Fractional laser or light based technologies

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Disclosure

- Syneron: stock option
- Cutera: support for clinical trial
- Cynosure: consultant agreement
Areas to cover

- PIH and fractional technologies
- Non-ablative FR in skin of color
- Low energy low density NR-FR in skin of color
- Ablative fractional FR in skin of color
- Complication of ablative FR
- Fractional RF and laser for treatment of acne scar
- Picosecond focus lens
Prevention of PIH

Occurrence of PIH will be determined by:

- Degree of disruption of epidermo-dermal junction
- Degree of inflammation especially at the E-D junction
- Skin type
Prevention of PIH

Factors that may lead to PIH when using any fractional lasers on Asians:

- Density
- Energy
- Bulk tissue heating
- Cooling
Prevention of PIH


“Retrospective and prospective study suggested that while both energy and density are important in causing PIH in Asians, density is of particular important.”
The use of NA Fractional resurfacing in Asian that I consider to be the first line

- Dermal collagen re-modeling
  1. Acne scarring/other atrophic scarring
  2. Wrinkle improvement
Before

After 3 sessions NA-FR
After 7 sessions of NA-FR
Before

After 8\textsuperscript{th} NA-FR
Before

After 15\textsuperscript{th} NA-FR
Before

After 3  NA-FR

After 4  NA-FR
Before

After 6th NA-FR
Before

After 6th NA-FR
Before

After 11th NA-FR
THE USE OF NON-ABLATIVE FRACTIONAL RESURFACING IN ASIAN ACNE SCAR PATIENTS


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² Wellman Center of Photomedicine, Department of Dermatology, Harvard Medical School, USA.
Results: efficacy

- 47 Patients
- Last follow-up vs baseline photo
  - skin texture ($p < 0.001$)
  - acne scarring ($p < 0.001$)
  - enlarged pores ($p < 0.001$)
  - overall pigmentation irregularity ($p < 0.001$)
3 full-NAFR vs 6 mini-NAFR: efficacy comparison

- No statistically significant difference in improvement in:
  - skin texture ($p = 0.176$)
  - facial acne ($p = 0.45$)
  - acne scarring ($p = 0.51$)
  - enlarged pores ($p = 0.566$)
  - overall pigment irregularity ($p = 0.446$)
Adverse effects
Hyperpigmentation after full -NAFR 
(cross-polarized, assessed after each treatment)

(n=99)

PIH rate for full-NAFR 18.2%
Hyperpigmentation after mini-NAFR
(cross-polarized, assessed after each treatment)

(n=183)

PIH rate for mini-NAFR 6.0%
Conclusions

- Non-ablative fractional resurfacing is effective for improving skin texture, facial acne, acne scarring, enlarged pores and overall pigment irregularity in Asians.
- No statistically significant difference in efficacy between 3 full NA-FR vs 6 mini NA-FR
- PIH rate: 18.2% for NA-FR, 6% for mini NA-FR
- By reducing the number of passes (density) and increasing the number of treatment sessions, non-ablative fractional resurfacing can be used effectively and safely among Asians.
Evaluating the Safety and Efficacy of the 1440-nm Laser in the Treatment of Photodamage in Asian Skin

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2 Division of Dermatology, Department of Medicine, University of Hong Kong, Hong Kong SAR, China
3 Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, USA

Objective:

- To evaluate the safety and efficacy of a low energy, low density 1440-nm fractional laser in the treatment of multiple signs of photoaging including dyspigmentation, wrinkling, tissue laxity, enlarged pores and skin roughness in Asians.
Patient Demographics

- 10 Chinese subjects with visible signs of photodamage
- 9 female, 1 male
- Mean Age: 30.6 (27-34)
- Skin type: III: 2 (20%); IV: 7 (70%); V: 1 (10%)
Study Design/Materials and Methods:

- A total of 4 treatments performed at two week intervals
- 1 month follow up visit after the final treatment
- Topical anesthetic, 4% lidocaine, applied 30min prior to each treatment
- 8 passes per treatment performed at highest tolerable setting
- Handheld fan utilized during treatment and cooling gel applied afterward to relieve heat sensation
- Pts instructed to strictly avoid sun exposure for duration of the trial
Study Design/Materials and Methods:

- Photography (Canfield System ®) performed: 
  *baseline, 2 weeks after first 3 treatments and 4 weeks after last treatment*

- Immediate feedback:
  - Pain - Visual Analog Scale (0-10)
  - Heat sensation - Severity Scale (0-3)
  - Redness - Severity Scale (0-3)
  - Swelling - Severity Scale (0-3)

- Physician assessment: *Clinical improvement and adverse events analyzed*

- Subjective assessment: *Discomfort, heat sensation and overall patient satisfaction*
# Results:

## Combined Independent Physician Evaluations

<table>
<thead>
<tr>
<th></th>
<th>Baseline Evaluation (Mean±SD)</th>
<th>Final Evaluation (Mean±SD)</th>
<th>P-value *</th>
</tr>
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<tr>
<td>Roughness</td>
<td>3.45±0.76</td>
<td>2.85±0.85</td>
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<td>Wrinkles</td>
<td>2.00±0.71</td>
<td>1.80±0.71</td>
<td><strong>0.046</strong></td>
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<tr>
<td>Pigment</td>
<td>3.30±1.44</td>
<td>2.55±0.86</td>
<td><strong>0.010</strong></td>
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<tr>
<td>Laxity</td>
<td>1.60±0.77</td>
<td>1.60±0.77</td>
<td>1.000</td>
</tr>
<tr>
<td>Pore size</td>
<td>3.35±1.03</td>
<td>3.05±0.93</td>
<td>0.086</td>
</tr>
</tbody>
</table>

*P-value* calculated by Wilcoxon signed-rank test

**P-value <.05 indicates statistical significance

Significant improvement in roughness, wrinkles and pigmentation at conclusion of trial. Changes in laxity and pore size failed to reach statistical significance.
Improvement in Pigmentation

(a) Facial skin of a thirty-five-year-old Asian woman. Before (left) and one month after four treatments with the fractional 1440-nm laser (right). (b) Mean decrease in pigment over trial period.
Improvement in Fine Lines

(A) Baseline (B) Minimal improvement in fine lines 1 month post 4th treatment
Improvement in Fine Lines

(A)Baseline (B)Minimal improvement in fine lines 1 month post 4th treatment
(A) Baseline  
(B) Slight improvement in enlarged pores 1 month post 4\textsuperscript{th} treatment  
**Did not reach statistical significance**
Immediate post-treatment response:

- **Erythema:**
  90% mild to moderate
  10% severe

- **Facial edema:**
  95% mild to moderate
# Patient Reported Treatment-Associated Discomfort

<table>
<thead>
<tr>
<th></th>
<th>None n(%)</th>
<th>Mild n(%)</th>
<th>Moderate n(%)</th>
<th>Severe n(%)</th>
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<tbody>
<tr>
<td><strong>Pain Level</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>2 (20%)</td>
<td>3 (30%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>2 (20%)</td>
<td>3 (30%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>3 (30%)</td>
<td>4 (40%)</td>
<td>3 (30%)</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>2 (20%)</td>
<td>7 (70%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td><strong>Heat Sensation</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>2 (20%)</td>
<td>6 (60%)</td>
<td>2 (20%)</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>3 (30%)</td>
<td>6 (60%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>8 (80%)</td>
<td>1 (10%)</td>
<td>1 (10%)</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; treatment</td>
<td>0(%)</td>
<td>4 (40%)</td>
<td>6 (60%)</td>
<td>0(%)</td>
</tr>
</tbody>
</table>

*Patient reported subjective assessment immediately following treatment

**Both pain & heat sensation experienced significantly decreased as the trial progressed**
Facial skin of a thirty two year old Asian woman. (a) Before and  (b) Two weeks after the third treatment. A localized area of hyperpigmentation is evident on the forehead (arrow). (c) One month after the final treatment.

Adverse Event: One Case of Isolated PIHP Noted which Completely Resolved
Conclusion:

- The low energy, low density nonablative 1440-nm fractional laser produces a mild improvement in select signs of photodamage after four treatments without any long-term adverse effects.
- The favorable side effect profile and short recovery window may hold particular appeal to patients with pigmented skin and early signs of photoaging.
The use of NA Fractional resurfacing in Asian that I consider to be the second line

Melasma

PIH
Control study looking at the use of FR for the treatment of melasma
Rokhar C, Fitzpatrick R Derm Surg Dec 2005

- 10 patients unresponsive to topical agents
- 6-12mJ, 2000-3500MTZ
- 60% : 75-100% clearing
- 30% less than 25%
- 1 case of PIH
Before

after 5 Tx NA-FR

after 2 Tx NA-FR
4 week after one NA-FRTx
6mj, 250Mt/cm² x 8 (cheeks)
6mj, 250Mt/cm² x 8
(forehead, nose, upper lip & chin)
Variation in response to laser treatment

- ? Extent of abnormal melanocytes involvement
- More extensive, more likely to be resistant and develop generalize pigmentation
- Need mean to predict treatment outcome

- Twenty-five patients with melasma received four monthly FP sessions and were followed up to 24 weeks after treatment completion.
- Investigators observed clinical improvements in 60% and patients in 44% at 4 weeks after treatment, but the figures decreased to 52% and 35%, respectively, at 24 weeks after treatment.
- Hyperpigmentation was observed in three of 23 subjects (13%).
- Treatment of melasma with FP led to some clinical improvements, but it was not as efficacious as previously reported at 6-month follow-up.

- 51 subjects with melasma treated with sunblock alone or received sunblock + NA-FR 1550
- No significant difference in the two groups
- Study findings do not support the hypothesis of NFP providing a substantial benefit in treating melasma when compared with the lone application of a broad-spectrum sunscreen.
14 patients were treated with FP in a split-face mode with standardized adjustments in three sessions.

Digital photography and SIAScope® revealed improvement in 54% and 85% after the first, 61% and 85% after the second, 41% and 58% after the third treatment.

Short-term improvement in terms of mild reduction and softening the edges of melasma in patients with skin types I/II, Treatment of patients with skin types III+ should be critically questioned.
1550 nm vs. 1927nm: Lesion depth

- Epidermis
- Dermis

Lesion Depth (um) vs. Pulse Energy (mJ)

- Er:Fiber 1550nm
- Tm:Fiber 1927nm

- Tone and Texture
- Pigmentation
- Scarring
- AK’s
1927 nm fractional thulium fiber laser for melasma
A retrospective review of 20 women (Fitzpatrick skin type II-IV) with melasma treated with the 1,927-nm fractionated thulium laser at 10 or 20 mJ/cm(2), with 60-70% surface area coverage.

Four investigators independently evaluated Melasma Area Severity Index (MASI) scores before, 4 weeks, 3-6 months, and 6-12 months after treatment.

Mean MASI scores decreased dramatically from $13.2 \pm 5.4$ before treatment to $8.5 \pm 3.5$ at 4 weeks after laser treatment ($P = 0.004$).
Result

- Patient assessment revealed that 12 of the 20 subjects had more than 50% clearance of their melasma.
- Recurrence was reported by 7 out of 15 patients who were successfully followed-up (mean 10.2 months).
- Two patients developed postinflammatory hyperpigmentation that subsided with topical bleaching after 3 months.
- High-density coverage fractional 1,927-nm thulium laser proved to be safe and effective for melasma with long-term remission.
Split-Face Study Using a 1,927-nm Thulium Fiber Fractional Laser to Treat Photoaging and Melasma in Asian Skin.

- 25 subjects have three laser treatments (at 3-week intervals) on the half of the face with more-severe photoaging and melasma.
- Independent investigators evaluated clinical improvement 2 and 6 months after the final treatment.
- Improvement in melasma was evaluated using the Melasma Area and Severity Index. Subjective satisfaction rates were also evaluated. Adverse events were assessed, and pain was scored using a visual analog scale (VAS). Histologic changes were observed using immunohistochemical staining.
RESULTS:

- Clinical improvement of photodamaged facial skin was remarkable on the treatment side. Most participants reported that their subjective satisfaction rate was greater than slight satisfaction.

- Downtime for healing required approximately 1 week.

- No severe adverse events occurred. Mean VAS score during treatment was 4.8. Collagen regeneration and melanin decrease were observed histologically.
Result

“All participants completed the three treatment sessions and the 2-month follow-up. After the 2-month follow-up, **18 participants were lost to follow-up because they did not want to visit our clinic.** Seven participants, six of whom concurrently had melasma, were followed for 6 months after their last treatment.”
A retrospective study of the management of Chinese melasma patients using a 1927 nm fractional thulium fiber laser.

Objective:

- To assess the efficacy of 1927nm Thulium fiber laser for the treatment of melasma in Chinese patients
Subjective improvement of melasma

- 60.0% noticed an improvement one month post-treatment
- 72.7% two months post-treatment
Subjective assessment of facial pigmentation

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<th>7 days post treatment</th>
<th>1 month post treatment</th>
<th>2 months post treatment</th>
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<tr>
<td>Worsen</td>
<td>0(0)</td>
<td>0(0)</td>
<td>0(0)</td>
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<tr>
<td>No improvement</td>
<td>1(9.1)</td>
<td>2(18.2)</td>
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<td>Mild improvement</td>
<td>4(40)</td>
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<td>Moderate improvement</td>
<td>5(45.5)</td>
<td>3(27.3)</td>
<td>3(27.3)</td>
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<td>Significant improvement</td>
<td>2(20)</td>
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Objective assessment: MASI score

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<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Percentiles</th>
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<td></td>
<td>75th</td>
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<tr>
<td>Baseline</td>
<td>11</td>
<td>3.932</td>
<td>2.0025</td>
<td>.6</td>
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<td>7 days follow-up</td>
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<td>3.536</td>
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<th>Std. Deviation</th>
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<th>Maximum</th>
<th>Percentiles</th>
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<td>75th</td>
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<tr>
<td>Immediate post treatment</td>
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<td>3.932</td>
<td>2.0025</td>
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Wilcoxon Signed Ranks Test

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<tr>
<th>Test Statisticsb</th>
<th>7 days follow-up - Baseline</th>
<th>1 month follow-up - Baseline</th>
<th>2 months follow-up - Baseline</th>
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<tr>
<td>Z</td>
<td>-2.214a</td>
<td>-2.207a</td>
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<td>Asy mp. Sig. (2-tailed)</td>
<td>.027</td>
<td>.027</td>
<td>.043</td>
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There is significant difference of MASI grading scores at 7days, 1mth and 2mths post treatment follow up.
Baseline

1 month post treatment
3m follow-up

- 7 completed
- Relapse
- Preliminary result:

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<td>MASI scores at baseline_combine</td>
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<td>MASI scores at 3 mths follow up_combine</td>
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Wilcoxon Signed Ranks Test

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<tr>
<td>Z</td>
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<tr>
<td>Asymp. Sig. (2-tailed)</td>
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a. Based on positive ranks.
b. Wilcoxon Signed Ranks Test

There is no significant difference of MASI grading score at baseline and 3mths post treatment follow up.
Baseline  2months post treatment  3months post treatment
Baseline | 2 months post treatment | 3 months post treatment
Conclusion:

- 1927nm Thulium fiber laser offers temporary improvement for the treatment of melasma in Chinese patients.
Use of NA- FR in other pigmentedary conditions
Becker’s nevus at baseline

After 4 treatment sessions with Long pulsed Alex and 1927NA-FR at alternate treatment sessions

Figure 2
Congenital Melanocytic Nevi at baseline

After 8 treatment sessions with long pulsed Alex and QS ruby and 3 sessions with NA-FR 1927nm

Figure 3
Fractional Carbon Dioxide Laser Resurfacing for skin rejuvenation, acne scar and facial scar in Asians


Nicola PY Chan¹, Stephanie GY Ho¹, Samantha Y. Shek¹, Carol S Yu¹, Henry H Chan¹,²

¹ Division of Dermatology, The University of Hong Kong, Hong Kong SAR, China.
² Wellman Center of Photomedicine, Department of Dermatology, Harvard Medical School, USA.
Objective

- To evaluate the efficacy and safety of a new fractional CO$_2$ ablative device for skin rejuvenation, acne scar and facial scar in Asians.
Objective assessment of skin rejuvenation

Mean of skin texture level

Mean level

Baseline
1mth follow-up
3mths follow-up
Last follow-up

* p-value=0.020, significant improvement in skin texture at last follow-up
Objective assessment of skin rejuvenation

Mean level

Baseline 1mth follow-up 3mths follow-up Last follow-up

Mean of skin laxity level

* p-value=0.023, significant improvement in skin laxity at last follow-up
Objective assessment of skin rejuvenation

* p-value=0.026, significant improvement in wrinkles at last follow-up
Objective assessment of skin rejuvenation

* p-value=0.024, significant improvement in enlarged pores at last follow-up
Objective assessment of acne scar

Mean of Scar score

<table>
<thead>
<tr>
<th>Mean level</th>
<th>Baseline</th>
<th>1mth follow-up</th>
<th>3mths follow-up</th>
<th>Last follow-up</th>
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<tr>
<td>0</td>
<td>7.60</td>
<td>5.75</td>
<td>5.00</td>
<td>5.00*</td>
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</tbody>
</table>

* p-value=0.038, significant improvement in scar score at last follow-up
Baseline

Immediate post Tx
Baseline

4mths post Tx
Baseline

7mths post Tx
Acne Scar subject

Baseline

1month post-treatment
Acne Scar subject

Baseline

1 month post-treatment
## Objective assessment of potential adverse effects of all cases

<table>
<thead>
<tr>
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<th>No. of Cases (%)</th>
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<tbody>
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<td><strong>Post inflammatory hyperpigmentation</strong></td>
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<tr>
<td>1 day follow-up</td>
<td>8 (66.7%)</td>
</tr>
<tr>
<td>7 days follow-up</td>
<td>6 (50.0%)</td>
</tr>
<tr>
<td>1 month follow-up</td>
<td>7 (58.3%)</td>
</tr>
<tr>
<td>Last follow-up</td>
<td>7 (58.3%)</td>
</tr>
<tr>
<td><strong>Erythema</strong></td>
<td></td>
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<tr>
<td>1 day follow-up</td>
<td>9 (75.0%)</td>
</tr>
<tr>
<td>7 days follow-up</td>
<td>7 (58.3%)</td>
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<tr>
<td>1 month follow-up</td>
<td>7 (58.3%)</td>
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<tr>
<td>Last follow-up</td>
<td>5 (41.7%)</td>
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<tr>
<td><strong>Acneiform eruption</strong></td>
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<td>1 day follow-up</td>
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<tr>
<td>4 days follow-up</td>
<td>1 (8.3%)</td>
</tr>
<tr>
<td>1 month follow-up</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Last follow-up</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
2 months after topical 4% hydroquinone cream

Post-inflamatory hyperpigmentation

3 weeks post-treatment 2 months after topical 4% hydroquinone cream
Conclusion

- Fractional CO$_2$ ablative resurfacing is effective for skin rejuvenation, acne scar and facial scar in Asians.
- 58.3% post-inflammatory hyperpigmentation
- Appropriate patient selection is important. Suitable candidates include elderly males and females, as well as males with acne scarring.
Efficacy and safety of a carbon-dioxide ablative fractional resurfacing device for treatment of atrophic acne scars in Asians

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Background: Treatment of atrophic scars with a fractional laser resurfacing technique has demonstrated favorable outcomes, although data on the efficacy and adverse effects of this procedure in persons with dark-skinned phenotypes are limited.

Objective: This study was conducted to evaluate the efficacy and safety of carbon-dioxide ablative fractional resurfacing on atrophic acne scars in Asian individuals.

Methods: Thirteen subjects (8 female and 5 male, aged 25-52 years) with skin phenotype IV and atrophic acne scars were treated with 3 sessions of carbon-dioxide ablative fractional resurfacing laser on an average of 7-week interval. Objective (ultraviolet A-light video camera) and subjective (clinical evaluation by two blinded dermatologists) assessments were obtained at baseline and at 1, 3, and 6 months after the final treatment.

Results: At the 6-month follow-up, 85% of the subjects were rated as having at least 25% to 50% improvement of scars. Improvement significantly progressed from the 1-month follow-up to the 6-month follow-up ($P = .002$). At 1 month after 3 treatments, surface smoothness ($P = .03$) and scar volume ($P < .001$) significantly improved, compared with baseline measurements. Of the subjects, 62% rated themselves as having at least 50% improvement in their scars. Mild postinflammatory hyperpigmentation was the most common adverse effect observed in 92% of the subjects or 51% of treatment sessions, and was completely resolved in an average of 5 weeks.

Limitation: The small sample size was a study limitation.

Conclusions: Carbon-dioxide ablative fractional resurfacing appears to be effective and well tolerated for the treatment of atrophic acne scars in Asians. (J Am Acad Dermatol 2010;63:274-83.)

Key words: ablative fractional resurfacing; Asians; atrophic acne scars; carbon dioxide; fractional photothermolysis.
“PIH rate: 92% of treated subjects or 51% of treatment sessions”
Non-ablative 1550-nm erbium-glass and ablative 10 600-nm carbon dioxide fractional lasers for acne scars: a randomized split-face study with blinded response evaluation.


- a split face study examined the role of NA-FR and A-FR in the treatment of acne scar in Asians
- both similarly effective after a single treatment with PIH rate that was estimated to be about 10%.
- However, parameters of NA-FR used was conservative (40mJ, treatment level 6, 8 passes for a single treatment) most would consider multiple treatment sessions to be necessary
- observed lower rate of PIH on the A-FR side may be related to lower energy and density used in that study.
Means to reduce PIH using ablative FR

- Reduce density but increase number of treatment session
- Short course of systemic steriod (10mg predisolone for 3 days)*
- topical steriod#
- Tranexamic Acid@

@ Kim MS et al. Ann Dermatol Vol. 27, No. 3, 2015
Other ablative fractional device

- Fractional YSGG for acne scar in Asians: 70% more than 50% improvement, 30% erythema post-operatively*
- Fractional 2940nm Er:YAG for acne scar: 75% more than 50% improvement, 3% PIH#

Major complication

- different ablative CO2 have different parameters
- 5% coverage of one device may be equal to 15% of another (depend upon the calculation method)
- inappropriate parameter can have major complication
Developed pustular discharge and erosion only just started to heal up, been on klacid and cipro.

Post Co2 laser treatment

3 months after Co2 laser
Treatment of scar induced by ablative fractional resurfacing
Jun 27, 2011
Baseline

Jul 26, 2012
After 4 PDL

Aug 13, 2013
After 12 PDL & injection

Jan 15, 2015
After 16 NA-FR
Dimpling: uncommon complication of ablative fractional resurfacing
Baseline

Post ablative CO2 treatment
Energy: 70mj x 4, suction 100%, total energy: 1.13kj,
depth: 1579u, tx level: 11, total coverage: 45%,
coverage/pass: 11.25%, passes: 4
Baseline

Pitted depression post ablative CO2 treatment
Energy: 70mj x 4, suction 100%, total energy: 1.13kj, depth: 1579u, tx level: 11, total coverage: 45%, coverage/pass: 11.25%, passes: 4
(A) Pitted depression (B) After treatment with topical retin A
EVALUATION OF COMBINED FRACTIONAL RADIOFREQUENCY AND FRACTIONAL LASER TREATMENT FOR ACNE SCARS IN ASIANS

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• Combined Fractional RF + IR aims to improve facial acne scarring
• Pigmentary alteration is a concern in Asians after fractional laser-based ablation
Results

• 20 Asian subjects included in this evaluation
• Sex: 16 males, 4 females
• Mean age: 28 (range 20-47)
• Atrophic acne scar: 20 (100%)
• Skin type: Type IV: 17 (85%); Type V: 3 (15%)
Results

- 20 subjects completed the study (16 received 5 sessions; 4 received 3 sessions)
- 52.6% rated at least moderate (>25%) objective global improvement
- Significant improvement of acne scarring with reduction of median score from 7.5 to 5.5 out of 10 (p<0.001) 3 mths. post last tx.
Adverse Effects

- 6.5% developed temporary PIH (6 episodes out of 92 tx sessions)
- 7 (7.6%) prolonged erythema
- 1 (1.1%) localised papules with erosions on left jaw at 1wk post 2nd Tx.
- 1 (1.1%) blisters on both sides of the jaw at 1day post 3rd Tx.
Parallel-polarised images of atrophic acne scars. (A) Photograph obtained before treatment of multiple atrophic acne scars on the left temple. (B) One month after five treatments with fractional RF and fractional laser with RF combined, significant improvement is seen.
Parallel-polarised images of multiple atrophic acne scars (A) Left cheek before treatment. (B) Improvement in acne scars is seen 3 months after five treatments with both devices.
The FOCUS Lens Array:
• is comprised of hundreds of micro-lenses per square centimeter that redistribute the PicoSure pulse energy into:
  • concentrated micro-beams of higher fluence
  • lower background fluence
• allows skin to be safely treated with higher fluence
  • fluence at the focus of these lenses is up to 20 times greater than the rest of the area
  • this higher fluence is delivered to less than 10% of tissue in each pass
• provides meaningful results
  • including revitalized appearance of the skin
  • on various areas of the body: face, décolleté, hands, and arms
Focus™ Lens Array  
Mechanism of Action (MOA)

The laser beam is fractionated into micro-beams that deliver 20X more fluence than is delivered to the surrounding low fluence areas.
Picolaser Focus™ Lens Array
Focus™ Lens Array. Acne scarring.
Skin rejuvenation

Right temple

Before tx

After tx

Parameters: PicoSure-Focus, 0.4J/cm², 10Hz, 8mm
Skin rejuvenation – baseline

6 weeks after 2nd treatment
PicoSure Focus: 0.4J/cm², 10Hz, 8mm
baseline

After 2 rx
Postinflammatory hyperpigmentation (PIH)

Before tx

After tx

baseline

Parameters: PicoSure, 0.4J/cm², 10Hz, 8mm
baseline

After 1 rx together with bleaching agents started 3 wks before laser
Patient 5

baseline

After 1 picoalex RX, Eldoquin 4% daily for 8 weeks (starting 4 weeks before baseline)
4 wks topical bleaching before baseline, 1 week after 1st treatment
PicoAlex-Focus: 0.4J/cm², 5.0 Hz, 8mm

melasma – baseline
Conclusion

- Fractional resurfacing has revolutionized the treatment of skin rejuvenation in Asians
- Careful selection of laser setting reduce the risk of complication including PIH
- NA-FR require multiple treatment sessions but lower risk of complication
Conclusion

- Ablative laser resurfacing can achieve a more rapid response but more significant complication including scarring and dimpling can occur.
- Fractionated pico is a new modality for skin rejuvenation and treatment of pigmentary conditions.