

Laser Treatment of Photodamaged Skin

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Disclosures

No Relevant Disclosures

Photodamaged Skin

- Pigment
- **Rhytids**

Photodamaged Skin

- Rejuvenation (45-70 years of age)
- Prejuvenation (30-45 years of age)

Rejuvenation

Fractional Photothermolysis

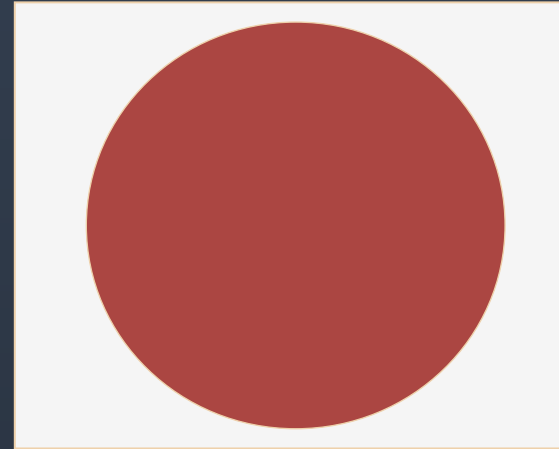
Full field ablative CO₂ resurfacing was the gold standard in treating facial photodamage, rhytides, skin texture

- Limitations:
 - Prolonged healing times
 - Unfavorable safety profile (dyspigmentation, scarring)

Concept of fractional photothermolysis, allowed development of fractional lasers

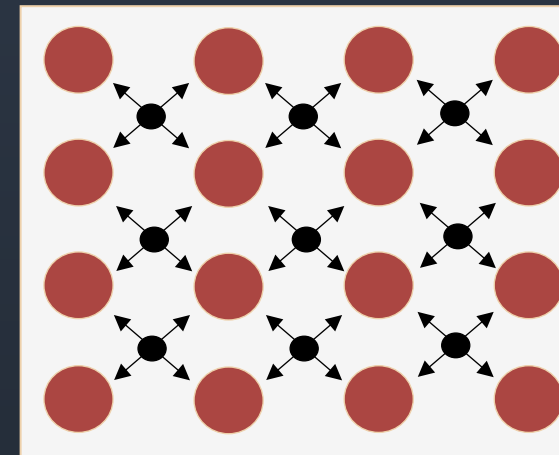
- Advantages:
 - Shorter recovery periods
 - Improved safety profile

Traditional Ablative



Confluent epidermal damage

Fractional Lasers



Columns of controlled thermal injury (microscopic treatment zones)

Intervening untreated skin

Rapid re-epithelialization



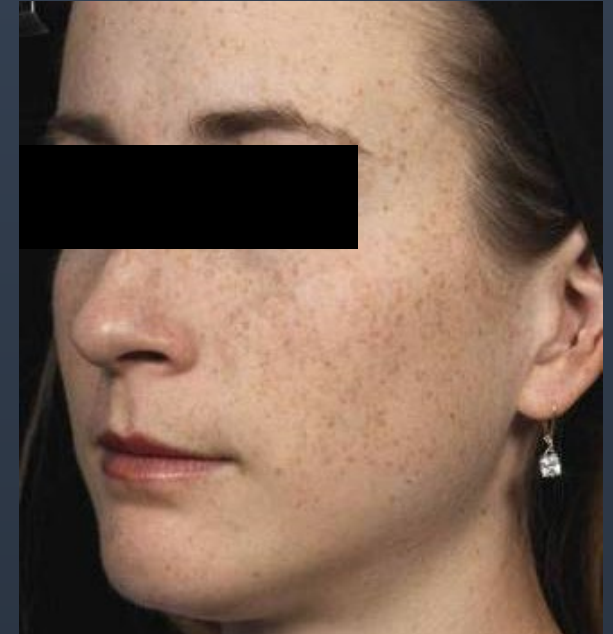
Laser tx'd skin (MTZs)



Untreated skin



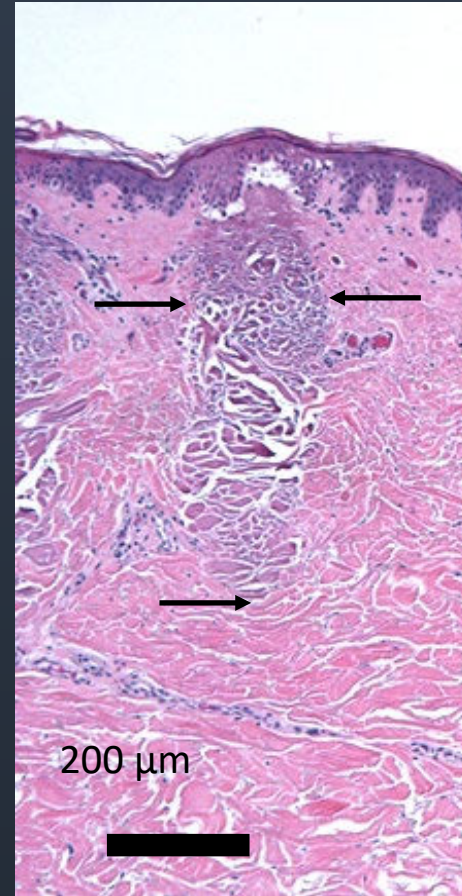
Healing



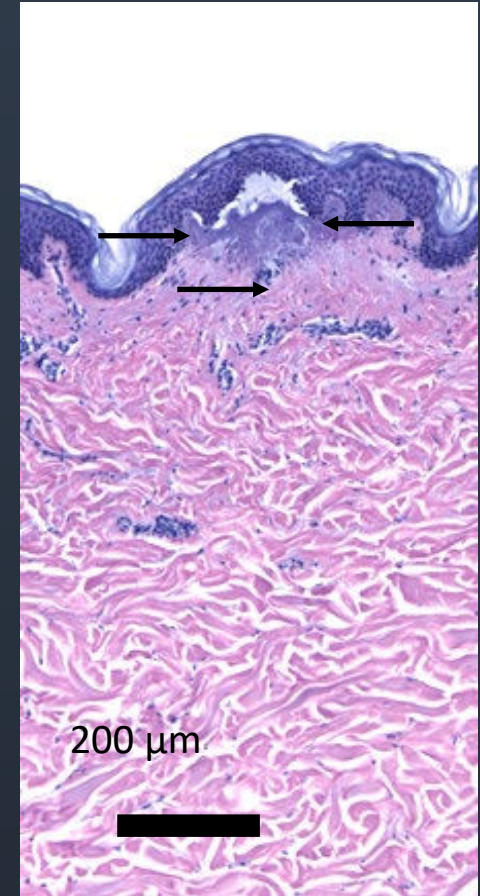
Fractional Lasers = Tissue Normalization

Non-ablative Fractional Resurfacing

- Non-Ablative
 - Tissue is coagulated (200-2000 microns deep), NOT vaporized
 - Stratum corneum remains intact
- Fractional
 - Pattern of 60-400 micron diameter (MTZs)
 - Each surrounded by viable tissue
- Resurfacing
 - Extrusion & replacement of damaged tissue
 - Rapid re-epithelization (1 day – 2 weeks)
- Wavelengths
 - 1470, 1540, 1550nm
 - 1927nm



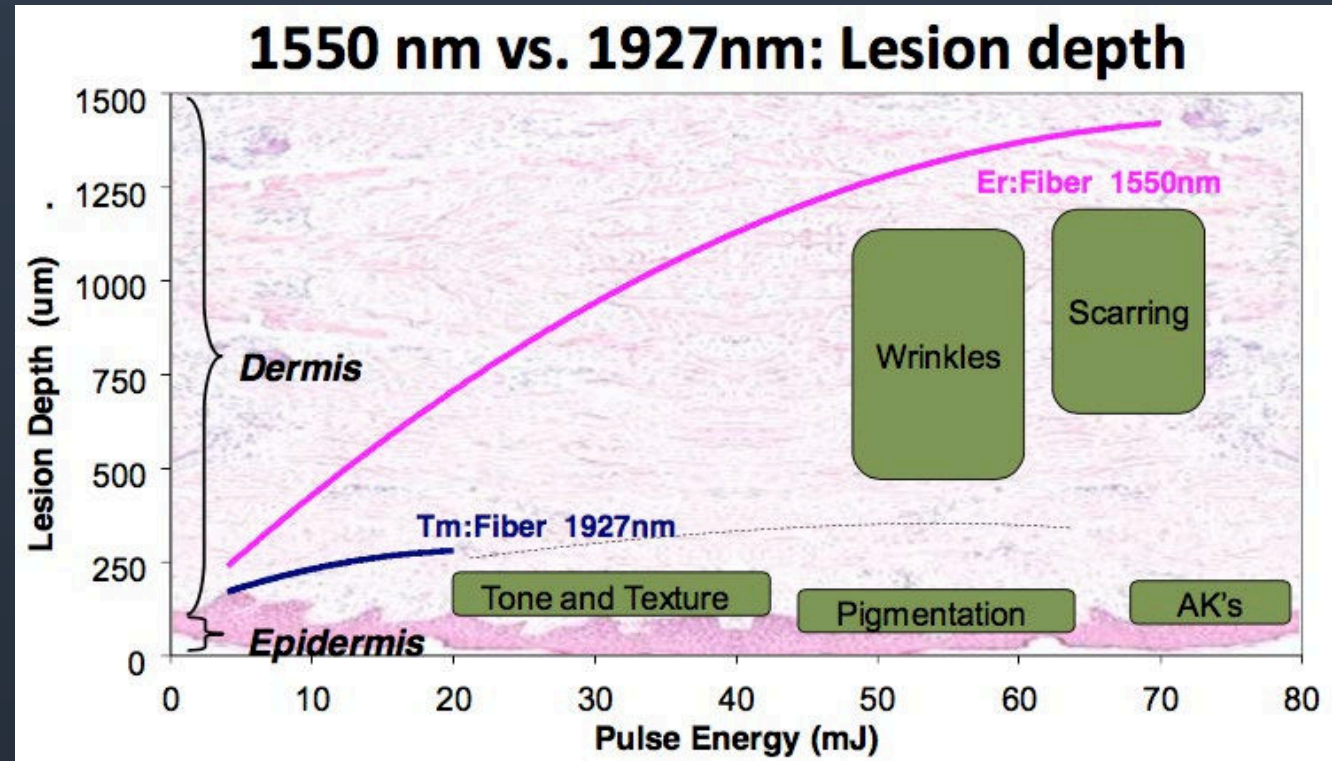
1550 nm



1927 nm

Non-ablative Fractional Resurfacing

- 1470, 1540, 1550 nm
 - Coagulate into the dermis
 - For texture, tightening, scars
- 1927 nm
 - Greater water absorption coefficient → more superficial absorption
 - For pigment, crepiness, AKs



Photodamage – 1550nm NAFR



Before

6 Months Post 4 Treatments

improvements in fine lines, texture and pigment

Photodamage – 1927nm NAFR



Before

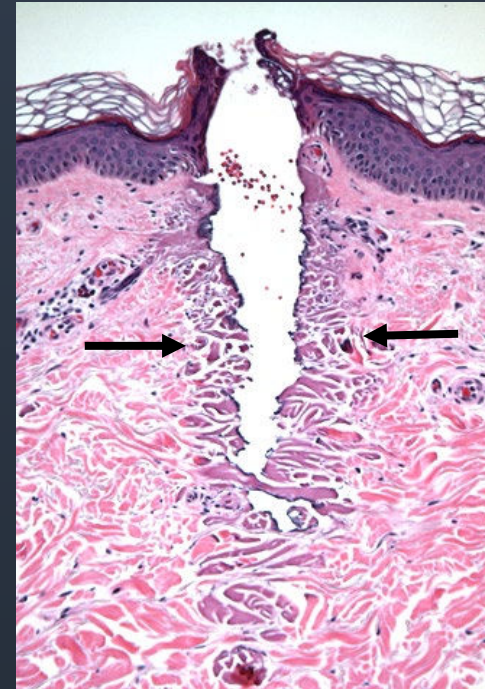


2 Weeks Post 2 Treatments

Significant improvement
in pigment

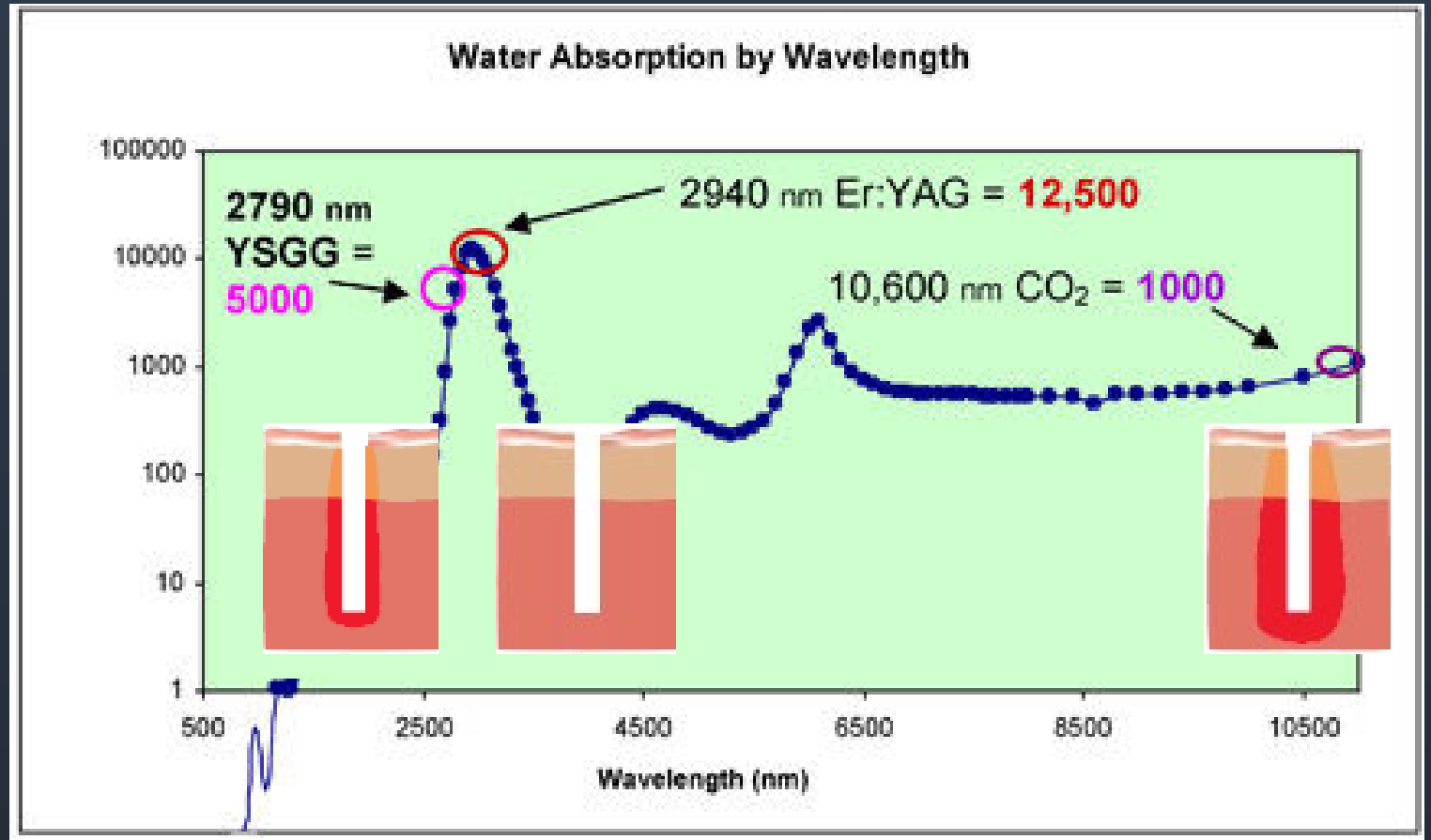
Ablative Fractional Resurfacing (AFR)

- Removal/ablation of tissue
- More downtime but often fewer treatments
- Laser Variables
 - Wavelength
 - Energy (mJ)
 - Density (% Coverage)
 - Power



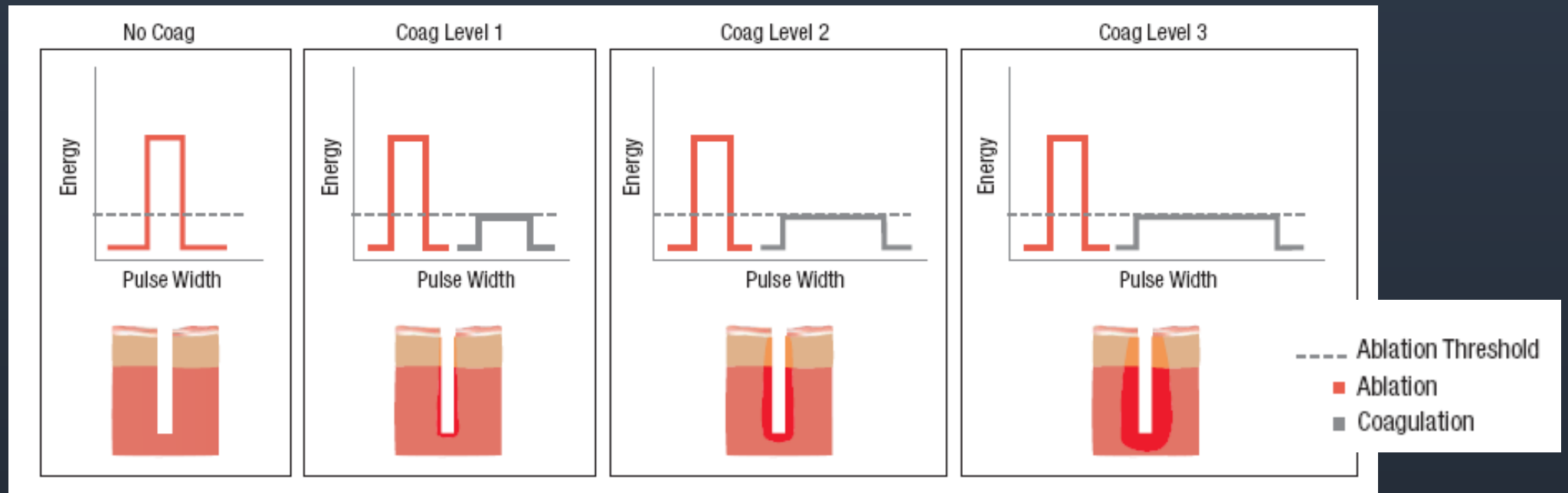
AFR – Wavelength

The greater the absorption coefficient \rightarrow the less collateral thermal injury



AFR – Tunable Coagulation

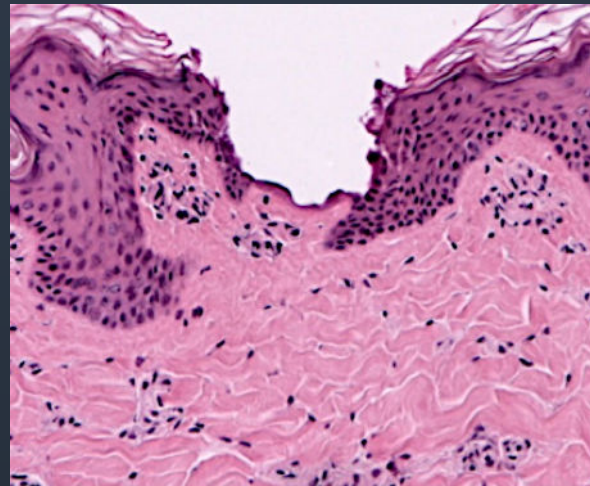
- Optimize the ratio of ablation and thermal zone
- Increase coagulation for more collagen production



AFR – Pulse Energy

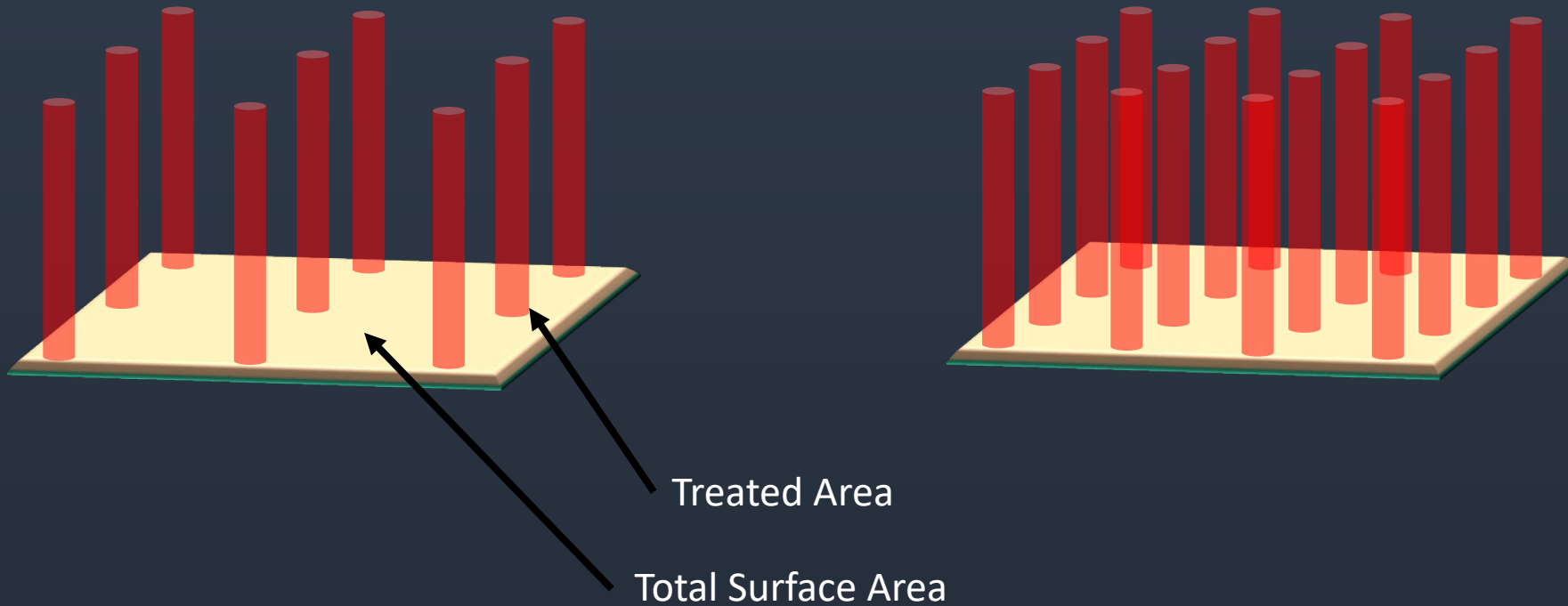


Increasing Laser Pulse Energy
Increasing MTZ Depth



AFR – Treatment Density

→
Increasing MTZ Density



$$\text{Tx Density} = \text{Treated Area} / \text{Total Surface Area}$$

Facial Rhytides – CO₂ AFR

Baseline



3 Months Post 2 Treatments



Facial Rhytides/Festoons – CO₂ AFR

Baseline



3 Months Post 1 Treatment



Perioral Rhytides – CO₂ AFR

Baseline



1 Month Post 1 Treatment



Facial Rhytides – Erbium AFR

Baseline

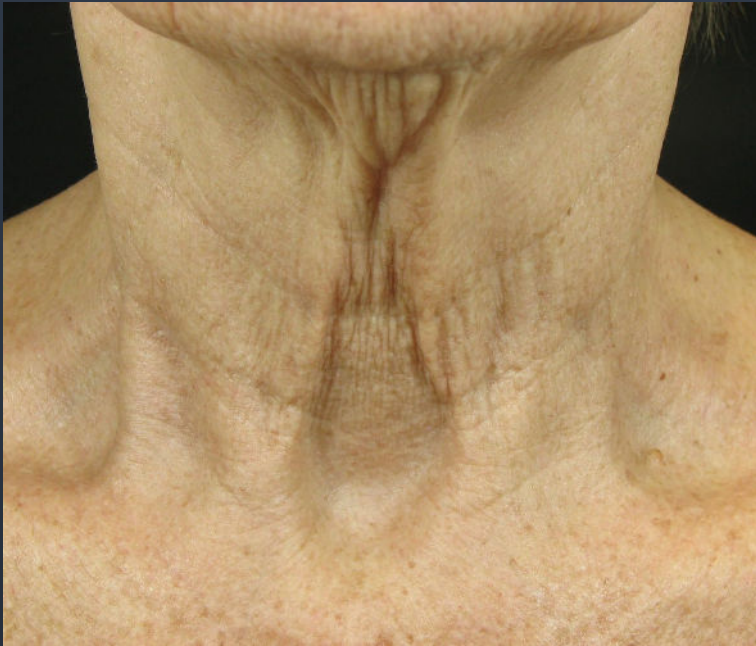


1 Month Post 1 Treatment



Neck Rejuvenation – CO₂ AFR

Baseline



01/26/2008

S/p 1 Tx



02/7/2008

4 Month F/U



05/22/2008

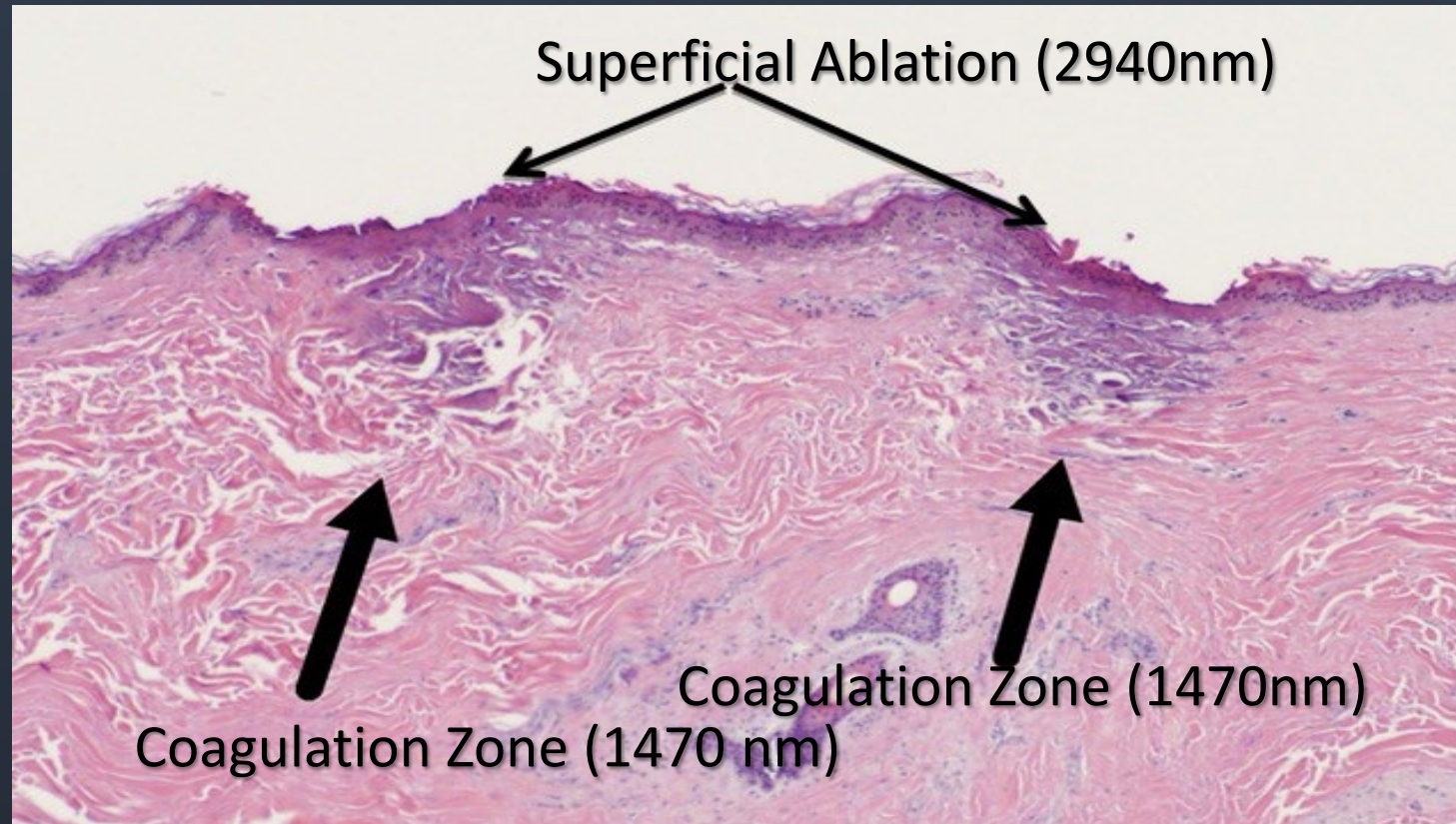
70mJ - 8.33% Coverage (50% Total Coverage but only 1 Pass)

Hybrid NAFR/AFR

- 2940 nm targets the epidermis (20-100um) to address textural issues/pigment
- 1470 nm targets the dermis (100-700um) to stimulate collagenesis



Hybrid NAFR/AFR



Hybrid NAFR/AFR



Baseline

S/P 1 Tx

Hybrid NAFR/AFR



Before



S/P 1 Tx

Hybrid NAFR/AFR



Baseline

S/P 2 Tx's

Conclusions

NAFR

- Advantages
 - Less down time
 - Lower risk of AE's
 - Minimal aftercare
 - Can use multiple lasers same day
- Disadvantages
 - More treatments
 - Less tightening

AFR

- Advantages
 - Greatest effect in single tx
 - Greater tightening
- Disadvantages
 - More downtime
 - Greater risk if AE's
- Hybrid NAFR/AFR – New frontier

Prejuvenation

Gen Z and Millennials

- Gen Z: Born 1996-2010
 - First generation to not experience a world without internet
 - Access to more advanced technology
 - Globally connected at earlier age
 - More focused on social justice
 - Greater appreciation of diversity and finding uniqueness
 - Value self-care



Gen Z and Millennials

- Millennials: Born 1981-1995
 - Largest living demographic
 - More limited technology as children
 - Stronger economy when young
 - Expect to be heard; Loyalty can be fickle



Laser treatments

Prejuvenation Laser Treatment

- Low downtime
- Glow, enhanced tone/texture
- Erase early sun damage
- Stimulate collagen production

> Minimize pores



Combined 1064nm 650usecond/ Superficial Erbium Laser: “



Before

4 Days After Treatment

Patient in Early-40s



Before Treatment



Immediately After Treatment

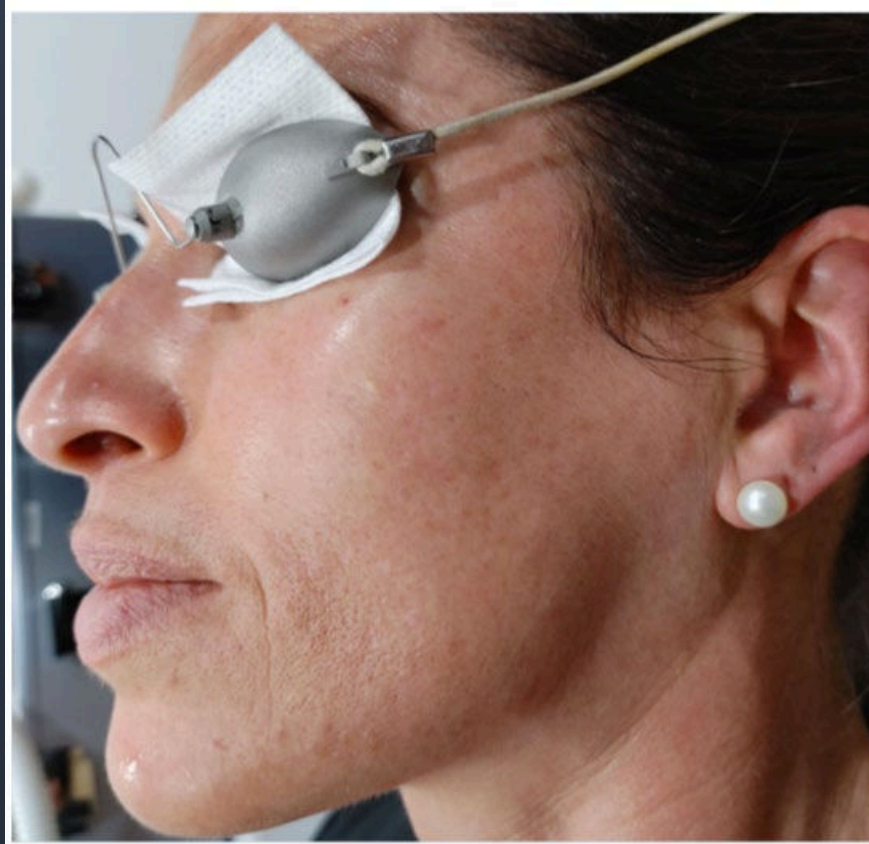


Morning After Treatment



5-Days Post Treatment

Patient in Early-40s



Before



5 Days Post Treatment