Management of Acne Scarring
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Disclosures
• Alastin – Paid consultant
• Allergan – Stockholder, Scientific advisory board, speaker’s bureau
• BTL – Equipment
• Cutera – Paid consultant
• Dermaflash – Paid spokesman
• Inmode – Honorarium, Scientific Advisory board, Speaker’s bureau, equipment
• Merz – Data safety monitoring board, Scientific Advisory Board
• Revance – Primary Investigator
• Rodan + Fields – Scientific Advisory board
• Sciton – Scientific Advisory board, Equipment
• Sienna Biopharmaceuticals – Scientific Advisory board, Primary Investigator

Types of Acne Scars
• Red “Scars” – Post inflammatory erythema
• Atrophic Scars
• Ice Pick Scars
• Box Car
• Rolling
• Hypertrophic/Keloid Scars

Managing Expectations
• Complete resolution of acne scarring is difficult
• Requires multiple treatments
• Takes several months to see full benefit
• Downtime
• Financial considerations

Pretreatment Considerations
• Manage active acne first
• Currently on photosensitizing antibiotics OK
• Ethnic considerations
• Isotretinoin use

Isotretinoin use with Laser
• Package insert states to discontinue isotretinoin for 6 months before performing cosmetic procedures
• Based on a handful of case reports of keloid formation from dermabrasion, argon laser, PDL
ASDS developed a consensus statement stating that there is insufficient evidence to justify delay of treatment with noninvasive procedures.

- Superficial peels
- Nonablative lasers
- Vascular lasers
- LHR

Randomized split-face controlled trial

- 10 patients with acne scars who completed isotretinoin within 1 month
- 3 treatments q 4 weeks with 1550 nm NAFL
- No hypertrophic/keloid scarring
- Satisfactory improvement in acne scars

Acne Scars

Red Scars

- Will fade with time
- Treating with laser speeds up recovery
- Vascular laser:
  - KTP
  - PDL
  - IPL

PDL

- Targets oxyhemoglobin to destroy blood vessels in the dermis
- 3-4 treatments q month
- Short pulse duration, low fluence
- Improves erythema and induces collagen remodeling
- Split-face study: 22 patients with erythematous and/or hypertrophic facial acne scars, 1 or 2 treatments with a 585nm PDL (0.45ms pulse, 6.5J/cm², 7mm) decreased erythema/scarring by 68%

KTP – 532nm Laser

- A single-blinded, split-scar study comparing the efficacy of KTP to 595nm PDL in reduction of erythema in surgical scars found no significant difference
- The thermal energy delivered by KTP extends only to the papillary dermis, making it useful for PIE without significant effects on collagen remodeling
**IPL**
- Broadband light sources -> emit multiple wavelengths
- Use cut-off filters to target various chromophores
- **Advantages**
  - Larger spot size allows for deeper penetration and faster treatments
  - Beneficial in patients with both pigmentary/vascular issues
  - Does not typically produce purpura
- **Disadvantages**
  - Significant melanin absorption depending on filters

**Ice Pick Scars**
- Narrow, V-shaped epithelial tracts have a sharp margin that extends vertically to the deep dermis or subcutaneous tissue
- Resistant to conventional skin resurfacing options
- CROSS Technique
- Punch excisions

**CROSS Technique**
- Chemical Reconstruction of Skin Scars
- Indicated for icepick and narrow boxcar scars
- TCA peel (65-100%) applied to the base of the scar to ablate the epithelial wall to promote dermal remodeling
- May require 3-6 treatments
- May results in PIH in darker skin types

**Punch Excisions**
- Indicated for icepick and boxcar scars
- 2 mm punch biopsy closed with a suture vs secondary intention healing
- A scar is created but is less noticeable because of change at the depth of the base
- Follow with laser resurfacing at suture removal

**Atrophic Scars**
- Become scars are wider, round-to-oval depressions with sharply demarcated vertical edges
- Rolling scars are the widest in diameter
  - Fibrous anchoring of the dermis to the subcutis results in superficial shadowing and an undulating appearance
- Subcision
- Microneedling
- Peels
- Lasers
- Needle RF
- Fillers, Bio stimulators
Subcision

- Best suited for rolling acne scars
- Insert a needle under the scar to sever the fibrous components that anchor the scar below the dermis
- The release of the fibrous tether elevates the scar & produces new collagen without recreating a depression
- 18- or 20-gauge tri-beveled hypodermic needle or an 18-gauge Nokor™ needle
- Multiple treatments may be required
- Adverse events include depression recurrence, swelling, bruising, bleeding, and infection

Lasers

- Nonablative, Ablative, Fractional Laser resurfacing stimulates dermal fibroblasts to replace lost collagen and elastin
- Traditional ablative lasers offer impressive clinical results but are associated with significant peri-procedural discomfort, prolonged recovery, and a significant risk of side effects
- Non-ablative lasers are more tolerable with shorter recovery times
- Multiple sessions are required and results are often less clinically impressive
- Consider prophylactic antibiotics for acne breakouts
- Limit petrolatum usage

Fractional Photothermolysis of Incipient Scarring

- Pattern of multiple columns of thermal damage
- Pixilated pattern of treatment
- Does not affect surrounding tissue
- Leave untreated, viable surrounding tissue as reservoir for rapid healing
- Minimizes adverse effects
- Removes scarred collagen and induces collagen remodeling

Fractional Ablative

Evaluation of a Novel Fractional Resurfacing Device for Treatment of Acne Scarring

- Early intervention is key
- Scars respond best to high fluence, low density

A Prospective, Randomized Controlled Trial on the Efficacy of Fractional Photothermolysis on Scar Remodeling

- Key points:
  - Early intervention is key
  - Scars respond best to high fluence, low density

Downtime

Baseline | Post-op | 3 day f/u
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1 week f/u | 1 month f/u | 3 month f/u
How long do results last?

**Long-Term Efficacy of a Fractional Resurfacing Device**

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Hybrid ablative and non-ablative fractional laser

- Simultaneous 1470/2940 nm wavelengths
- 1470 nm coagulation
  - Targets dermis and epidermis
- 2940 nm ablation
  - Targets stratum corneum and epidermis
  - May promote faster healing time
- Approaches Ablative Fractional Results
- Non-Ablative Downtime

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**Effect of Pretreatment on the Incidence of Hyperpigmentation Following Cutaneous CO₂ Laser Resurfacing**

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**OBJECTIVES.** To determine whether pretreatment of hyperpigmentation with a fractional CO₂ laser would protect against hyperpigmentation postoperatively, we conducted a pilot study to test whether a single pretreatment with a fractional CO₂ laser would prevent hyperpigmentation following CO₂ laser resurfacing. The study included 10 patients with Fitzpatrick skin types I-II who received pretreatment with a single pretreatment with a fractional CO₂ laser, and 10 patients who received treatment with no pretreatment. All patients were treated with the same laser parameters: a 1.5-mm tip size, 150 mJ/cm², and 200 Hz. The patients were hydrated for 15 minutes before and after the procedure. All patients were treated with a single pass. The patients were evaluated for hyperpigmentation at 1 month, 3 months, and 6 months postoperatively. The results were compared to historical controls of patients who received treatment with no pretreatment. The results were compared to historical controls of patients who received treatment with no pretreatment.

**RESULTS.** All patients who received pretreatment with a fractional CO₂ laser had complete resolution of hyperpigmentation within 1 month postoperatively. All patients who received treatment with no pretreatment had complete resolution of hyperpigmentation within 3 months postoperatively. The results were compared to historical controls of patients who received treatment with no pretreatment. The results were compared to historical controls of patients who received treatment with no pretreatment.

**CONCLUSIONS.** Pretreatment of hyperpigmentation with a fractional CO₂ laser is effective in preventing hyperpigmentation postoperatively.

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**Fractional Needle Radiofrequency**

“Microneedling with heat”
Mechanism of Action

- Thermal damage from microneedles create thermal wounds in the deep dermis in a fractional pattern
- Stimulates wound healing, dermal remodeling and new collagen, elastin, and hyaluronic acid formation
- Intervening areas are unaffected to serve as a reservoir of cells that promote and accelerate wound healing

Pre Treatment Medications

- Antibiotic/Antiviral prophylaxis
  - Valacyclovir 500 mg bid x 5-7 days
  - Doxycycline 100 mg bid x 5-7 days

- Anesthesia
  - Topical anesthesia:
    - 23% lidocaine/7% tetracaine
  - Nerve blocks
  - Local injected anesthesia
  - Pro-Nox – 50% Nitrous/50% O₂ on demand

Bipolar Needle RF

- Depth determined by the length of needle
- Density is determined by the number of needles
- Use 24 pin tip (3mm) for tightening
- Use 60 pin tip (600u) for texture
- Use coated tips for darker skin types

Silicone Coated Tips

Thermal Injury= Epidermal Sparing

Ablation Histologies

- 60/126 pin
- 24 pin
- 24 pin silicone coated

Immediately Post-Operative
High Intensity Focused Monopolar RF

- 7x7 array of 49 insulated microneedles
- ~34g needle
- Only the needle tip (300 µm) is the active electrode
- No thermal epidermal injury
- Little downtime
- Safely treat all skin types, including tanned skin
- Depth of treatment can be adjusted up to 3.5 mm
- Multilayer Approach, multiple Passes

Monopolar and Bipolar Needle RF (Intracel)

Combination Laser Treatments

- Vascular laser first
  - So you don’t exacerbate erythema
- Followed by resurfacing device
Microneedling
- Utilizes tiny needles to puncture the skin multiple times creating micro-clefts that penetrate into the dermis.
- The trauma in the dermis initiates wound healing and growth factor release, leading to collagen production and deposition.
- Epidermis remains intact.
- Low-risk procedure.
- 36 patients (SPTs IV–V) underwent 5 sessions had a decrease in mean acne scar assessment score from 11.73 at baseline to 6.5, and a 50- to 75-percent improvement in the majority of pts. [118]

Microneedling with PRP
- Microneedling provides a channel for absorption of topical agents including platelet-rich plasma (PRP) which can improve cosmetic results.
- In a split-face study - microneedling plus PRP versus microneedling plus distilled water.
- The PRP-treated side showed greater improvement in acne scarring after three monthly sessions (62.20% vs 45.84% improvement).

Fillers
- Augment soft tissue, particularly in soft atrophic rolling or boxcar scars.
- Temporary fillers – (HA)
  - Repeated treatments necessary, which increases cost.
- Semi-permanent fillers (Poly-L-lactic acid, Calcium hydroxylapatite)
  - Lasts up to two years.
  - Biostimulatory.
- Permanent fillers (Silicone, Polymethylmethacrylate - synthetic permanent filler suspended in bovine collagen and lidocaine).
  - Adverse effects include lumps, nodules, granulomas.

Thank you!