Acne: Devices + Aesthetics
What's New in 2026

South Beach Symposium
Loews Miami Beach Hotel
Miami Beach, FL

February 5-7, 2026

Presented by Michael H. Gold, MD
Gold Skin Care Center
Tennessee Clinical Research Center
Nashville, TN 37215

Academic Appointments

01. Assistant Clinical Professor

- Department of Medicine, Division of Dermatology, Nashville, TN USA
- Vanderbilt University School of Medicine: 2006-2014
- Vanderbilt University School of Nursing: 2006-2020

02. Adjunct Assistant Professor

- Meharry Medical College: 2013 – Present
- School of Medicine, Nashville, TN

03. Visiting Professor of Dermatology

- Huashan Hospital, Fudan University (Shanghai Medical University), Shanghai, China
- The First Hospital of China Medical University, Shenyang, China:
- Guangdong Provincial People's Hospital, Guangzhou, Zhejiang

04. Visiting Professor of Plastic Surgery

- First People's Hospital of Foshan University, Guangdong, China
- The First Affiliated Hospital of Zhejiang University, Hangzhou, Zhejiang
- Rongjun Hospital, Jiaxing, China
- The People's Hospital of Hunan Province, Changsha, China

05.

- Editor-in-Chief – Journal of Cosmetic Dermatology – Wiley: 2016-Present
- Editor-in-Chief- Dermatological Reviews – Wiley: 2019 - Present

Conflict of Interest

01. Consultant to many pharmaceutical, cosmeceutical, laser and energy-based device companies

02. Consultant, performs research and speaks on behalf of numerous pharmaceutical and medical device companies

03. For the benefit of this presentation, consultant, Investigator, Speaker for almost every company in this space

The growing demand for a different acne approach

$4.3B

US acne treatment market[1]

~50M

Americans affected by acne annually[2]

46%

Nearly half of acne patients are unsatisfied with their current treatment[3]

$13B

That acne treatment market value is estimated to grow to $13.1B by 2030[4]

The Psychosocial Consequences of Acne

Depression[1,2]

LOW SELF-ESTEEM[1,2]

Anxiety[1,2]

SOCIAL PHOBIA[3]

Social isolation[1,2]

Negative psychosocial impact does not correlate with acne severity, and **even mild disease can impact negatively** on work, social interactions, and mood[1]

Female patients, particularly those >20 years of age, appear to be **more vulnerable** to appearance-related distress related to acne[1]

Acne imposes **significant psychological burden** on patients[1-4]

1. Layton AM et al. *Br J Dermatol.* 2021;184(2):219-225. 2.Cortes H et al. Int J Dermatol. 2022;61(7):783-791. 3. Halvorsen JA et al. *J Invest Dermatol.* 2011;131:363-370. 4. Samuels DV et al. J *Am Acad Dermatol.* 2020;83:532-541.

Patients and physicians need a more effective, predictable, and cost-effective, cost-efficient approach to addressing acne for the modern patient

ADDRESSING THE COMPLETE PATIENT JOURNEY - SCARRING

ACTIVE ACNE

POST-ACNE ERYTHEMA SCARRING

POST-ACNE ATROPHIC SCARRING

GENERAL TEXTURAL CONCERNS

CUTERA®

Devices for Acne
Expert Review of Dermatology 2006

Novel treatment options for severe inflammatory acne vulgaris

Michael H Gold

Acne vulgaris is one of the most common dermatological disorders encountered in everyday practice. Treatment options for this often psychologically scarring disease are numerous and, for many individuals, provide relief from the disorder. However, factors such as antibiotic resistance and, slow onset of action from many topical therapies has led researchers to seek out alternative therapies, especially for those suffering from moderate to severe inflammatory acne vulgaris.

Expert Rev. Dermatol. 1(1), 13–23 (2006)

Energy- Based Devices in Treatment of Acne Vulgaris
Dermatol Surg 2016;42:573-585

REVIEW ARTICLE

Energy-Based Devices in Treatment of Acne Vulgaris

Marc Z. Handler, MD,* Bradley S. Bloom, MD,† and David J. Goldberg, MD*†‡

BACKGROUND Acne vulgaris is a chronic dermatologic complaint with a multifactorial cause. Traditionally, antibiotics and retinoids have been used to manage the condition; patient compliance has been an ongoing issue. A variety of energy-based devices have been reported to be effective in the treatment of acne vulgaris.

OBJECTIVE To review and summarize the current literature specific to treatment of acne vulgaris with energy-based devices.

METHODS A review of the current literature of energy-based devices used for the treatment of acne vulgaris.

RESULTS AND CONCLUSIONS Although limited randomized controlled trials for the treatment of acne have been performed, significant clinical improvement of acne vulgaris, especially of inflammatory lesions, has been demonstrated with a variety of energy-based devices. Newer approaches may lead to even better results.

The authors have indicated no significant interest with commercial supporters.

Established and Emerging Laser Treatments for Acne Vulgaris in Diverse Skin Types
J Clin Aesthet Dermatol. 2025 Jun;18(6):41-48

Established and Emerging Laser Treatments for Acne Vulgaris in Diverse Skin Types

by KIMBERLY HUERTH, MD, M.ED; CHIAMAKA OHANENYE, MD; ANDREA QUARTEY, MD; BROOKE JACKSON, MD; and VALERIE CALLENDER, MD

Dr. Huerth is with the Gateway Aesthetic Institute and Laser Center in Salt Lake City, Utah. Mses. Ohanenye and Quartey are with the Lewis Katz School of Medicine at Temple University in Philadelphia, Pennsylvania. Dr. Jackson is with Skin Wellness Dermatology Associates in Durham, North Carolina. Dr. Callender is with the Howard University College of Medicine in Washington, District of Columbia, and the Callender Dermatology and Cosmetic Center in Glenn Dale, Maryland.

J Clin Aesthet Dermatol. 2025;18(6):41–48.

OBJECTIVE: This review examined studies published during the past two decades in which lasers were used to treat acne vulgaris. Its aim was to assess the mechanism, efficacy, and safety of lasers as a treatment modality for this vexingly common and potentially disfiguring condition. **METHODS:** PubMed searches were performed to identify articles published through December 2023 that discuss the use of lasers for the treatment of acne vulgaris. **RESULTS:** Various lasers, including visible light, infrared, fractional ablative CO_2 lasers with isotretinoin, and two 1726-nm lasers approved by the United States Food and Drug Administration, show efficacy in treating acne vulgaris. Studies vary widely in their design, characteristics, and methodological rigor. **LIMITATIONS:** The available literature on using lasers to treat acne is limited by variability in study design, short-term follow up, and small sample sizes. **CONCLUSION:** Lasers have demonstrated efficacy as primary or adjunctive treatment modalities for acne vulgaris in certain clinical scenarios. Larger randomized, controlled, double-blinded studies with sufficiently long follow-up periods and standardized objective measurements are needed to substantiate the efficacy of lasers in treating acne vulgaris. **KEYWORDS:** Acne, acne vulgaris, acne treatment, acne treatment alternatives, *Cutibacterium acnes*, fractional ablative laser, fractional photothermolysis, isotretinoin, laser, laser acne treatment, pulsed-dye laser, sebaceous glands, selective photothermolysis, skin of color

Acne Vulgaris

- Laser/Light technology
  - Lasers/light sources to reduce the *P. acnes* population
    - Blue Light Sources - Blu-U (Dusa/Sun Pharma)
    - Red Light Sources – RhodoLED XL Lamp (Biofrontera)
    - Intense Pulsed Light Devices– Quantum/Vasculight/Lumenis One/M22/Stellar M22 (Lumenis), Ellipse (DDD/Candela), BBL/Joule (Sciton), Harmony XL (Alma), Lumecca (InMode), Lucent (Darwin/Luvo) and others
    - Vascular Lasers –Cynergy (Cynosure), V-Beam Perfecta (Candela), AdvaTX (AdvaLight)
    - Short-Pulsed 650 usec 1064 nm – Aerolase Neo

- IPL Technology

Acne Vulgaris

- Laser/Light technology
  - Intense Pulsed Light (IPL) technology for acne - many systems exist
    - Ross V (2002 ASLMS) – 50% inflammatory acne lesion improvement
    - Elman M, Lebzelter J. Light therapy in the treatment of acne vulgaris. Dermatol Surg 2004; 30: 130-146.
      - 85% > 50% improvement; 15-20% non-responders

Studies With IPL in Acne Vulgaris
Dermatol Surg 2016;42:573-585

TABLE 3. Studies With IPL in Acne Vulgaris

Author of Trial	*Type of Study*	*Device*	*Number of Patients in Study*	*Duration of Treatment*	*% Reduction in Lesions, Inf or NI*
Liu and colleagues[13]	OL	IPL	50	6 ± 2.15 treatments	>90 (Inf)
Shamban and colleagues[4]	Retrospective	IPL + pneumatic	56	4 treatments	90 (Inf)
Berger (unpublished)	OL	IPL + pneumatic	15	1 treatment every other week × 2 sessions	75 (Inf)
Gold and Biron[14]	OL	IPL + pneumatic	11	4 treatments	78.8 (Inf)
Wanitphakdeedecha and colleagues[15]	OL	IPL + pneumatic	18	4 treatments	65 (Inf)
Elman and Lask[16]	OL	IPL	19	8 treatments	85 (Inf); 87 (NI)
Yeung and colleagues[17]	OL	IPL	30	4 treatments per week at 3-week intervals for 12 weeks	22 (Inf); 44 (NI)
Baugh and Kucaba[18]	OL	IPL	25	2 treatments per week for 2 weeks	20 (Inf)
Sadick[19]	OL	IPL	8	3 treatments spread over 12 weeks	32 (Inf)
Myers and colleagues[12]	OL	IPL	7	1 treatment every 3 weeks	70 (Inf)

Inf, inflammatory lesions; NI, noninflammatory lesions; OL, open label.

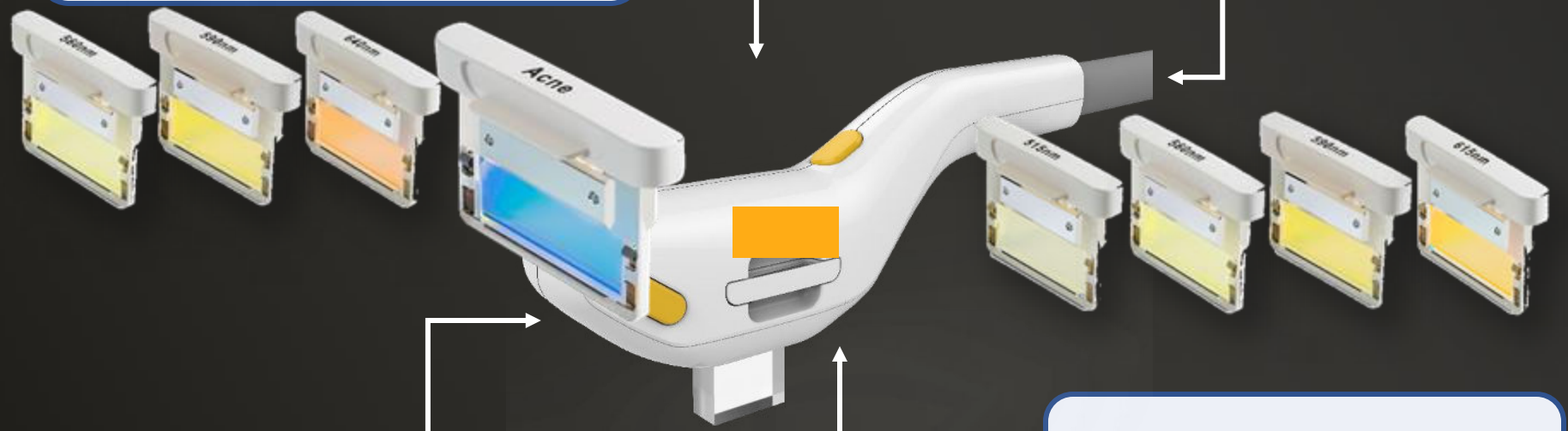
IPL - Different Treatment Groups

ST – Skin Treatments

- Aesthetic and cosmetic applications requiring selective photothermolysis
- Mild to moderate inflammatory Acne

PL – Pigmented Lesions

Benign epidermal lesions



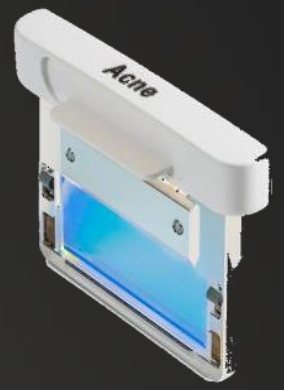
HR – Hair Removal

Permanent hair reduction

VL – Vascular Lesion

Benign cutaneous vascular lesions

Dedicated ACNE notch filter*



Propionibacterium acnes produce endogenous porphyrins as part of their normal metabolism

The notch filter 400-600 & 800-1200nm is ideal for inflammatory acne:

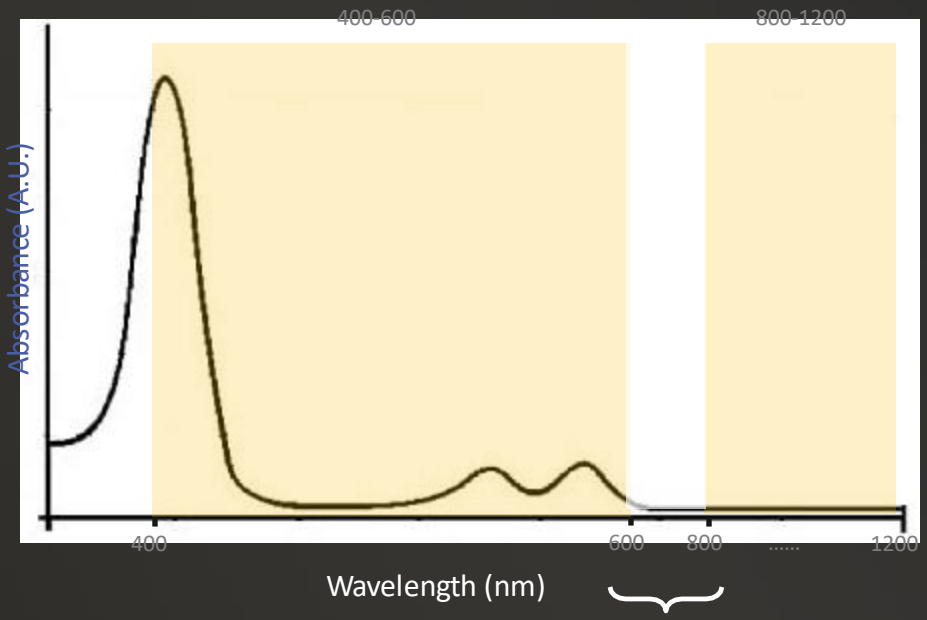
When exposed at 400-600nm (with a peak at the Soret band around 400-420nm)

- Porphyrins are excited to release Singlet Oxygen which eradicate P. Acnes
- Superficial inflammation is reduced

When exposed at 800-1200nm

- Light penetrates deeper to reach the sebaceous glands
- The "shrinkage" of the sebaceous glands reduces the anaerobic environment necessary for the bacteria to proliferate

Porphyrin absorption spectrum
(not drawn to scale)



**** Optional***

Dr. Li, China

Pre IPL

Jan 15, 2007

Dr. Li, China
Post 6 IPLs

2007-08-15 IPL

治疗 6次后， 炎症性痤疮基本消退，但瘢痕改善的不理想

Acne notch Filter

November 2019 1116 Volume 18 • Issue 11
Copyright © 2019 ORIGINAL ARTICLE Journal of Drugs in Dermatology

Combined 400-600nm and 800-1200nm Intense Pulsed Phototherapy of Facial Acne Vulgaris

J. Matthew Knight MD
Knight Dermatology Institute, Orlando, FL

ABSTRACT

Materials and Methods: The study was designed as a single-site, prospective study of 10 patients with Fitzpatrick skin types II-V presenting with mild to moderate inflammatory facial acne vulgaris. A total of five whole-face light treatments were conducted at 1-2-week intervals with an IPL system (Lumenis M22 System, Lumenis Ltd.) equipped with a dual-band "notch" acne filter (400-600nm and 800-1200nm). Follow-up visits were performed at 1 and 4 weeks following the last treatment session. Acne mean change from baseline was assessed using the 4-point Investigator Global Assessment (IGA) scale. Comprehensive facial photographs were taken, and lesions were counted at screening, treatment 4, and both 1- and 4-week follow-up visits. The investigator and the patients assessed overall improvements in appearance, using the 5-point Likert scale. Subjects also completed the Cardiff Acne Disability Index (CADI) questionnaire and rated their satisfaction from treatment. Subject-reported pain, using the visual analog scale (VAS), and downtime were also recorded.

Results: Treatment impact on overall lesion clearance was most substantial at 4 weeks follow-up, at which 50% of patients showed at least a 50% reduction from baseline of lesion counts (P<0.0001). IGA scores improved throughout the course of the study, and significant improvements in the overall skin condition was noted, with mean 1.63-point and 1.50-point increases from baseline in the acne improvement ratings, at 1- and 4-weeks follow-up, respectively (P=0.0074, 0.0063). Patient-assessed CADI improved throughout the treatment and follow-up visits, peaking at a 3.22-point and 4.9-point average reductions from baseline at 1-week follow-up (P=0.0001) and 1-month follow-up (P<0.0001), respectively. The majority of the patients (80%) rated their acne lesions as improved, much improved, or very much improved at 4-weeks follow-up (P=0.0004). Significant enhancements were also noted for skin texture. Eighty percent of the patients reported overall satisfaction with treatment outcomes, while 60% rated their satisfaction as "good" or "very good" at 4-weeks follow-up (P<0.0001). Treatments were well tolerated, with mean per-session VAS scores being ≤3.77, while the mean downtime was negligible (a few hours).

Conclusion: The use of an IPL device equipped with a proprietary "notch" acne filter elicited a significant effect on acne vulgaris. No severe pain, erythema, edema, folliculitis, crusting or exfoliation was noted, emphasizing the safety of our technique.

Acne and Vascular Notch Filters

- Acne filter

Photo courtesy of Travis J. Laverne, PA-C

VASCULAR FILTER

Photo courtesy of Dr. Shauna Diggs

Photo Courtesy of Dr. Chen Ping, Foshan, China

痤疮疤痕皮肤案例

治疗前

治疗4次后

Photo Courtesy of Dr. Chen Ping, Foshan, China

红色增生性瘢痕案例-1

2/9 23/9 19/10 11/11 29/12 19/1 16/2

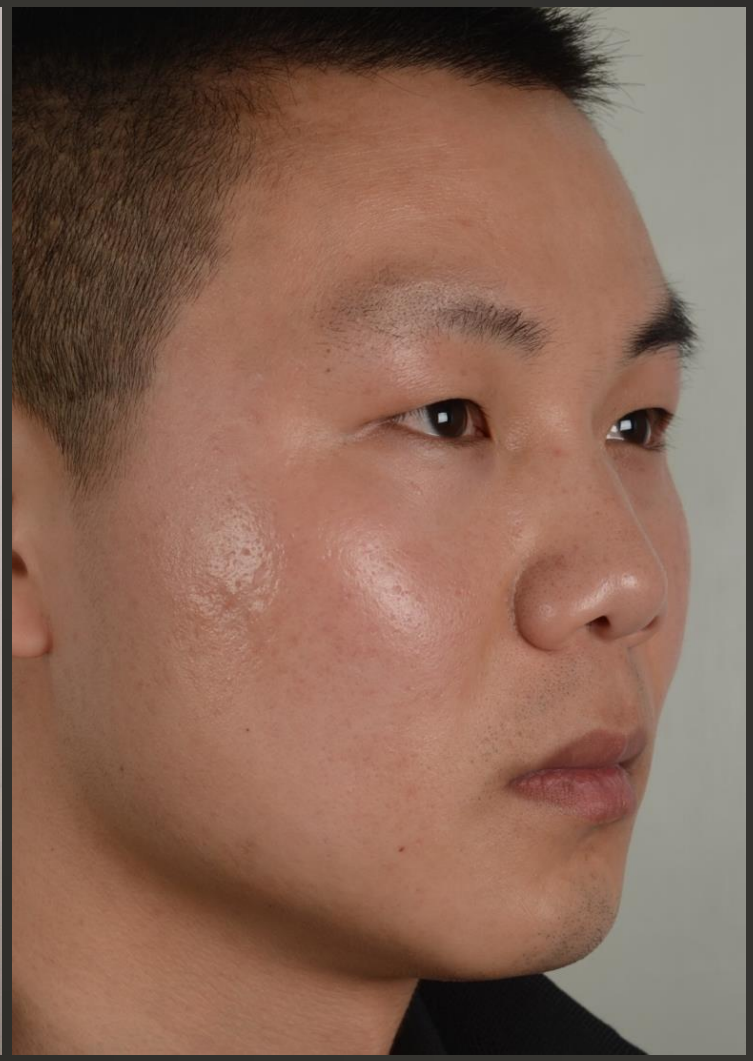
before

5 months after 5 treatments

M22 590
AOPT（Vascular）

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before



After 4 IPL TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 4 IPL TX

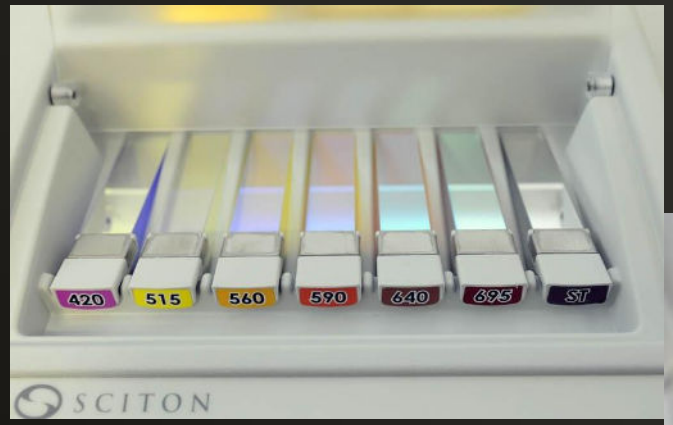
BBL is available in Several Options -- Old

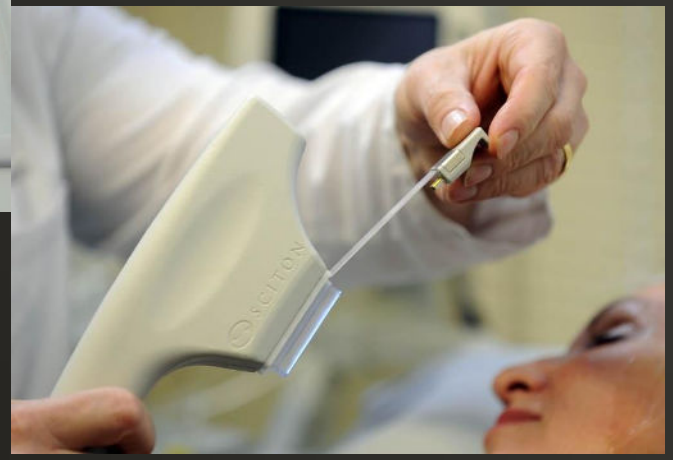
BBL module incorporated into JOULE™

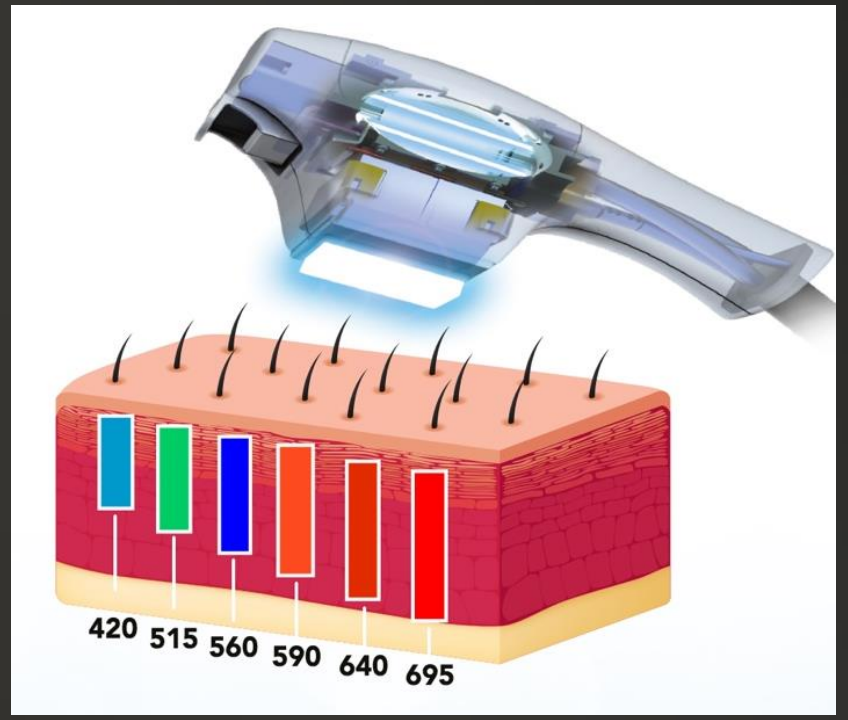
BBLs Stand alone System

BBL™ easy to change Smart Filters™

- BBL uses Smart Filters™ allowing for quick and easy adjustment of wavelengths on a single hand piece.
- This allows you to address multiple skin concerns without having to use or change multiple hand pieces.







Forever Clear BBL Results

FCBBL | 8 weeks post 5 tx | courtesy of Patrick Bitter, Jr., MD

FCBBL | 3.5 months post 9 tx | courtesy of Patrick Bitter, Jr., MD

FCBBL | 1 month post 9 tx | courtesy of Brooke Bangart, National Laser Institute

FCBBL | 4 months post 4 tx | courtesy of Michelle Turley, Savannah Plastic Surgery

Forever Clear BBL Results

Forever Clear BBL Results

Build the *ultimate* Aesthetic package

Customizable multi-modality workstation

- Advanced & customizable

The multi-modality workstation offers a complete selection of complementary handpieces to suit your business needs. Expand your system at any time by simply plugging in a new handpiece.

BUILD YOUR SYSTEM

BARE 808

LUCENT IPL

PROLIFT RFM

PROLIFT HIFU

REFRESH RF

lucent ipl | LUVO

Intense Pulse Light Handpiece

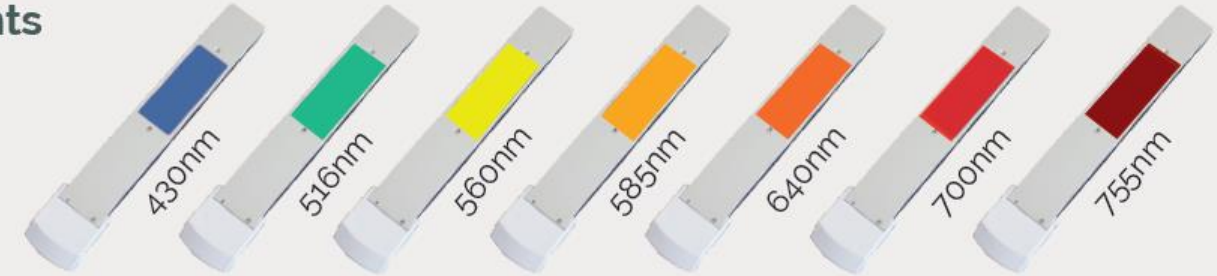
IPL technology is a tried and true staple of any aesthetic business. The ongoing battle against reoccurring pigmentation, vascular lesion, acne & hair regrowth provide a constant revenue stream when armed with an effective treatment solution.

LUCENT IPL features & benefits

1 handpiece multiple IPL applications

7 filters for expert IPL treatments

Choose between seven expert filters to treat acne, pigment and vascular lesions, remove hair and more.



Acne

Skin rejuvenation

Pigmentation & sun damage

Vascular lesions

Hair removal

LUCENT IPL features & benefits

High power & advanced pulse technology

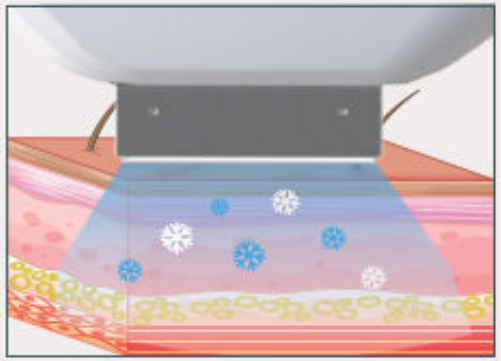
Most powerful IPL system on the market

At 3500 Watts LUCENT IPL delivers the highest power on the market

Choose from 4 pulse modes

Enhance treatment results with four specially designed pulse modes for safe, effective and comfortable treatments.

Advanced cooling technology



Enhance patient comfort and safety

Automatic cooling protects the epidermis, increases patient comfort, reduces erythema, and improves the efficacy of IPL treatments.

IPL Results - Darwin

* Results may vary

- Photopneumatic Acne Therapy System

Gold MH, Biron J. J Drugs Dermatol 2008; 7(2):139-145

Copyright © 2008 Journal of Drugs in Dermatology

Efficacy of a Novel Combination of Pneumatic Energy and Broadband Light for the Treatment of Acne

Michael H. Gold MD,[a] Julie Biron BS[b]

a. Medical Director, Gold Skin Care Center, Tennessee Clinical Research Center, Clinical Assistant Professor, Division of Dermatology, Department of Medicine, Vanderbilt University Medical School, Vanderbilt University Nursing School, Nashville, TN; Visiting Professor of Dermatology, Huashan Hospital, Fudan University, Shanghai, China

b. Director, Tennessee Clinical Research Center, Nashville, TN

Abstract

Introduction: A novel photopneumatic platform (Isolaz, Pleasanton, CA), combining vacuum pressure with a broadband light source device has been designed to attack multiple targets for the effective treatment of acne.

Objective: The objective of this study was to evaluate the safety and efficacy of photopneumatic technology for the treatment of mild to moderate acne vulgaris.

Methods: Eleven subjects (7 women) aged 15 to 54 years with skin types 1 to 4 presented with mild to moderate facial acne (defined as 15 or more facial inflammatory or noninflammatory lesions) were recruited to the study. All subjects underwent 4 photopneumatic treatments at 3-week intervals with follow-up visits at 1 and 3 months.

Results: Inflammatory lesion counts continued to decrease for at least 3 months after the final treatment. At 3 months, reductions in lesion counts were significant for both inflammatory ($P=.0137$) and noninflammatory ($P=.0383$) lesions. Mean scores between visits consistently dropped sharply from their immediate posttreatment values for pain, erythema, and edema. Nine subjects (82%) were moderately satisfied to very satisfied with treatment.

Conclusion: Results suggest that the photopneumatic device is a safe and effective modality for the treatment of mild to moderate inflammatory and comedonal acne vulgaris.

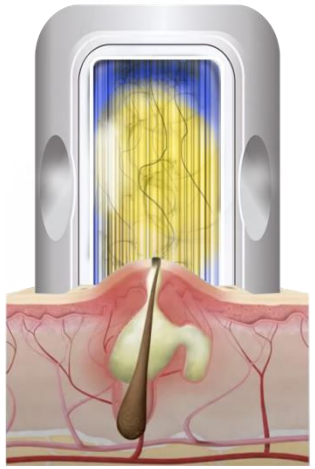
Acne Therapy System

An addition to the armamentarium and management plan for the treatment of acne

Specifically designed for the indication of **mild to moderate acne**

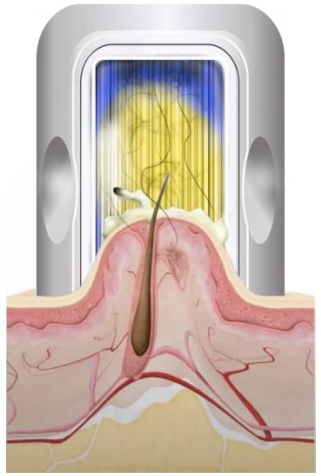
Treatment Timeline: Step By Step

Place



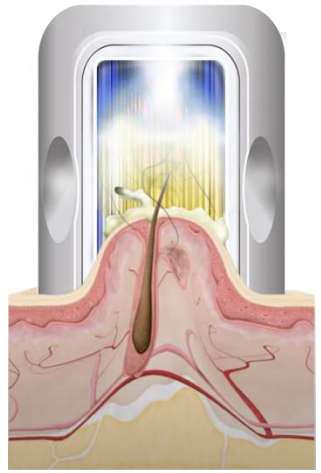
The handpiece makes full contact with treatment area

Extract



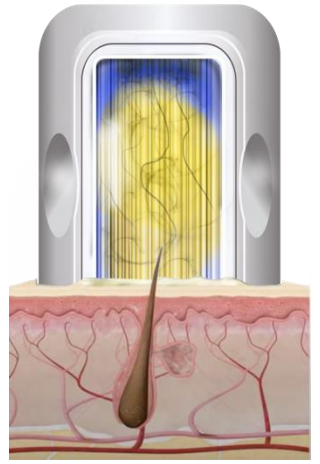
Pneumatics deep **cleans pores** by extracting sebaceous and follicular material

Treat



Along with targeting heating of the dermis, light activates porphyrins to **directly reduce *C acnes*** and sebum production

Complete



Obstruction in the pilosebaceous apparatus is removed and skin normalizes

Before and After

BEFORE
TREATMENT

AFTER
2 WEEKS AFTER SINGLE TREATMENT

- Photos courtesy of Suneel Chilukuri, MD.

Before and After

BEFORE
TREATMENT

AFTER
3 TREATMENTS

- Photos courtesy of Suneel Chilukuri, MD.

Before and After

BEFORE
TREATMENT

AFTER
4 TREATMENTS

- Photos courtesy of Suneel Chilukuri, MD.

• Photopneumatic Acne Therapy System

1st Tx date 04/13/23

2nd Tx date--- 4/18/23

3rd Tx date---5/2/23

Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, and Collette Utley, DNP, NP-C
The Laser & Rejuvenation Center of Gold Skin Care Center, Nashville, TN

- Photopneumatic Acne Therapy System

6/15/23

8/23/23

9/7/23

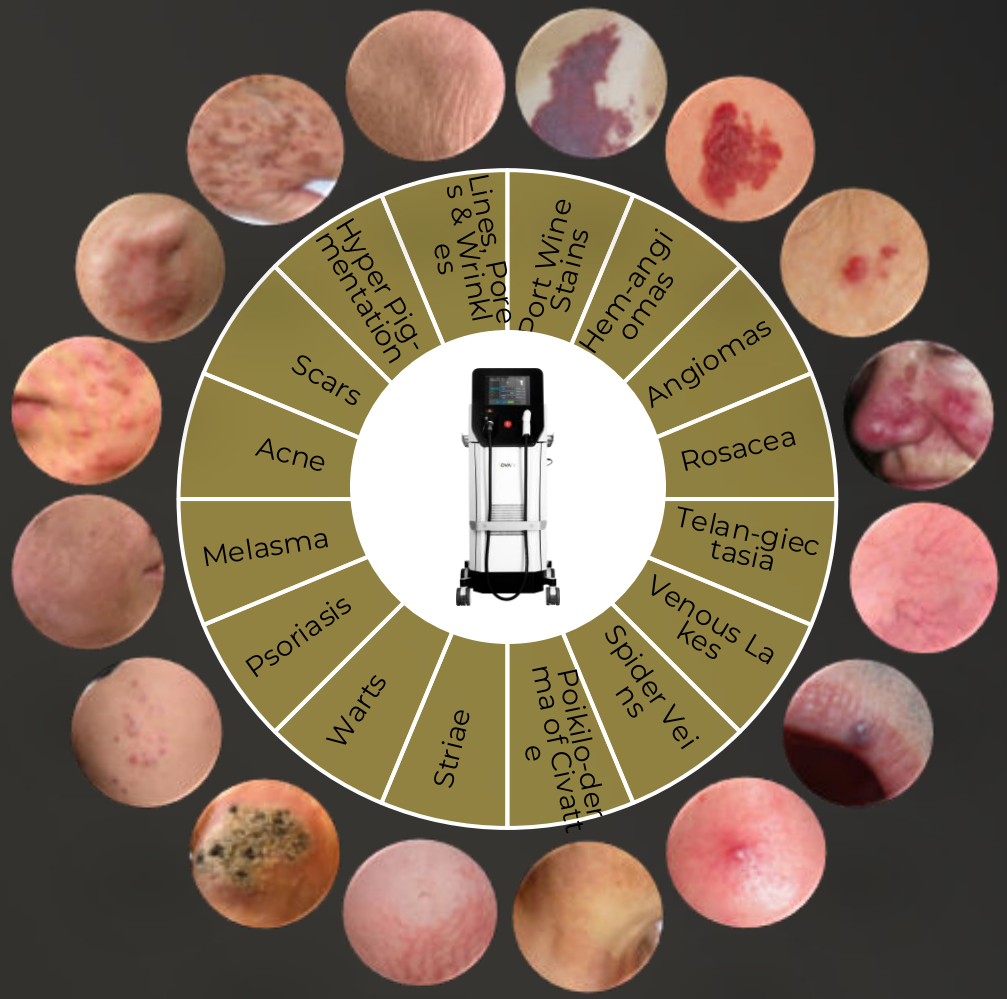
10/6/23

Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, and Collette Utley, DNP, NP-C,
Gold Skin Care Center, Nashville, TN

- Vascular Lasers

589/1319 nm – a Foundational Technology in Dermatology & Aesthetics

- The laser system was launched commercially in 2018
- It is CE/FDA approved as medical equipment suited for the treatment of 25 different skin conditions
- Its unique, patented laser technology makes it highly versatile, clinically efficacious, and very safe to use



589/1319 nm

- Solid-state 589/1319nm
  - ND Yag Diode Crystals
    - No Consumables

- Scanner Hand piece
  - Single spot or fractional
  - 1mm spot size
  - Multi-pattern up to 10x10mm
  - Both wavelengths delivered with the same hand piece

Each Tx 2 weeks apart

Before Tx

Post 1 Tx

Post 2 Txs

Post 3 Txs

Post 4 Txs

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Each Tx 2 weeks apart

Before Tx

Post 1 Tx

Post 2 Txs

Post 3 Txs

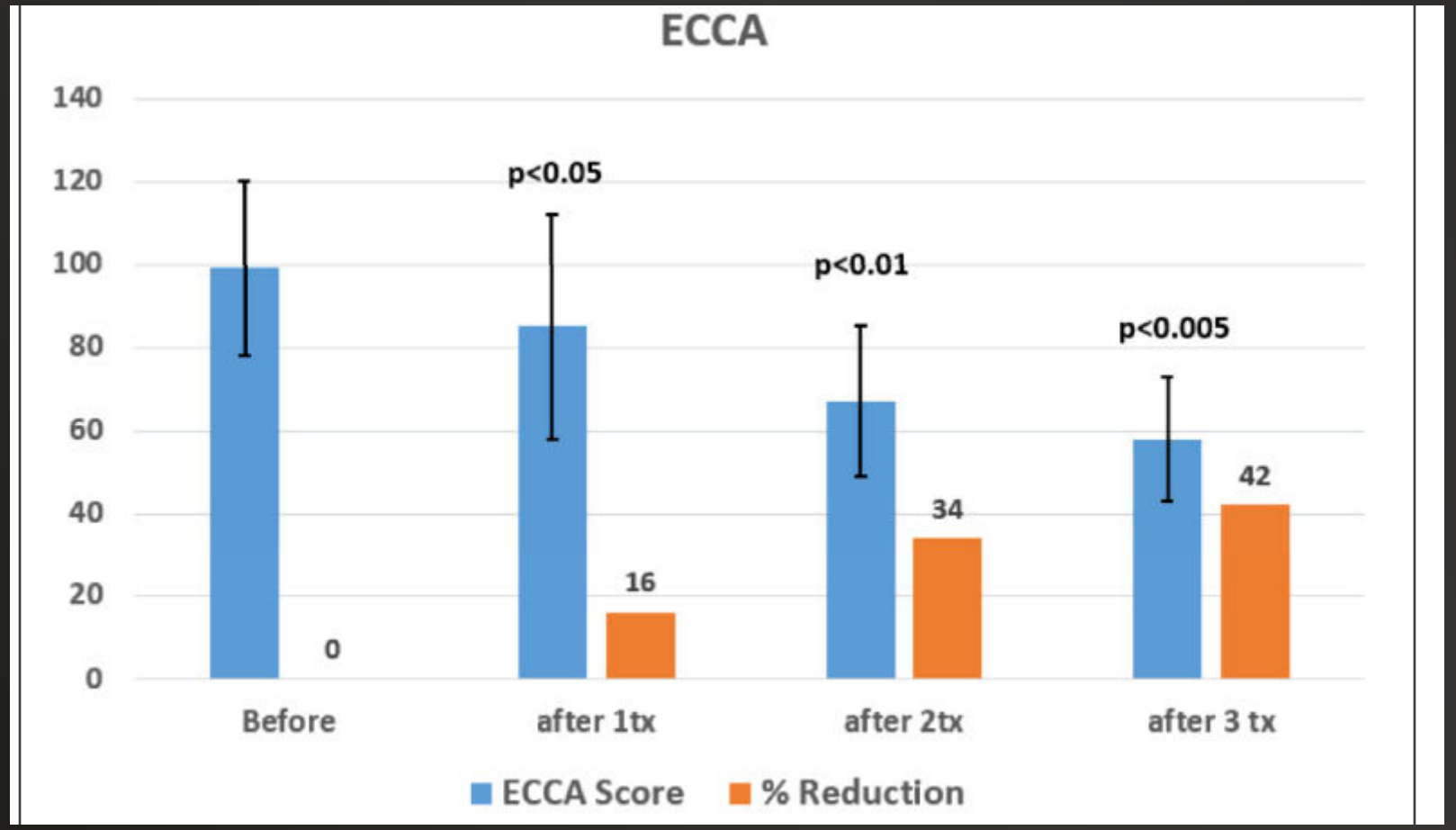
Post 4 Txs

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Background and Objectives for TCRC Study

- Facial acne scarring is a prevalent disease
  - Physical and psychosocial sequelae
- Innovative solid state, dual-wavelength laser investigated
  - 589/1319 nm
  - No consumables
  - No dye kits

ECCA Scale


ECCA
140
120
100
80
60
40
20
0
p<0.05
p<0.01
p<0.005
0
16
34
42
Before
after 1tx
after 2tx
after 3 tx
ECCA Score
% Reduction

Before and After

Before and After

Baseline

Post 3 Months

Post 6 Month

Photos Courtesy of Michael H. Gold, MD
The Tennessee Clinical Research Center, Nashville, TN USA

Treatment of Acne Scaring with a Novel Dual-Wavelength Laser
J Cosmetic Dermatol. 2019;18:1290-1293

ORIGINAL CONTRIBUTION

JCD Journal of Cosmetic Dermatology | WILEY

Treatment of acne scarring with a novel dual-wavelength laser

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[2]University Lille, Inserm, CHU Lille, U1189-ONCO-THAI – Image Assisted Laser Therapy for Oncology, Lille, France

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Email: serge.mordon@inserm.fr

Funding information
Advalight, San Diego, CA, USA

Abstract

Background: Facial acne scarring is a prevalent disease with both physical and psychosocial sequelae.

Aims: This study aims to evaluate an innovative solid state dual wavelength 1,319 and 589 nm laser, which does not require consumable dye, for the treatment of acne scars.

Patients/methods: A total of 12 patients (11 female, 1 man - Fitzpatrick skin phototypes II & III) with acne scar for more than one year, were treated with 1,319 nm and subsequently by 589 nm, all having four-sessions, one every other week. A full face was covered in approximately 30 minutes. Acne scars were scored by one physician evaluator using the ECCA grading scale before, 2 weeks after each treatment and 1 month and 6 months after the 4th treatment. Safety was measured by recording subject discomfort scores and adverse effects.

Results: 12 subjects were enrolled into the study, 10 completed all 4 treatments and 2 were lost to follow up. Fluence used was 28 J/cm² ± 2.4 J/cm² at 1,319 nm and 16 ± 2.9 J/cm² at 589 nm. At baseline, mean ECCA score was 98 ± 23. This score was reduced to 88 ± 30 ($p<0.02$), after one session, to 68 ± 21 ($p<0.01$) after 2 sessions, to 58 ± 17 ($p<0.01$) after 3 sessions to reach 58 ± 15 ($p<0.01$) 1 month after the 4th and finally 66 ± 11 ($p<0.01$) at 6 month follow up. This observation corresponds respectively to 14%, 33 %, 42 %, 40% and 30% reduction of the ECCA score. Only one patient (ECCA score: 120) did not improve after 3 sessions. Slight to moderate erythema was sometimes observed without dryness or bruising. No or minimal burning or stinging was reported. No crust was observed.

Conclusion: Improvement in scarring was noted in almost all patients with minimal discomfort and minimal downtime. Combining both minimal side effects with effective acne scar reduction, this laser appears to be highly effective. Long-term evaluation remains necessary to confirm the efficacy of this new laser.

KEYWORDS
acne, ECCA, near-infrared laser, scarring, yellow laser

Treatment of Moderate-to-Severe Facial Acne Vulgaris with Solid-State Fractional 589-1,319-nm Laser

J Clin Aesthet Dermatol. 2019;12(3):28–31

Treatment of Moderate-to-severe Facial Acne Vulgaris with Solid-state Fractional 589/1,319-nm Laser

ABSTRACT

Objective: The objectives of this study were to evaluate the efficacy, safety and patient satisfaction of a unique combination of wavelengths 589nm and 1,319nm for the treatment of facial acne vulgaris. **Design:** This was a small, randomized, prospective, split-face, single-blinded study of patients with moderate-to-severe acne vulgaris. **Setting:** The study took place at a single outpatient center study in Torrance, California. **Participants:** Nine patients underwent four treatment sessions at 2- to 3-week intervals. Each patient received one pass with the 1,319nm laser followed by one pass with the 589nm laser only to the randomized treatment side of the face. **Measurements:** A blinded, board-certified dermatologist reviewed photographs and counted acne lesions on treated and nontreated sides. **Results:** Of the nine patients, eight were Fitzpatrick Skin Type IV. At the final visit, inflammatory acne lesions were reduced by 2.5 (-23.1%) on the treatment side and increased by 1.1 (+11.1%) on the control side. No patients experienced bruising, edema, hyperpigmentation or scarring. At the conclusion of the study, 77.8 percent of the patients reported overall satisfaction. **Conclusion:** This unique combination of lasers appears to be safe in patients with Fitzpatrick Skin Type IV, and might be useful in treating moderate-to-severe acne vulgaris.

KEY WORDS: Acne, acne vulgaris, active acne, acne scarring, laser

by ALISON KANG, MD; ALEXIS LYONS, MD; JENNIFER HERRMANN, MD; and RONALD MOY, MD

Drs. Kang and Herrmann are with the Division of Dermatology, Harbor-UCLA Medical Center in Torrance, California. Drs. Lyons, Herrmann, and Moy are with Moy-Fincher-Chipps Facial Plastics and Dermatology in Beverly Hills, California. Dr. Moy is with the Department of Dermatology, Keck School of Medicine at the University of Southern California in Los Angeles, California.

J Clin Aesthet Dermatol. 2019;12(3):28–31

Acne vulgaris is the most common skin condition in the United States, affecting up to 50 million Americans each year.[1] Although most prevalent during the teenage years, acne often persists into adulthood and is more common in women than men.[2] Acne affects all skin colors and can cause negative self-image, lower self-esteem, and feelings of isolation, anxiety, and depression.[3] Scarring is a common complication of acne and has been reported in up to 95 percent of patients with acne.[4]

Standard medical treatments for acne include topical medications such as benzoyl peroxide, antibiotics, retinoids, and salicylic acid, as well as oral medications such as antibiotics, contraceptive pills, spironolactone, and isotretinoin.[5–7] Treatments are individualized depending on acne severity, type, and etiology. Recently, there has been increasing recognition of laser- and light-based therapies for the treatment of active acne and resultant scarring.[8,9] Lasers studied include the 1,540-nm erbium:glass laser, 1,550-nm fractionated erbium:glass laser, pulsed-dye

To date, few studies have investigated laser combinations, including PDL combined with either a 1,064-nm Nd:YAG or a 1,450-nm diode laser.[11–13] The device investigated in this study is a unique, solid-state laser with both 589-nm and 1,319-nm wavelengths. The 589-nm wavelength targets the superficial cutaneous microvasculature and might reduce acne-associated erythema,[14–16] while the 1,319-nm wavelength is absorbed primarily by water, generating thermal energy nonspecifically, leading to dermal collagen remodelling.[21] Studies evaluating the 1,320-nm wavelength have demonstrated histologic improvement in epidermal and dermal thickening as well as acne scar improvement.[17–24] In addition, the 1,319-nm wavelength might also target the sebaceous gland directly, leading to reduced sebum production.[25]

The primary objective of this study was to evaluate the efficacy of a unique combination of the 589-nm and 1,319-nm wavelengths for the treatment of facial acne vulgaris. The secondary objectives of this study were to assess the safety

Use of a Novel 589-nm Solid-State Laser for Treatment of Facial Erythema
J Cosmet Dermatol. 2018;17:770–774.

ORIGINAL CONTRIBUTION

WILEY JCD Journal of Cosmetic Dermatology

Use of a novel 589-nm solid-state laser for treatment of facial erythema

Diana K. Cohen[1] MD, MS | Noelani E. Gonzalez[1] MD | Bradly S. Bloom[1,2] MD | David J. Goldberg[1,2] MD, JD

[1]Skin Laser & Surgical Specialists of NY and NJ, Hackensack, New Jersey,

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Correspondence: Diana K. Cohen, MD, MS, Skin Laser & Surgical Specialists of NY and NJ, Hackensack, NJ (cohen.dianak@gmail.com).

Funding information
Advalight

Summary

Objective: To evaluate the efficacy and safety associated with use of a 589-nm solid-state laser for treatment of facial erythema.

Methods: A prospective, IRB-approved study was conducted. Participants who were interested in treatment for facial erythema were recruited. They received four monthly treatments with the 589-nm laser. Erythema of the right and left face was graded on a scale of 0-4, 4 being most severe, by both investigators and participants prior to each treatment and at follow-up. Safety was assessed by any reported side effects.

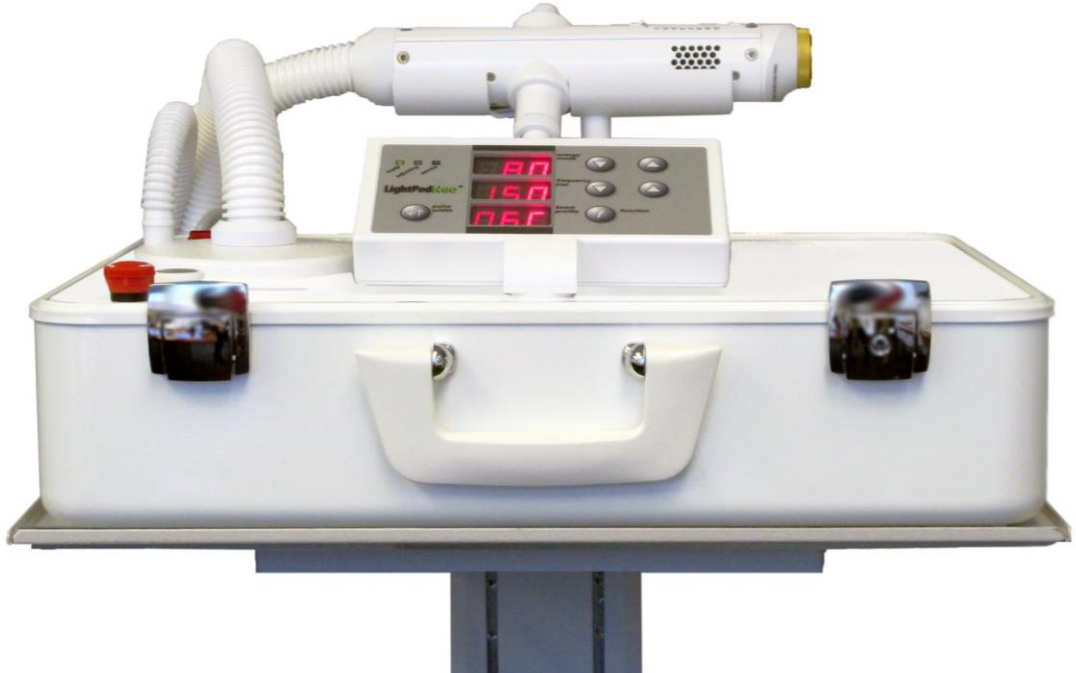
Results: Twenty-four participants enrolled in the study, 16 women (67%) and 8 men (33%), with an average age of 51.1 years. Investigator grades showed a statistically significant improvement in erythema of 31% for both the right and left face. Participant grades showed a statistically significant improvement in erythema of 23.2% for the right face and 22.8% for the left face. Side effects were limited to transient erythema posttreatment.

Conclusion: A 589-nm solid-state laser achieved a modest improvement in facial erythema when evaluating results 1 month after four monthly treatments. No major safety issues were reported.

KEYWORDS
erythema, vascular laser

- Short-Pulsed 1064 nm Laser

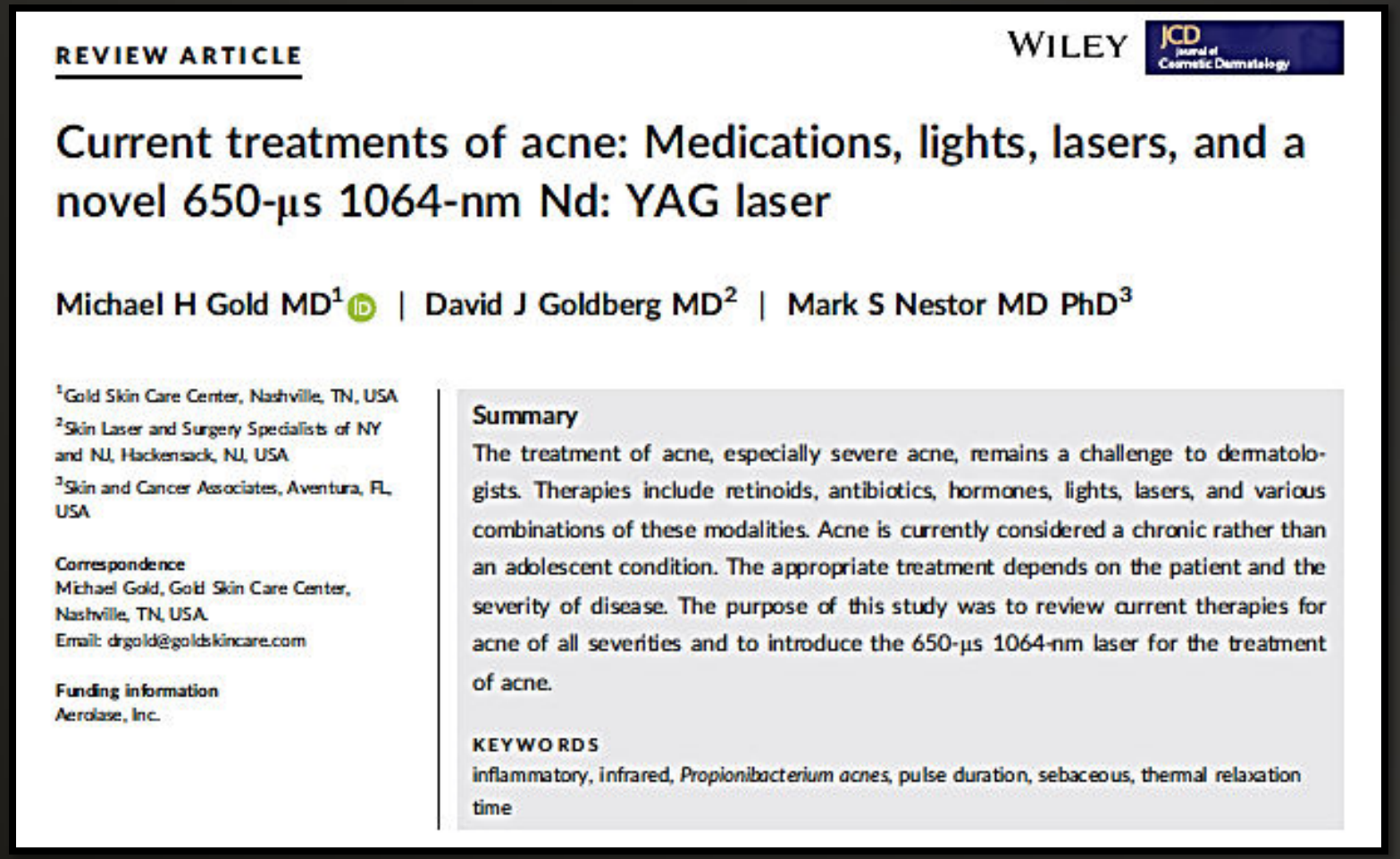
650 Microsecond Technology®



• Short-Pulsed 1064 nm Laser

- 650-microsecond technology for up to 255 J/cm2 in a single pulse duration
- More than 50 FDA cleared medical aesthetic indications
- Ability to perform anesthetic, gel & skin contact free treatment on all skin types
- Eliminates pain, burns or adverse effects of the previous generation of lasers
- No costly service contracts

Current treatments of acne: Medications, lights, lasers, and a novel 650-μs 1064-nm Nd: YAG laser
J Cosmet Dermatol 2017:1-16



REVIEW ARTICLE

WILEY JCD Journal of Cosmetic Dermatology

Current treatments of acne: Medications, lights, lasers, and a novel 650-μs 1064-nm Nd: YAG laser

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Funding information
Aerolase, Inc.

Summary

The treatment of acne, especially severe acne, remains a challenge to dermatologists. Therapies include retinoids, antibiotics, hormones, lights, lasers, and various combinations of these modalities. Acne is currently considered a chronic rather than an adolescent condition. The appropriate treatment depends on the patient and the severity of disease. The purpose of this study was to review current therapies for acne of all severities and to introduce the 650-μs 1064-nm laser for the treatment of acne.

KEYWORDS
inflammatory, infrared, *Propionibacterium acnes*, pulse duration, sebaceous, thermal relaxation time

Before and After Photos

Before Treatment Post 2 Treatments – 4 weeks apart

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Photos

Before Treatment

Post 4 Treatments, 4 Weeks Apart

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Photos

Before Treatment

Post 1 Treatment – 2 weeks apart

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Photos

Before Treatment

Post 2 Treatments – 4 weeks apart

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Photos

Before Treatment

Post 11 Treatments – 1 week apart

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Tx

Before Treatment

6 treatments post 13 months

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Tx

Before Treatment

6 treatments post 13 months

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

Before and After Tx

Before Treatment

6 treatment post 13 months

Photos Courtesy of Michael H. Gold, MD
Gold Skin Care Center, The Laser and Rejuvenation Center, Nashville, TN

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DOI: 10.1111/jocd.13480

ORIGINAL CONTRIBUTION

JCD Journal of Cosmetic Dermatology WILEY

650 usec 1064nm Nd:YAG laser treatment of acne: A double-blind randomized control study

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Skin Laser and Surgery Specialists of NY & NJ, Hackensack, NJ, USA

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Funding information
Skin Laser and Surgery Specialists of NY & NJ received funding from Aerolase for this study.

Abstract

Background: A variety of energy-based devices have been used to treat acne. However, all studies have been subjective and have not involved double-blind and randomized controlled studies.

Aims: We undertook a randomized controlled study evaluating the use of a 650 usec 1064 nm Nd:YAG laser compared with a sham in the treatment of acne.

Patients/Methods: A total of 20 subjects with moderate-to-severe acne were randomized to receive either 650 usec 1064nm Nd:YAG laser or sham treatment. All subjects received 3 treatments, two weeks apart, plus an additional session undertaken 4 weeks after the 3rd treatment. Subjects were evaluated for investigator global improvement, improvement in inflammatory lesions, improvement in comedonal lesions, total porphyrin score, and total sebum score.

Results: The laser-treated group showed an Investigator's Global Assessment Scale (IGA) improvement of 26% compared with 7% for the sham group (a 271% improvement over sham treatment group). The treatment group also showed a decrease in the number of inflammatory lesions of 42% compared with 26% in the sham group (a 62% improvement over sham). The laser-treated cohort also experienced a reduction in total number of comedones similar to that seen with inflammatory lesions and a decrease in total porphyrin score. There was also an 18% reduction in sebum production in the treated group, compared with 9% in the sham group (a 100% improvement).

Conclusion: This is the first study that has compared laser treatment of acne compared with a sham treatment. A 650 usec 1064nm Nd:YAG laser can effectively treat acne.

KEYWORDS
acne, laser, Nd:YAG

1 | INTRODUCTION

Acne vulgaris is one of the most common conditions treated by dermatologists.[1] The pathogenesis of acne is multifactorial. Epidermal hyperproliferation and excess sebum production result in blockage of the pilosebaceous units. This is followed by increased proliferation and activity of commensal skin bacteria *Propionibacterium acnes*, resulting in subsequent inflammation.[2,3] Moderate acne is traditionally treated with topical cleansers, retinoids, and antibiotics. Moderate-to-severe acne may sometimes require additional treatment with systemic antibiotics or retinoids.[4] Treatments can often be irritating, unsatisfactory, and the chronic exacerbations and remissions throughout adolescence and adulthood can have a major impact on patient quality of life.[5,6] Devices and lasers are often employed as an adjunctive treatment for acne and acne scarring. Common treatments include chemical peels, nonablative radiofrequency,

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A randomized, double-blind, controlled study to determine the efficacy and tolerance of a 650 microsecond YAG laser therapy in the treatment of moderate to severe acne vulgaris

David J. Goldberg, MD, JD & Katarina Kesty, MD, MBA

The first study of it's kind to be completed:

- 271% improvement in acne vs. sham
- 42% reduction in inflammatory lesions
- 18% reduction in sebum production

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Treatment of Moderate to Severe Acne and Scars With a 650-Microsecond 1064-nm Laser and Isotretinoin

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[c]Central State Medical Academy of the Administrative Department of President of the Russian Federation, Moscow, Russia

ABSTRACT

Background: Laser procedures for acne and acne scars have traditionally been postponed for at least 6 to 8 months after the end of systemic isotretinoin therapy. Lower dosages with more modern laser devices having unique energy parameters of high power in microsecond pulse durations have made it possible to administer laser therapy during or shortly after completion of isotretinoin therapy, thus reducing the risk of side effects of isotretinoin.

Methods: Patients with moderate to severe facial acne (n=46) and atrophic scars enrolled in a 6-month study. Genetic analysis of patients revealed the presence of polymorphisms of genes Col1A2, MMP3, ESR1, MMP1, and MMP7, which can lead to scar formation. Patients underwent low-dosage isotretinoin therapy (0.2-0.3 mg/kg/day) in combination with facial laser treatment using a 650-microsecond, 1064-nm Nd:YAG laser. Acne severity was graded using the Investigators Global Assessment (IGA) scale and quality of life was evaluated by the Dermatology Life Quality Index (DLQI).

Results: IGA parameters decreased from 1.8 ± 0.2 (mean ± SD) initially to 0.5 ± 0.4 at the end of the study, a 72.3% reduction which was significant ($P<0.01$). The DLQI index decreased from 10.1 ± 1.3 initially to 2.8 ± 1.2, a 72.3%, a significant reduction ($P<0.01$). Inflammatory elements resolved without scarring. Laser treatment was well tolerated and improvement in pre-existing scars was noticeable.

Conclusions: The 650-microsecond, 1064-nm laser in combination with low-dose isotretinoin is safe and effective in patients with acne complicated by atrophic scars and genetically prone to post-acne scarring.

J Drugs Dermatol. 2020;19(6):646-651. doi:10.36849/JDD.2020.5108

INTRODUCTION

Tradition holds that laser procedures to treat acne vulgaris should be postponed at least 6 to 8 months after the end of systemic therapy with isotretinoin. This is based on data suggesting that dermabrasion or laser therapy during isotretinoin treatment may induce keloid formation or delay the repair of skin integuments (ie, skin scar tissue).[1-7] The validity of this practice has recently been questioned.[8-12] In their consensus recommendations, Spring and colleagues[10] reported insufficient evidence that physicians should delay manual dermabrasion, cutaneous surgery, superficial chemical peels, laser hair removal, and fractional ablative and nonablative laser procedures in patients receiving or recently completing therapy with isotretinoin. The authors did not, however, recommend mechanical dermabrasion and fully ablative laser therapy while patients underwent systemic isotretinoin treatment.

Two months later the American Society of Dermatologic Surgery reported its consensus recommendations regarding the safety of lasers, dermabrasion, chemical peels, energy devices, and skin surgery during and after isotretinoin use.[11] The Task Force concluded that evidence was lacking that physicians should delay procedures with chemical peels and nonablative lasers (ie, hair removal lasers and lights, vascular lasers, fractional devices) in patients currently or recently exposed to isotretinoin, and that superficial and focal dermabrasion, when performed by a well-trained professional, may also be safe.

Mysore and colleagues,[12] after reviewing published studies, reported that evidence for avoiding a variety of procedures (fractional CO2 resurfacing, fractional Nd:YAG laser, fractional infrared lasers, laser hair removal, microdermabrasion using

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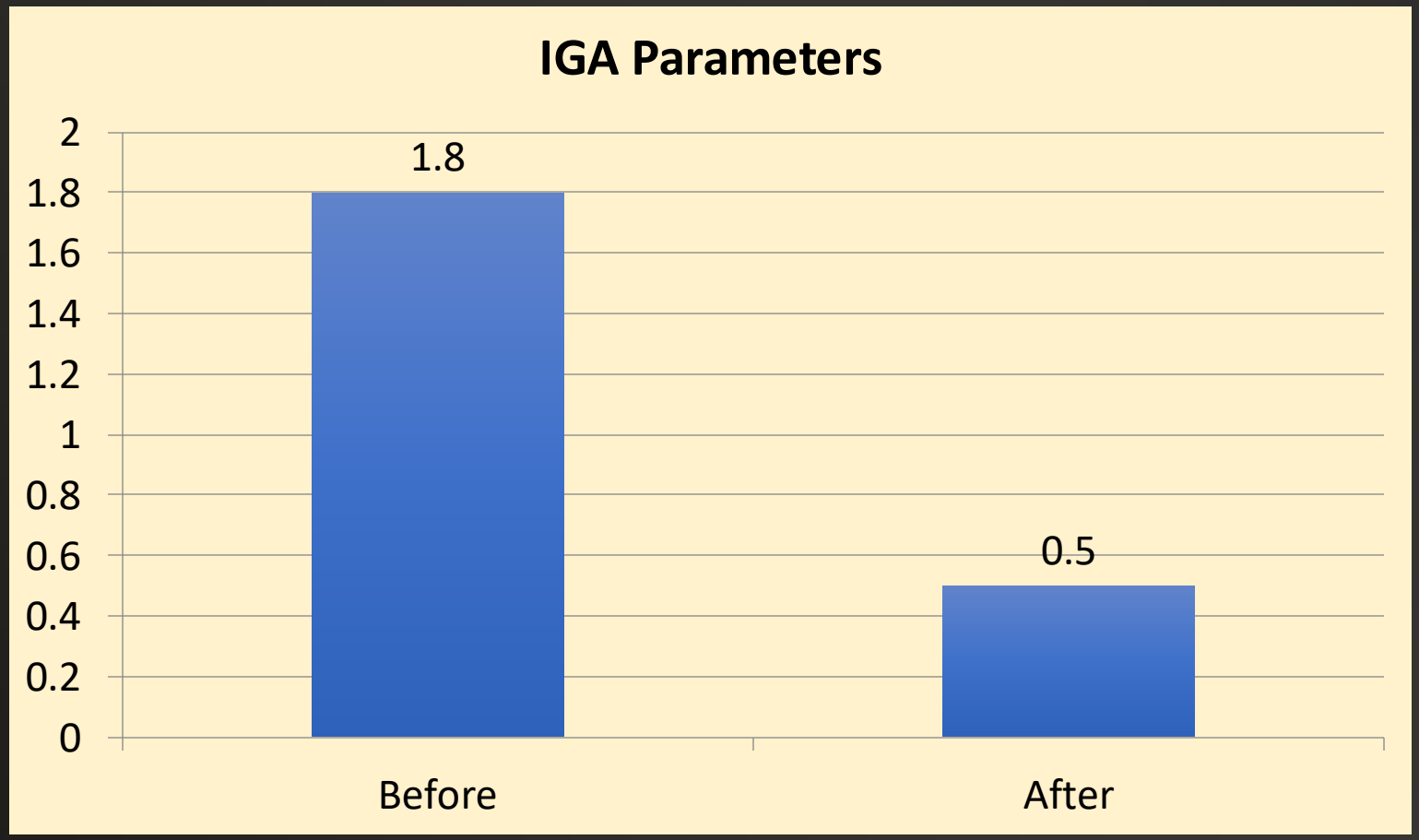
JO00620

Treatment of Moderate to Severe Acne and Scars with a 650-microsecond 1064nm Laser and Isotretinoin

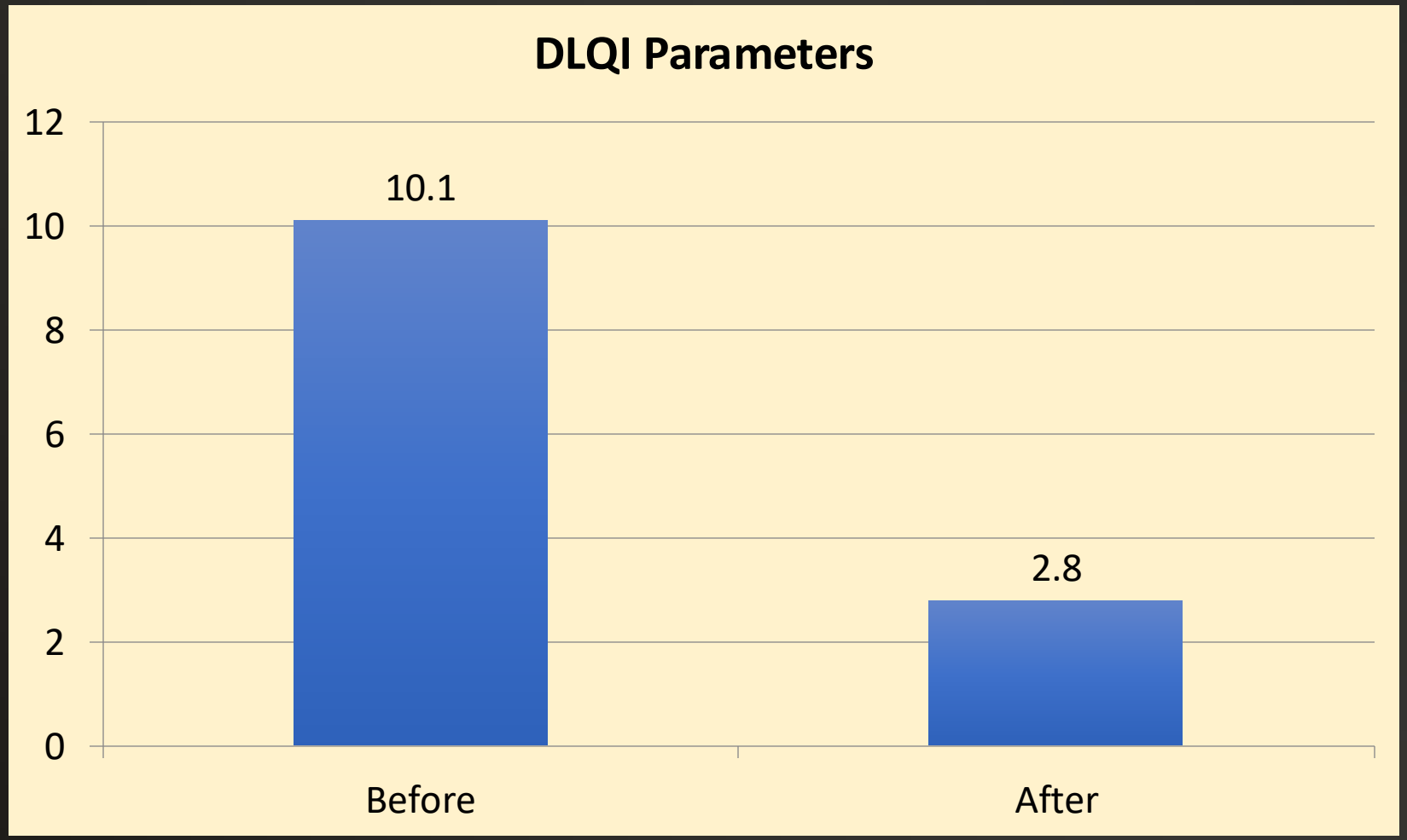
Published by Michael H. Gold, MD

Results: IGA Parameters



Decreased by 72.2% and reached 0.5± 0.4 ($p < 0.01$) points

Results: DLQI Parameters



Decreased to 2.8± 1.2points ($p < 0.01$)

Results

Before and After 12 Laser Treatments in Combination with Low Dose Isotretinoin

Results

Before and After 12 Laser Treatments in Combination with Low Dose Isotretinoin

Results

Before and After 12 Laser Treatments in Combination with Low Dose Isotretinoin

Results

Before and After 12 Laser Treatments in Combination with Low Dose Isotretinoin

- Acne Devices Targeting Sebaceous Glands

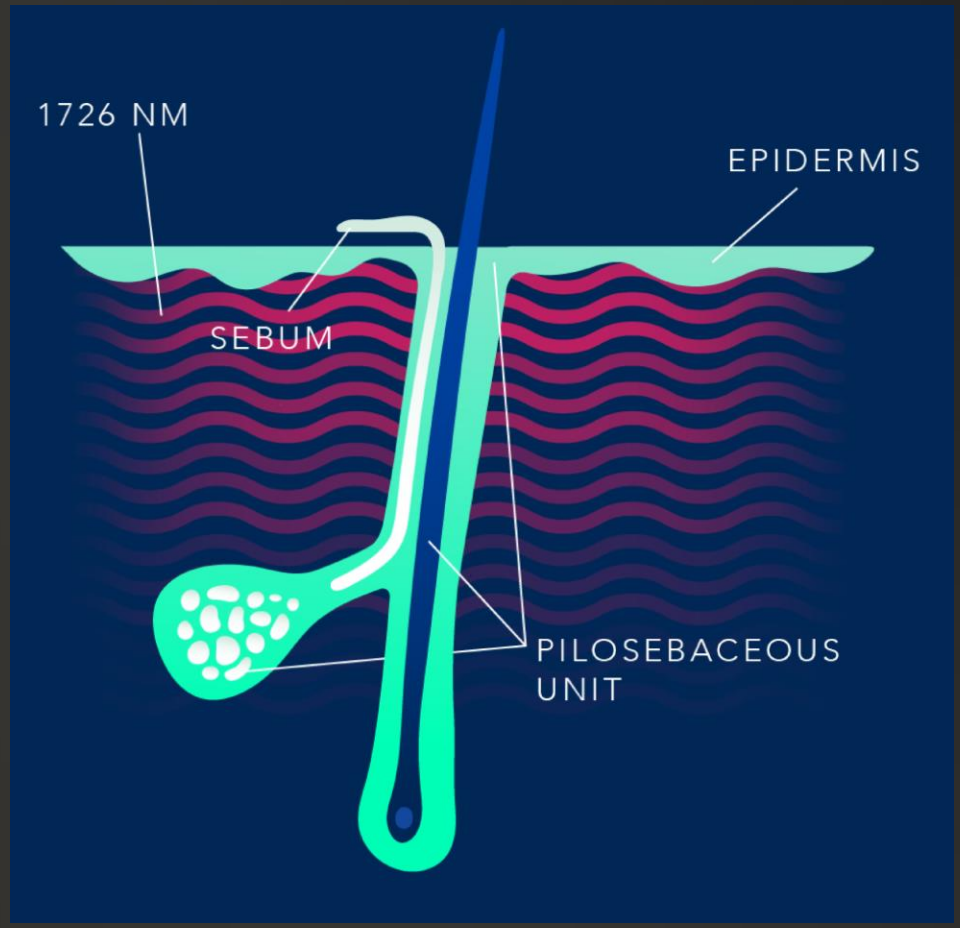
• Acne Devices Targeting Sebaceous Glands

- Two new devices developed for targeted sebaceous gland activity at 1726 nm

Mechanism of Action

Target acne at the source

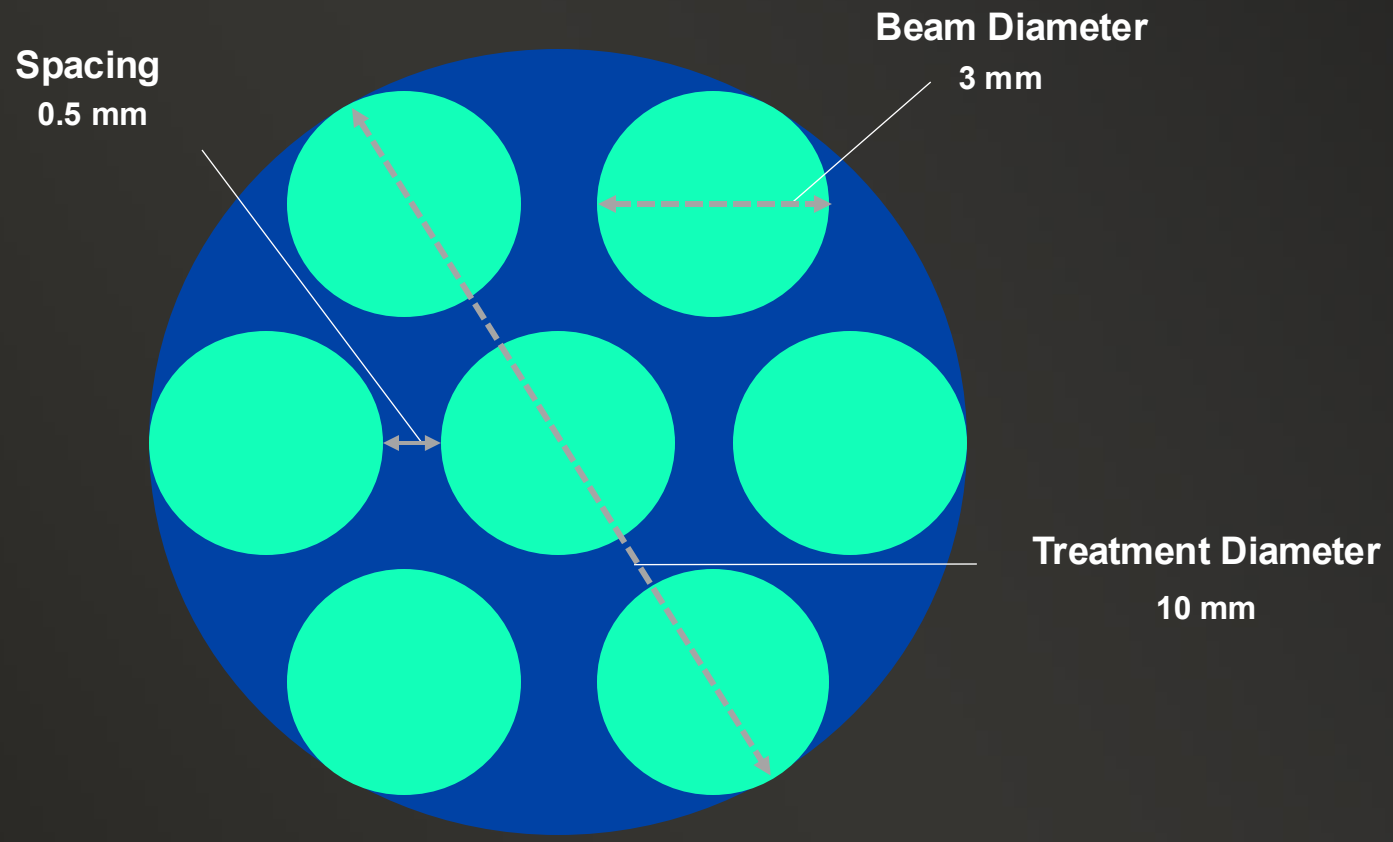
- Overproduction of sebum by the sebaceous glands is one of the leading causes of acne[1]
- At 1726 nm sebum absorbs 2x more energy compared to H_2O[2]
- AviClear uses this wavelength to selectively target and damage sebocytes
- Sebaceous glands shrink and sebum production decreases



[1]O'Neill AM, Gallo RL. Host-microbiome interactions and recent progress into understanding the biology of acne vulgaris. Microbiome. 2018;6:177
[2] Sakamoto FH, et al. Selective photothermolysis to target sebaceous glands: theoretical estimation of parameters and preliminary results using a free electron laser. Lasers Surg Med. 2012;44(2):175-183

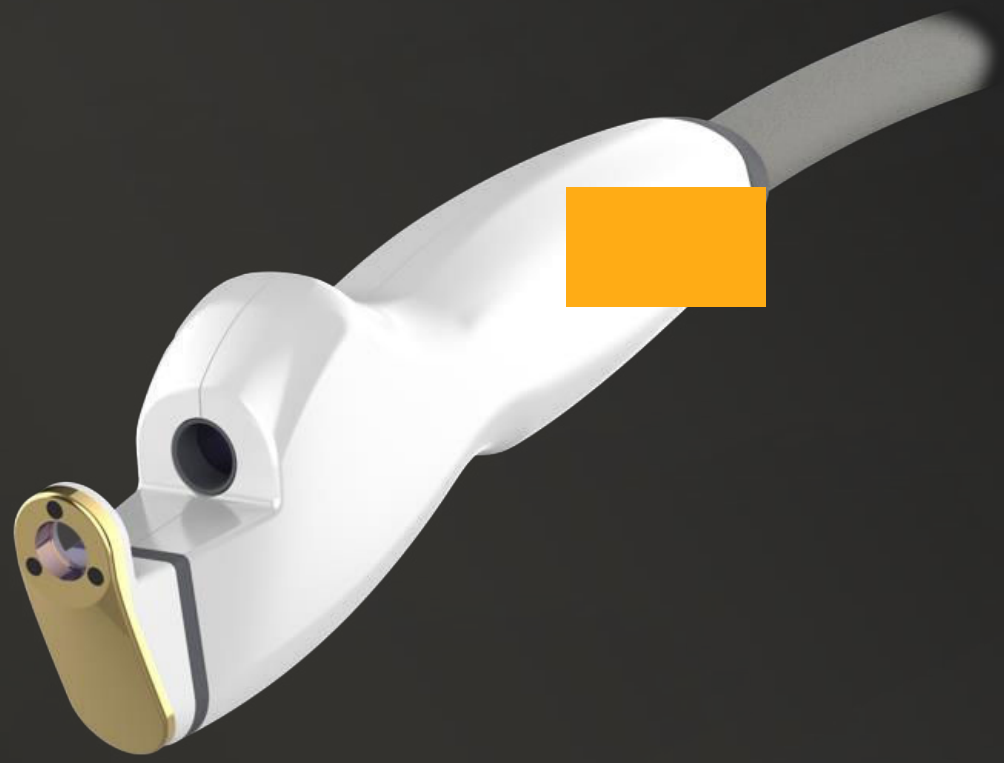
Unique imprint designed for acne

- 7 Individual 3 mm laser spots delivered in a 10 mm treatment area
- Exceptionally fast scanning pattern that takes into account thermal relaxation times of sebaceous glands
- Algorithm delivers a treatment imprint at roughly 0.3 Hz and a 1.5 mm depth of penetration



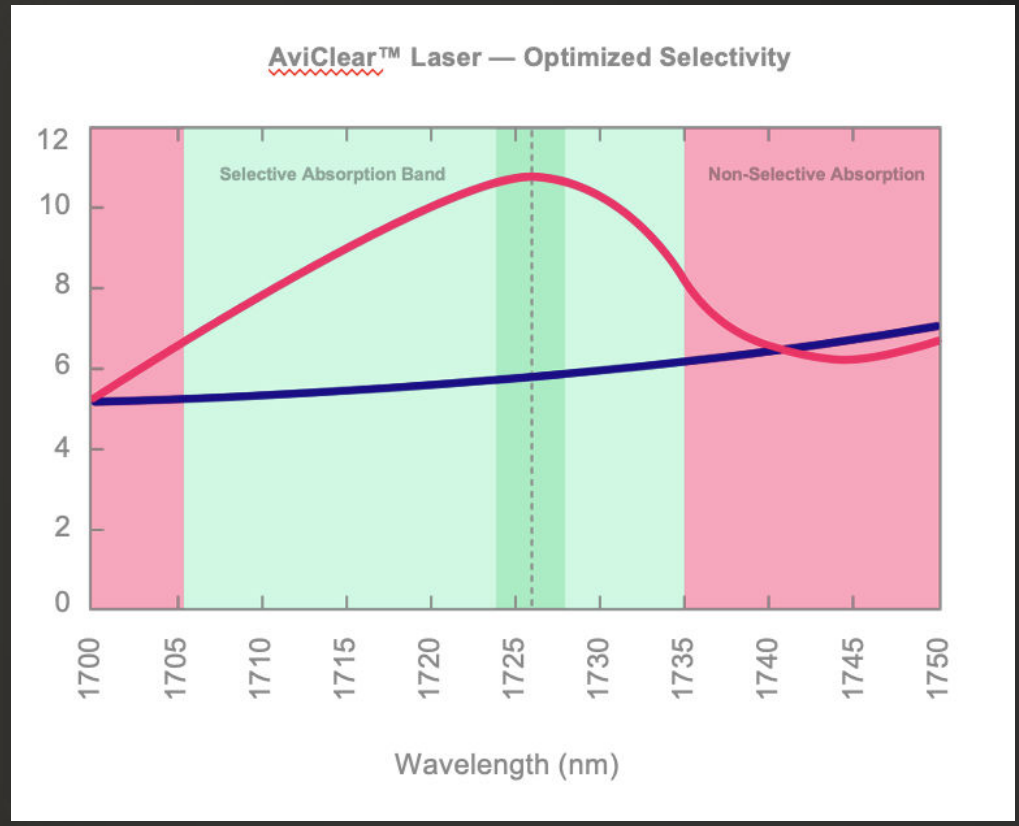
Advanced Cooling

Handpiece designed with exclusive sapphire skin cooling and smart sensors to maximize patient comfort and safety – This is required for patient comfort and compliance



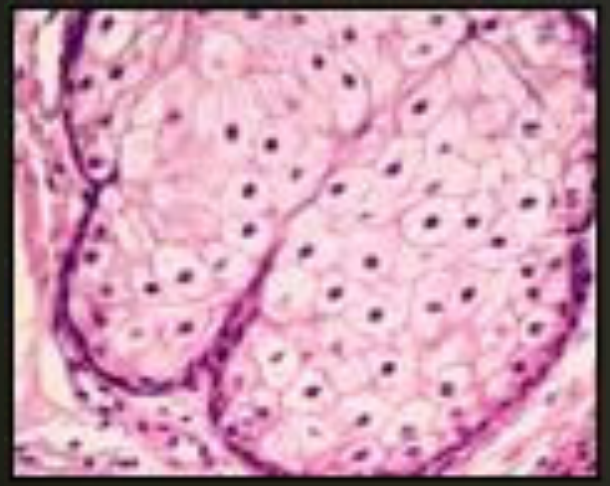
• Selective Absorption of 1726 nm

- The 1726 nm wavelength is clinically proven to absorb 2x more energy in sebum compared to H2O1
- The 1726 nm wavelength to selectively target and damage sebocytes to suppress sebum production

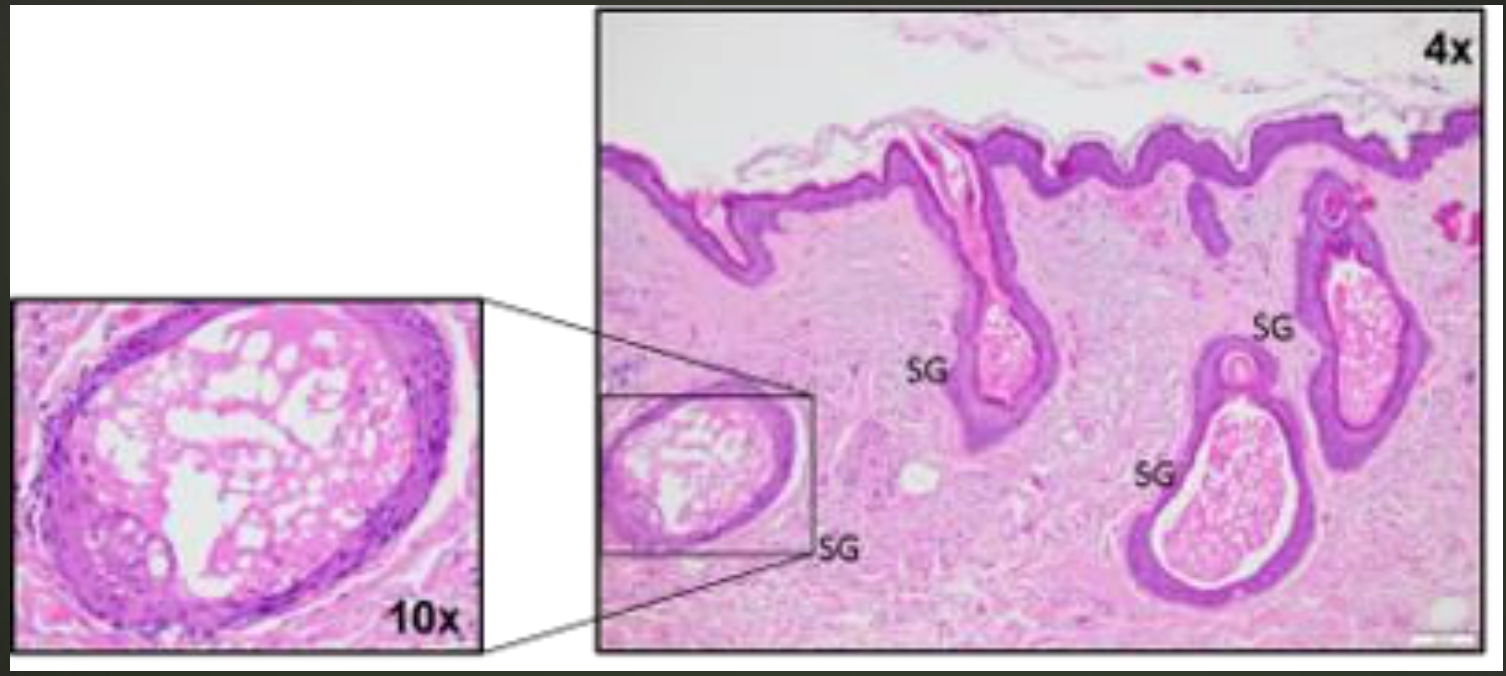


1. O'Neill AM, Gallo RL. Host-microbiome interactions and recent progress into understanding the biology of acne vulgaris. *Microbiome.* 2018;6:177. **2.** Sakamoto FH, et al. Selective photothermolysis to target sebaceous glands: theoretical estimation of parameters and preliminary results using a free electron laser. *Lasers Surg Med.* 2012;44(2):175-183

• Histological Evidence[2]



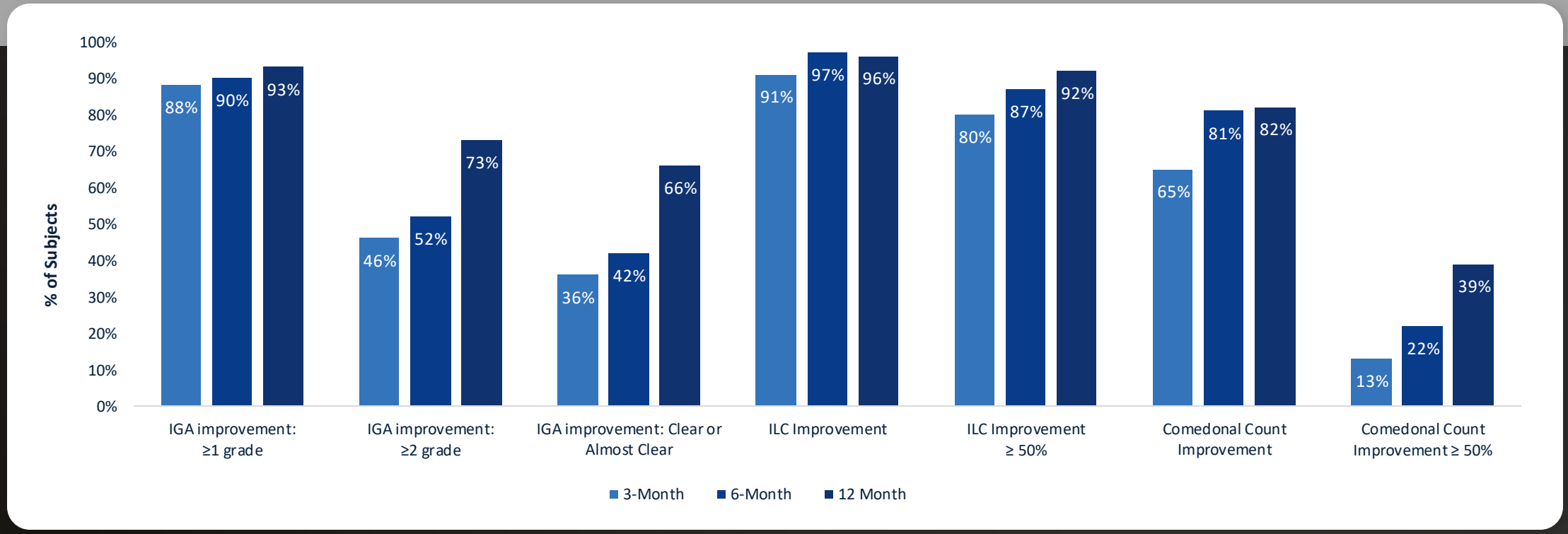
- Healthy sebaceous gland with nucleated sebocytes



- 5 days post-treatment
- Destroys nucleated sebocytes
- Epidermis remains intact

Procedure Efficacy: 3-, 6-, and 12-Month Data[1,3]

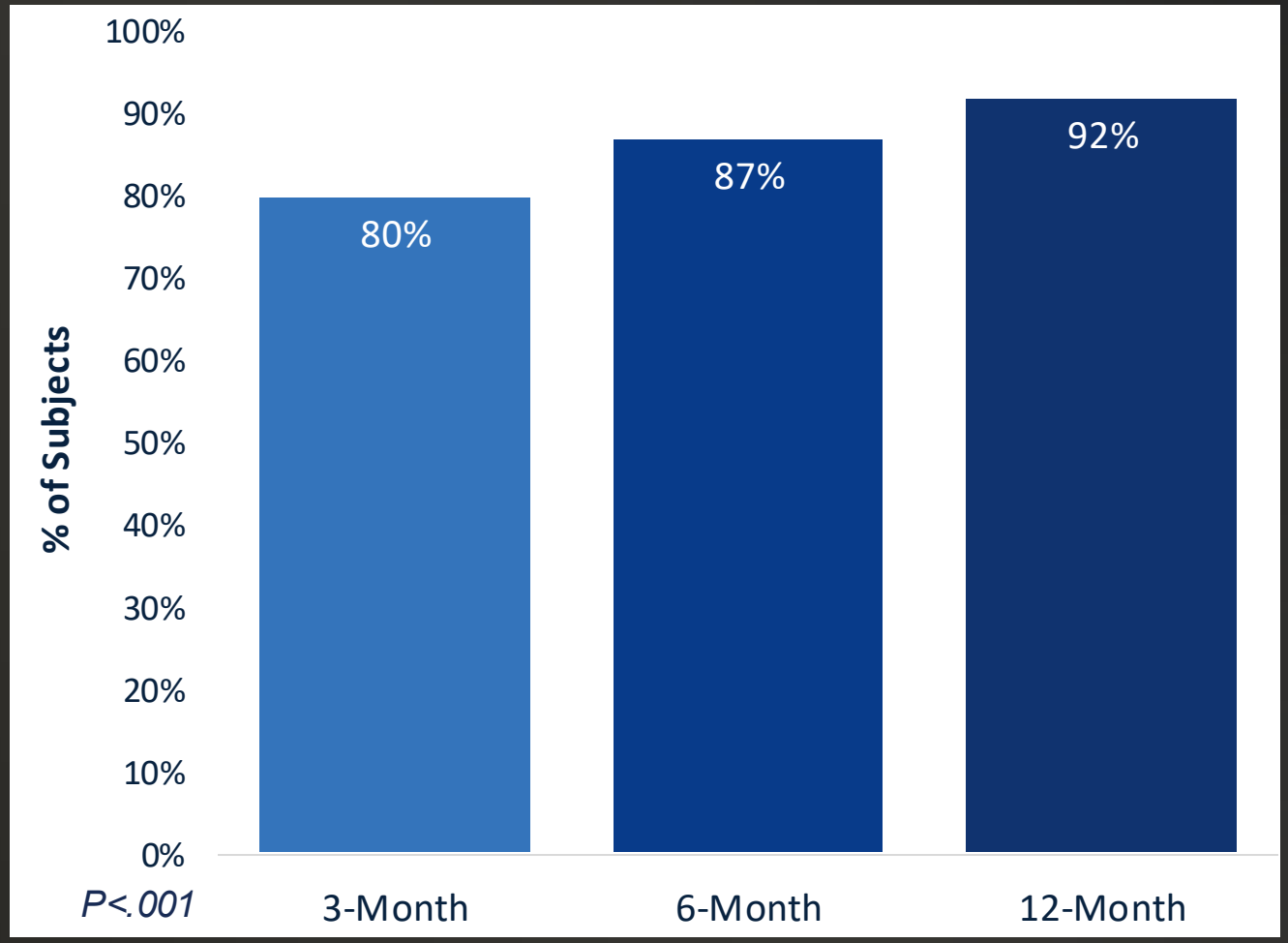
Acne Improvement Over Time



Clinical Results:

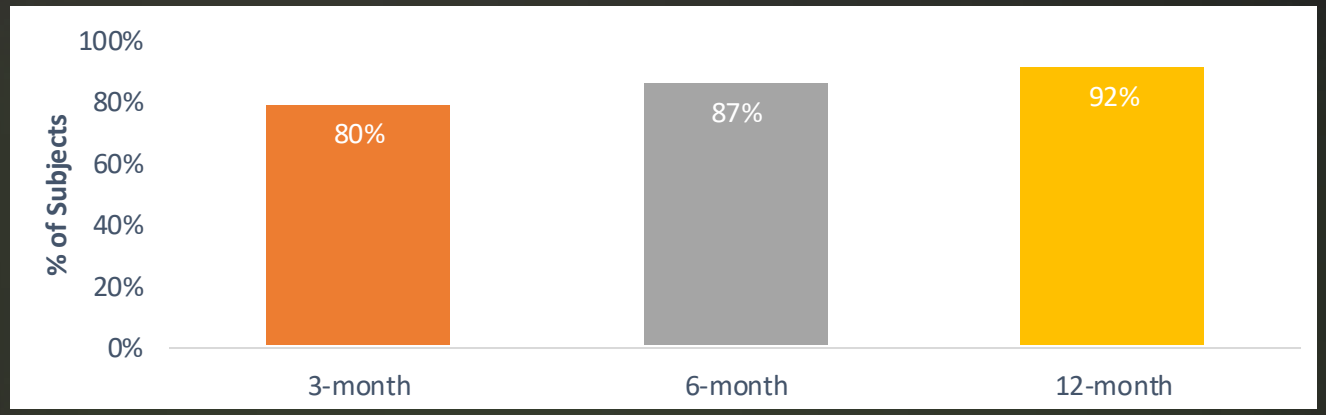
Inflammatory Acne Lesion Count Reduction[1,3]

≥ 50% ILC Improvement

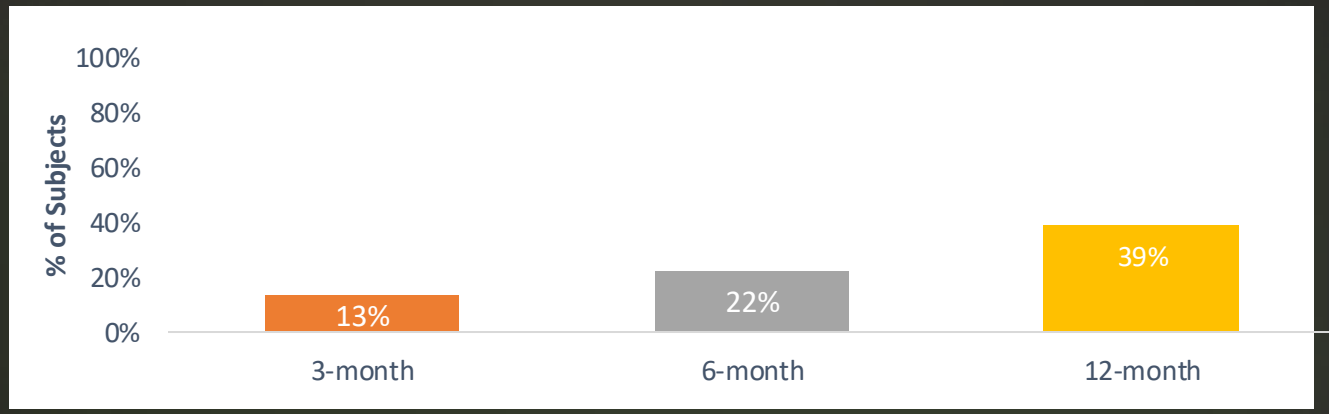


Clinical Results: Acne Lesion Count Reduction[1,3]

≥ 50% ILC Improvement

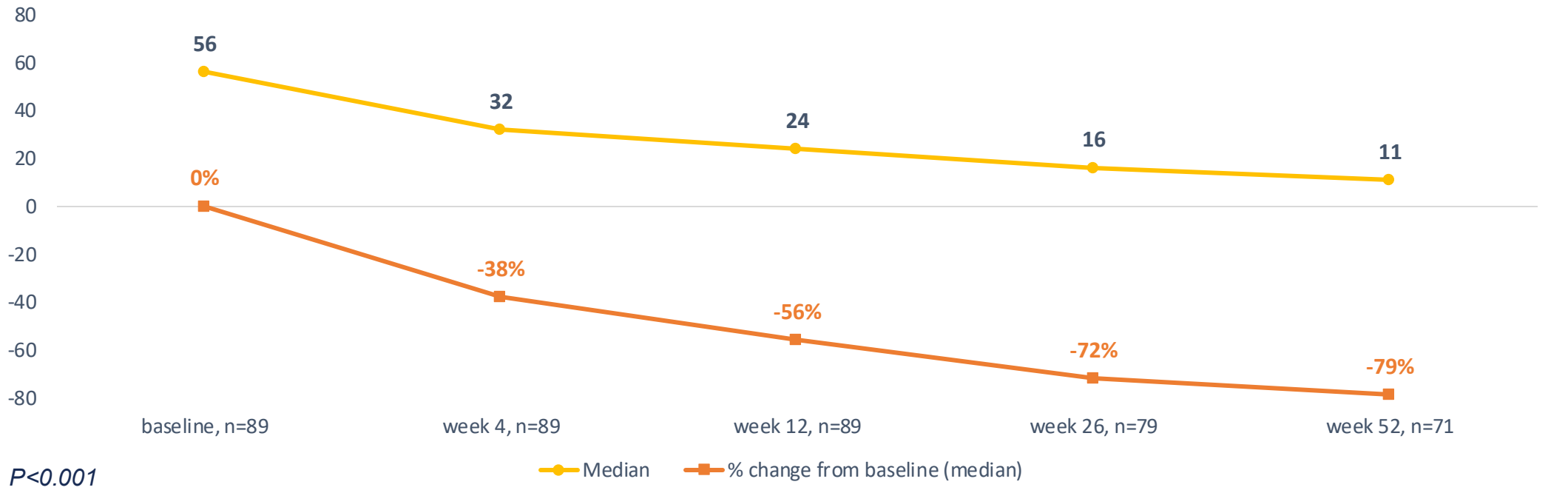


≥ 50% Comedonal Count Improvement



Median Inflammatory Acne Lesion Counts & Percent Reduction[3]

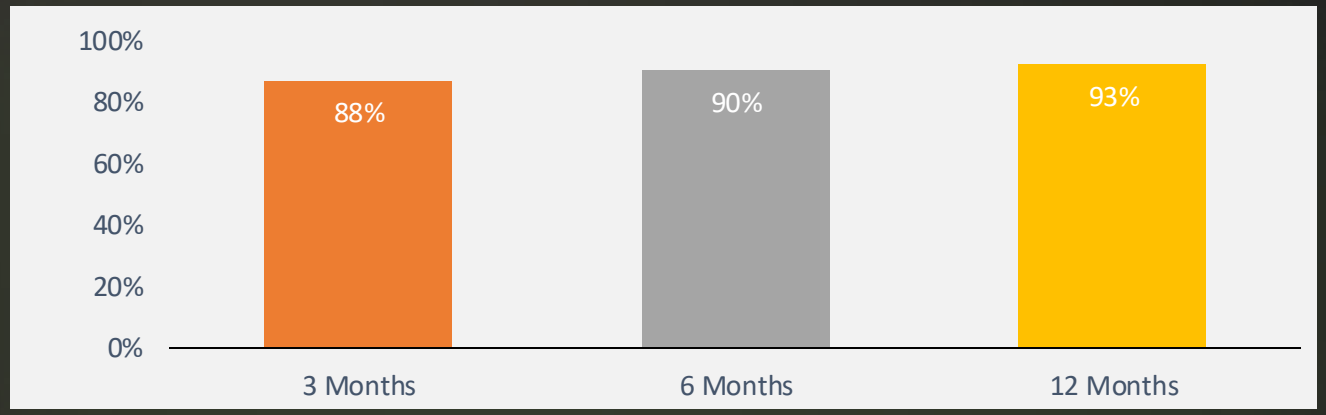
Absolute median ILC and percent change from baseline (PP cohort)



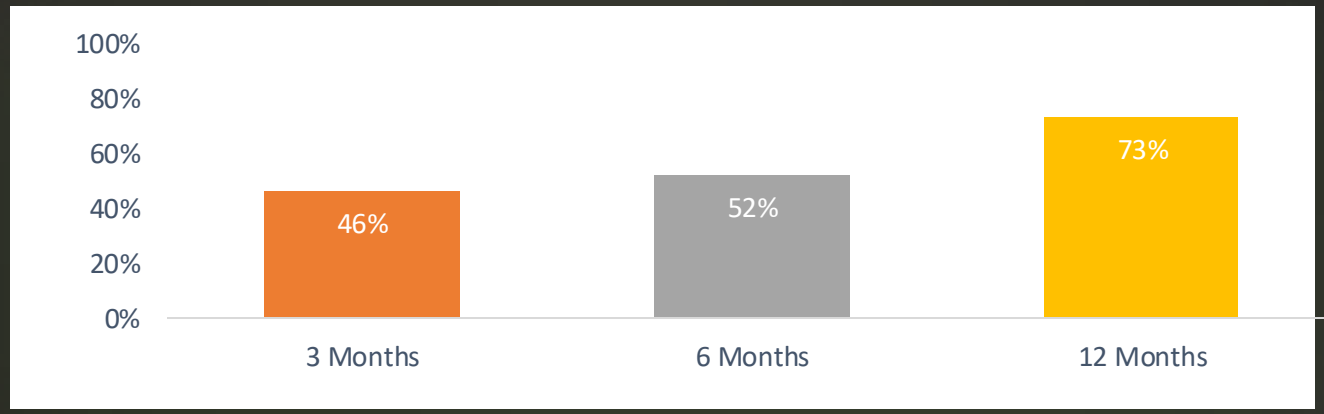
P<0.001

Clinical Results: IGA Improvement at 3, 6 and12-Months[1,3]

IGA Improvement +1



IGA Improvement +2



Selective Photothermolysis with a Novel nm Laser Beam…
J Cosmet Dermatol. 2023;22:486–496

Selective photothermolysis with a novel 1726 nm laser beam: A safe and effective solution for acne vulgaris

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[3]Blackhawk Plastic Surgery and MedSpa, California, Danville, USA

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Funding information
Cutera Inc.

Abstract

Background: Selective photothermolysis on sebaceous glands is an effective method for treating acne vulgaris (AV); however, safety, efficacy, and discomfort hinder its utilization in clinical settings.

Aims: The primary objective is to evaluate the safety and efficacy of a novel 1726 nm laser with contact cooling to treat AV.

Methods: Seventeen patients aged 18 to 36 were enrolled and treated in this IRB-approved, single-center, open-label study. Patients received up to three facial laser sessions up to seven weeks apart. Follow-up visits happened ten days post-session and at the 4 and 12 weeks following the final session. The investigator assessed the severity of device-related adverse events (AEs). Investigator Global Assessment (IGA) and inflammatory lesion counts (ILC) were used as metrics to evaluate acne resolution and skin condition enhancement. Patients' perspectives on satisfaction and comfort using this technology were assessed using Subject Experience Questionnaires (SEQ).

Results: Safety assessment showed mild and transient AEs. All subjects tolerated anesthetics-free treatments well, with a mean treatment discomfort score of 4.9 ± 1.5. Compared to baseline, a statistically significant reduction in ILC ($p = 0.003$) of 52% to 56% is achieved four to twelve weeks following treatment. Long-term follow-ups showed progressive improvement 24 months post-treatment with a 97% reduction in ILC. SEQs revealed high subject satisfaction (71%) with psychosocial improvement three months post-treatment.

Conclusion: The novel 1726 nm laser appears safe and effective for treating mild-to-severe acne. Acne resolution is apparent within the first month and progresses beyond the study duration.

Novel 1726 nm Laser Demonstrates Durable Therapeutic Outcomes and Tolerability for Moderate-to-severe Acne Across Skin Types
J Am Acad Dermatol. 2023 Oct;89(4):703-710

Novel 1726 nm laser demonstrates durable therapeutic outcomes and tolerability for moderate-to-severe acne across skin types

Macrene Alexiades, MD, PhD,[a,b,c] Amogh Kothare, MS,[d] David Goldberg, MD,[e,f] and Jeffrey S. Dover, MD[b,g,h]

Background: Traditional acne management with topical therapy, systemic antibiotics, hormonal agents, or oral isotretinoin requires compliance and may produce significant side effects. However, alternative treatments with lasers had failed to demonstrate durable clearance.

Objective: To assess the tolerability and therapeutic outcomes of a novel 1726 nm laser treatment of moderate-to-severe acne across skin types.

Methods: A prospective, open-label, single-arm, Investigational Device Exemption-approved, institutional review board-approved study of 104 subjects with moderate-to-severe facial acne and Fitzpatrick Skin Types ranging from II-to-VI was conducted. Subjects received 3 laser treatments at 3 (-1/+2)-week intervals.

Results: Following final treatment, ≥50% reduction in active acne inflammatory lesions was 32.6% at 4-weeks follow-up, increasing further to 79.8% and 87.3% at 12 and 26-weeks, respectively. The percentage of subjects clear or almost clear increased from 0% at baseline to 9%, 36.0%, and 41.8% at 4-, 12-, and 26-weeks follow-up. No serious adverse events were observed related to device or protocol; treatments were well tolerated, requiring no anesthetic. Therapeutic outcomes and discomfort were similar across all skin types.

Limitations: Lack of control group.

Conclusions: The study findings demonstrate the novel 1726 nm laser is well tolerated with durable progressive posttreatment improvement to at least 26 weeks for moderate-to-severe acne across skin types. (J Am Acad Dermatol 2023;89:703-10.)

Key words: acne; acne guidelines; acne management; acne scarring; acne severity; acne skin types; acne treatment alternatives; acne vulgaris; antibiotic therapy; hormone therapy; isotretinoin; laser; light therapies; sebaceous glands; selective photothermolysis.

Safety[1]

Treatment was safe for all skin types

No incidences of treatment related hypo- or hyperpigmentation

Erythema and edema typically resolved within several hours to a day, but some instances lasted several days

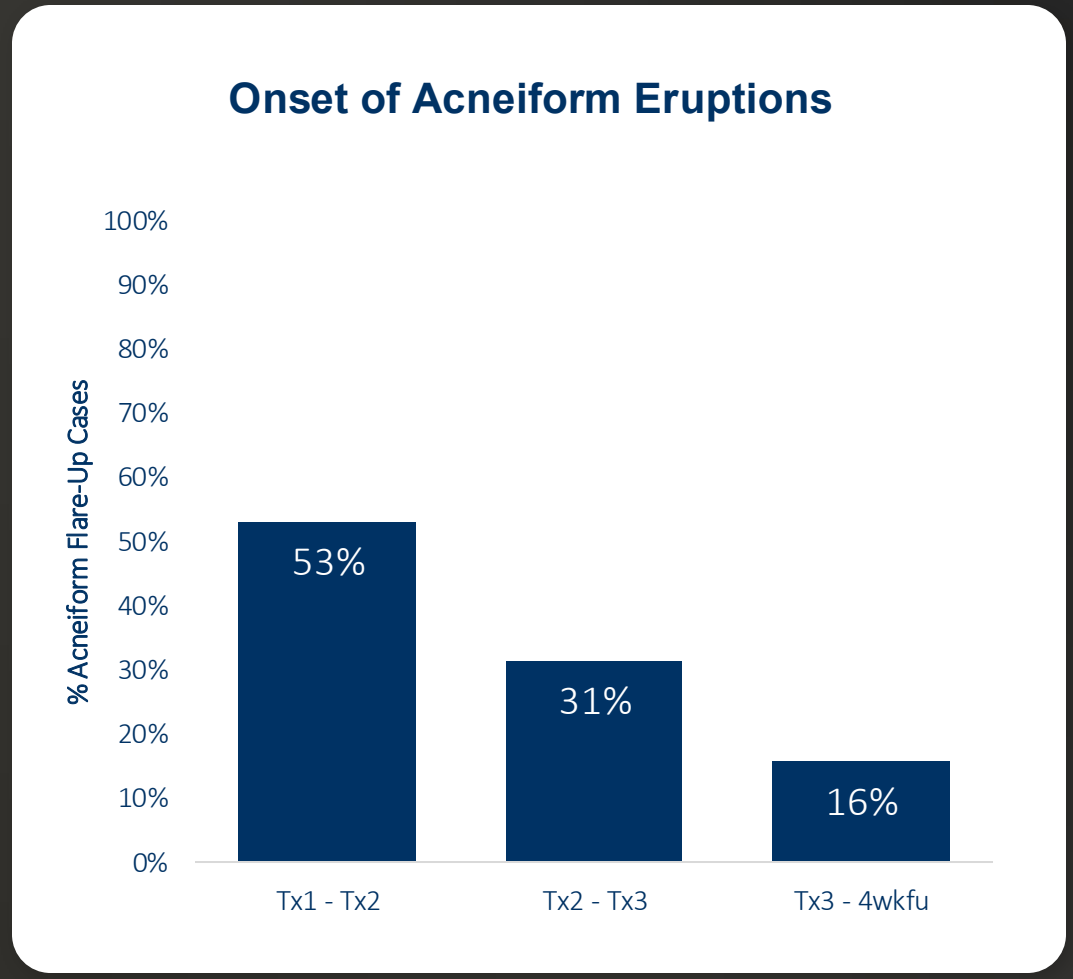
Vast majority of **side effects were mild** with no serious or unexpected adverse events reported

Transient side effects	Incidence (%)
Erythema	100%
Edema	98%
Acneiform flare-up	42%
Dryness	18%
Itchiness	2%

Acneiform Flare-Up[3]

Transient acneiform flare-ups were a mild one-time event for most subjects with a little over half of the flare-ups occurring within a few weeks post treatment 1.

A strong majority of acneiform flare-ups typically resolved within **6-weeks of treatment.**



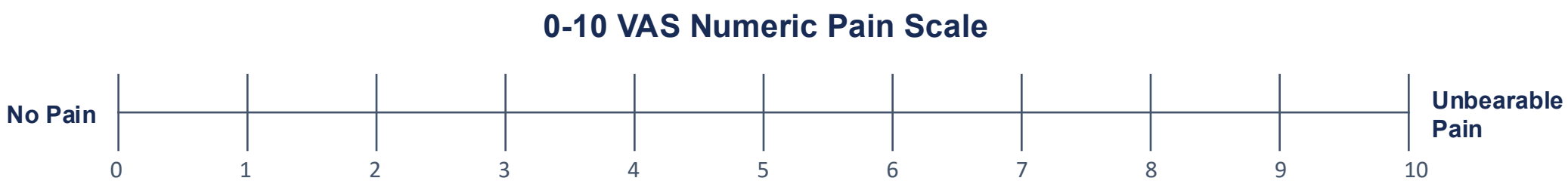
Patient Comfort[1,3]

Built-in technology that helps maintain patient comfort and spare the epidermis during treatment.

Subjects tolerated treatment well without the need for topical anesthetic

Average VAS score during treatment was 5.2 out of 10

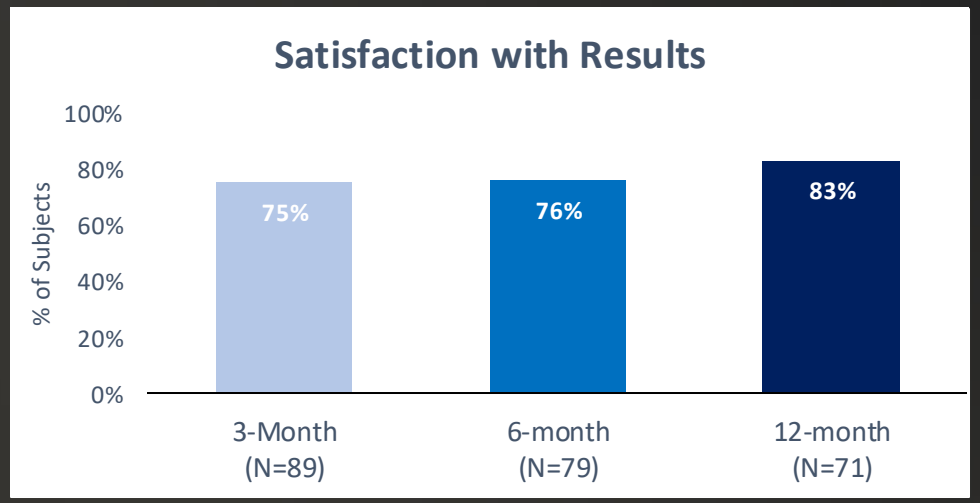
No subjects dropped out or ended treatments prematurely due to discomfort



Patient Satisfaction[1]

Subject Reported Visual Improvement

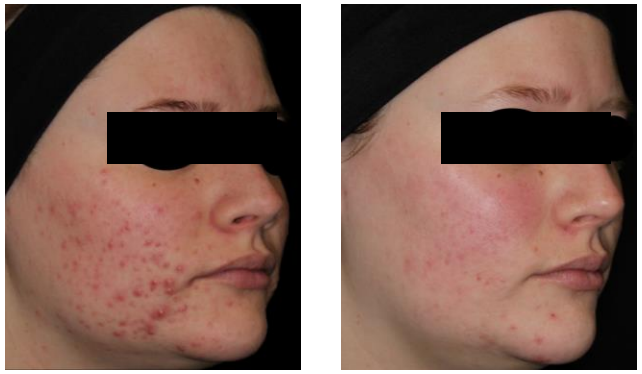
Over 80% of subjects saw visual improvement in their skin at 6- and 12- months post three 1726nm treatments



- Satisfaction, defined as being “satisfied” or “very satisfied” with improvement after 3 treatments, was maintained through 1 year after last 1726nm treatment.
- The large number of subjects completing the study with no additional acne therapies utilized during the 1-year follow-up period post last 1726nm treatment further emphasizes the positive subject perspective of the results.

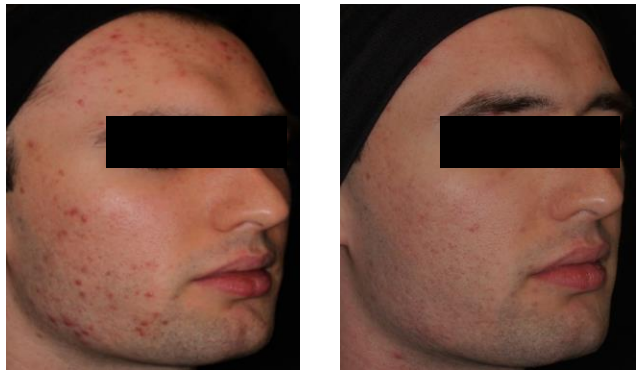
Treatment Results[3]

Fitz II



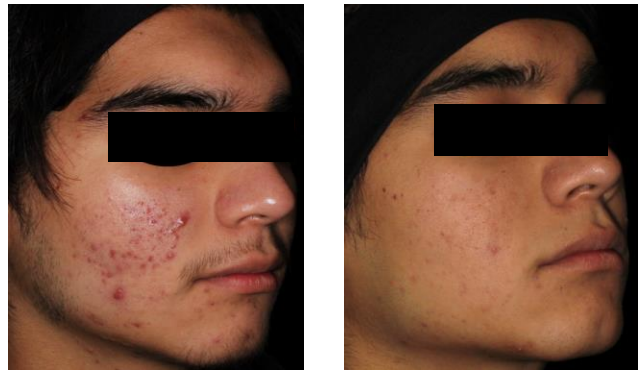
Baseline, Severe | 6 Months After 3rd Treatment, Mild

Fitz III



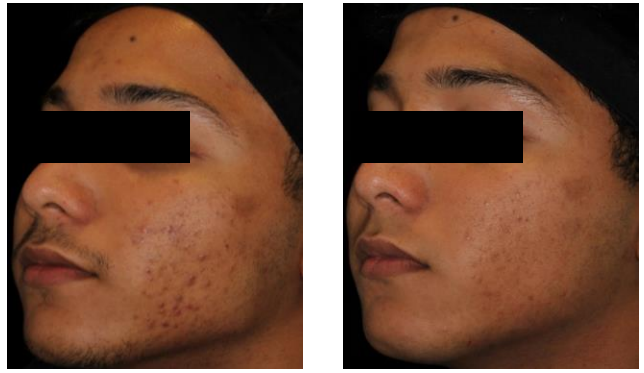
Baseline, Moderate | 6 Months After 3rd Treatment, Clear

Fitz IV



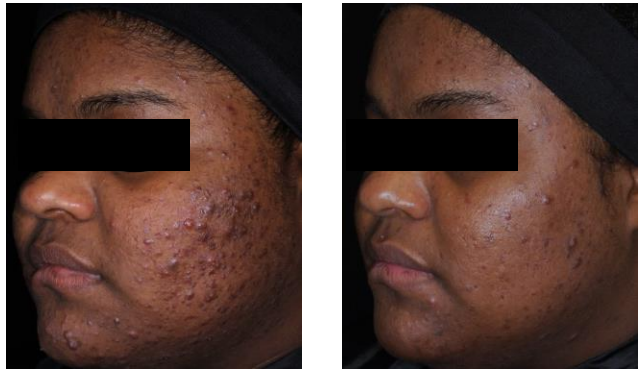
Baseline, Moderate | 6 Months After 3rd Treatment, Almost Clear

Fitz V



Baseline, Moderate | 6 Months After 3rd Treatment, Almost Clear

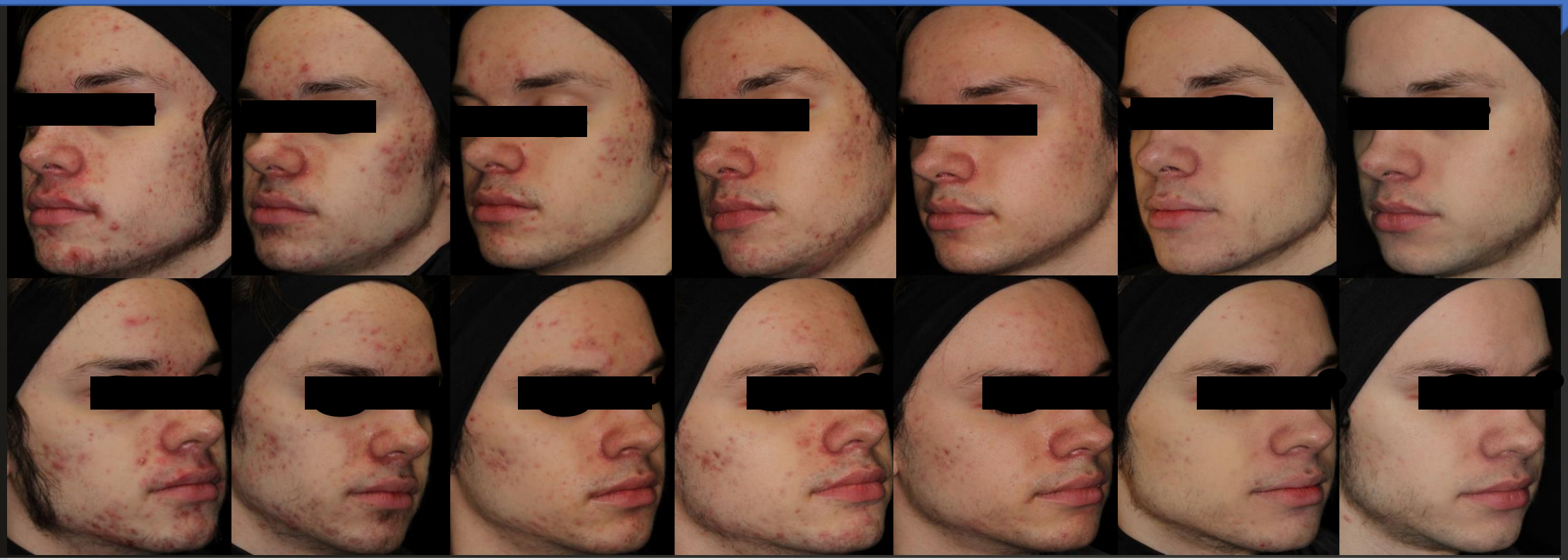
Fitz VI



Baseline, Severe | 6 Months After 3rd Treatment, Moderate

Patient Journey[3]

(Male; 20 Years Old; Fitz Skin Type II)



IGA	Severe	N/A	N/A	Moderate	Mild	Almost Clear	Almost Clear
Satisfaction	N/A	N/A	N/A	Satisfied	Extremely Satisfied	Satisfied	Satisfied

Mild Acneiform Flare-Up: (Not pictured)
Onset: 3/26/2021 (3 Days Post Tx 1)
Duration: 3.4 Weeks
Self-Resolved: 4/19/2021 (By Tx 2)

Treatment Results[3]

Baseline, Moderate

6 Months After 3rd Treatment, Mild

12 Months After 3rd Treatment, Almost Clear

Patient Journey[3]

(Female; 23 Years Old; Fitz Skin Type IV)

	Baseline	Pre-Tx 2	Pre-Tx 3	4 Week Follow-Up	12 Week Follow-up	26 Week Follow-Up	52 Week Follow-Up
IGA	**Moderate**	**N/A**	**N/A**	**Moderate**	**Mild**	**Mild**	**Almost Clear**
Satisfaction	N/A	N/A	N/A	Neutral	Satisfied	Satisfied	Extremely Satisfied

No Acneiform Flare-Up Reported

Long-Term Treatment Results[2,7]

Baseline

Moderate

6 months

Mild

2 years

Almost Clear

4 years

Almost Clear

- Improved from moderate to almost clear over 2 years
- Results continued to develop even after the 6-month follow-up
- Results maintained ~4 years post final treatment

AviClear Real World Cases- Acne (right side)

1st Tx date (before photo)--- 10/13/22

1 mo after 3rd Tx Date---1/31/23

Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, Collette Utley, DNP, NP-C, and Kevin Griffin, PA-C
The Laser & Rejuvenation Center of Gold Skin Care Center, Nashville, TN

AviClear Real World Cases- Acne (left side)

1st Tx date (before photo)--- 10/13/22

1 mo after 3rd Tx Date---1/31/23

Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, Collette Utley, DNP, NP-C, and Kevin Griffin, PA-C
The Laser & Rejuvenation Center of Gold Skin Care Center, Nashville, TN

AviClear Real World Cases

Personal photo prior to AviClear treatment

Post #3 treatment AviClear (5 months)

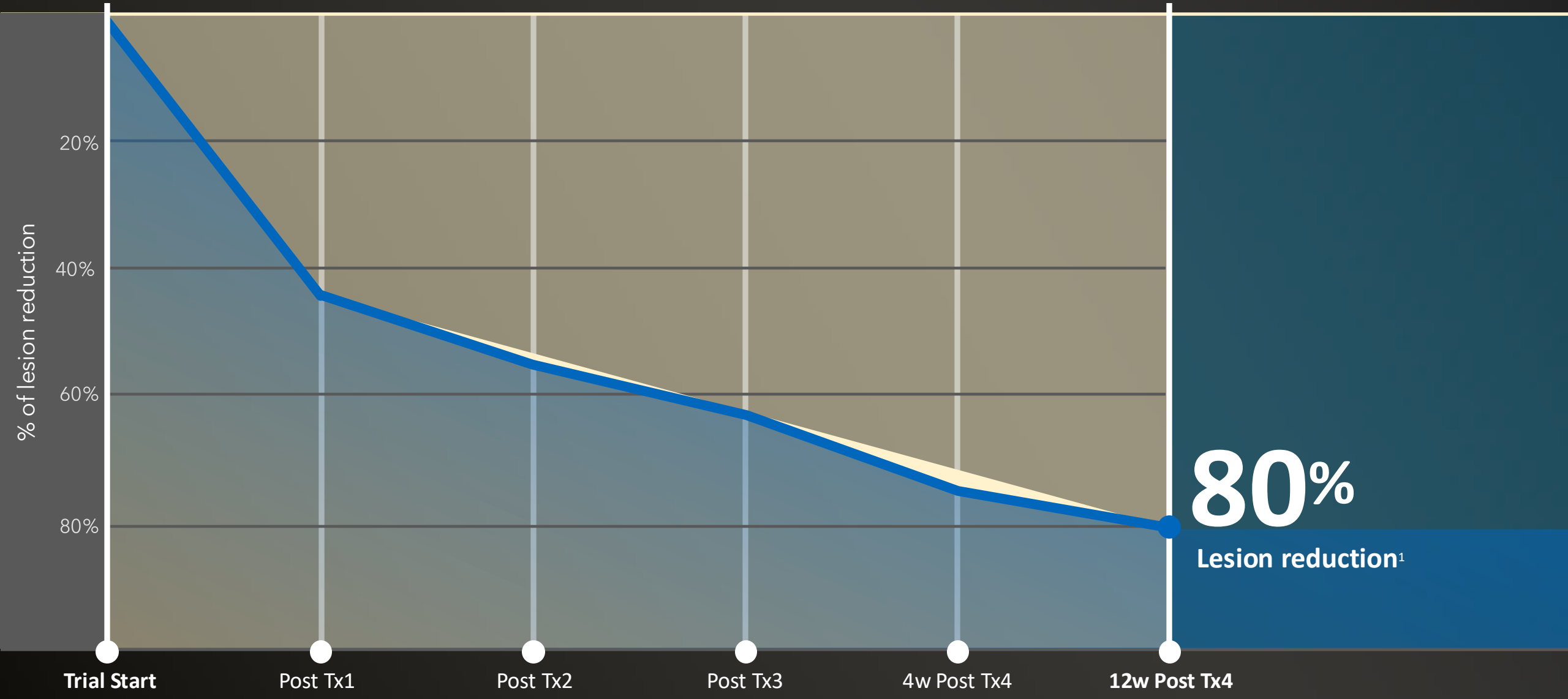
Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, Collette Utley, DNP, NP-C, and Kevin Griffin, PA-C
The Laser & Rejuvenation Center of Gold Skin Care Center, Nashville, TN

The System

- 40W 1726nm Raman fiber laser
- Real-time temperature monitoring with continuous clinical feedback
- We have correlated a target surface temperature to a dermal and sebaceous gland temperature which produces a delayed clinical end point and precise and selective sebaceous gland damage
- Our current software is closed-loop: the device controls that laser power based on temperature feedback. We have a temperature cut-off where the device will stop pulsing if a specified high temperature is reached.

Acne Lesion Reduction

Percent Inflammatory Acne Lesion Reduction on treated side of hemiface — Face Acne Trial



1. "Tanghetti, E., Geronemus, R., Bloom, B., Anderson, R.R., Ross, E.V., Sakamoto, F.W. Safety And Efficacy Data In A Pilot Study Of The Treatment Of Acne With A Fiber Laser. 40th ASLMS Annual Conference; 2020

Clinical Results

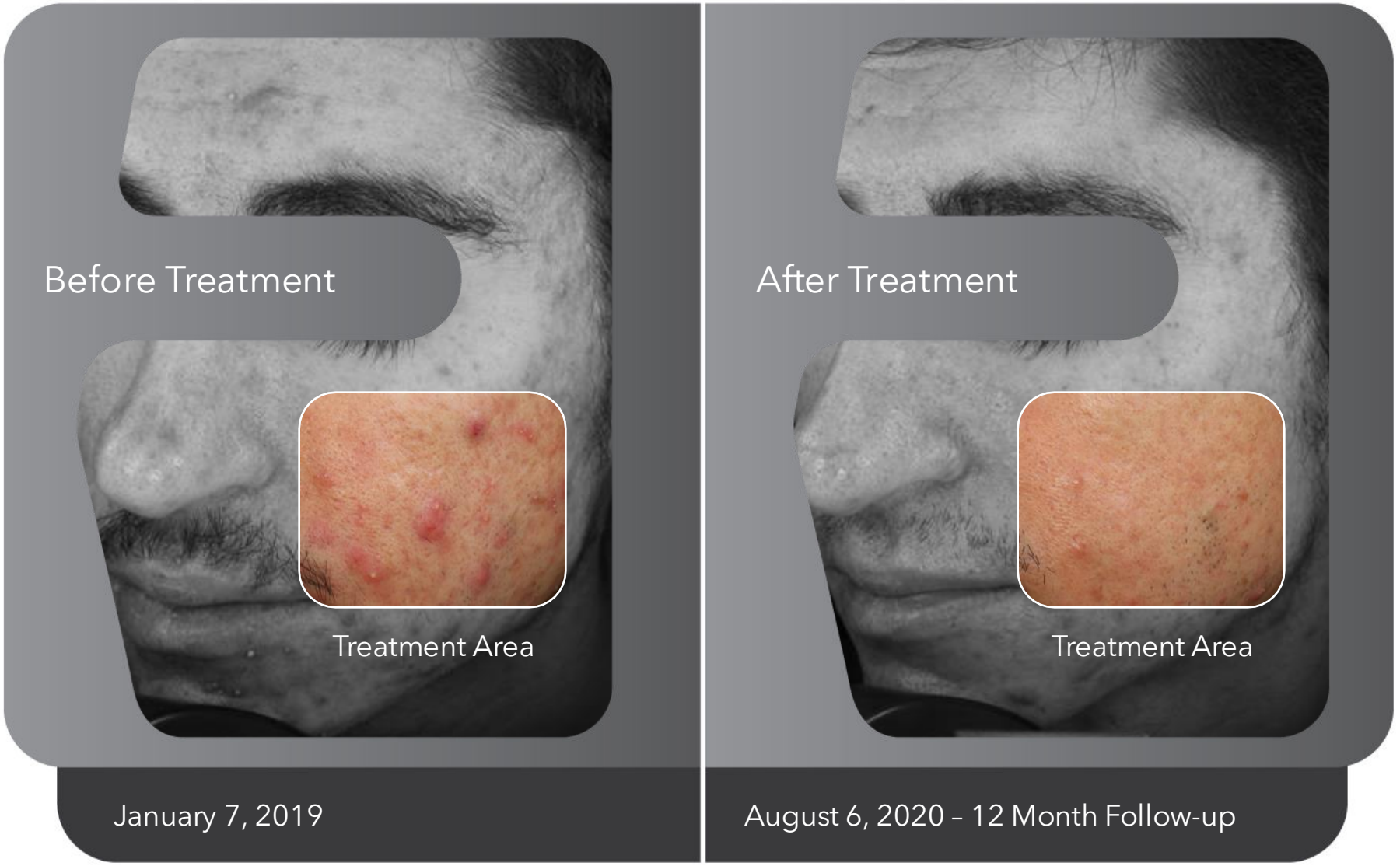
Courtesy: Roy Geronemus, MD

Treatment regimen will be customized to the individual patient and could range from 1 to 6 treatment sessions administered approximately 3 to 6 weeks apart.

This clinical study treatment regimen consists of a total of four treatment sessions, each approximately 4 weeks apart.

This subject was part of an IRB-approved split-face clinical study with the treated side shown in the photos.

Clinical Results



Courtesy: Emil Tanghetti, MD

Treatment regimen will be customized to the individual patient and could range from 1 to 6 treatment sessions administered approximately 3 to 6 weeks apart.

This clinical study treatment regimen consists of a total of four treatment sessions, each approximately 4 weeks apart.

This subject was part of an IRB-approved pilot study with a specific treatment area as noted in the photos.

Treatment of Acne With a 1726 nm Laser, Air Cooling, and Real-Time Temperature Monitoring, Software-Assisted Power Adjustment to Achieve…
Lasers Surg Med. 2025 Mar;57(3):236-251

Treatment of Acne With a 1726 nm Laser, Air Cooling, and Real-Time Temperature Monitoring, Software-Assisted Power Adjustment to Achieve a Temperature Endpoint With Selective Sebaceous Gland Photothermolysis

Emil A. Tanghetti[1] | Rafael Sierra[2] | Michael Estes[2] | Aubrey Eck[2] | Alfred Intintoli[2] | Henrik Hofvander[2] | Joel L. Cohen[3] | Daniel P. Friedmann[4] | Mitchel P. Goldman[5] | Hyemin Pomerantz[6] | Jordan V. Wang[7] | Roy G. Geronemus[7] | R. Rox Anderson[8] | Fernanda H. Sakamoto[8]

[1]Center for Dermatology and Laser Surgery, Sacramento, California, USA | [2]Accure Acne Inc., Boulder, Colorado, USA | [3]AboutSkin Dermatology and Derm Surgery, Greenwood Village, Colorado, USA | [4]Westlake Dermatology Research Center, Westlake Dermatology & Cosmetic Surgery, Austin, Texas, USA | [5]Cosmetic Laser Dermatology, A Platinum Dermatology Partners Company, San Diego, California, USA | [6]VivaSkin Dermatology and Aesthetics, Wellesley, Massachusetts, USA | [7]Laser & Skin Surgery Center of New York, New York, New York, USA | [8]Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, Massachusetts, USA

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Received: 6 December 2024 | **Revised:** 6 December 2024 | **Accepted:** 10 December 2024

Keywords: 1726-nm laser | acne vulgaris | air cooling | laser acne treatment | multi-pulse | sebaceous glands | temperature control | thermal imaging

ABSTRACT

Objectives: This work highlights the methods used to develop a multi-pulse 1726 nm laser system combined with bulk air-cooling for selective sebaceous gland (SG) photothermolysis using thermal imaging and software algorithms. This approach enables treating to a desired tissue temperature and depth to provide a safe, effective, reproducible, and durable treatment of acne.

Methods: We designed and built a 1726 nm laser system with a 40 W maximum power output, a highly controlled air-cooling device, and a thermal camera in the handpiece, which permits real-time temperature monitoring of the epidermis. IRB-approved safety and efficacy trials demonstrated SG damage at depth, resulting in safe, efficacious, and durable clinical outcomes. Bioheat transfer and light transport modeling confirmed that the pulsing protocols could produce therapeutic temperatures at various SG depths, while protecting the epidermis and dermis with bulk air-cooling. Similarly, we employed clinical observations and photothermal modeling to identify pain mitigation opportunities while maintaining therapeutic efficacy. Biopsies were subsequently taken for histological evaluation.

Results: Clinical and histological data, confirmed with modeling, demonstrated that multi-pulse laser delivery with bulk air-cooling selectively increased SG temperature compared to surrounding dermis and at depths unachievable by a single pulse. Subjects showed an average 71% ILC reduction at 3 months posttreatment. We identified two different pulsing protocols with similar selective photothermolysis (SP) of the SG with very different pain responses. Thus, changing the pulsing protocols allowed for pain mitigation and eliminated the need for injectable anesthetic. Histology confirmed the selective damaging of the SG at depth and the preservation of the surrounding dermis and the epidermis.

Conclusions: The multi-pulse 1726 nm laser with bulk air-cooling, thermal monitoring, treat-to-temperature (and depth) control, and a unique pulsing protocol, is capable of selectively damaging SGs at depth without damage to the surrounding

Summary

- This 1726nm laser is effective at improving acne vulgaris
  - Improved inflammatory lesion counts
  - High responder rate with what appears to be a durable response

- High level of safety without serious adverse events
  - Real-time temperature monitoring with continuous clinical feedback and temperature cut-off
  - Integrated highly-controlled skin cooling system
  - Over 15,000 trigger pulls safely performed

- Current large-scale clinical trials are underway and almost completed

Acne Treatment with Lasers

- Acne therapy with lasers and EBDs can make your acne patients better – and faster than with conventional therapy

- Use the tools we have to make your patients better each and every day

TREATING THE COMPLETE PATIENT JOURNEY

ACTIVE ACNE

POST-ACNE ERYTHEMA SCARRING

POST-ACNE ATROPHIC SCARRING

GENERAL TEXTURAL CONCERNS

CUTERA®

THE GOLD STANDARD IN VASCULAR TREATMENT

Versatile, dual-wavelength aesthetic platform

- Clinically proven wavelengths – 532 and 1064 nm, real world selectivity based on absorption

Class leading specifications

- Expanded range of specifications
- Large spot sizes up to 16 mm
- 6 operating modes

Solid-state, efficient design

- Real-time calibration
- No consumables/disposables

Results – AviClear + Laser Genesis

Before

After 3 AviClear + 2 Laser Genesis Treatments

Courtesy of Mira Kaga, MD

Results – Laser Genesis

Before

After 2 Treatments (532 nm)

Courtesy of Jessica Weiser, MD

TREATING THE COMPLETE PATIENT JOURNEY

ACTIVE ACNE

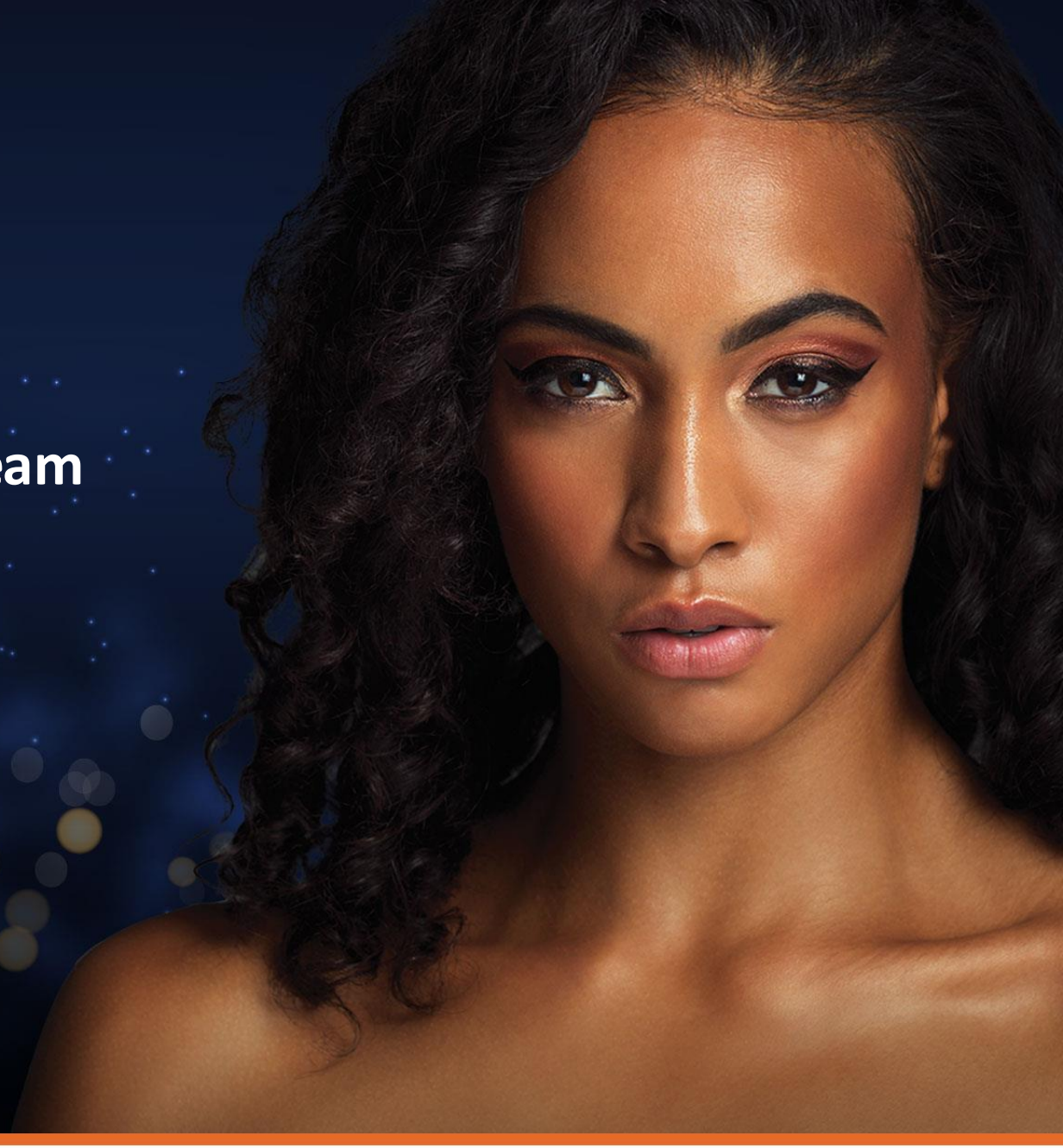
POST-ACNE
ERYTHEMA
SCARRING

POST-ACNE
ATROPHIC
SCARRING

GENERAL
TEXTURAL
CONCERNS

CUTERA®

Synchronous Parallel Ultrasound Beam Technology



FDA Cleared

Lifting the Eyebrow
Lifting Lax Submental Tissue
Lifting Neck Tissue
Reduction on Fine Lines & Wrinkles
Cellulite
Acne Scars
Upper Arm Laxity Improvement

Lift Applicator

3-D Cylindrical Volumetric Tissue Impact

- High volume coagulation coverage resulting in high coverage with subsequent neocollagenesis and neoelastogenesis
- Unique array of volumetric, cylindrical-shaped thermal zones that lie parallel to the skin surface along the same direction as the collagen fibers

Featuring Sofcool™

- Proprietary feedback-controlled skin cooling via unique thermo-cooled direct contact transducers
- Confinement of the thermal zones to the targeted areas and full protection of the epidermal layer
- Patient safety

Precise Applicator

- The “Precise applicator” is a new smaller version of the current approved “Lift” applicator
- The “Precise applicator” has 3 synchronized parallel high intensity, high frequency U/S beams The “Precise” applicator is designed to allow the user treatment flexibility and easier access to smaller (such as around the eyes: ”Peri Orbital”, or the mouth: ”Peri Oral”) and more curved areas (such as the forehead and along the jawline)
- The “precise applicator has similar technological characteristics and similar indications for use as the current “Lift” applicator
- The main difference between the “Precise” applicator and the “Lift” applicator is that it has 3 transducers compared to 7 transducers in the “Lift” applicator

Improvement in the Appearance of Acne Scars

Anne Chapas, MD; Arielle N.B. Kauvar, MD; David Goldberg, MD;
Roy G. Geronemus, MD

STUDY DESIGN

67 subjects

Triple treatment protocol, 5 facial zones
Evaluation by Acne Scars Severity grading (ASSG) and Blinded Review

RESULTS AT 3 MONTHS POST-TREATMENT

97%
have improved their acne scars appearance per blinded evaluation

88%
of the subjects have reported an improvement in their acne scars appearance

46%
improvement level based on ASSG

Courtesy of Anne Chapas, MD

BASELINE 6-MONTH FOLLOW UP

Courtesy of Anne Chapas, MD

BASELINE 3-MONTH FOLLOW UP

Before and After – Dr. David Goldberg

Pre-tx

3 months FU

Before and After – Dr. David Goldberg

Pre-tx

3 months FU

RF Microneedling

- Next generation of biopolar RF microneedling
- The only device with dual mode capability specifically designed to treat all skin layers*: epidermis, basement membrane and dermis
- Developed by the pioneer in RF microneedling technology, Dr. Na
- Patented microneedle technology delivers RF energy efficiently to the target area minimize discomfort and downtime.
- Satiety and efficacy is documented in 26 publications
- High patient satisfaction rate offering the most asked about cosmetic procedures

*Through hemostasis and tissue coagulation

PULSED WAVE (PW) AND CONTINUOUS WAVE (CW)

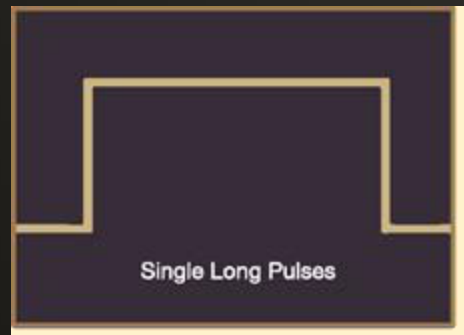
- **PW** mode, unique to this device, targets epidermis and basement m
  embrane to improve sun damaged skin
- **CW mode** targets the dermal layer providing controlled heating to induce c
  ollagen remodeling

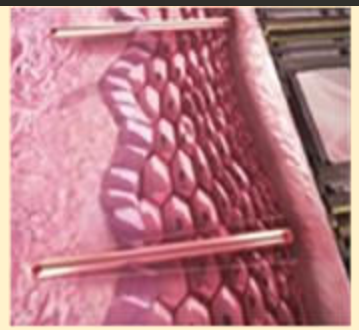
- Uniquely addressing the entire skin*
  - Epidermis for improving the appearance of photodamaged skin
  - Basement membrane (at DEJ) to fortify the skin structure
  - Dermal layer by inducing neocollagenesis and dermal remodeling

*Through hemostasis and tissue coagulation

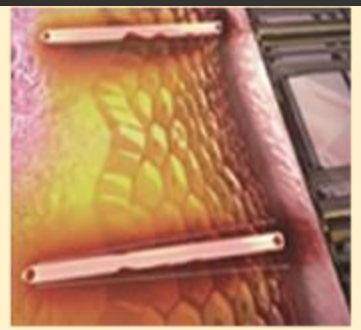
PULSED WAVE (PW) AND CONTINUOUS WAVE (CW)

The Continuous Wave Advantage

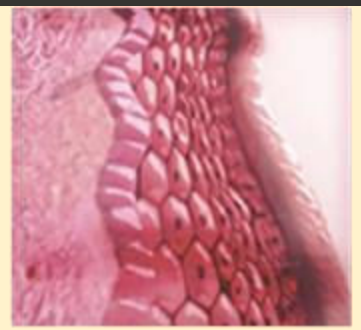




Electrodes inserted into the dermal tissue.



Short pulse RF shooting 55~60°



Thermal energy are delivered along electrodes in total dermal layer.

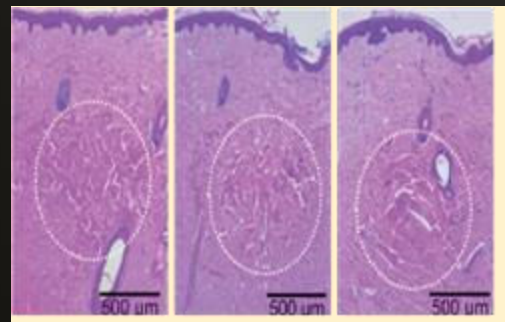


Fig. 5(a)

▶ Thermal coagulation at the target depth

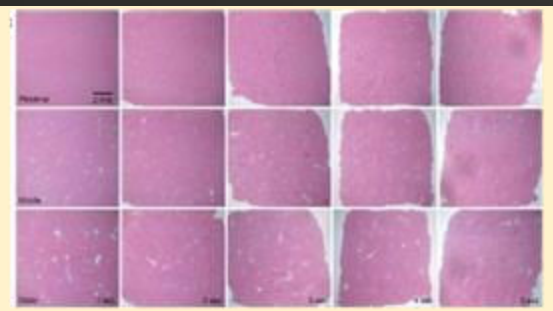


Fig. 5(b)(c)

▶ Safety of Non-insulated needle

WAVE FORM	CW1	CW2	CW3	CW4
PULSE DURATION	120 msec	160 msec	200 msec	300 msec

CW MODE

Continuous Wave Mode

Skin Revitalization

Proven by 10 Clinical Papers

Reference:
Fig. 5[a] Electromagnetic Initiation and Propagation of Bipolar Radio frequency Tissue Reactions via Invasive Non-Insulated.
Fig. 5[b] Micro needle Electrodes. Sci Rep. 2015; 5; 16735.
Fig. 51c] Clinical Study of Facial Wrinkle Treatment with Fractional Micro needle Radio Frequency System. Med Laser 2014;3[2]:59-64

PULSED WAVE (PW) AND CONTINUOUS WAVE (CW)

Results CW Mode

CW MODE

Continuous Wave Mode

Skin Revitalization

Proven by 10 Clinical Papers

Improvement of wrinkles and skin tone

Before

After

Before

After

Before

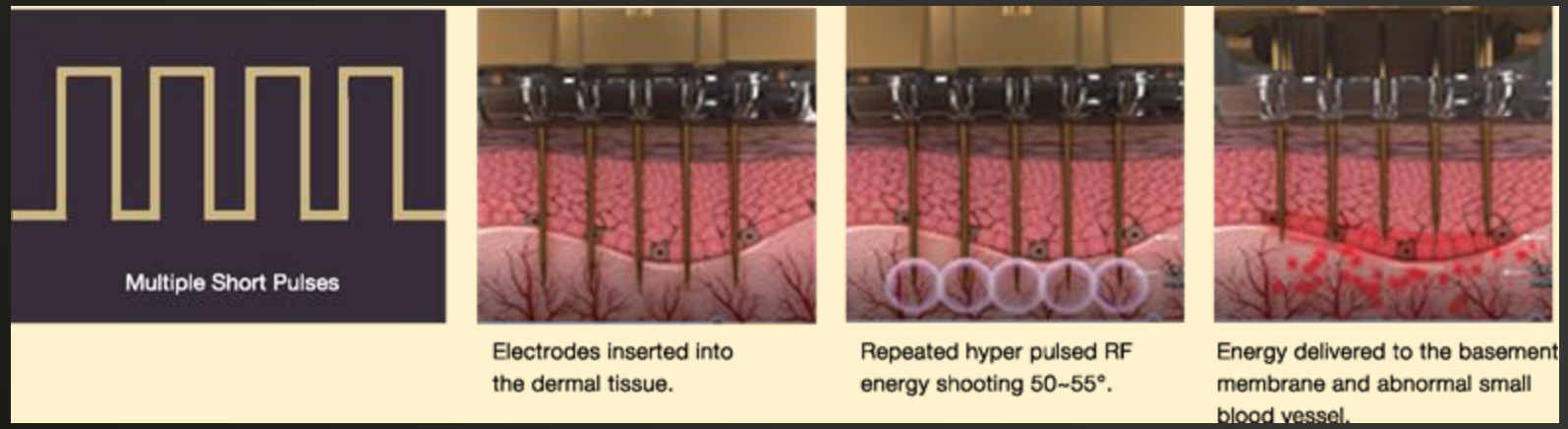
After

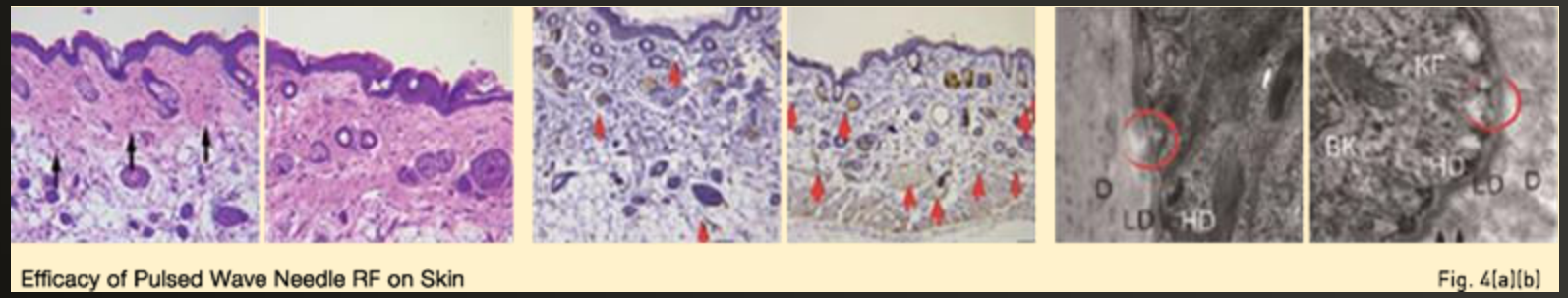
Before

After

PULSED WAVE (PW) AND CONTINUOUS WAVE (CW)

The Pulse Wave Advantage





WAVE FORM	PW1	PW2	PW3	PW4
PULSE DURATION	30 msec (75% Duty Cycle)	40 msec (80% Duty Cycle)	50 msec (83.3% Duty Cycle)	60 msec (85.7% Duty Cycle)

PW MODE

Pulsed Wave Mode

Skin Complexion'

Proven by 10 Clinical Papers

Reference

Fig. 4la] Senescent Fibroblasts Drive Aging Pigmentation: A Potential Therapeutic Target for Senile Lentigo. Theranostics 2018, Vol. 8, Issue 17.

Fig. 4lb] Senescent Fibroblasts in Me las ma Pathophysiology. Experimental Dermatology. 2018; 1-4

PULSED WAVE (PW) AND CONTINUOUS WAVE (CW)

Results PW Mode

PW MODE

Pulsed Wave Mode

Skin Complexion’

Proven by 10 Clinical Papers

Improvement of skin tone and texture

Before After

Before After

Before After

Before After

RESULTS

Improvement in the appearance of acne scars Post 1 Tx

Courtesy: JD McCoy, MD

RESULTS

Courtesy of Gilly Munavalli, MD, MHS

RF Microneedling

1st Tx date (before photo)
July 10, 2023

2nd Tx date
Aug 14, 2023

Photos courtesy of Michael H. Gold, MD, Marci Kleinrock, PA-C, Collette Utley, DNP, NP-C, and Michaela Minga, BSN, RN
The Laser & Rejuvenation Center of Gold Skin Care Center, Nashville, TN

Build the *ultimate* Aesthetic package

Customizable multi-modality workstation

- Advanced & customizable

The multi-modality workstation offers a complete selection of complementary handpieces to suit your business needs. Expand your system at any time by simply plugging in a new handpiece.

BUILD YOUR SYSTEM

BARE 808

LUCENT IPL

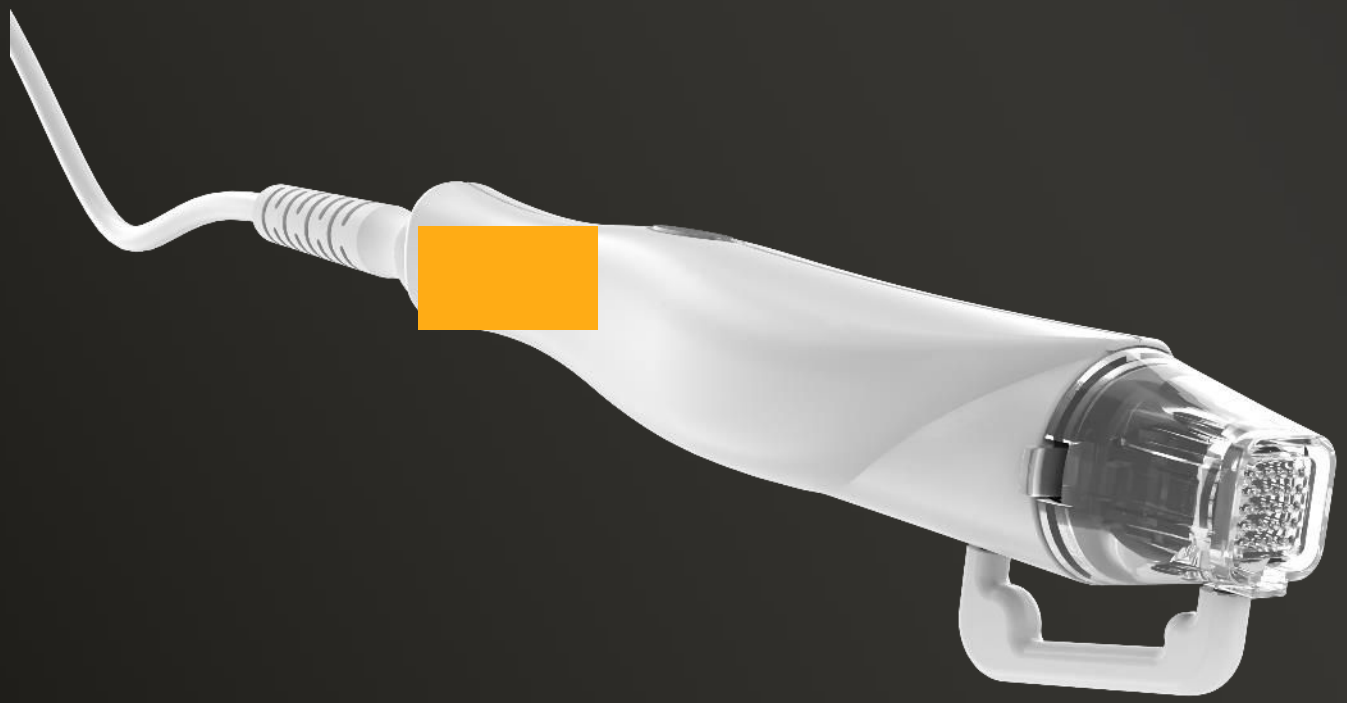
PROLIFT RFM

PROLIFT HIFU

REFRESH RF

RF Microneedling(RFM) Handpiece

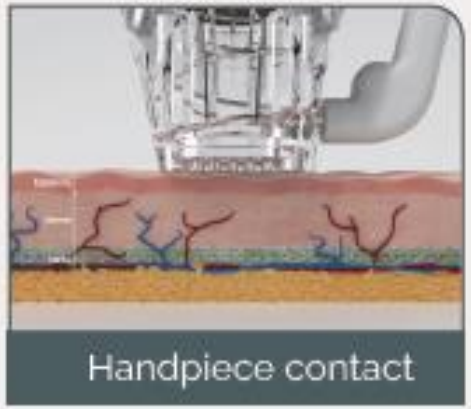
RF Microneedling is a popular treatment that can safely and effectively address a range of face and body concerns. This innovative handpiece combines the benefits of Microneedling with Radio Frequency (RF), taking skin rejuvenation to the next level.

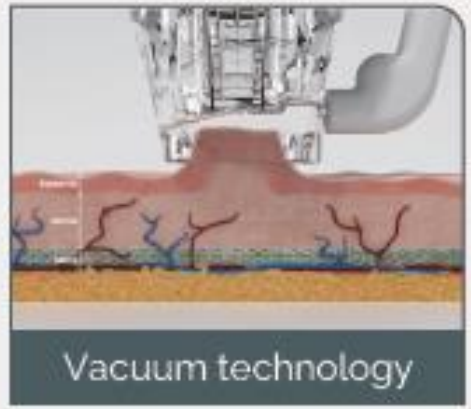


- RFM features & benefits

Advanced vacuum technology & 2Mhz delivery for improved comfort

- The latest move from 1 to 2Mhz allows for the most comfortable RF microneedling treatment on the market.
- The unique vacuum feature gently pulls the tissue into the tip resulting in even and accurate treatment depth, increased safety, and improved comfort for the patient.
- Vacuum is a major benefit when treating sensitive areas around the eye and t-zone.

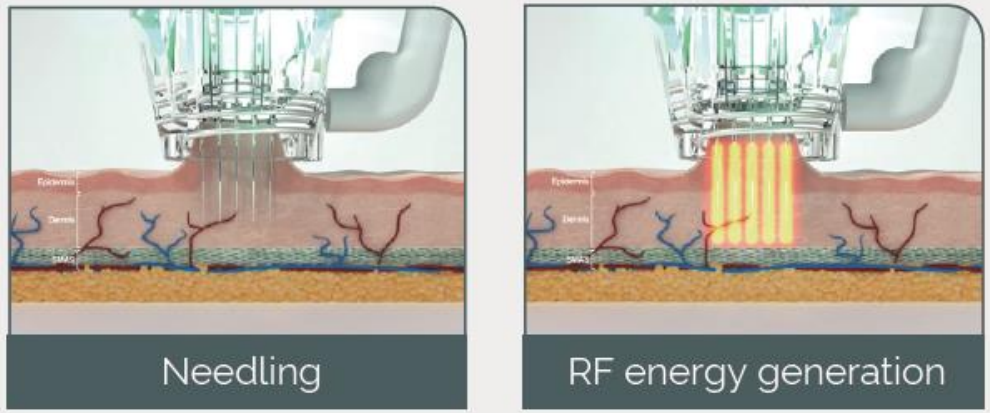

Handpiece contact


Vacuum technology

- RFM features & benefits

Non-insulated needles for optimized results

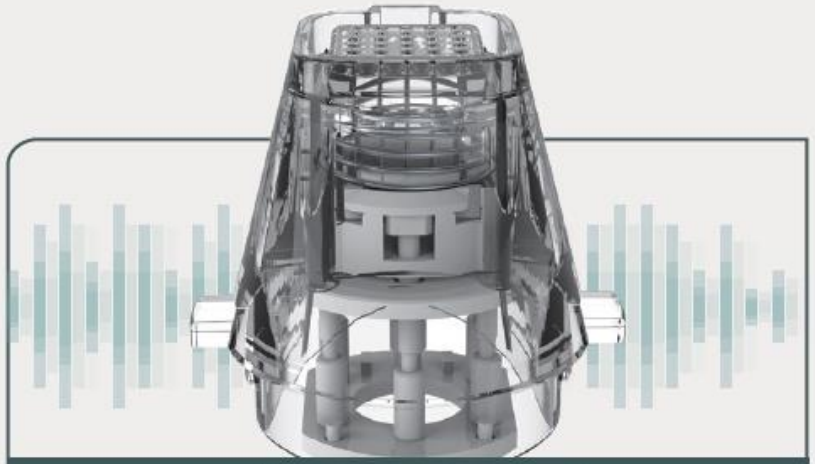
- Fractional radio frequency energy is delivered through the entire length of the needle for uniform and consistent energy delivery.
- Tips are available in 25 and 10 pin options.
- Maximum needle depth is 3.5mm.



*Insulated needles available also

- RFM features & benefits

Sophisticated motor for smooth & fast performance



Prolift rfm 25pin needle

- Smooth and fast insertion of needles is maintained using unique motor mounting control technology.
- Patients will experience a delicate procedure without severe recoil when needles are inserted into the skin.

- RF Microneedling

Fractional CO2 Resurfacing

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 2 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 3 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 3 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 2 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 2 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 1 fCO2 TX

After 2 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Before

After 1 fCO2 TX

Photos Courtesy of Dr. Tan Jun, Changsha, China

Combination Treatment

Before | After 4 OPT TX | After 2 fCO2 TX

ADDRESSING THE COMPLETE PATIENT JOURNEY

ACTIVE ACNE

POST-ACNE ERYTHEMA SCARRING

POST-ACNE ATROPHIC SCARRING

GENERAL TEXTURAL CONCERNS