Acne Treatment and Procedures

Tam Nguyen, MD, FAAFP
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Dr. Nguyen is a graduate of Pennsylvania State University College of Medicine in Hershey. He completed his residency at Family Practice at San Jose-O’Connor Family Medicine Residency Program. He practices inpatient and outpatient family medicine at WTMF. His topics of specialty include dermatology and diabetes. Dr. Nguyen instructs physicians of various specialties on aesthetic procedures, including the use of botulinum toxin, lasers, liposuction, and nonsurgical facial reconstruction. He also consults with providers on how to establish an aesthetic practice. Dr. Nguyen believes family medicine’s most critical challenge is caring for the uninsured and underinsured.
Learning Objectives

1. Classify the severity of acne.

2. Discuss the safety and efficacy of the various classes of agents used for treating acne.

3. Explain the mechanisms of action of systemic and topical agents used to various severity of acne.

4. Describe the appropriate candidates for isotretinoin therapy, and incorporate improved protocols for the optimum use of this agent.
Learning Objectives (Cont.)

5. Discuss the protocols for using chemical peel as effective acne and its scar treatment.

6. Evaluate the use of microdermabrasion (with and without infusion) as an effective acne scar treatment procedure.

7. Evaluate when to use intraleisional corticosteroid injections for the treatment of acne cysts and its scar.

8. Evaluate the use of acne extraction procedures.

9. Recognize the urgency of prompt treatment of acne to prevent physical and psychological scarring.
Acne Treatment & Procedure

• Definition & standard medical treatment of acne vulgaris
• Isotretinoin & iPledge program
• Acne injection
• Acne extraction
• Acne scar treatments
  – Microdermabrasion
  – Chemical peels
  – Micro-needle
Definition

• By AAD, “chronic inflammatory dermatosis which is notable for open and/or closed comedones (blackheads and whiteheads) and inflammatory lesions including papules, pustules, or nodules”
Pathophysiology

- Pilosebaceous unit consists of hair follicle, the hair shaft, and the sebaceous gland.
- For primary factors contribute to acne
  - Abnormal desquamation of keratinocytes within the pilosebaceous unit
  - Increased sebum production
  - Proliferation of *Propinibacterium acnes*
  - Inflammation
  - Follicular proliferation
Pathophysiology

- Glands produce sebum, a complex lipid mixture for maintaining skin hydration.
  - Excessive sebum production secondary to sebaceous gland hyperplasia by androgen secretion
  - As sebocyte differentiates, it ruptures and releases lipids into the sebaceous duct and follicle.
  - Normally single keratinocytes are shed into the follicular lumen for excretion, but in acne, this process is disrupted and keratinocytes accumulate becoming interwoven with monofilaments and lipid droplets.
Pathophysiology

• Glands produce sebum
  – Lipids and cellular debris can accumulate within blocked follicle.
  – Areas of high sebaceous glands include face, neck, chest, upper arms, and back.

• Blockage of gland generally by overgrowth of Propionibacterium acnes in the follicles
Pathophysiology

- Inflammation occurs when disruption extrude into the dermis causing formation of papules, pustules, nodules, and cysts,
  - Cytokines and other inflammatory agents will cause inflammation to surrounding tissue.
  - Inflammation can lasts for days.
  - Inflammation increases with hyperpigmentation.
  - Therefore, patients should not pop their pimples.
Types of comedones

- Blackheads – noninflammatory lesions of acne that are opened
- Whiteheads – inflammatory lesions of acne that are closed.
  - Characterized by proliferation of *P. acnes*, a gram-positive anaerobe that resides in the pilosebaceous unit.
  - Role of *P. acnes* is now thought to be inflammatory rather than infectious.
There are several types of acne including open and closed comedo, pustular, and nodulocystic.
Classifications

- There are many through the years
- Samples of grading scale
  - Pillsbury
  - Frank numerical
  - Christiansen
  - Cook, Center, and Michaels
  - Allen and Smith
  - Leeds Technique
  - Samuelson
Classifications

- Global Acne Severity Scale (FDA 2002)
  - Grade 0 – normal clear skin
  - Grade 1 – almost clear skin, rare-non-inflammatory lesions with rare non-inflamed papules that must be resolving
  - Grade 2 – some non-inflammatory lesions, few inflammatory lesions (papules/pustules only, no nodulo-cystic lesions)
  - Grade 3 – non-inflammatory lesions predominant, multiple inflammatory lesions +/- one small nodulo-cystic lesion
Classifications

• Global Acne Severity Scale (FDA 2002)
  – Grade 4 – inflammatory lesions more apparent, many comedones and papules/pustules, +/- few nodulo-cystic lesions
  – Grade 5 – high inflammatory lesions predominant, variable number of comedones, many papules/pustules, nodulo-cystic lesions present.
Classifications

• Grading by American Academy of Dermatology (AAD)
  – Severity
    • Mild – few to several papules and pustules but no nodules
    • Moderate – many papules and pustules with few nodules
    • Severe – numerous or extensive papules and pustules as well as many nodules

## Treatment Summary

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(-) no effects; (+) weak effect; (+++) strong effect
Treatment – Overview

• General recommendations by AAD
  – Topicals – retinoids, benzoyl peroxide, and antibiotics (all IA)
  – Should be standard of care use.
  – Benzoyl peroxide in combination with topical antibiotics (erythromycin or clindamycin)
  – Other topicals also recommended – salicylic acid and azelic acid

Treatment – Overview

• General considerations
  – Cannot combine benzoyl peroxide and retinoid topical since they will cancel each other out.
  – Retinoids increase sun sensitivity so avoid sun and sunscreen.
  – First 2-4 weeks face will get worse before it gets better. Face will be red and scaling.
Treatment – Diet

• Diet modifications
  – Carbohydrates
    • Low glycemic index diet appears to reduce occurrence of acne (Western society with high glycemic index food has more prevalence of acne).
    • Smith 2007 showed strict improvement with low glycemic diet.
    • Glycemic index between 55-60 and not to exceed 70

Ingram, J.R., D.J. Grindlay, and H.C. Williams, Clinical & Experimental Dermatology, 2010. 35(4): p. 351-4
Treatment – Diet

• Diet modifications
  – Diary
    • Acne positively reported with milk ingestion
    • Milk has androgenic effect proteins
    • Reduced diary products but supplement calcium.
  – Oxidative stress
    • Follicular plugging to acnes colonization to inflammation
      (which direction and maybe both directions)
    • Increase intake of anti-oxidants such as vitamin C and green tea)
Treatment – Diet

• Diet modifications
  – Fish oil
    • Omega-6 fatty acid are pro-inflammatory
    • Omega-3 fatty (EPA, DHA) are anti-inflammatory
    • Hitch 1961
    • Increase intake of rich in fish oil (omega-3) showed improvement in acne.
Treatment – Diet

- Diet modifications
  - Probiotics – limited evidence
    - Regulate inflammatory cytokines within the skin (IL-2)
    - Probiotic bacteria found in IGF-1 during fermentation
    - 4-fold lower level of IFG-1

Treatment – Topical

• Topical retinoids
  – Foundation of therapy for both comedonal and inflammatory
  – Should be first-line therapy, but only 55% of dermatologists and 10% of primary care uses this topical

Treatment – Topical

• Topical retinoids
  – Inhibit micro-comedone formation and regulate the follicular keratinocytes which helps prevent the formation of new lesions
  – Also it has anti-inflammatory properties by affecting immune response, inflammatory cell migration, and inflammatory mediators.
  – Best result if used initially and applied to the entire area of affected regions.
Treatment – Topical

• Topical retinoids
  – Available formulation – tretinoin, adapalene (naphthoic acid derivative with retinoid activity), and tazarotene.
    • All three have been proven to be effective, but adapalene is least irritating and both adapalene and tazarotene are photostable.
    • Should not applied concurrently with benzoyl peroxide retinoid products will degrade faster so use benzoyl peroxide in the morning and retinoids in the evening.
    • It is also inactivated by ultraviolet light so it should be applied at night.
Treatment – Topical

• Topical retinoids
  – Topical retinoids can cause irritation, erythema, desquamation, pruritus, and some burning so patients should be warned.
  – Alcohol-based gels are more irritating cream-based product.
  – Start off with reduced frequency of application (every 2nd or 3rd day) and shorter duration of contact (washing off after a period of time) and less amount of topical.
Treatment – Topical

- Retinoids – should not be used during pregnancy or lactations
  - Retin-A (Tretinoin)
    - Cream based – 0.25% (20, 45 gm), 0.05% (20, 45 gm), and 0.1% (20, 45 gm)
    - Gel based – 0.01% (15, 45 gm) and 0.025% (15, 45 gm)
    - Liquid – 0.05% (28 gm)
  - Retin-A Micro (Tretinoin) – gel including 0.1% (20, 45 gm) and 0.04% (20, 45 gm)
  - Tazorac (Tazarotene)
    - Gel – 0.1% (30, 100 gm) and 0.05% (30, 100 gm)
    - Cream – 0.1% (15, 30, 60 gm) and 0.05% (15, 30, 60 gm)
  - Differin (Adapalene)
    - Gel – 0.1% (45 gm)
    - Cream – 0.1% (45 gm)
    - Pledgets – 0.1 % (1 box)
    - Solution – 0.1% (30 ml)
Treatment – Topical

• Salicylic acid topical and benzoyl peroxide
  – Benzoyl peroxide
    • Oxidizing agent used as bactericidal activity
    • Available OTC and prescription
  – Salicylic acid
    • Well-tolerated keratolytic agent
    • Available OTC
    • Often used with benzoyl peroxide

Treatment – Topical

Cleansers
- Benzac AC wash 2.5% - Liquid 2.5% (8 oz)
- Benzac AC wash 5% - Liquid 5% (8 oz)
- Benzac AC wash 10% - Liquid 10% (8 oz)
- Benzac W wash (Rx) - Liquid 5% (4 oz, 8 oz)
- Benzac W wash (Rx) - Liquid 10% (8 oz)
- Brevoxyl Cleansing Lotion (Rx) - Liquid 4% (10.5 oz)
- Brevoxyl Cleansing Lotion (Rx) - Liquid 8% (10.5 oz)
- Brevoxyl Creamy Wash - Liquid 4% (6 oz tube)
- Brevoxyl Creamy Wash - Liquid 8% (6 oz tube)
- Desquam-X 5% wash (Rx) – Liquid 5% (150ml)
- Desquam-X 10% wash (Rx) – Liquid 10% (150 ml)
- Desquam-X 10% bar (Rx) - Bar 10% (4 oz bar)
- Panoxy 5 bar (otc) - Bar 5% (4 oz bar)
- Panoxy 10 bar (otc) - Bar 10% (4 oz bar)
- Triaz 3% - Liquid 3% (6 oz, 12 oz)
- Triaz 6% - Liquid 6% (6 oz, 12 oz)
- Triaz 9 % - Liquid 9% (6 oz, 12 oz)

Benzoyl peroxide gels (2.5%-3.0%)
- Benzac W 2.5 – water (60 gm, 90 gm)
- Benzac AC 2.5% - water (60 gm, 90 gm)
- Clear By Design (otc) – Water (45 gm, 90 gm)
- Desquam-X 2.5% - Water (1.5 oz )
- Desquam-E 2.5 - Water (1.5 oz )
- Panoxy AQ 2.5 - Water (60 gm, 120 gm)
- Triaz 3% - Water (42.5 gm)
Treatment – Topical

• Benzoyl peroxide gels
  – Concentration between 4%-8%
    • Benoxyl 5 (otc) – Water (1 oz, 2 oz)
    • Benzac 5 – 12% alcohol (60 gm)
    • Benzac AC 5% - Water (60 gm, 90 gm)
    • Benzac W 5 – Water (60 gm, 90 gm)
    • Brevoxyl 4% (Rx) – Water (42.5 gm, 90 gm)
    • Brevoxyl 8% (Rx) – Water (42.5 gm, 90 gm)
    • 5-Benzagel – 14% alcohol (42.5 gm, 85 gm)
    • Clinac BPO – 7% (45 gm)
    • Desquam-X 5 – Water (42.5 gm, 90 gm)
    • Desquam-E 5 – Water (1.5 oz)
    • Neutrogena Acne Mask 5% - 2 oz tube
    • Panoxyl 5 – 20% alcohol (60 gm, 120 gm)
    • Panoxyl AQ 5 – Water (60 gm, 120 gm)
    • Sulfoxyl Regular 5 (contains 2.5% sulfur) – Water (30 ml)
    • Triaz 6% - Water (42.5 gm)

• Benzoyl peroxide gels (10%)
  • Acne-Aid (otc) – Flesh-tinted (1.8 oz)
  • Benoxyl 10 (otc) – Water (1 oz, 2 oz)
  • Benzac 10 – 12% alcohol (60 gm)
  • Benzac AC 10% - Water (60 gm, 90 gm)
  • Benzac W 10 – Water (60 gm, 90 gm)
  • 10-Benzagel – 14% alcohol (42.5 gm, 85 gm)
  • Desquam-X 10 – Water (42.5 gm, 85 gm)
  • Desquam-E 10 – Water (1.5 oz)
  • Panoxyl 10 – 20% alcohol (60 gm, 120 gm)
  • Panoxyl AQ 10 – Water (60 gm, 120 gm)
  • Sulfoxyl Strong 10 (contains 5% sulfur) – Water (2 oz)
Mild acne
Treatment – Antibiotics

- Antibiotic topical drugs
  - Clindamycin (Cleocin-T) and erythromycin either in solution, gel, or lotion
  - Retinoids – tretinoin (Retin-A) and adapalene (Differin) apply daily
  - Weak acids – azelaic acid (Azelex) and alpha-hydroxy acids
Treatment – Antibiotics

- Antibiotic topicals
  - Akne-Mycin – 2% erythromycin (25 gm ointment)
  - A/T/S – 2% erythromycin (60 ml liquid)
  - A/T/S gel – 2% erythromycin (60 ml liquid)
  - Cleocin T – 1% clindamycin (30 gm, 60 gm liquid), (30 gm, 60 ml gel), (60 ml lotion), and (#60 pledgets)
  - Clindagel – 1% clindamycin (42 gm, 77 gm gel)
  - Clindets – 1% clindamycin (#60 pledgets)
  - Emgel – 2% erythromycin (27 gm, 50 gm gel)
  - Erycette – 2% erythromycin (#60 swabs)
  - EryDerm – 2% erythromycin (60 mg liquid)
  - Erygel – 2% erythromycin (30 gm, 60 gm gel)
  - Erymax – 2% erythromycin (2 oz, 4 oz liquid)
  - Staticin – 1.5% erythromycin (60 ml liquid)
  - Theramycin Z – 2% erythromycin (60 ml liquid)
Treatment – Antibiotics

• Other topicals
  – Azelaic acid
    • Anti-keratinizing agent with antibacterial and anti-inflammatory activity
    • Less irritating than benzoyl peroxide but can cause hypopigmentation especially in dark skin patients.
  – Azelaic acid products
    • Azelex – 20% azelaic acid (30 gm, 50 gm cream)
    • Finacea – 15% azelaic acid (30 mg gel)
Treatment – Antibiotics

• Antibiotics – antimicrobial properties and also some anti-inflammatory process
  – Should be used in conjunction instead of primary use.
  – Topical antibiotics for mild cases and oral antibiotics reserved for moderate-severe cases.
  – Topical antibiotics should be used in conjunction with BPO.
Mild acne
Treatment – Antibiotics

• Antibiotics
  – Tetracycline and its second-generation derivatives, doxycycline and minocycline, are first line therapy
  – In order of potency for inflammation – minocycline > doxycycline > tetracycline
  – Minocycline is more soluble and permeability than doxycycline

Simpson, R.C., D.J. Grindlay, and H.C. Williams, Clinical & Experimental Dermatology, 2011. 36(8): p. 840-3; quiz 843-4
Treatment – Antibiotics

- Antibiotics
  - Need to consider dosing regardless what is standard due to patient’s solubility and absorption.
  - Tetracycline class of medication should **not** be used in children (especially under 10 years old) or pregnancy.
  - Erythromycin 333 mg TID should be considered in children (under 8 years old) to prevention dentition and pregnant women.
Treatment – Antibiotics

• Other antibiotics – less inflammatory effect.
  – Trimethoprim/sulfamethoxazole (Bactrim DS) two tablets daily.
  – Amoxicillin 250-1000 mg PO daily (much more limited data)
  – Azithromycin 500 mg PO daily for 4 consecutive days per month for 3 month
  – Due to lack of efficacy, do not use cephalosporins, fluoroquinolones, aminoglycosides, chloramphenicol, sulfonamides/sulfur, and gyrase inhibitors.
Treatment – Antibiotics

• Antibiotics should be discontinued once improvement has been seen.
• If no improvement in 8-16 weeks
  – Consider changing antibiotics due to resistance
  – Using antifungal therapy for Pityrosporum species.
Moderate acne
Treatment – Isotretinoin

• Isotretinoin (Amnesteem, Clavaris, Sotret, and Myorisan)
  – Accutane no longer available
  – General considerations
    • Limited studies and research on this medications.
    • Four available generics
    • FDA recommends for severe cases but guidelines recommend for mild to moderate.
  – Need special registration with iPledge
    • www.ipledgeprogram.com

Treatment – Isotretinoin
Treatment – Isotretinoin
Treatment – Isotretinoin

• Isotretinoin
  – Initiation – all forms are free from website
    • Two forms of contraception must be used while on this medication and one month after the cessation of medication (for female of child-bearing age)
    • Two negative pregnancy tests one month apart (for female of child-bearing age)
    • Baseline labs – LFT, BMP, CPK, and lipids
    • Should be taken with fatty meals or decrease in absorption.
Treatment – Isotretinoin

• Isotretinoin
  – Follow-up on monthly basis
    • Continue the two forms of contraception must be used while on this medication (for female of child-bearing age)
    • Monthly pregnancy test (for female of child-bearing age)
    • Monitor any side effects
    • Follow-up labs – LFT, BMP, CPK, and lipids
    • Make sure to use moisturizers since it is extremely drying to skin.
Treatment – Isotretinoin

- Isotretinoin
  - 10 mg (start with 0.5 to 2 mg/kg per day with therapeutic range of 0.5 to 2 mg/kg per day divided in two doses for 15-20 weeks) retinoid acid use for refractory cases.
  - Usually 0.5-1.0 mg/kg/day for 16-32 weeks (average 20 weeks) usually aiming for a total dose of 120-150 mg/kg (if use longer period then use lower dosage).
  - Continuous is better than intermittent (0.5-0.7 mg/kg/day for 1 week out of every 4 weeks).
  - Low-dose (0.25-0.4 mg/kg/day) continuous is equal effective as high-dose (0.5-0.7 mg/kg/day).
Treatment – Isotretinoin

• Isotretinoin
  – Side effects
    • Hepatitis, hypertriglyceridemia, intracranial hypertension, arthralgia, myalgias, night blindness, and hyperostoses are rare
    • Monitor depression but there are studies stating no more depression than topical. Assess for suicidal ideation.
    • Possible linked with inflammatory bowel disease

Treatment - Isotretinoin
Treatment - Isotretinoin
Treatment - Isotretinoin
Treatment – Others

• Other therapies
  – Spironolactone – can also be used but caution about gynecomastia and hyperkalemia.
    • Dosage 50-200 mg/day in women with elevated DHEA
    • Need to monitor blood pressure, potassium, and CBC for agranulocytosis.
    • Not FDA-approved for acne.
  – Chemical peels – limited data
  – Blue light and laser including PDT

Active nodular acne
Acne injections

• Pathophysiology of intra-lesional steroids
  – Reduction of inflammation
  – Benefits – no bleeding, less pain, more rapid resolution, and fewer complications
  – Side effects – skin atrophy, pigmentary changes, and telangiectasias

Intra-lesional corticosteroid

• Materials
  – 1 cc insulin syringe
  – 30-33 gauge needle
  – Triamcinolone 10 mg/ml

• Process
  – Insert the needle at a 30-30 degree directly to the lesional skin through the pore and not the intact skin
  – Inject about 0.03-0.5 mg into each lesion

Intra-lesional corticosteroid
Intra-lesional corticosteroid
Intra-lesional corticosteroid
Persistent nodular acne
Acne extraction

• Inclusion and exclusion
  – Closed comedones are good candidate
  – Inflamed comedones are not ideal

• Tools
Acne extraction

• Process
  – Stabilize the face
  – Pressure on one side of the comedone and then apply the extractor
  – Scope the acne

• Extraction can be done frequently (every couple of weeks) to remove all the lesions

Acne extraction

• Video/demo
Chemical Peel & Microdermabrasion

MAYBE NEXT TIME YOU’LL TRY A LITTLE SUNSCREEN...
Chemical peels & Microdermabrasion

• Pathophysiology
  – Partial thickness exfoliation or wound either by control chemical burn or mechanical abrasion resulting in the formation of new skin
  – Deeper the wound, greater the rejuvenation
  – It is a safe procedure when performed by a qualified, experienced provider (physician, nurse, aesthetician, etc.)
Chemical peels & Microdermabrasion

• Types of exfoliation
  – Mechanical exfoliation
    • Dermabrasion
    • Microdermabrasion
  – Chemical exfoliation
    • Chemical peels
    • Enzymes

• Comparison between two modalities
  – Limited data on superiority of techniques
  – Each has its efficacy and applications
Chemical peels & Microdermabrasion

• Exfoliation depths
  – Greater the depth of exfoliation or wounding is associated with more dramatic the results
  – Greater the depth
    • More downtime
    • More follow-up
    • Greater risks of side-effects and complications

• Recommended depth
  – Stay above the dermis to minimize risks (ie scar) and dyschromia
  – If bleeding occurs, you’ve breached the papillary dermis
Microdermabrasion
Microdermabrasion (MDA)

• Absolute contraindication
  – Sunburn or suntan
  – Accutane in last year
  – Active infection
  – Melanoma or suspicious pigmented lesion
  – Dermatitis
  – Keloids
  – Skin fragility
  – Chronic prednisone

• Relative contraindication
  – Anticoagulants
  – Insufficient sun-protection
  – Telangiectasias, rosacea, poikiloderma of civatte
  – Pregnancy & nursing
  – Herpetic lesions
  – Warts
  – Erosions or ulcers
Microdermabrasion (MDA)

• Risks and complications
  – Mild erythema
  – Mild pain during procedure.
    • Some may have minor abrasions and petechiae lasting about one week.
    • Ocular abrasions from debris
    • Activation of viral infections such as herpes.
    • Urticaria in patient who has allergy to latex and a history of dermatographism.
  – Urticaria especially with latex allergy

Microdermabrasion (MDA)

• Machine and process
  – Skin is lifted by vacuum to the handpiece
  – Superficially abraded by a stream of crystals, diamond-tipped pad, or other abrasive material

• Elements of MDA
  – Crystals – aluminum oxide, sodium chloride, bicarbonate, and/or magnesium oxide
  – Crystal-free – diamond tipped, bristle, ultrasonic, and/or stainless steel
  – Other considerations – some device combine MDA with dermal infusion of products

Microdermabrasion (MDA)

• Exfoliate
  – Pass hand piece over skin in regular pattern
  – Hand piece in dominant hand – oblique angle
  – Stretch skin between the fingers and move the hand piece parallel to direction of tension
  – 2 passes typically used with the 2nd pass perpendicular to 1st pass
  – May need up to 3-4 passes in thicker skin areas based on patient comfort
  – Reduce vacuum strength near eyes
  – Caution around area of thin skin such as the eyes and mucosa
Microdermabrasion (MDA)

• Before treatment
  – Pretreatment

• During treatment
  – 30-60 minutes treatment lines
  – Slight discomfort with crystal MDA

• Areas for treatment
  – Face
  – Neck
  – Chest
  – Hands
  – Back
Microdermabrasion (MDA)

• Pretreatment
  – Skin test – skin upper back
  – Tretinoin, hydroquinone, low-grade chemical peel

• Treatment
  – With aluminum oxide crystals
    • After 2 passes – stratum corneum removed
    • After 4 passes – stratum granulosum partially removed
  – With vacuum
  – With hydration, other enzymes, and/or supplements
Microdermabrasion (MDA)

• Cleanse and prep
  – Headband
  – Remove contact lenses
  – Remove makeup – cleanser
  – Degrease – toner/astringent
  – Re-evaluate skin – limit treatment areas if indicated
  – Eye protection
Microdermabrasion (MDA)

• After-care
  – Soothe and hydrate
    • Mild cleanser like Cephafil
    • Mild moisturizers like Cephafil
  – Sun protection
  – Combination with other modalities
    • Antioxidant
    • Skin lightener
Microdermabrasion (MDA)
Microdermabrasion (MDA)

Before

After
Chemical Peels
Chemical peel

• Contra-indications
  – Oral retinoid in the last 6-12 months
  – Tendency to keloid and/or hypertrophic scar
  – Excessive sun exposure
  – Unrealistic expectations
  – Patients who cannot avoid sunlight
  – Patients taking immunosuppressive medications
  – History of HSV
Chemical peel

• **Complications** and contraindications
  – Common, transient complications
    • Pruritus which can last up to 1 month – treat with hydrocortisone
    • Erythema and peeling – treat with hydrocortisone
    • Infections
Chemical peel

• Complications and contraindications
  – Significant side effects
    • Edema due to allergic reactions – treat with anti-histamines
    • Acne during healing or after re-epithelialization
    • Milia may appear 2-3 weeks after re-epithelialization and may be triggered by the use of thick ointments.
    • Delayed healing (after 8 days for medium peel and 14 days for deep peel) – treat with topical hydrocortisone, oral anti-histamines, and short-term systemic steroids, and/or silicone gel sheeting.
    • Scarring
    • Dyschromias especially with sun exposure.
Chemical peel

• Body regions
  – Face
  – Non-facial
    • Neck
    • Chest
    • Hands
    • Back

Chemical peel

• General considerations
  – Endpoints – either erythema and/or frosting (erythema generally for glycolic and frosting is more TCA and Jessner’s)
  – No neutralization for glycolic and Jessner’s.
  – TCA definitely need neutralization.

• Terminology based on Mark Rubin’s classification

• Classifications
  – Very superficial
  – Superficial
  – Medium
  – Deep
Chemical peel

• Very superficial (can be done every 2-4 weeks)
  – Strateum corneum (0.06 mm)
  – AHA example glycolic 20-35%
  – BHA example salicylic acid 20-30% (caution for aspirin overdose)
  – TCA 10-20%
  – Jessner’s
  – Tretinoin and 5-fluorouracil products
Chemical peel

• Superficial – epidermal (can be done every 2-4 weeks)
  – AHA – glycolic peels 30-50% (most common)
  – BHA – salicylic acid peels 20%
  – TCA 15-30%
  – Jessner’s solution (salicylic acid 14%, lactic acid 14%, resorcinol 14% in ETOH).
  – Resorcinol paste
Chemical peel

- Medium (can be done every 3-6 months)
  - TCA 35-50%
  - Glycolic acid 70%
  - Glycolic acid 70% + TCA 30% (Coleman’s combination)
  - Phenol 88%
  - Jessner’s solution (4-10 coats)
  - Combinations – Jessner’s + TCA 35% (Monhelt’s), GA 70% + TCA 35%
Chemical peel

• Deep (can be done every 3-6 months)
  – Reticular dermis (0.06-0.8 mm)
  – Phenol 88%
  – TCA 50-70% and phenol (Baker-Gordon Formula)

• Other agents
  – Kojic
  – Azelaic acid
  – Phytic acid
  – Pyruvic acid
Chemical peel

• Indications and use
  – Indications
    • Superficial peel for all skin types
    • Deeper peels has higher risks of complications in Fitzpatrick IV-VI
  – Conditions
    • Acne
    • Provide skin radiance and luminosity
    • Rough skin texture due to xerosis, SKs, AKs, keratosis pilaris
    • Thickened, scaling skin (ichthyosis)
    • Photoaging (solar elastosis)
    • Pilaris keratosis
Chemical peel

• Pre-op and care instructions
  – History
    • Check for sunburn and polymorphic light eruption.
    • Check for use of photosensitizers, medication (minocycline), cosmetics (musk ambrette), and others (sandal oil/paste)
    • Any allergy or side effect with aspirin especially if using salicylic acid.
    • Routine activities or occupation since sun exposure can increase risk of hyperpigmentation.
    • Make sure to clearly set expectations for both the patients and provider.
  – Pre-op instructions
    • No make-up.
    • Stop aspirin use one week before treatment
    • If patient has telangiectasia, patient will likely have erythema after procedure.
Chemical peel

• Pre-op and care instructions
  – Treatment preparation
    • Wash face with acetone (or alcohol) based cleaning solution to de-grease or de-fat surface as well as dirt.
    • Skin preparation
  – Warn patients
    • Dry skin
    • Swelling
    • Itchiness
    • No scratching, picking, or pulling to prevent scarring and hyperpigmentation.
Chemical peel
Chemical peel

• Treatment
  – Consider petroleum protection eyes and mucosa
  – Apply chemical with applicators (brush, sponge, cotton, or gauge)
  – Apply 1-3 coats until erythema or frost
  – May need fan across face for comfort
  – Neutralize with bicarbonate superficial or higher peel
Chemical peel
Chemical peel
Chemical peel

• Post-op and care instructions
  – Post-op care
    • Sunblock at all time and minimize sun exposure
    • Moisturizers only until heated
    • Start skin regimen after healing.
  – Complications
    • Post-inflammatory hyperpigmentation
    • Herpes
    • Bacterial infection
    • Scarring
    • Prolonged redness
    • Dry/swollen skin
Chemical Peels for active acne
Chemical peel
Chemical peel
Chemical peel vs. Microdermabrasion

**Chemical peel**
- Less cost
- Type I-IV
- Oily skin
- Acne
- Various skin conditions
- Less control
- Less time
- More side effects

**Microdermabrasion (MDA)**
- More cost
- All skin type
- Combine with modalities
- Treat isolated condition
- More control
- More time
- Scars
- Less side effects

- Rejuvenation
- Photoaging
- Dyschromia
- Rhytids/Wrinkles
- Striae
Micro-needle
Micro-needle

• Minimally invasive procedure involving superficial and controlled puncturing of the skin by rolling with miniature fine needles
  – Simple, cheap, safe and effective technique requiring minimal training
  – Use in conjunction with transdermal delivery system for therapeutic drugs and vaccines
Micro-needle

• History
  – Early use
    • In 1995, Orentreich described dermal needling in the form of subcision for scar treatment
    • In 1997, Camirand used tattoo guns without ink for post-surgical scars.
  – Invention
    • German inventor Liebl in 2000 and
    • Plastic surgeon Fernandes in 2006 designed drum-shaped device with multiple fine protruding needles
Micro-needle

• Pathophysiology
  – Controlled skin injury without actually damaging the epidermis
    • Microinjuries lead to minimal superficial bleeding and set up a wound healing cascade with release of various growth factors
    • Needles also break down the old hardened scar strands and allow it to revascularize
Micro-needle

• Pathophysiology
  • Another theory by Liebl – electrical potential
    – Resting electrical membrane potential is about -70 mV
    – Microneedling the cell, the inner electrical potential increases quickly to -100 mV
    – Increase in the electrical potential triggers increased cell activity and the release of various proteins, potassium and growth factors

Micro-needle

• Tip length to dip diameter of 13:1 or higher – good needles

• Length of needles depend on what is being treated
  – Acne scar – 1.5-2 mm
  – Wrinkles – 0.5 to 1.0 mm
  – Eyes and around eyes – 0.50-0.75 mm
Micro-needle
Micro-needle

• Five basic types of dermarollers described by Konstantinos
  – C8 (cosmetic type – needle length 0.13 mm)
  – C8HE (cosmetic type for hair-bearing surfaces scalp) – needle length of 0.2 mm
  – CIT-8 (Collagen Induction Therapy, medical type) – needle length of 0.5 mm (pain start after this length)
  – MF-8 – needle length of 1.5 mm allowing microchannels on the whole epidermis and dermis as well as destroys scar collagen bundles
  – MS-4 – smaller cylinder of 1 cm length and 2 cm diameter with 1.5 mm length
Micro-needle

• Conditions
  – Acne scar
  – Skin rejuvenation
  – Scars
    • Acne scars
    • Other scars – post-burn scar, post-traumatic scar, hypertrophic scar, and varicella scars
  – Alopecia
    • Androgenic alopecia
    • Alopecia areata


Micro-needle

• Other conditions
  – Melasma
  – Periorbital hypermelanosis
  – Others
    • Stretch marks
    • Axillary hyperhidrosis
    • Actinic keratosis
    • Skin laxity


Micro-needle (results)
Micro-needle (results)
Contra-indications

- Active acne
- Herpes labialis or any other local infection such as warts
- Moderate to severe chronic skin disease such as eczema and psoriasis
- Blood dyscrasias, patients on anticoagulation therapy
- Extreme keloidal tendency
- Patient on chemo/radiotherapy
Micro-needle

• Anesthesia – topical lidocaine before the procedure
• Microneedling
  – After preparation of the skin with antiseptic and saline,
    • Skin is stretched with one hand
    • Perpendicularly rolling is done 5 times each in the horizontal, vertical, and oblique directions with the other hand
  – Endpoint – uniform pin-point bleeding which is controllable
• Post-procedure
  – Ice packs
  – Moisturizer and sunscreen regularly
  – Erythema and edema for 2-3 days
Micro-needle
Micro-needle

- Results do not occur for about 3-6 months after treatment sessions have stopped.
- Frequency – 3-8 weeks
Micro-needle

• Complications
  – Most common
    • Pain during the procedure
    • Erythema
    • Swelling
  – More serious
    • Pigmentation changes
    • Tram-track scar
    • Pinpoint scars

Micro-needle (side effects)
Types of micro-needle

• Dermaroller
• Derma-stamp
• Dermapen
• DermFrac
Micro-needle
Active acne
Additional therapies
Chemical peel vs. Microdermabrasion

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Rejuvenation
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- Striae
Questions

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