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Clinical Paper Summary



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Australas J Dermatol, Vol. 56(3), 186-191, 2015



1. Histologic Analysis on the Response of the Skin to 1,927-nm Fractional Thulium Fiber Laser Treatment

1,927-nm Fractional Thulium Laser 조사에 따른
피부의 조직학적 반응 관찰
J Cosmet Laser Ther, 1-5, 2017

Histologic Analyses on the Response of the Skin to 1,927-nm Fractional Thulium Fiber Laser Treatment

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Background: To histologic responses to varied parameters of 1,927-nm fractional thulium fiber laser treatment have not yet been sufficiently elucidated.

Objective: This study sought to evaluate histologic changes immediately after 1,927-nm fractional thulium fiber laser session at various parameters.

Methods: The dorsal skin of Yucatan mini-pig was treated with 1,927-nm fractional thulium fiber laser at varied parameters, with or without skin drying. The immediate histologic changes were evaluated to determine the effects of varying laser parameters on the width and the depth of treated zones.

Results: The increase in the level of pulse energy widened the area of epidermal changes in the low power level, but increased the dermal penetration depth in the high power level. As the pulse energy level increased; the increase in the power level under the given pulse energy level more evidently made dermal penetration deeper and the treatment area smaller. Skin drying did not show significant effects on epidermal changes, but evidently increased the depth of dermal denaturation under both high and low levels of pulse energy.

Conclusion: These results may provide important information to establish treatment parameters of the 1,927-nm fractional thulium fiber laser for various skin conditions.

Histologic Analyses on the Response of the skin to 1,927-nm Fractional Thulium Fiber Laser Treatment

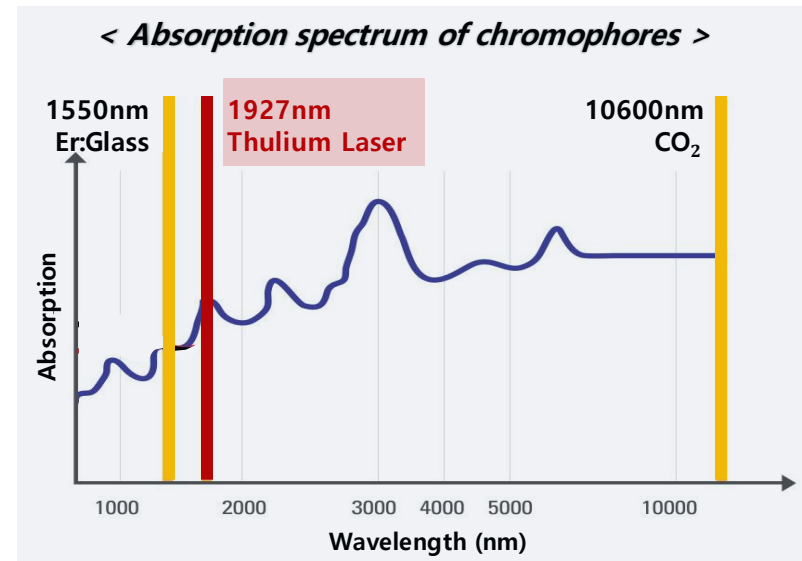
「 1,927-nm Fractional Thulium Laser 조사에 따른 피부의 조직학적 반응 관찰 」

1. Key words

1,927-nm fractional thulium laser, parameter establishment, histology, Lavieen[®]

2. Key points

- 1) The first study on the **histologic changes of the skin** at various treatment parameters of the **1,927-nm fractional thulium fiber laser** system
- 2) **1,927-nm thulium laser** has **high absorption coefficients for water**
 - ① induces epidermal changes and upper dermal tissue denaturation with relative sparing of the stratum corneum
 - ① the stratum corneum remains relatively intact



「 1,927-nm Fractional Thulium Laser 조사에 따른 피부의 조직학적 반응 관찰 」

2. Key points

3) Histologic analysis depending on **pulse energy, power, stacking** and **skin drying**

- ① **Higher power level** results in **more focal and deeper** treatment effects
- ② **To maximize the dermal penetration,**
a **high level of pulse energy** should be delivered at a **high power level**
- ③ **Low energy level** should be used to target **epidermal lesions**
with **minimizing dermal effects**
- ④ **Pulse stacking increased** both the **width of epidermal changes** and
the depth of dermal denaturation under the low level of pulse energy
- ⑤ **Longer pulse duration** induces **broader and more superficial effects**
- ⑥ **Skin drying increased the depth of dermal denaturation**
under both high and low levels of pulse energy

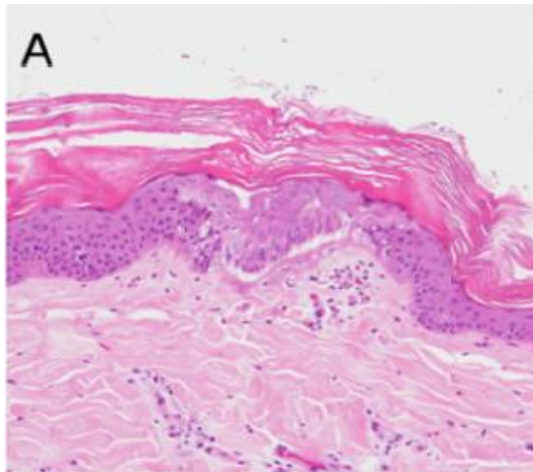
Histologic Analyses on the Response of the skin to 1,927-nm Fractional Thulium Fiber Laser Treatment

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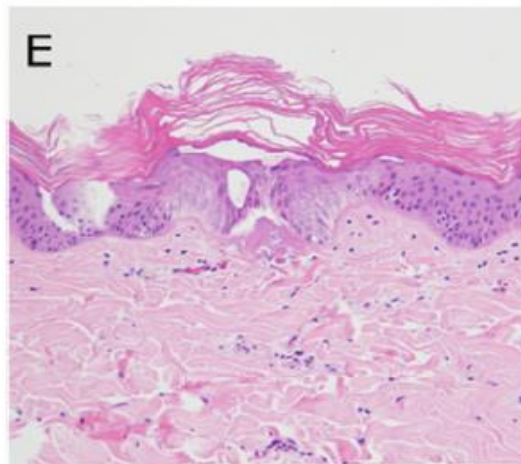
3. Results

Histologic analysis of 1927nm laser-induced ablation

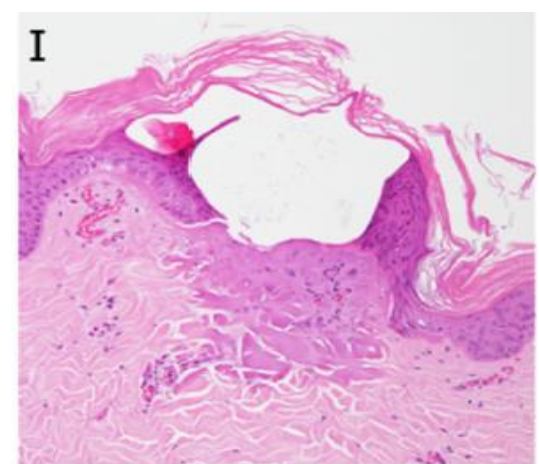
(Non-ablation)



(Sub-ablation)



(Ablation)



4. Parameter

| | A | E | I |
|--------------|----|-----|----|
| Power(W) | 10 | 10 | 10 |
| Duration(ms) | 1 | 1.5 | 2 |
| Stack num | 1 | 1 | 2 |



2. Laser Skin Resurfacing: A Patient-centred Classification Based on Downtime

| 레이저 박피: Downtime에 근거한 환자-중심 분류

Australas J Dermatol, 56(3), 186-191, 2015

Laser Skin Resurfacing: A Patient-centred Classification Based on Downtime

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Introduction: Laser skin resurfacing is used to address cutaneous concerns including acne scarring, photoageing (particularly dyschromia and vascular changes), rhytides and skin laxity. In response to the increasing consumer demand for clear, concise and relevant information and in the interests of informed consent, we have devised a user-friendly patient-centred classification system for laser skin resurfacing. Existing skin resurfacing classifications do not adequately meet the above objectives. In this article, we categorise resurfacing lasers, review existing resurfacing classification systems and propose a patient-centred classification based on downtime (the period of time following resurfacing where patients may choose not to appear in public due to expected side-effects such as erythema, oedema and exudate).

「레이저 박피: Downtime에 근거한 환자-중심 분류」

1. Key words

1,927-nm fractional thulium laser, patient-centred classification based on downtime, Lavieen[®]

2-1. Key points

- 1) **Laser skin resurfacing**; in the treatment of **photoageing** (dyschromia and vascular changes), **(acne) scarring, and other textural skin abnormalities** (rhytides and skin laxity)
- 2) A patient-centred classification based on downtime
; **the period of time following resurfacing** where patients may choose not to appear in public **due to expected side-effects such as erythema, oedema and exudate**
- 3) Laser classified according to depth of skin damage
; the gentlest true resurfacing (level 1) ~ intensity up to a maximum of level 7
- 4) Racial categories – accurately predict response to treatment

「레이저 박피: Downtime에 근거한 환자-중심 분류」

2-2. Key points - Lavieen[®]

- 1) Lavieen[®] - 1927 nm, Thulium, Non-ablative laser
- 2) **Level 2 fractional laser** based on patient-centred classification system
- 3) **Little or no downtime** (0-2 days)
- 3) Main after effects are flaking and swelling
- 4) **Improvement of skin color(++) and texture(+)**

Laser Skin Resurfacing: A Patient-centred Classification Based on Downtime

「레이저 박피: Downtime에 근거한 환자-중심 분류」

3. Result

Level 2 resurfacing with intense pulsed light and 1927 nm fractional laser.

[Before]



[After]



** Detailed parameters of laser treatment did not appear in the paper.*

Laser Skin Resurfacing: A Patient-centred Classification Based on Downtime

「레이저 박피: Downtime에 근거한 환자-중심 분류」

4. Appendix

Table 2. Racial categories used to predict response to laser resurfacing

| Race | Original geographical habitat | Characteristics of skin and features | Complications | Candidate for laser resurfacing |
|---|--|---|--|---------------------------------|
| Nordic, e.g., Swedish, Irish | Northern Europe | Light to very light colour Very fine skin and features | Erythema +++ Telangiectasia Scarring | Very good |
| European, e.g., French, English | Mid-Europe Southern Europe | Average colour Average coarseness of skin and features | Low incidence | Excellent |
| Mediterranean, e.g., Spanish, Greek | North Africa West Asia | Darker and coarser than the Europeans | Hyperpigmentation +/++ Erythema + | Very good |
| Indo-Pakistanis, e.g., Pakistanis, Thais | Upper middle Asia | Coarser and darker than the Mediterranean group | Hyperpigmentation +++ | Poor |
| Africans, e.g., African Americans, Sudanese | Lower west Asia Middle and lower Africa | Thick, oily skin and hair Colour is black to deep black Features and skin are coarse to very coarse | Hypopigmentation + Hypopigmentation +++ Hyperpigmentation ++ | Very poor |
| Asians, e.g., Japanese, Koreans | East Asia | Colour varies from light to medium dark Skin and features are coarse to very coarse | Hyperpigmentation +++ Erythema +++ | Good |



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