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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:

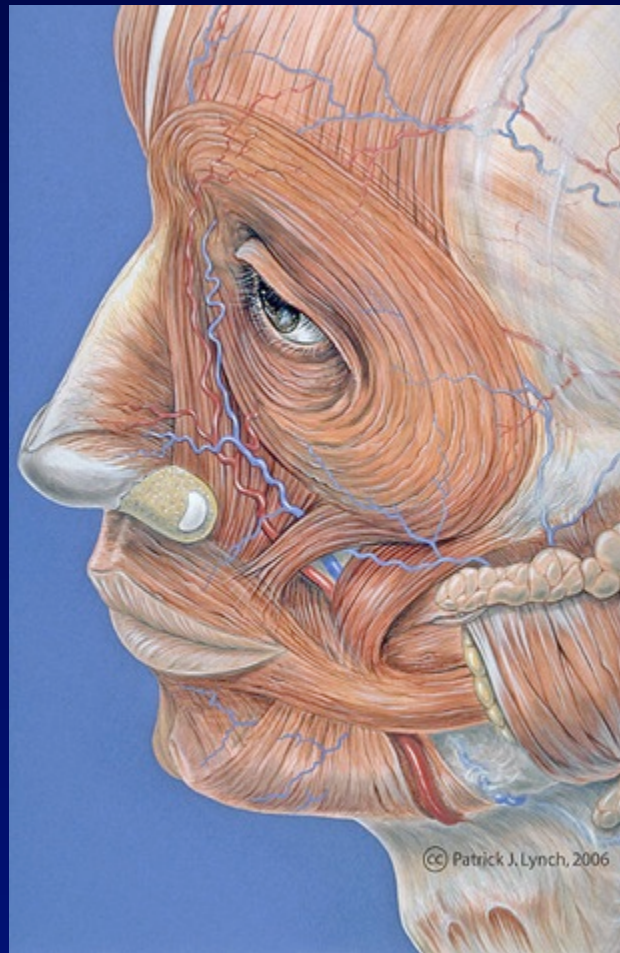
“FOREHEAD WRINKLES”

**“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



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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

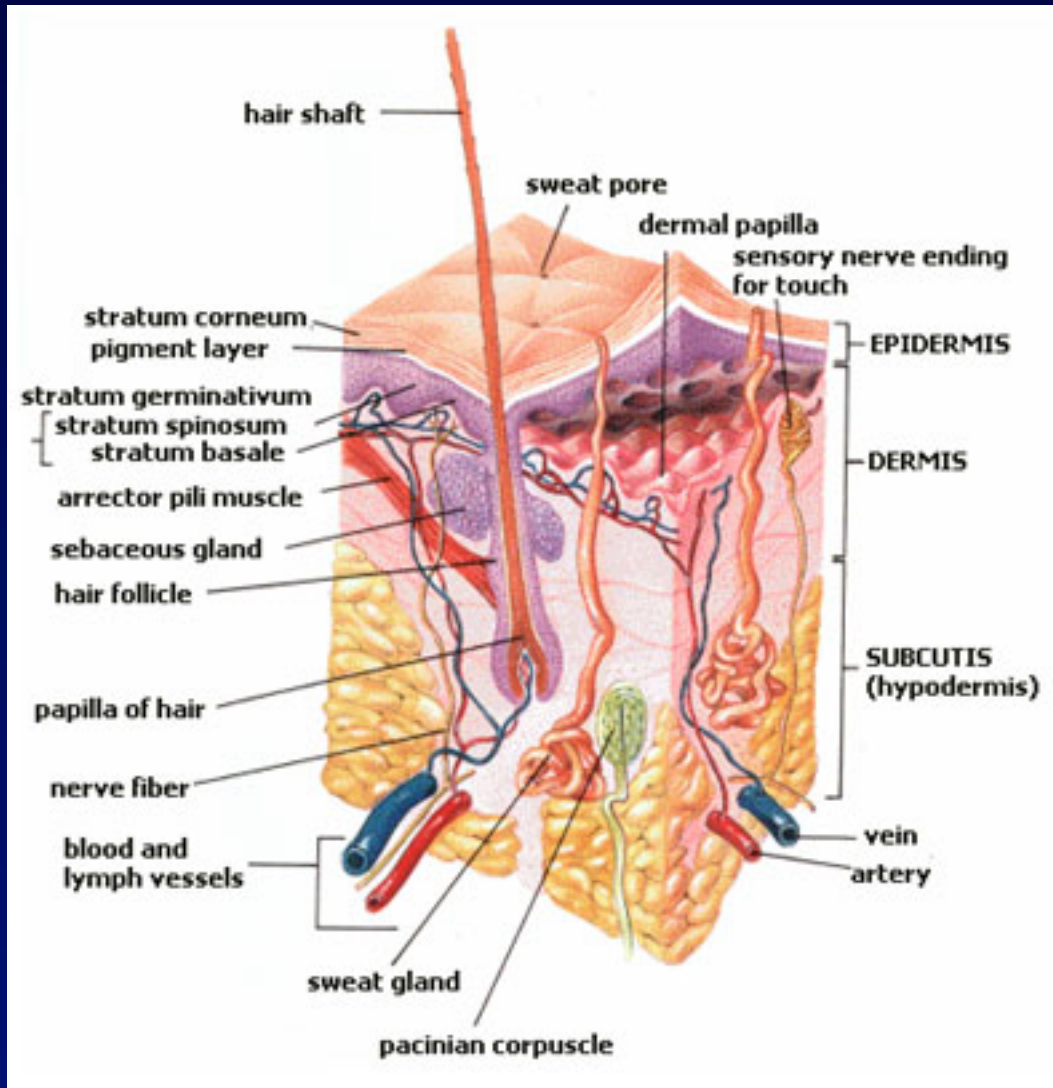
PROBLEM:

**“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
 - “Marionette 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
 - Telangiectatases
 - 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)
- Trichloroacetic acid (TCA)
- Salicylic acid (SA)
- Jessner's solution (TCA+resorcinol+ SA+lactic acid)
- Phenol based

■ Indications

- Acne/acne scarring
- Photoaging
- Dyspigmentation

Chemical Peels

TYPE	DEPTH OF PENETRATION
Superficial	Epidermis to upper papillary dermis
Medium	Papillary dermis to upper reticular dermis
Deep	Mid-reticular dermis

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

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