Aging Face: Facelifts and Laser Resurfacing

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Grand Rounds Presentation
March 29, 2012
Outline

- Characteristics of the Aging Face
- Evaluation of the Aging Face
- Surgical management of the Aging Face
  - Facelifts
  - Brow lifts
- Botox
- Laser Resurfacing
Pathophysiology of Aging

• Factors:
  • Gravity
  • Microscopic/histologic changes
  • Sun exposure
    • Premature aging
Which histologic change occurs in the skin with aging?

a) Flattening of the DEJ with loss of papillae
b) Increase in GAGs, proteoglycans, and ground substance
c) Decrease in number of melanocytes
d) Increase in total collagen
e) A and C
Histopathology of Aging

- Flattening of the DEJ with loss of papillae
- Decrease in number of melanocytes
- Decrease in GAGs, proteoglycans, and ground substance
- Decrease in elastic fibers
- Decrease in total collagen, especially type III
Case 1

J.S is a 64 year old male who presents to your clinic for evaluation for surgery. He says “I don’t like my forehead wrinkles and these folds. (points to nasolabial folds)” He has a PMH of HTN and takes a baby ASA daily. He is a smoker but is trying to quit. His remaining history is otherwise unremarkable. How would you manage this patient?

http://www.williamsfacialsurgery.com/photos/volumize-03-r-front-before_1.jpg
History

- PMH, Medication history, PSH, allergies
- HTN?
- ASA and anticoagulants?
  - NSAIDs/ASA stopped 14 days before surgery
  - Warfarin and Plavix patients – surgery possibly contraindicated
- Smoking?
  - Microcirculatory changes
  - Cessation 2-3 weeks before surgery

NOTES: Facelifting is probably contraindicated in patients on warfarin (Coumadin) or clopidogrel (Plavix), even if they are allowed by their physicians to stop these medications. At the very least, facelifting on such patients is performed with extreme conservatism and only after every possible means of eliminating the effects of these medications has been pursued.
Patient Selection

CRITICAL!
- Clear understanding of goals and limitations of surgery.

MULTIPLE CONSULTATIONS MAY BE NECESSARY TO FIND HIDDEN MOTIVATIONS AND CONFUSION OF GOALS.

- Motivated to support longevity
- Healthy
- Appropriate weight
Patient Selection

**TABLE 15-1  Ideal Candidates for Facelifting Exhibit**

- Good skin tone with minimal photoaging and few wrinkles
- Strong facial bony structures
- Strong forward chin
- Prominent cheek bones
- Fuller midface
- Shallow cheek–lip grooves
- Sharp cervicomental sulcus
- Nonsmoker

**TABLE 15-2  Poor Candidates for Facelifting Exhibit**

- A low hyoid producing an obtuse cervicomental angle
- Have receded or weak chins
- Have low slung submandibular glands
- Deep oral commissure cheek–chin grooves
- Deep nasolabial grooves and prominent cheek mounds or folds

Johnson and Bradley. Facial Plastics and Reconstructive surgery. 2nd edition. Pg 156-157
Physical Exam

- Well-lit room
- Pre-op photography
- Anatomical subunits:
  - Forehead and brow
  - Periorbital region
  - Cheeks
  - Nose
  - Perioral region and chin
  - Neck
- Actinic damage?
- Degree of skin laxity?
- Skin wrinkling?

http://www.plasticsurgerypractice.com/issues/articles/2010-07_03.asp
Upper Face: Forehead & Brow

- Muscles of forehead and brow movement:
  - Frontalis
  - Procerus
  - Corrugator supercilii
  - Orbital portion of orbicularis oculi
- “SCALP”
  - Galea becomes temperoparietal fascia below the superior temporal line
  - Periosteum becomes confluent with the deep temporal fascia at the temporal fusion line
Despite the complexity of anatomical layers of the face, the facial nerve remains deep to the SMAS and innervates the musculature from their deep surfaces;

Giachino and Spiegel. Facial Plastics, Reconstructive, Trauma surgery, pg. 1027
Over-activity of what muscle(s) are responsible for the glabellar wrinkles or furrows shown in the picture?

a) Frontalis muscles  
b) Frontalis and procerus muscles  
c) Frontalis, procerus, and corrugator muscles  
d) Procerus and corrugator muscles
Upper Face: Signs of Aging

- Physical Exam:
  - Forehead height, hairline, hair density, brow position
- Transverse forehead wrinkles: *Frontalis m.*
- Oblique/vertical *glabellar* wrinkles: *Corrugator m.*
- Transverse *glabellar* wrinkles: *Procerus m.*
- Eyebrow/upper eyelid ptosis
Ideal Brow Position

1. Vertical line: Alar base
2. Medial and lateral brow same level
3. Oblique line: Ala to lateral canthus
4. Apex of brow in line with lateral limbus
5. Brow arches above rim in women and at rim in men.

http://www.faceliftnet.com/blepharoplasty.html; The Beverly Hills Center for Facial Rejuvenation

http://www.femininebeauty.info/eyebrow-aesthetics; The aesthetics of the eyebrows – James Alex, MD
Midface: Periorbita & Nose

• Periorbita:
  • Consists of upper and lower eyelids, medial and lateral canthal region, and the globe
  • *Orbicularis oculi m.*: temporal and zygomatic of CN 7
    • Attaches to anterior temporal and malar skin
  • Upper and lower eyelids: Size, shape, position, and symmetry are to be noted

• Nose:
  • Signs of aging: tip ptosis, dorsal hump
  • Nasal assessment & rhinoplasty

NOTES: Things like intercanthal distance should be noted
Midface: Cheeks

• Cheeks:
  • pre-auricular crease (lat), nasolabial fold (med), inferior border mandible (inf), zygomatic arch/infraorbital rim (sup)

• Cheek muscles:
  • Origin: pterygomandibular raphe
  • Insertion: superficial fascia or the perioral skin or the deep musculature of the upper lip.

• Buccal fat pad

NOTES: Malar eminences are the most noticeable landmark in this area; Malar fat pad, zygomatic, and maxillary bones. It is a sign of youth and beauty and lends the form strength and shape to the face. Buccal fat pad is located through and intraoral incision above the third maxillary molar, the two surgically vulnerable structures in this area of the parotid duct and buccal branch of the facial nerve.

Muscles: buccinator, caninus muscle, quadratus labii superioris
Malar eminence: Malar fat pad, skin, zygomatic and maxillary bones
• The **malar fat pads** ligamentous attachments to the skin form

• The cutaneous insertion of the zygomatic muscles, levator labii superioris, and levator labii anguli oris defines the nasolabial crease. Lateral to the crease, these muscles have no direct dermal attachments, and a generous layer of subcutaneous fat is present. In contrast, medial to the crease, the skin adheres tightly to the orbicularis oris muscle, with very little subcutaneous fat evident. Thus, the nasolabial fold represents a transition between the skin territories of the cheek and the upper lip. The skin of the upper lip is supported by its attachment to the mimetic musculature against gravitational forces. The skin lateral to the nasolabial fold has no direct attachments to the underlying musculature for similar support. This discrepancy leads to pronounced ptosis of the skin and subcutaneous tissues of the mid face compared to the upper lip.
What characteristic is seen with aging in the mid-face?

a) Shallowing of the nasolabial fold
b) Deepening of the nasolabial fold
c) Increase of the malar eminence
d) A and C
e) B and C
Mid-face: Signs of Aging

- Mid-face fat atrophy:
  - Deepening of nasolabial folds
  - Infraorbital hollows
  - Decreased malar eminences
  - Crow’s feet

http://lastheplace.com/2008/12/03/dr-john-vartanian-helps-you-get-ready-for-the-holidays/

Lower Face:

- Perioral Region, Chin, and lower border mandible
- Muscles: quadratus labii inferioris, mentalis, and triangularis; all deep to platysma and insert into inferior rim of mandible


NOTES: Peri-oral region: subnasale to nasolabial folds laterally to menton
Chin is 2nd the second most common site of abnormality (nose most common)
What characteristic is consistent with the aging lower face?

a) Shortening of the upper lip
b) Lengthening of the upper lip
c) Marionette lines
d) Tightening of skin at the lower border of the mandible
e) B and C
f) A, C, and D
Lower Face: Signs of Aging

- Lengthening of upper lip including philtrum
- Thinning of red portion of upper lip
- Perioral rhytids
- “Marionette” line’s – extension of nasolabial crease
- Underprojection of the chin
- Jowling:
  - Ptosis of the buccal fat pad
Neck: Evaluation

1. Skeletal Framework?
2. Management of SMAS-platysma muscle complex
3. Need for fat contouring?
4. Need for skin tightening?
Neck: Dedo’s Classification of Cervicomental Changes

A. **Class I** - Well-defined cervicomental angle
B. **Class II** - mild laxity of the cervical skin.
C. **Class III** - layer of subcutaneous fat
D. **Class IV** - varying degrees of platysma dehiscence and weakness best seen with voluntary facial grimacing.
E. **Class V** - Retrognathia → neck fullness and may require chin augmentation or mandibular osteotomies.
F. **Class VI** - abnormal hyoid position, most often a low-lying hyoid → obscures the cervicomental angle.
• **A. Class I**: a well-defined cervicomental angle with little fat and good skin and platysma tone.

• **B. Class II**, showing mild laxity of the cervical skin without significant fat deposition or muscle looseness.

• **C. In class III** a layer of subcutaneous fat is present. Liposuction is usually required to improve the cervical contour. There is adequate skin and muscle tone so that lip contouring yields good results.

• **D. Class IV** shows varying degrees of platysma dehiscence and weakness best seen with voluntary facial grimacing. Anterior cervical cording is often visible, and surgical manipulation of the platysma may be helpful.

• **E. In class V**, patients have retrognathia that contributes to their neck fullness and may require chin augmentation or mandibular osteotomies.

• **F. Class VI**, showing abnormal hyoid position, most often a low-lying hyoid that obscures the cervicomental angle. Neck results from any surgery will be limited owing to this anatomical variant. Used with permission of Mayo Foundation for Medical

• **Hereditary things**: Low lying hyoid-thyroid complex and accumulation of fat both superficial and deep to the platysma
The following are expected acquired characteristics of the aging neck?

a) Submandibular gland prolapse
b) Platysmal banding
c) Jowling
d) Mandibular hypoplasia
e) A and B only
f) A, B, and C
Neck: Signs of Aging

• Submandibular gland prolapse aka “ptotic submandibular gland”
• Platysmal banding: “Turkey neck”; thinning of neck skin → visible platysma
• Skin redundancy
• Jowls

Botox for neck bands before and after photos provided by Beverly Hills Facial Plastic Surgeon William J. Binder, M.D.

http://www.riverbanksclinic.co.uk/Treatments/Neck/SaggingJowls.asp
Recap: The Aging Face

http://www.williamsfacialsurgery.com/photos/volumize-03-r-front-before_1.jpg
Surgical Management of the Aging Face

• History:
  • 1900’s German and French surgeons are credited with pioneering facelift surgery.
    • limited subcutaneous dissection and skin elevation
  • Skoog 1970’s – “deep layer suspension” or subfascial plane
  • Miz and Peyronie – defined fascia superficial musculoaponeurotic system (SMAS).

• Rhytidectomy:
  • **Lower face**: traditional and lateral rhytidectomy
  • **Mid-face**: Extended, deep plane, composite, and subperiosteal
  • **Forehead**: Coronal lift, endoscopic forehead lift, and direct brow lift
  • Neck: Cervicofacial Liposuction
Face Lift Incision

- **Start:** Temporal hairline
  - 5 cm superior to ear, 3-5 cm posterior to hairline
- Parallels hairline to helical root
- Pre-auricular incision – pre or post tragal
- Lobule base to posterior concha skin
- **End:** Hairline
  - 3-5 cm

Top: Bottom:
http://messageboards.makemeh eal.com/george-yang doctor/sideburn-incisions-from-facelift-t94726.html; Dr. George Yang, M.D.
• 1. Pretragal – men – this avoids the need to redrape hair-bearing skin onto the tragus.
• 2. Post tragal – women
• 3. 2-3mm above the retroauricular (postauricular) sulcus
• 4. Hairline : 3-5 cm

• THERE ARE VARIATIONS. CAN DO A PRETRICHIAL OR "TRICOPHYTIC" INCISION TO PREVENT TEMPORAL ALOPECIA

• Infiltration
• Initiate dissection with electrocautery and facelift scissors
Variation of Facelift Incision

Techniques of Creating Inconspicuous Facelift Incisions
Kridel R et al.

A. Classic facelift incision
B. Typical post op appearance: lower cheek skin advanced to temporal side burn = hair loss.
C. Proposed incision lower in hairline tuft.
D. Result
Lower Face: Conventional (Traditional) Facelift

1. Subcutaneous undermining
2. SMAS incised
3. SubSMAS dissection
4. Trim excess SMAS re-approximate vs. SMAS-plication.
5. Re-drape, trim excess skin, close

Effective for jowls and neck tightening but no improvements to midface.

http://www.seattleface.com/html/face_lift.php; Dr. Sam Naficy
1. Subcutaneous undermining

2. SMAS incised transversely under zygomatic arch and vertically anterior to the preauricular sulcus.

3. SubSMAS dissection to the anterior border of the parotid and inferiorly sub-platysmal just beyond and inferior to the angle of the mandible.
   • The Smas-platysma along the vertical incision is pulled posteriorly while SMAS-plat along the transverse incision is pulled superiorly.
   • SMAS is secured using sutures and excess is trimmed
   • Skin is also secured and excess is trimmed

   • For SMAS plication – bites of SMAS are plicated to the zygomaticotemporal fascia, fascia of the bony EAC, and mastoid fascia with 3-0 Mersilene

• Borders of dissection:
Traditional Facelift
Lower Face: Lateral Facelift

- Simplest SMAS suspension rhytidectomy
- AKA limited SMAS facelift or lateral SMASectomy
- Subcutaneous undermining to malar eminence beyond jowls to below the mandible
- Sub-SMAS and sub-platysmal resection enough to remove 2-3 cm anterior to pre-auricular sulcus
- Remaining SMAS-platysmal flap pulled posterosuperior and sutured to proximal SMAS and dense zygomatic fascia.
- Best for jowls and neck, but not midface
Midface

• A youthful midface is characterized by prominent cheeks and a smooth transition between the lower eyelid and cheek.
• Dissection should lift the malar fat pad and flatten the nasolabial fold.
• Malar fat pad has attachments to overlying skin and underlying muscle.

NOTES: Extended facelift and deep plane face lifts – lifts fat pad but not muscle
Composite and superiosteal – lift fat pad and muscle
Mid-face: Extended Facelift

• Similar to traditional facelift but includes extensive **medial subSMAS** dissection
  • Extends medially beyond nasolabial fold.
• **Plane of dissection is OVER the zygomatic muscles.**
  • Leaves MFP attached to skin
• Are results Temporary?

NOTES: SMAS dissected anterior to the parotid is fragile

Red – Subcutaneous / Yellow – subSMAS
Green – Malar fat pad / Blue – incision of SMAS
Image Credit: [http://www.centrplastiki.ru](http://www.centrplastiki.ru)
Midface: Deep Plane Facelift

- Extensive medial subSMAS dissection
- Ligamentous attachments of SMAS to zygomatic muscles, parotid, and masseter muscles are disrupted.
- **SMAS-platysma-skin flap advanced posteriorly as a single unit**
- Foreshortened subcutaneous flap dissection

* A **thick myocutaneous flap is created which contains the malar fat pad**

NOTES: The initial subcutaneous dissection extends medially to a line that is tangent to the angle of the mandible to the origins of the zygomatic muscles. Incision into the SMAS is performed at this same line and an extensive subSMAS dissection is carried medially in the same fashion as the extended rhytidectomy.
Midface: Composite Facelift

• Proposed by Hamra
• Includes dissection and elevation of the orbicularis oculi and zygomatic muscles through a separate blepharoplasty incision.
• More favorable midface and periorbita but increased risk of CN7 injury and permanent muscle injury.
• Reserved for significant aging problems.
Is There a Difference?

- *Is There a difference? A prospective study comparing lateral and standard SMAS face lifts with extended SMAS and Composite Rhytidectomies. Ivy E et al. 1996*
- *N = 21 patients*
  - 7 patients - extended SMAS and conventional
  - 5 patients - extended SMAS and lateral SMASectomy
  - 8 patients - conventional SMAS and composite
  - 1 patient - lateral SMASectomy and composite
- *Techniques compared immediately post op, at 24 hours post op, and at 6 and 12 mos by three independent face lift surgeons*
Is There a Difference?

• Results:
  • Immediately post op: more improvement in midface with extended SMAS and composite rhytidectomy
  • At 24 hours – no appreciable difference (swelling)
  • At 6 mos and 12 mos – no detectable difference

• Conclusion:
  • Comparable outcomes for all procedures
  • All are lacking in their improvement of midface ptosis and nasolabial folds.
  • *The increased risk & morbidity with the more extensive procedures do not seem warranted in the average patient.*
Upper face: Direct/Midforehead Brow lift

- Used to correct brow ptosis and asymmetry...NOT for forehead wrinkles
- Direct brow lift – skin excised directly above the brow
- Midforehead – skin excised mid-forehead
- Width and shape of ellipse of skin excised determines height and shape of eyebrow

NOTES: Forehead aging is not improved by a standard rhytidectomy. Direct - Suitable for men with thicker eyebrows for scar camouflage and for patients with alopecia which would make incisions on the scalp or forehead more evident. Midforehead – suitable for patients with thinning eyebrows but deep midforehead creases that can provide camouflage for the scar. CN 7 paralysis causes brow asymmetry.
A patient wants a brow lift to address his forehead wrinkles. His forehead appears high and measures out to 6cm in length. What approach should be avoided?

a) A direct brow lift
b) A pretrichial incision approach
c) A tricophytic incision approach
d) A coronal incision approach
Upper face: Coronal Brow lift

- Employed by most surgeons.
- Incision made within the hair bearing scalp.
  - Raises hair line thus **contraindicated in high hair lines or male pattern baldness.**
- Levels of dissection:
  - Subcutaneous
  - Subgaleal (supraperiosteoal) – most common approach
  - Subperiosteoal – approach used in endoscopic forehead lifts.
• **Subcutaneous**: Advantage – does not injure supraorbital nerves (no compromise of sensation to anterior scalp) and address forehead wrinkles but the skin flap vascularity may compromised.

• **Subgaleal**: Preferred because rapidity and ease. Allows direct visualization of the muscles responsible for forehead wrinkling. Main disadvantage is scalp numbness posterior the incision 2/2 division of the supraorbital nerves.

• **Subperiosteal**: More effective, allows for the tissues to slide over frontal bones, scarring of the periosteum to the underlying frontal bone allows for the permanency of the lift. Disadvantage: theoretically some bone resorption may occur because the frontal bone has been separated from the periosteum thus compromising its blood supply.
Variations in hairline brow incisions.

- Tricophytic incision, green.
- Coronal incision, yellow; **7cm behind hairline centrally and curves into the temporal scalp towards root of helix.**
- Endoscopic brow lift incisions, red.
- Pretrichial incision, blue
Upper face: Coronal Brow lift

• **Incision:**
  - Infiltration
  - Scalpel beveled in direction of hair follicles to minimize injury and post op alopecia.

• **Subgaleal dissection to supraorbital rims**
  - ID supraorbital and supratrochlear neurovascular bundles
  - Release flap from supraorbital attachment

• **Dissection to nasal dorsum**
  - Corrugators are identified and cut
  - Procerus is identified and sharply released

• **Skin flap re-draped and secured**
  - Three point deep fixation (midline and each temporal scalp
  - Excess flap trimmed
  - Subcutaneous layer closed with 2-0 or 3-0 Vicryl
  - Staples
Upper Face: Endoscopic Brow lift

- Increasing popularity
- “Easy, safe, effective”
- Candidates: short foreheads, balding patients
- 4-5mm rigid 30 degree angled scopes
  - Three to five 2cm incisions
  - One midline incision, two 4cm lateral to midline on either side, and two in temporal scalp
- Dissection from temporal to central
  - Temporal: subgaleal to zygomatic arch/lateral orbital rim
  - Central: subperiosteal to supraorbital rims
- Corrugators and procerus identified and cut
- Flap secured with screws
• The temporal scalp incision is in line with the lateral canthi
• **TEMPORAL DISSECTION:** Through the temperoparietal fascia in a subgaleal fashion to the lateral orbital rim and anterior 2/3 – AVOID THE POSTERIOR 1/3 TO AVOID INJURY TO THE SUPERFICIAL TEMPORAL VESSELS.

• **CENTRAL DISSECTION:** Supraorbital and supratrochlear nerves should be identified.

• **PERIOSTEUM SCREWS:** The periosteum is screwed into place with titanium screws (1.5mm in diameter and 12-18mm long); the are placed in the central 3 incisions and are placed 4mm into the bone. They will suspend the forehead flaps and be left in place for 10-14 days until the flap has sufficiently scarred in placed. Resorbable screws can be used and not need to be removed.
Endoscopic Brow Lift
What is the most common nerve injury with rhytidectomy?

a) Buccal branch of facial nerve
b) Greater auricular nerve
c) Temporal branch of facial nerve
d) Supraorbital nerve
e) Supratrochlear nerve
Complications

• Most common nerve injury: Greater auricular nerve (6%)
• Facial nerve injury is less common; 2.6% with subcutaneous techniques and 4.3% in sub-SMAS techniques.
  • **Buccal branch of the facial** is the most common branch injured (least noticed).

• Hematoma (2-15%)
  • Increases risk of epidermolysis and skin sloughing
  • Abrupt pain, acute swelling, ecchymosis in 24hrs → remove dressings, to OR for control of bleeding
  • Delayed or small hematomas → needle aspiration upon clot liquefaction (1-2 weeks)

NOTES: Men 2x prone given increased vascularity of hearing bearing skin of face
Skin sloughing can be full or partial thickness and can result from infection, in smokers, thin flaps
Complications

- Skin sloughing (1-3%)
- Alopecia (1-3%)
- Hypertrophic scar (1-4%)
- Earlobe deformity (Pixie ear; 5%)

http://messageboards.makemeheal.com/facelift/yang-explains-pixie-ears-t64307.html; Dr. Yang MD
Botox (botulinum toxin A)

- Blocks the release of Ach from cholinergic nerve terminals
- Can be used for:
  - glabellar frown lines
  - forehead creases
  - horizontal forehead line
  - crows feet
  - and platysmal bands.
- The toxin is injected into overactive muscles.
- Effects last for 3-11 mos

http://whatisbotox.net/
Laser Resurfacing

Properties:
• Emits electromagnetic radiation (EMR) – photons traveling a the speed of light that emit energy
  • High energy photons → short wave lengths
  • Lower energy photons → long wave lengths
• Clinical lasers emit EMR in the infrared, visible, and UV spectrum
• Lasing material: crystal, dye, gas, or other
• Energy source: stimulates the lasing material
  • Flash lamps, radiation, electrical current
• Photothermolysis

1. EMR is the type of energy found in radiowaves, microwaves, infrared, UV, visible light, x-rays, and gamma rays. The difference between each is the amount of energy their photons produce.
2. When stimulated, electrons jump to high energy levels but upon returning to steady-state photon energy is released.
3. Laser absorption in tissue is based on wave length (absorption length)
4. Laser energy, once absorbed, is heat; this heat is what injures the tissue = photothermolysis
Laser Resurfacing

- Two most commonly used lasers for facial resurfacing:
  - **Er:YAG, 2940nm** - Depth of penetration 5μm
  - **pulsed CO2, 10600nm** – Depth of penetration 25μm
- The chromophore for these lasers is water.
- Can be used alone or together (unique properties to each).
- Depth of injury liken to a medium chemical peel.
- Clinical outcome similar to deep chemical peel

- CO2 has a higher absorption length thus a deeper depth of penetration than the Er:YAG
- CO2 has a greater potential for photothermolysis, CO2 is done in pulsed mode to minimize its thermal damage.
- Medium chemical peel = TCA peel
Fitzpatrick zones of injury

- Zone 1: Direct laser interaction → crater of vaporization
- Zone 2: Irreversible thermal damage → tissue necrosis
- Zone 3: reversible thermal damage → collagen shrinking and remodeling (CO2 lasers)

FitzPatrick:
Zone 1: Of note, skin has to be heated to 100 C to be vaporized
Zone 2 and 3: Zones of thermal injury that occur by the heat that has dissipated into surrounding tissue
Zone 1 and 2 injury → responsible for skin smoothing and getting rid of epidermal and dermal lesions and pigment irregularities.
## Er:YAG vs. pulsed CO2

<table>
<thead>
<tr>
<th>Er: YAG</th>
<th>Pulsed CO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Epidermal and superficial lesions</td>
<td>1. Can be used for moderate to severe photodamage</td>
</tr>
<tr>
<td>2. Mild to moderate rhytids</td>
<td>2. Deeper dermal lesions</td>
</tr>
<tr>
<td>3. Little patient discomfort thus can be done under local anesthesia</td>
<td>3. Greater zone of thermal injury and more painful – general anesthesia</td>
</tr>
<tr>
<td>4. Single pass $\rightarrow$ 10-20um of tissue ablation</td>
<td>4. Single pass $\rightarrow$ 20-60um</td>
</tr>
<tr>
<td>5. Three passes $\rightarrow$ ablates entire epidermal layer (100um)</td>
<td>5. Two to three passes $\rightarrow$ 100um</td>
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Facial Laser Resurfacing

- Safe; re-epithelialization occurs with low incidence of scarring
- Re-epithelialization occurs by virtue of skin appendages:
  - The more appendages, the more reliable and rapid this is.

Body and neck ➔ fewer skin appendages
Cheeks, chin, forehead, and perioral region ➔ ample skin appendages

Notes: The regions with more appendages tolerate deeper resurfacing
Whereas the neck can tolerate “light” resurfacing (1-2 passes with Er:YAG) – as you don’t want sharp demarcation; light feathering can be done along the mandible and the neck safely.
Facial Laser Resurfacing

• **Indications:**
  • Fine or moderate rhytids
  • Dyschromias, including solar lentigines
  • Melasma
  • Atrophic scars

• Rhinophyma
• Cutaneous photodamage
• Sebaceous hyperplasia
• Xanthelasma
• Syringomas
• Actinic cheilitis
Perioperatively

• Preoperatively:
  • Skin preparations- Retin-A, hydroquinone, based on preference
  • Antibiotics and antivirals (famiciclovir; 125mg BID vs.. 250mg BID)

• Post-operatively:
  • Cool gauze with lidocaine
  • Continue famiciclovir (7-10 days)
  • Stop antibiotics
  • Wound care – open vs.. closed

**NOTES:**

125mg BID – no hx of HSV and 250mg if hx of HSV
d/c abx so as not to select out resistant bugs
Open: allows wound seepage and mild debridement while maintaining a moist air for reepithelialization;
pts use vinegar solution or gentle water to clear crusts and much ointment for reepithelialization
Closed: Occlusive dressing place x 24hrs – 3 days; then open approach – THERE IS NO DIFFERENCE IN OUTCOME
CO2 laser treatment


Er: YAG laser treatment

http://www.zeel.com/t/skin-tightening-resurfacing/pictures-before-and-after/211; Dr. Pozner in Boca Raton, FL
Complications

- Laser fire
- Inadvertent organ injury
- Scarring
- Prolonged erythema
- Hypopigmentation
- Hyperpigmentation
- Acne exacerbation
- Milia
- Infection:
  - Bacterial or fungal treat accordingly

HSV infection:
- Occurs within 9% of cases without antiviral prophylaxis
- Infection despite prophylaxis → continue antiviral x 14 days at increased dose

NOTES: Acne or milia: treat with retinoic or glycolic acid and mechanical debridement