Ocular Surface temperature changes associated with Pelleve Radiofrequency Treatment

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Provided for educational purposes

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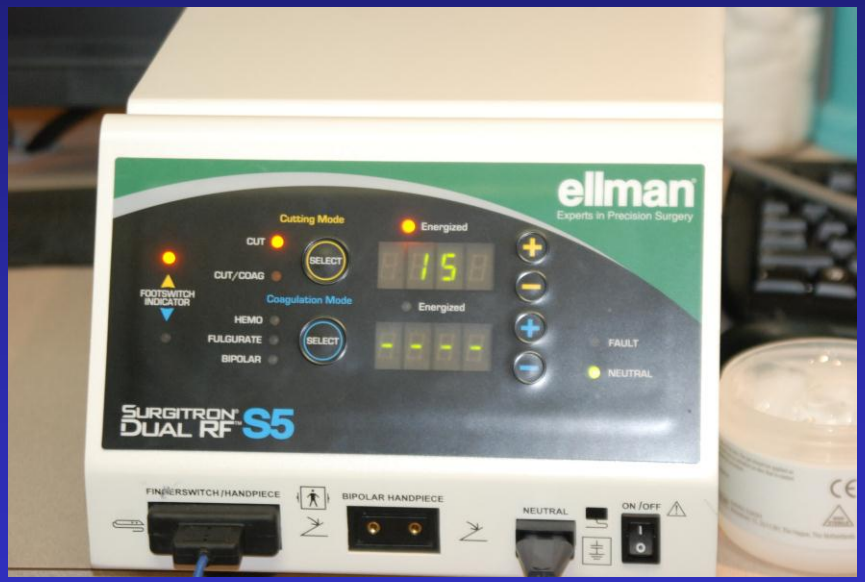
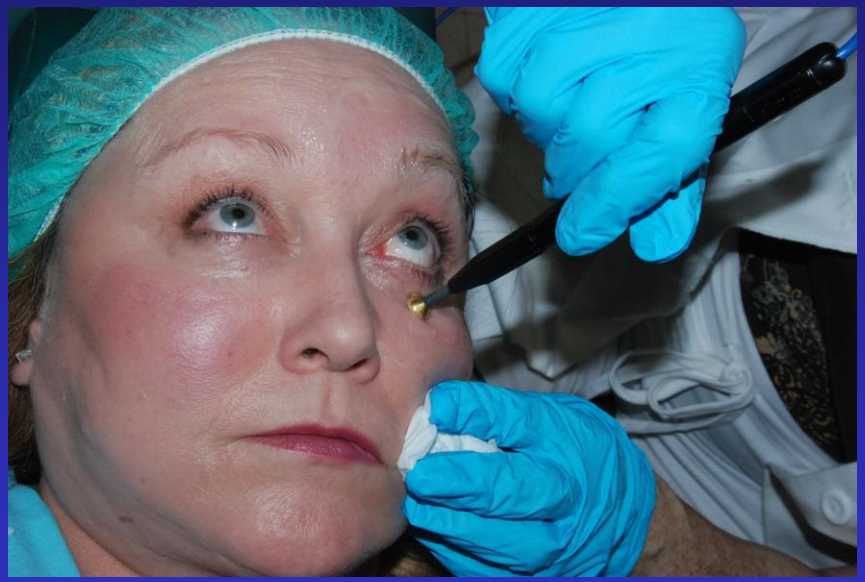
- Gentle heating of the skin denatures & contracts collagen in the deep dermis & stimulates fibroblast activity/neocollagenesis
  - No injury in epidermis thus no downtime


ellman
Experts in Precision Surgery
Cutting Mode
CUT
CUT/COAG
SELECT
Energized
15
FOOTSWITCH INDICATOR
Coagulation Mode
HEMO
FULGURATE
BIPOLAR
SELECT
Energized
FAULT
NEUTRAL
SURGITRON DUAL RF S5
FINGERSWITCH/HANDPIECE
BIPOLAR HANDPIECE
NEUTRAL
ON /OFF


pellevé
Elegance through science.
Treatment Gel



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How Much Heat is Required?

Not Safe

- Heating sufficient to cause complete collagen fiber dissolution (collagen turns into gelatin)
- Tissue necrosis, scarring, burning, etc.

Safe, Effective

- Heating partially disrupts semi crystalline fibril structure
- Weak intermolecular bonds maintain structural stability
- Contraction along the length of collagen fibers occurs
- Thermally mediated healing response causes new collagen formation

Safe, Not Effective

- Heating insufficient to disrupt collagen fibril structure
- No clinical effect observed

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What Subdermal Temperature?

- **65° C is most commonly referenced temp for human collagen modification**
- 63-67° C for sheepskin
- 54-59° C for intact rat tail tendon
- 61-63° C for human scleral collagen
- 55-59° C for human corneal collagen
- 65-75° C – Ulthera citation for human “connective tissue”
- 55-65° C – Thermage target temperature
- 55-65° C – Accent target temperature

Study

- Determine effects of lower lid & crows feet soft tissue heating on the globe
- 13 consecutive patients enrolled
- Baseline surface temperature of sclera/globe at point half way between limbus & inferior fornix

- Therapeutic treatment of soft tissue to obtain surface skin temperature of 39-42ºC,
- Temperature re-recorded on ocular surface at end of treatment
- Treatment alternated right and left for total of one treatment per decade of life to each side
  - 42 yo had each eye area treated 4 times

IR temperature measurement

Results

- Baseline temperature
  - Right: 35.43ºC & Left: 34.45ºC
- 13 patients, 58 passes
  - Average 4.54 treatment cycles/eyelid
- Post treatment inferior globe temperature
  - Right: 36.52ºC & Left: 36.57ºC
- No reported changes in vision

Conclusions

- Pelleve RF treatment of periocular rhytids has minimal energy transfer to globe with only 1.61ºC change in surface temperature.
  - Measured temperature still well below internal body temperature and certainly well below temperature needed to induce scleral injury

Conclusions

- Manual Retraction of the lower lid with the patient looking upwards allows excellent treatment of periocular skin along orbital rim
- Technique does not significantly heat the sclera
  - Eliminates the need for shielding the globe during treatment
  - Did not have subjective effect on vision

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