

# Fractional Treatment of Aging Skin with an Oscillatory Array of Micro-Tips at High Temperature

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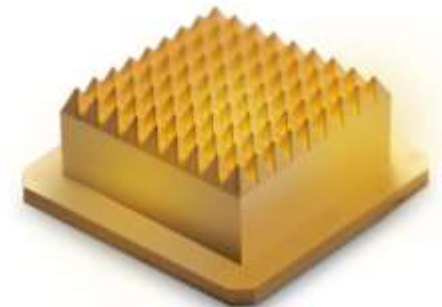
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## Objective

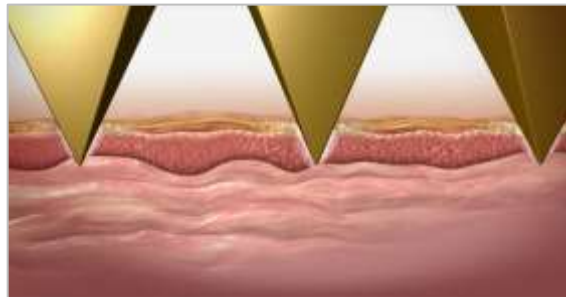
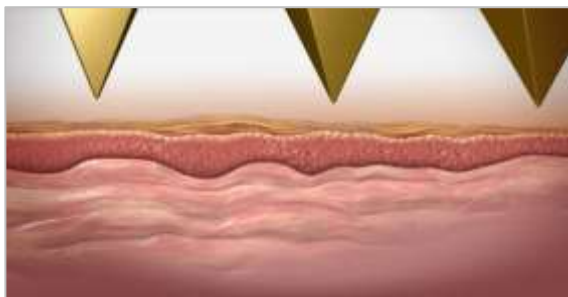
To establish clinical results of a novel ablative fractional system (Tixel™) based on thermo mechanical ablation technology (TMA) with comparison to fractional CO<sub>2</sub> laser.

## Materials and Methods

Tixel (Novoxel, Israel) employs a thermal tip containing an array of 81 heated pyramids which evaporate tissue upon brief contact. Tip temperature is 400°C ; Tip active area 1cm<sup>2</sup>; Ten patients were enrolled in a pilot study: ages 35-65, 8 females, 2 males, phototypes II-IV. In two cases, fractional CO<sub>2</sub> laser was used for comparison. Analgesic cream was not applied.



The tip



Energy is transferred from the pyramids to the upper skin layers upon brief contact. Craters are created.

# Results: Tixel vs. Laser

LASER



TIXEL



Comparison: Laser and Tixel.

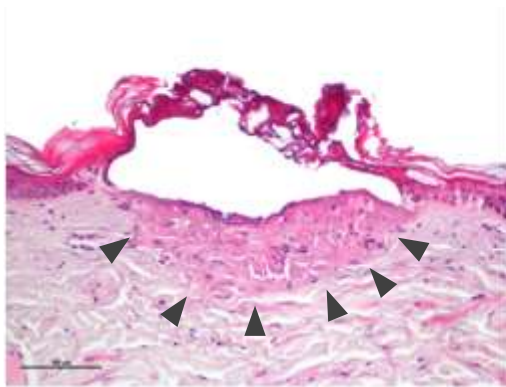
Day 2 after first session of peri-orbital treatment.

Male 65, Phototype III.

Treatment Pain

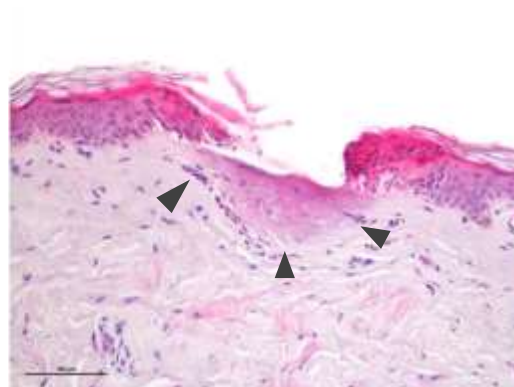
	Laser	Tixel
Pain Level	8/10	2/10

LASER



Epidermis necrotic zone measuring **330µm diameter**, and a papillary dermis coagulation zone measuring **170µm depth**.

TIXEL



Epidermis coagulation zone measuring **160µm diameter** and a papillary dermis coagulation zone measuring **170µm depth**

Comparison of histopathology cross sections on human skin post treatment (X20). Male 61, Phototype III. Biopsies taken on upper arms.

Tixel crater shows no evidence of necrotic tissue or charring. Zone of dermal thermal damage is as deep as laser but narrower.

Crater Dimensions

	Laser	Tixel
Width	330 µm	160 µm
Depth	170 µm	170 µm

## 4 months after, 2 sessions



### Comparison of Tixel to Laser

Male 65, phototype III.  
Same settings as first session.

- Similar improvement in skin texture and resurfacing.
- Side effects: none.
- Average pain in 2 sessions: 2/10 (Tixel); 8/10 (laser).

# Healing After Tixel Treatment

before

Immediately after

3 days after

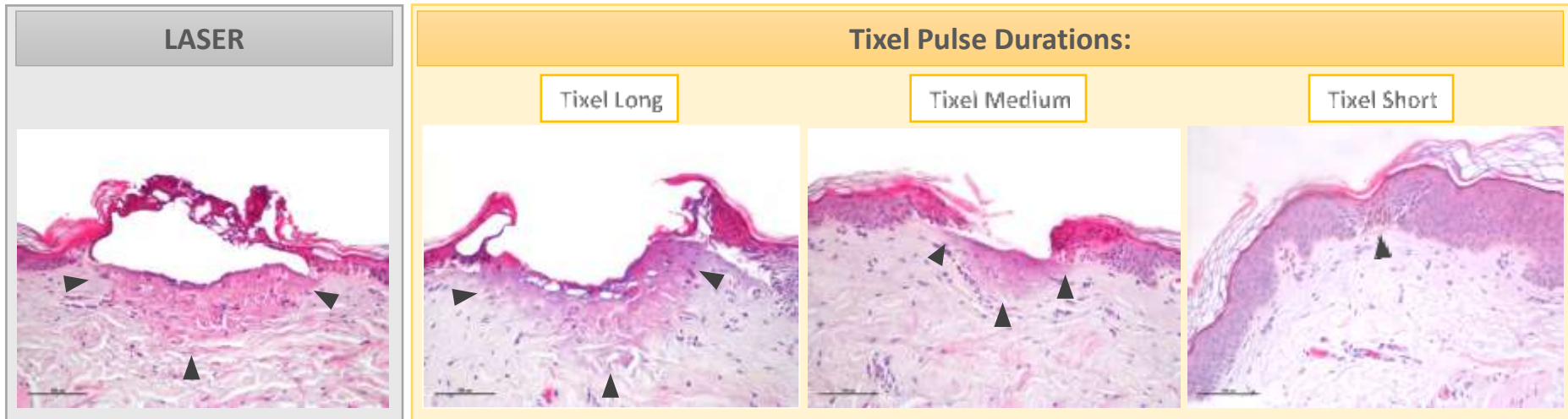
7 days after



## Tixel treatment:

- Tixel settings: medium pulse
- Female, 45, Phototype II.
- Pain level: 3/10.
- Post treatment: 1 hour sunburn sensation.
- Clearance of redness: 3 days.
- Down time: on treatment day only.
- Side effects: none.

# Histology: Tixel and Laser



Punch biopsies of human skin (from the same patient, male 61) extracted immediately after treatment.

**Laser:** Fractional CO<sub>2</sub> laser “YouLaser” Quanta, 24W, 750µsec, 2 stacks, density 100, 36mJ/point.

**Tixel:** The dimensions of the evaporation zone and extent of thermal damage correlate to pulse duration.

		Laser	Tixel long	Tixel medium	Tixel short
<b>Vaporized tissues</b>		Epidermis & upper papillary dermis	Epidermis & upper papillary dermis	Epidermis	Stratum corneum
<b>Thermal effect</b>		papillary dermis	papillary dermis	papillary dermis	Epidermis
<b>Crater (including thermal zone)</b>	width	330 µm	270 µm	160 µm	100 µm
	depth	170 µm	160 µm	170 µm	100 µm

## Summary of Results

- Tixel was compared to fractional CO<sub>2</sub> lasers using recommended settings in both.
- Average pain level with Tixel was 3/10.
- Full face patients felt a typical sun burn sensation for about 1 hour after Tixel.
- Analgesic cream was not used nor requested by any of the patients.
- Mean time to clearance of redness is 3 days.
- Mean down time is 1 day.
- Efficacy of Tixel is similar to laser.
- There were no side effects.

## Conclusions

Tixel is a new, safe and versatile modality for ablative fractional treatment.

Treatment is significantly less painful than laser and does not require use of topical anesthesia or cooling.

By adjusting treatment parameters the physician can control crater properties, down time and duration of healing.

Tixel is compact, light weight and easy to operate.

Tixel



### Reference

Gary Lask, Monica Elman, Nathalie Fournier, Michael Slatkine. 'Fractional vaporization of tissue with an oscillatory array of high temperature rods – Part I : *Ex vivo* study '. J Cosmet Laser Ther, 2012 Oct;14(5):218-23