- ❖ More prominent in thin, elastic skin
- ❖ Common forehead rhytids:
 - Frontal
 - Temporal (Crow's feet)
 - Glabellar (Sam Donaldson)



Preoperative Assessment

- ❖ The single most important preoperative assessment is the goal of the patient, not the goal of the surgeon
- ❖ Intricate relationship between forehead, brow and eyes
 - patient usually unaware of forehead and brow contribution



Preoperative Assessment, cont.

❖ Ptosis

- Brow, forehead, temporal and glabellar ptosis
- Must differentiate between ptosis of brow and redundant eyelid skin, particularly in younger patient
- Patient must be in repose
 - ◆ most subconsciously elevate forehead when looking in mirror



Ptosis, continued

- ❖ Forehead ptosis
 - leads to forehead rhytids
- ❖ Glabellar ptosis
 - glabellar rhytids, vertical and horizontal
 - “droopy” nose with appearance of overrotated tip
- ❖ Temporal ptosis
 - lead to “Crow’s feet”



Anatomy, continued

❖ Frontalis muscle

- begins around forehead line between galea
- no bony insertion
- forehead rhytids

❖ Corrugator supercili muscle

- from nasal bones to supraorbital rim/frontalis
- draws brow medial/inferior
- vertical glabellar rhytids



Anatomy, continued

❖ Procerus muscle

- from nasal bones, lateral ala to frontalis and frontal bone
 - ◆ draws eyes down
 - ◆ forms horizontal glabellar rhytid

❖ Orbicularis oculi muscle

- “sphincter” of eye
- partially responsible for brow ptosis



Preoperative Assessment, cont

❖ Rhytids

- forehead
- glabellar (procerus versus corrugator)
- temporal
- extent of rhytids dictates extent of myoplasty to be performed



Preoperative Assessment, cont.

- ❖ Hairline pattern
 - height of hairline
 - extent of alopecia
 - direction of hairgrowth
 - ◆ inferiorly versus superiorly
 - must include eyebrow hair



Preoperative Assessment, cont.

❖ Skin type

- Thin skin

 - ◆ usually scar better

- Thick, oily skin

 - ◆ usually scar poorly

- Elastic skin

 - ◆ the more elastic the skin type, the better the scar



Preoperative Assessment, cont.

❖ Facial symmetry

- any facial asymmetry should be pointed out to patient preoperatively
- “minor” facial asymmetries give pt uniqueness, and should not be altered
- gross asymmetries draw the eye to unfavorable characteristics and should be corrected



Preoperative Assessment, cont.

❖ Bony contour

- supraorbital rims

 - ◆ masculinization in females

- frontal bones

 - ◆ “frontal bossing”

 - ◆ depressions and methylmethacrylate



Surgical Approaches

- ❖ “Open” Approaches
 - Forehead rhytectomy
 - ◆ bicoronal, trichophytic, pretrichial, bitemporal
 - Midforehead rhytectomy
 - ◆ Indirect browlift and midforehead rhytectomy
 - Direct Browplasty
 - Browpexy
- ❖ Involve excision of tissue



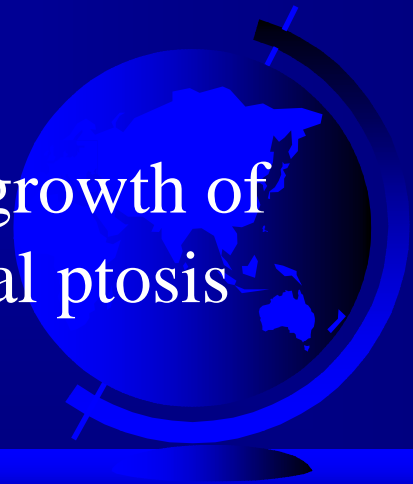
Surgical Approaches, cont.

- ❖ “Closed” Approach, i.e., endoscopic forehead lift
 - subperiosteal “suspension” of tissues instead of excision
 - no long term data



Direct Browlift

- ❖ First described by Passot in 1930
- ❖ Heavily refined in 1970's by Anderson and Goode
- ❖ An ellipse of skin is excised above brow and orbicularis is suspended
- ❖ Indications:
 - alopecia, high hairlines, superior hair growth of brows, ptosis limited to brow, unilateral ptosis



Direct Browlift, continued

- ❖ Contraindications and disadvantages
 - it will leave a scar
 - thick, oily skin usually has more prominent scarring
 - eyebrow hair that courses inferiorly makes scar more noticeable
 - possible requirement for scar revision including dermabrasion
 - cosmetics often required



Direct Browlift, continued

❖ Surgical technique

- a tapered elliptical incision above brow
- widest diameter over lateral limbus
- subcutaneous dissection
- orbicularis is suspended from anterior galea or from periosteum



Indirect Browlift

- ❖ Also known as midforehead browlift
- ❖ Similar to direct approach except incision is concealed in deep rhytid well above brow
- ❖ Indications, contraindications and technique similar to direct browplasty



Browpexy

- ❖ Performed through eyelid incision in conjunction with blepharoplasty
- ❖ Useful in younger patients with minimal brow ptosis
- ❖ Long term results disappointing
- ❖ Advantages: quick, simple, minimal morbidity, excellent cosmesis



Browpexy, continued

❖ Surgical Technique:

- supraorbital vessels identified
- eyelid incision made
- dissection over supraorbital rim below orbicularis
- suspend orbicularis from posterior galea or periosteum
- perform blepharoplasty last



Midforehead Rhytidectomy

- ❖ First described 1983 by Johnson and Waldman
- ❖ Essentially an extension of indirect browlift
- ❖ Advantages: allows myoplasty
- ❖ Indications: male pattern baldness, high forehead, deep rhytids
- ❖ Contraindications: thick skin, oily skin, minimal glabellar/forehead rhytids



Midforehead Rhytidectomy, cont.

❖ Surgical Technique

- Incision in deep forehead rhytid
- Dissection in subcutaneous plane
- Perform myoplasty
- Suspend orbicularis
- Excise excess skin



Bicoronal Forehead Lift

- ❖ The procedure of choice
- ❖ Best results for extensive forehead, glabellar and brow ptosis and rhytids
- ❖ Indications: generalized ptosis and rhytids, low or normal hairline, no alopecia
- ❖ Contraindications: alopecia, high hairline, asymmetrical ptosis



Bicoronal Forehead Lift, cont.

- ❖ Advantages: excellent cosmesis, lengthening of forehead (in patients with low forehead), long lasting results, wide exposure for myoplasty
- ❖ Disadvantages: occasional hematoma, incisional alopecia, hypesthesia posterior to incision



Bicoronal Forehead Lift, cont.

❖ Surgical Technique:

- Incision from helical root to helical root 5 cm posterior to hairline
- Keep incision parallel to hair follicles
- Dissection to 2 cm above supraorbital rims in subgaleal plane
- Perform myoplasty
- Redrape and excise redundant skin
- Allow 5 mm of “stretch”



Bilateral Temporal Lift

- ❖ Similar approach to bicoronal lift, but incision is not carried over top of head
- ❖ Advantages: well camouflaged incision, able to use with male pattern baldness in those unable to accept visible scar
- ❖ Disadvantages: unable to perform myoplasty in midline
- ❖ Indications: lateral brow hooding in MPB when unable to accept forehead scar



Pretrichial/Trichophytic Lift

- ❖ A modification of the bicoronal lift
- ❖ Incision is brought to anterior hairline over top of head
- ❖ Advantages: able to perform in those with high foreheads, excellent exposure for myoplasty, reduction of forehead height
- ❖ Disadvantages: visible scar possible, incisional hair loss, hypesthesia



Trichophytic Lift, continued

❖ Surgical Technique

- Temporal incisions parallel to hair shafts and carried to subgaleal plane
- Cephalad incision parallel to hair through dermis and then bevelled anteriorly through hair shaft to subgaleal plane
- Remainder as in bicoronal forehead lift



Endoscopic Forehead Lift

- ❖ Performed through several incisions posterior to hair line. Number of incisions is variable
- ❖ Subperiosteal dissection is carried out and tissues are suspended
- ❖ Indications: generalized mild ptosis and rhytids, no alopecia
- ❖ Contraindications: alopecia, severe rhytids and ptosis, Asians, American Indians



Endoscopic Forehead Lift, cont.

- ❖ Advantages: decreased hypesthesia, decreased scarring, less invasive, quicker recovery
- ❖ Disadvantages: unknown long term results, increased operative time, requirement for extensive training



Endoscopic Forehead Lift, cont.

❖ Surgical Technique

- One midline, two paramedian and two temporal incisions
- Subperiosteal dissection under direct endoscopic visualization
- Horizontal incisions through periosteum above brow and glabella allows limited myoplasty
- Suspend periosteum
- Minimal tissue excision possible



Complications

❖ Bleeding

- Less than 5%
 - ◆ most common with bicoronal approach
- If hematoma forms must reexplore, control bleeding and place suction drain
- Small hematomas can be managed with I and D with pressure dressings



Complications, continued

❖ Hypesthesia

- All approaches carry risk of hypesthesia
- Bicoronal, trichophytic usually well tolerated by patient
- Subcutaneous approaches (direct, indirect, midforehead) usually last several months
- minimal risk with endoscopic approach



Complications, continued

❖ Frontal nerve injury

- Most common when dissection carried laterally as frontal nerve located 1 cm laterally to lateral brow
- Myoplasty should be limited to between pupils

❖ Lagophthalmos

- rare with browplasty alone
- more common in conjunction with blepharoplasty
- perform blepharoplasty last



Complications, continued

❖ Alopecia

- Most commonly seen with preexisting hair loss
- Sometimes seen as result of “follicle shock”
- Important to make incisions parallel to hair shafts
- More common on revision bicoronal approaches



Surgical Alternatives

- ❖ Avoid sun exposure
- ❖ Topical retinoids
- ❖ Chemical peels
- ❖ Cosmetics
- ❖ Collagen injection
- ❖ Botulinum toxin injections

