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Human Appearance
Dermatology

M2 – Dermatology Sequence

Fall 2008
The area of dermatology that deals with appearance related issues (aka “cosmetic dermatology”)

Drugs and procedures are used to improve the skin’s appearance by making clinically detectable changes in skin
Aging Skin
Clinical Findings

- Wrinkles
- Dull complexion
- Textural irregularities (roughness)
- Volume loss (atrophy)
  - Lips
  - Nasolabial folds
- Brown spots (lentigines)
- Red spots (telangiectases)
PROBLEM:

“FOREHEAD WRINKLES”

“I LOOK LIKE I’M FROWNING”
Dynamic wrinkles

- Due to repeated muscle contraction
- Most common sites
  - Glabella
  - Brow
  - Crow’s feet
It’s All About the Anatomy

Patrick J. Lynch, wikimedia commons
Botulinum A exotoxin (Botox)

- Most popular cosmetic procedure in the U.S.
- Purified protein from *Clostridium botulinum*
- Reduces hyperkinetic lines associated with muscles of facial expression
- Typically used in the top 1/3 of the face
  - Glabella
  - Crow’s feet
  - Forehead
- Weakens overactive underlying muscle contraction causing flattening of facial skin and improved cosmesis
- 3-4 months effect
Botox

Mechanism of Action

- Heavy chain binds the toxin to the presynaptic cholinergic nerve terminal

- Light chain cleaves SNAP25 which prevents vesicles from fusing with the membrane and prevents acetylcholine release into the neuromuscular junction

- Collateral sprouting of new nerve terminals over time leads to restoration of function
Side Effects of Botox

- General
  - Ecchymosis
  - Pain
  - Headache
  - Eyelid ptosis
- Forehead
  - Brow ptosis
- Crow’s feet
  - Diplopia
  - Ectropion
  - Drooping lateral lower eyelid
  - Asymmetric smile
Contraindications to Botulinum Toxin

- Myasthenia gravis
- Neuromuscular diseases
- Pregnancy category C
PROBLEM:
“LINES AROUND THE MOUTH”
“THIN LIPS”
Soft Tissue Fillers

- 2nd most popular cosmetic procedure in U.S.
- Restore facial fullness and volume
- Particularly useful in the lower face
  - Nasolabial folds
  - Lip augmentation
  - “Marionnette lines”
- Volume expansion of wrinkles
- Filler types
  - Intradermal fillers
  - Deep dermal/subcutaneous fillers
Agents

- Temporary
  - Bovine collagen (Zyderm, Zyplast)
  - Porcine collagen (Evolence)
  - Human collagen (Cosmoderm, Cosmoplast)
  - Hyaluronic acid (Restylane, Perlane, Juvederm)

- Semi-permanent
  - Polymethylmethacrylate--PMMA (Artecoll)
  - Calcium hydroxylapatite (Radiesse)

- Permanent
  - Silicone
Hyaluronic Acid (HA) Fillers

- HA is a major component of the dermis
- Derived from bacteria or rooster combs
- NASHA=non animal stabilized HA
- Intradermal injection
- Does not require skin testing
- Duration of 4-5 months
- Cross-linked
  - Stabilizes HA as it degrades in the dermis
- NASHA shown to stimulate new collagen production in photodamaged human skin
Soft tissue filler
Side effects

- Bruising
- Swelling
- “Lumpiness”
- Risk of necrosis or embolism when used in the glabellar or periorbital sites
PROBLEM:

“SPIDER VEINS ON LEGS”
Varicose veins

- Superficial and deep venous systems
- Seen in 40% of females
- Risk factors
  - Genetic predisposition
  - Pregnancy
  - Prolonged standing
  - Caucasians
Sclerotherapy

- Sclerosant is injected into varicose veins
- Does NOT work for large varicose veins
- Small vessel varicose veins of the legs
  - Telangiectasias
    - Red
    - <1mm diameter
  - Venules
    - Blue
    - <2mm
  - Reticular veins
    - Blue
    - 2-4mm
Sclerosants

- Detergents
  - Disrupt vein cellular membrane
    - Sodium tetradecyl sulfate (Sotradecol)
    - Polidocanol

- Osmotic agents
  - Damage cell wall by shifting water balance
    - Hypertonic sodium chloride (23.4%)

- Chemical irritants
  - Damage cell wall
Sclerotherapy
Side Effects

- Pain and burning
- Bruising
- Edema (compression relieves this)
- Telangiectatic matting
- Hyperpigmentation
- Extravasation of sclerosant can lead to ulceration and necrosis
PROBLEM:

“ACNE SCARRING”

“UNEVEN PIGMENT”
Chemical Peels

Agents
- Alpha hydroxy acids (AHA)
- Tricholoracetic acid (TCA)
- Salicylic acid (SA)
- Jessner’s solution (TCA+resorcinol+ SA+lactic acid)
- Phenol based

Indications
- Acne/acne scarring
- Photoaging
- Dyspigmentation
## Chemical Peels

<table>
<thead>
<tr>
<th>TYPE</th>
<th>DEPTH OF PENETRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial</td>
<td>Epidermis to upper papillary dermis</td>
</tr>
<tr>
<td>Medium</td>
<td>Papillary dermis to upper reticular dermis</td>
</tr>
<tr>
<td>Deep</td>
<td>Mid- reticular dermis</td>
</tr>
</tbody>
</table>
Choosing a Chemical Peel

- SUPERFICIAL
  - Improved appearance
  - Acne

- MEDIUM DEPTH
  - Superficial wrinkles/pigmentary changes

- DEEP
  - Deep wrinkles
Chemical Peels
Side Effects

- Persistent erythema
- Blisters
- Infection
- Dyspigmentation
- Herpes labialis
- Milia
- Scarring
- Cardiotoxicity (phenol peels only)
PROBLEM:

“DULL COMPLEXION”
Microdermabrasion

- For textural irregularities, aging skin
- Performed as a “series” of treatments
- Power source delivers aluminum oxide crystals to the skin surface
- Gentle abrasion of the epidermis
- Suction/vacuum returns the crystals to the machine with sloughed epidermal cells
Microdermabrasion
Patient Expectations

- Practically no downtime
- Need for repeat treatment q2-4 weeks
- Some residual erythema
- Number of “passes” and “aggressiveness” of treatment will determine depth of abrasion
Medical Therapy of Aging Skin

- Topical retinoids
- Bleaching agents
- Sun protection
  - Avoidance
  - Sunscreens
- Cosmeceuticals
  - Peptides
  - Antioxidants
Patient selection

- Skin phototype
- Prior cosmetic procedures
- Medical history (cardiac, etc. ability to tolerate local anesthesia)
  - Cardiac
  - Medical devices
  - Autoimmune
  - Oral herpes simplex

EXPECTATIONS
Additional Source Information
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