

Cutaneous Histologies Seen with Fractional Picosecond 532nm, 1064nm, 755nm, and Correlation with Laser Interaction Modeling of the Absorbing Chromophores

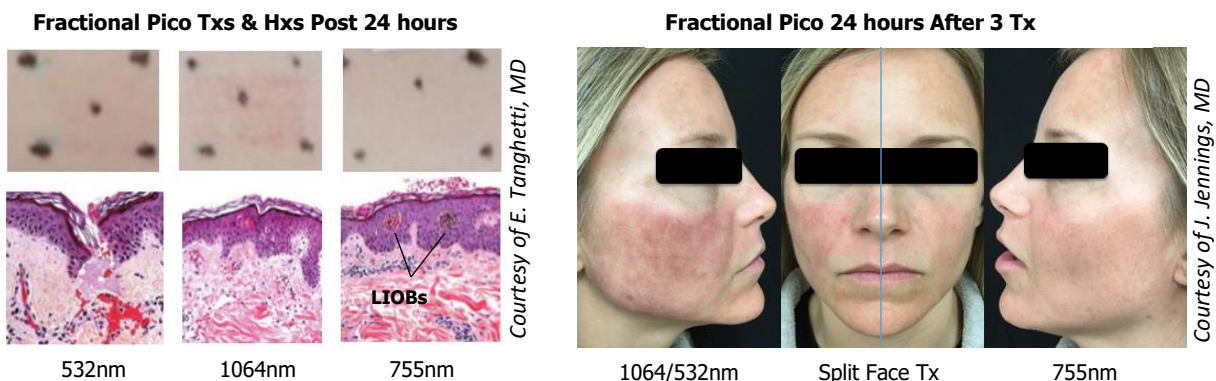
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Study Design:

- Prospective study to evaluate clinical and histological changes with fractional 532nm, 1064nm and 755nm over 24 hours in 8 female patients, skin types I-VI, to be correlated with modeling of competing chromophores.
- Each patient received 1 treatment and photographs were taken 15-minutes and 24-hours post treatment and 3.5mm punch biopsies were taken from each side.
- Total of 3 passes per treatment with manufacturers' recommended fluences with each wavelength for each device.

Results:

- At 24 hours, erythema with small areas of petechial hemorrhage was seen at 1064nm and to a lesser extent in 532nm. No petechia and only faint erythema seen in 755nm.
- LIOBs form consistently with 755nm, while 532 and 1064nm inconsistently demonstrate LIOBs often accompanied by epidermal necrosis and dermal hemorrhage.
- Clinical split face Tx's show prolonged erythema >24 hours using 1064/532nm (vs 755nm).



Conclusion:

- When examining melanin and blood absorption at 755nm vs. 532nm and 1064nm, 755nm offers the best compromise and leads to the lowest blood temperature rise at the LIOB threshold fluence or higher in the epidermis from melanin absorption. This means fewer side effects observed clinically and histologically and is consistent with modeled absorption characteristics.

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