FRx Presentation

FRx Technology

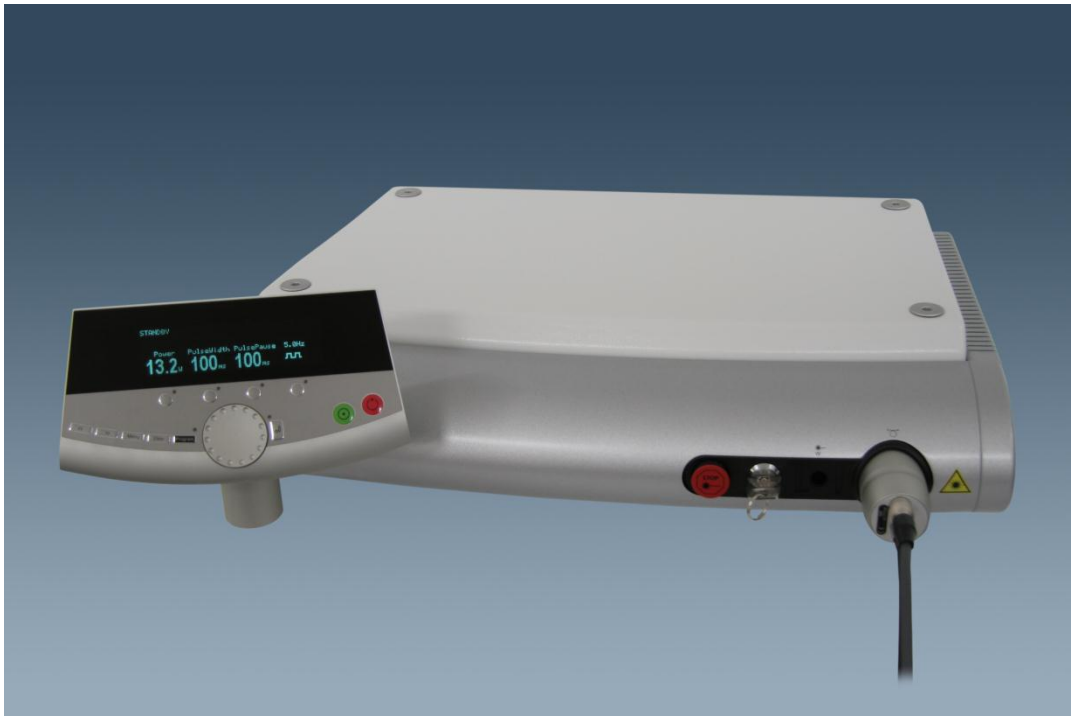
Fractional CO_2 Laser Technology

- Ablative Fractional CO_2 Laser
  - Microscopic zones of tissue ablation with spatial separation between columns of treated and untreated tissue.
  - Uses a wavelength of 10,600 nm, the main chromophore (target) is tissue water.
  - Significant heating of adjacent dermal collagen
    - Alteration of the helical structure of collagen molecules results in tissue tightening
  - Tightening continues for 3-6 months post-treatment.
  - Untreated skin promotes healing and reduces downtime.

FRx Fractional Treatment - Indications

- Photodamage
- Acne Scarring
- Scarring from other causes
- Dyschromia
- Improvement in Vascular Ectasia
  - Single treatment, with cumulative improvement seen with multiple treatments
  - Commonly used to treat Face, Neck and Chest

FRx Technology



- Unique Fibre Delivery System
- Continuous Wave or Pulsed Output
- Industry-leading Scanner
- Variable Scan Density
- Variable Pulse Duration
- Laser Diode Aiming Beam
- 400 Micron Spot Size
- 10-1,000 millisecond pulse width
- Footswitch Activation

FRx Scanner Technology

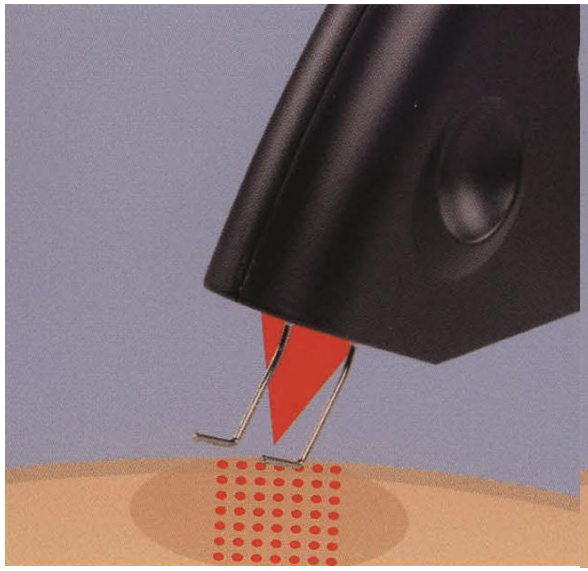
- Scan Size: 10 x 10mm
- Scan Density:
  - 7x7 spots = 1.66mm spacing
  - 9x9 spots = 1.23mm spacing
  - 11x11 spots = 1mm spacing
- Selectable Pulse Width/Dwell Time
- Energy Density up to 105mJ/cm^2
- Power Density approximately 21kW/cm^2 at 15 Watts
- Treatment distance 27mm from output lens

How The FRx Scanner Works

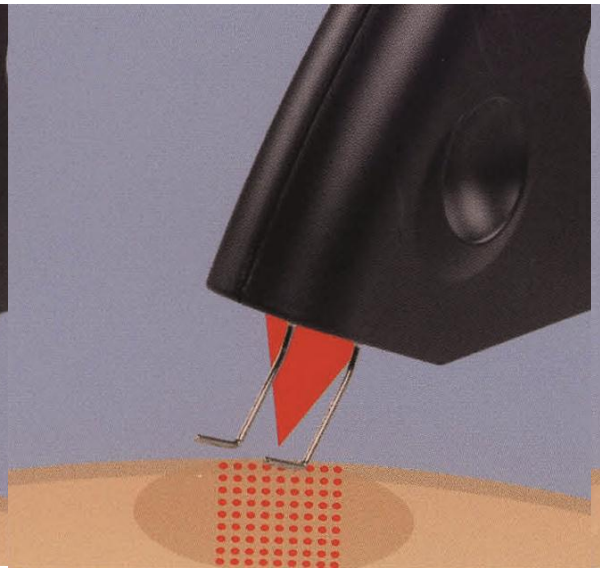
- Distributes energy over 10mm x 10mm treatment area in an even pattern of spots
- Leaves small areas of untreated skin between the spots, facilitating a faster skin-healing process and reducing patient downtime
- Density of spots:
- 7 x 7 spots
- 9 x 9 spots
- 11 x 11 spots
- Within each of the densities, the pulse width can be adjusted from 2 to 7ms

FRx Scanner Technology

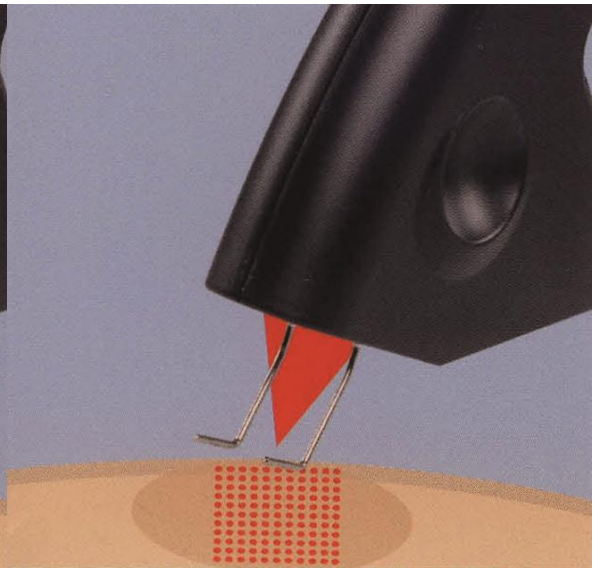
7 x 7 spots



9 x 9 spots



11 x 11 spots



Pulse Width/Dwell Time: 2-3-4-5-6-7 milliseconds, selectable per spot

FRx Treatments

- Various Scars
  - Burn Scars, Acne Scars, Surgical Scars
- Dyschromia
- Photo-Damaged Skin
  - Large Pores, Uneven Skin Tone, Skin Texture
- Skin Laxity (Deep Wrinkles)
- Rhytides
  - Periorbital & Perioral Wrinkles
- Total Fractional Skin Resurfacing
  - Full-Face, Non-Facial

FRx Clinical Study

- Kaare Christiansen, MS - Molholm Research, 7100 Vejle, Denmark and Peter Bjerring, MD, PhD - Department of Dermatology, Molholm Hospital, 7100 Vejle, Denmark
- Lasers in Surgery and Medicine 40:454–460 (2008)

- Quality control study by Prof. Peter Bjerring
- 10 patients skin type I-III
- Upper lip treatment
- Local or infiltration analgesia
- 3 treatments – 4 weeks apart
- 12 watts, graduated pulse lengths acc to skin condition

FRx Clinical Study Conclusions

- Conclusions:
- The present study demonstrates subjective improvements in wrinkles, skin texture and mottled pigmentation as well as statistically significant objectively measured improvements in ultrasonographical dermal density after three non-ablative fractional CO_2 laser treatments.
- Lasers Surg. Med. 40:454–460, 2008.

FRx Treatment Protocols

Treatment	Watt	Msec	Pattern Density
Facial/Skin Tightening	8 - 10	3 - 4	Medium
Perioral	6 - 8	5	High
Periorbital	8 - 10	3 - 4	Medium
Scars (including Acne)	8 - 12	4 - 5	Medium to High
Pigmentation	10 - 12	2	High
Wrinkles	8 - 9	3	Medium to High
Enlarged Pores	8 - 10	4 - 5	Medium
Striae Albae	7 - 8	3 - 4	Medium
Striae Rubrae	6 - 7	3	Medium
Hand (Dorsal)	8 - 10	3 - 5	Medium to High
Neck/Cleavage	8 - 10	3 - 4	Medium

Note: Only for use with Fitzpatrick Skin Types I – III and tanning level 1-2

FRx Treatment Parameters

Treatment Intensity	Low	Medium	High
Settings	3 msec	3-4 msec	5-7 msec
Healing	3-5 days	3-5 days	3-5 days
Anaesthesia	None	None/EMLA	Non/EMLA

Settings are based on 8 Watts output power, 9x9 spots

- Treatment Protocol normally comprises a single treatment; however, 3 treatments at intervals of 4 weeks deliver optimal results.
- Parameters are lowered after each Treatment.
- Patients can normally go to work.

FRx Post-Treatment Sequelae

- **Pain and swelling**
- Redness and Sunburn-like stinging immediately post-tx, lasting up to 30 minutes, with mild swelling on days 2-3.

- **Itching**
- Scabs will form on the surface 24 – 36 hours after treatment, and normally disappear within 3-5 days.

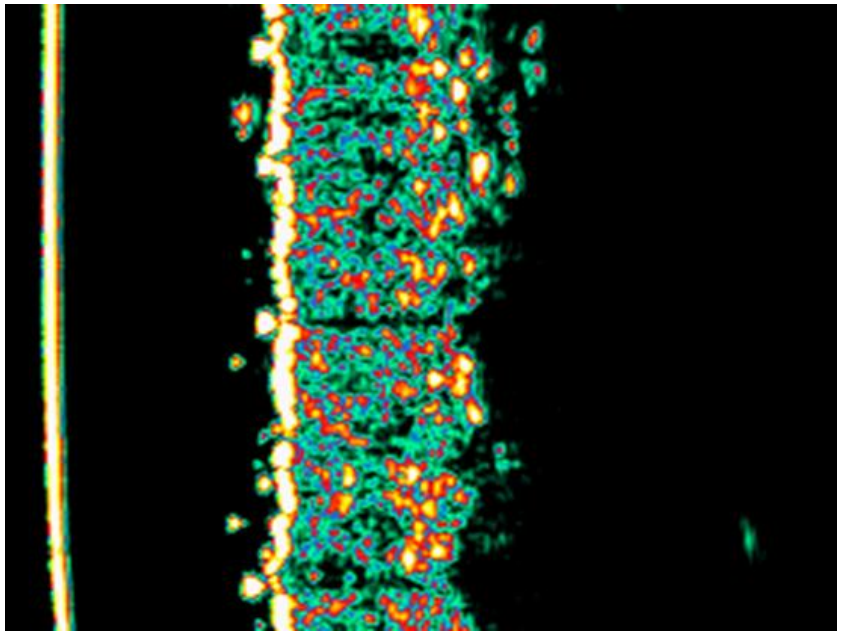
- **Erythema**
- Normally evident after treatment for 2-5 days.. Can be covered with good quality mineral makeup.

- **Sun Exposure**
- Avoid direct sun exposure for 3-5 months. Sun block (SPF 30+) should be applied daily.

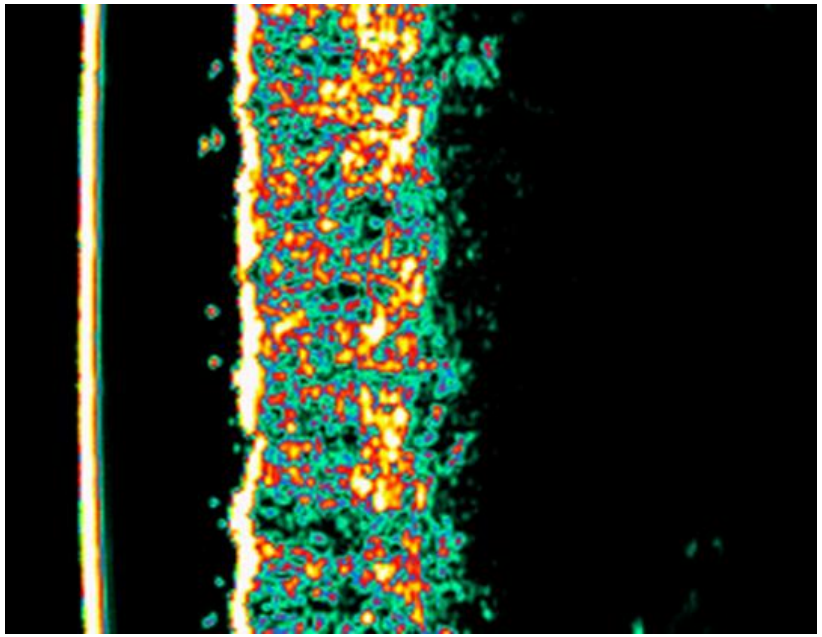
FRx Exclusion Criteria

- Extreme caution with skin types IV-VI
- Newly tanned skin
- Active herpes infection
- Filler treatments closer than 3 months before treatment start
- Connective tissue disease
- Tendency to Keloid and/or hypertrophic scarring
- Immunosuppressed patients
- Smoking reduces blood flow = slower healing
- History of vitiligo
- Patients who cannot manage post-treatment care

FRx Ultrasound Images



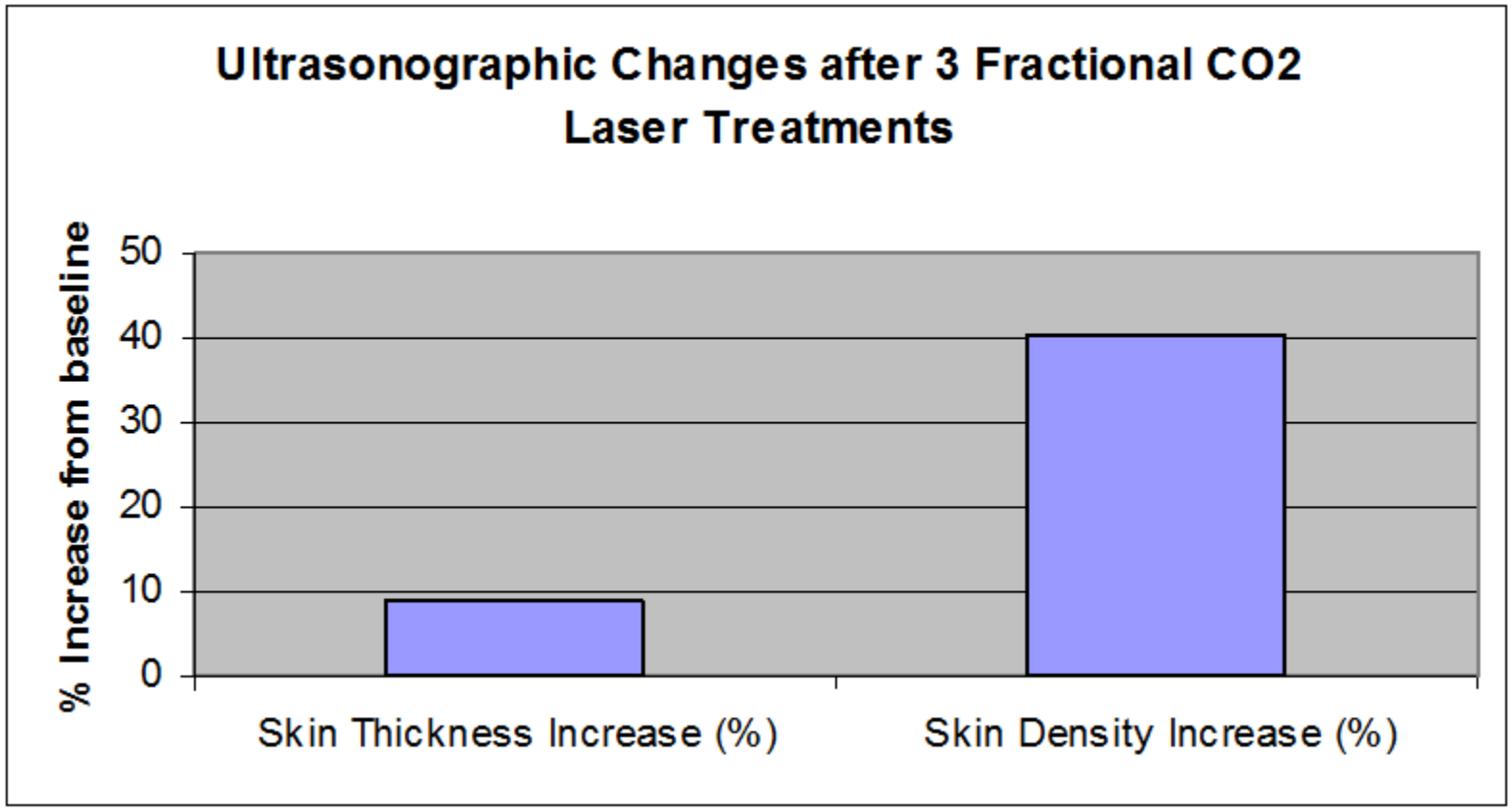
Before Treatment



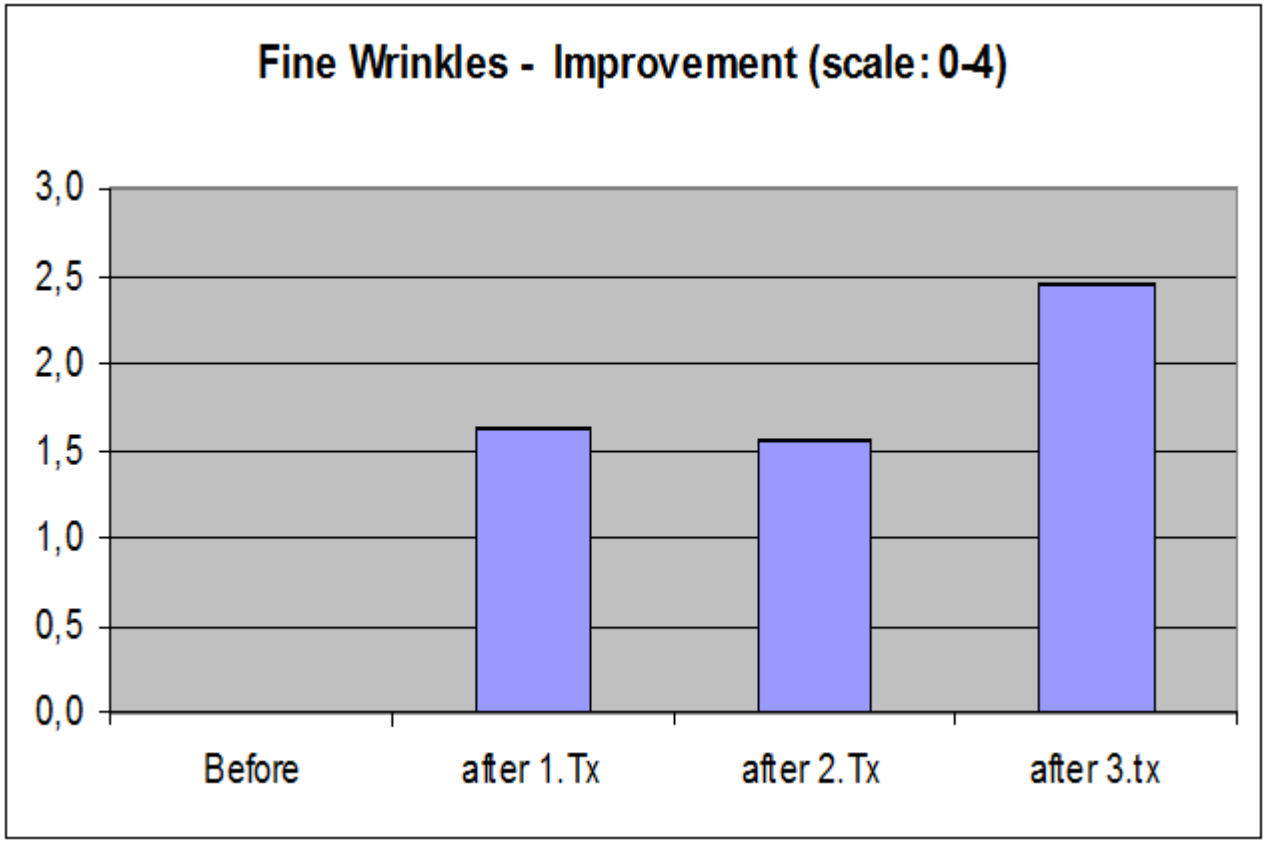
2 months after 3rd Treatment

Increase in Skin Thickness as seen via Ultrasonography

Changes in Skin Thickness



Wrinkle Improvement - Patient Evaluations



FRx Before and After Pictures

Peri-orbital Treatment

Before Treatment

5 Weeks After Final Treatment

Acne Scar Treatment

Before Treatment

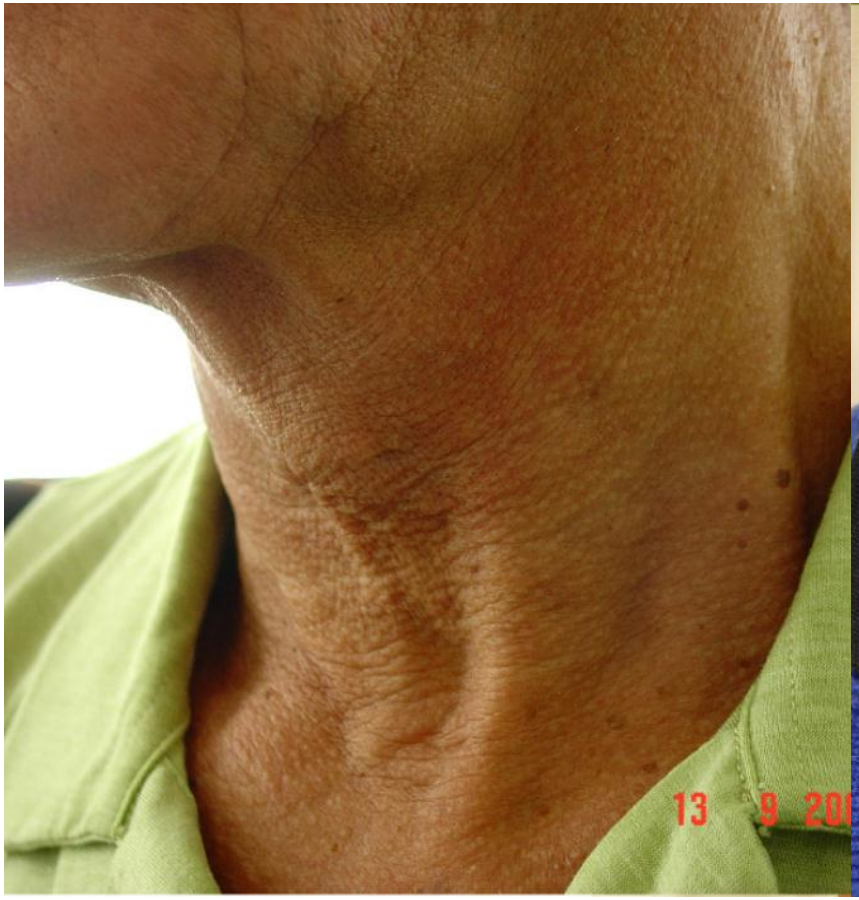
2 Weeks After 1st Treatment

Facial Treatment

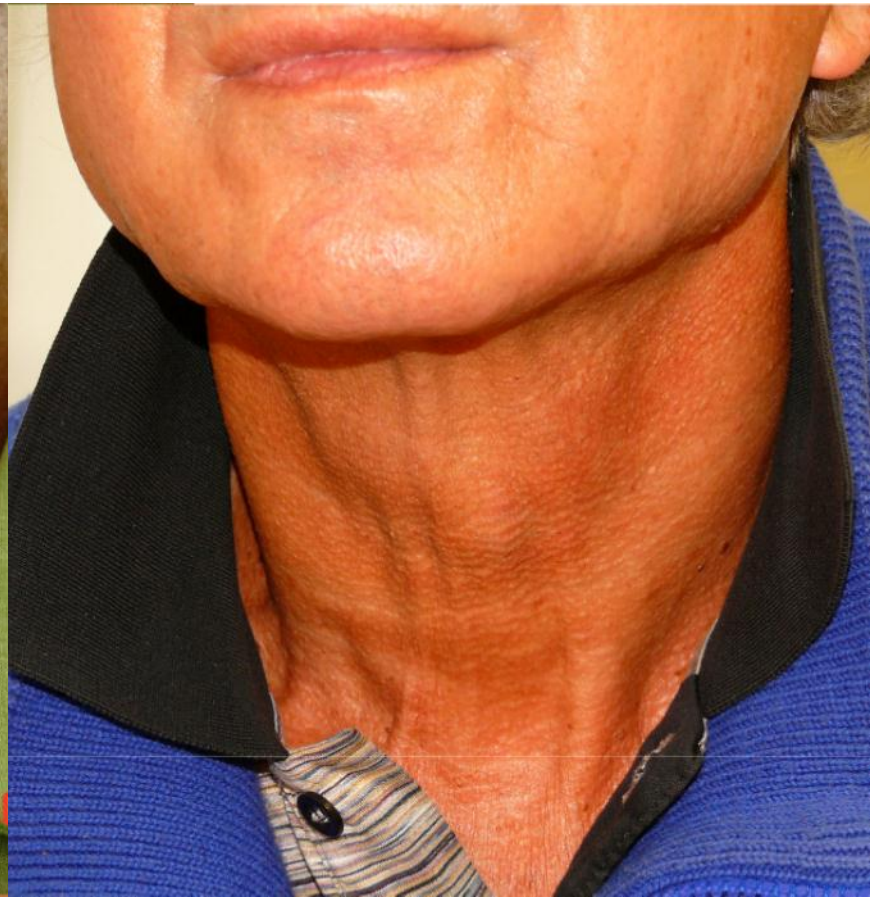
Before Treatment

After 3rd Treatment

Neck Treatment



Before Treatment



4 Weeks following 1st Treatment

Neck Treatment

Acne Scar Treatment

Before Treatment

After Second Treatment

Stretch Mark Treatment

Before Treatment

After Treatment

Scar Treatment

Before Treatment

Post - Treatment

Treatment Indications for CW CO_2 Output

- **General Dermatology Uses of FRx:**
- Solar lentigines
- Keratoses
- Leukoplakia
- Excision of scars, warts and benign tumours
- Naevi Excision
- + many more

Standard CO_2 Handpiece

Removal of Naevus

Pre - Treatment

Post - Treatment

Removal of Naevus

Pre - Treatment

One Month Post - Treatment

Removal of Naevus

Before Treatment

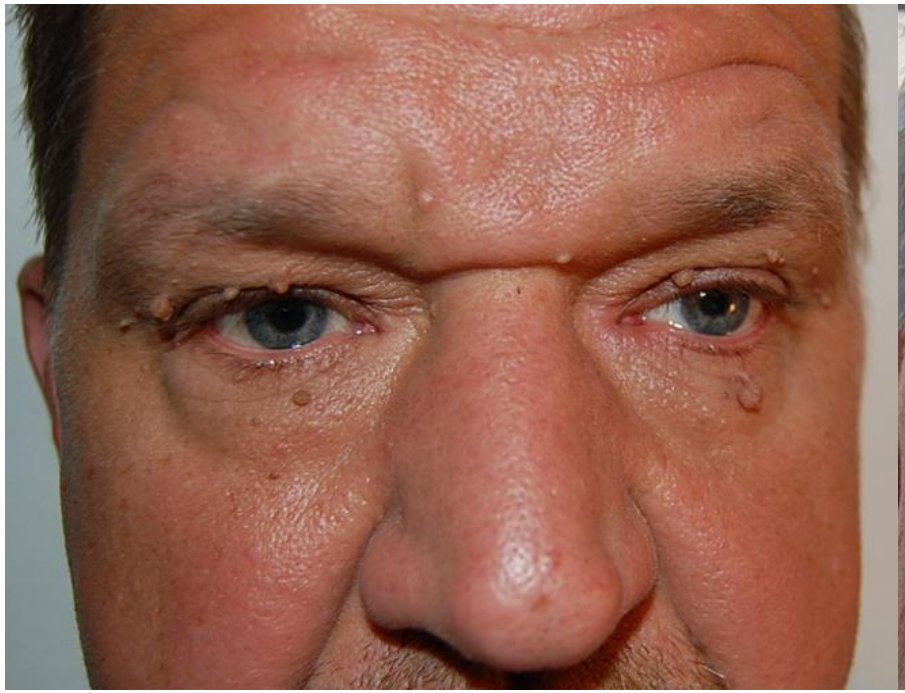
Immediately Post - Treatment

Removal of Naevus

Before Treatment

Immediately Post - Treatment

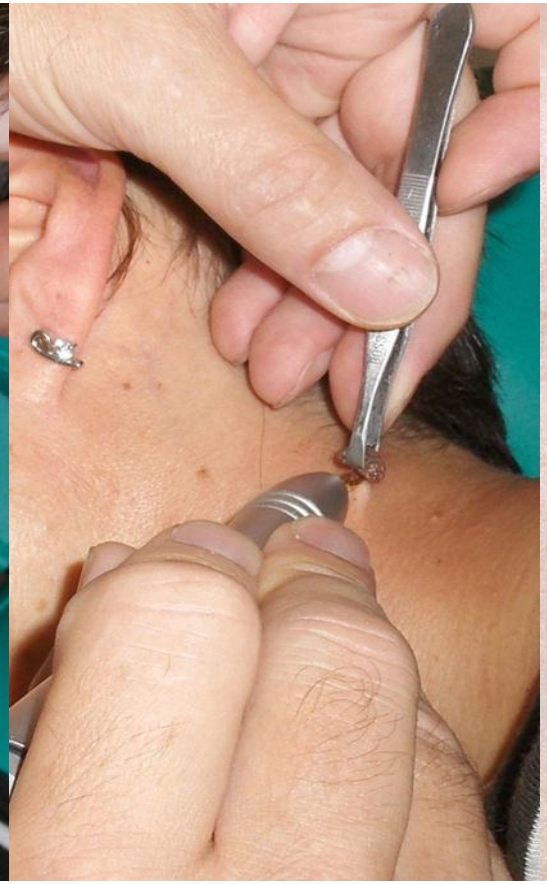
Removal of Naevi



Before Treatment

After Treatment

Removal of Naevus



Before Treatment

Immediately Post - Treatment