Ultrasound-guided percutaneous cryoneurolysis for refractory post-mastectomy neuroma pain in severe cachexia: a novel technique

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Why it matters

Post-mastectomy pain syndrome (PMPS) affects 25–60% of mastectomy patients and often resists drugs and radiofrequency ablation (RFA).

Cryoneurolysis freezes nerves but spares their scaffolding thereby preventing neuroma regrowth.

Never described: severe cachexia, where the pleura sits just deep to the skin with minimal subcutaneous soft tissue

Methods

**Woman, BMI 13 kg/m², ** bilateral post-mastectomy scar neuromas; failed opioids, gabapentin, lidocaine, pulsed RFA

Ultrasound-mapped pleural depth: 0.5–1.2 cm

iovera° cryoneurolysis under real-time out-of-plane ultrasound; 7 × 65-s freezes per side, overlapping technique

Ultrasound findings

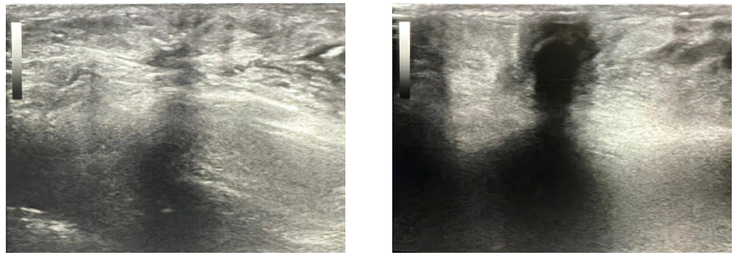


Fig. 2. Left: before probe, pleura 0.5–1.2 cm deep. Right: during freeze, ice ball shadow lies superficial to intact pleura.

First report of overlapping technique in cryoneurolysis to relieve post-mastectomy pain with a pleura as shallow as 0.5 cm without pneumothorax.

Decreased Pain

at 3 weeks post procedure

Improved mobility & sleep

shoulder abduction improved from <90° to 120°

Safe

Pneumothorax was avoided in a patient who otherwise may not have received cyroneurolysis due to high-risk body habitus

Why cryoneurolysis?

RFA heat destroys nerve scaffolding; cryoneurolysis spares it, so neuromas are less likely to regrow and function may be regained.

Three safety elements

1. Pleural line in view during every insertion and freeze
2. Out-of-plane, perpendicular approach anchored to rib shadow
3. Anterior bilateral lung ultrasound with linear probe followed by upright expiratory chest X-ray

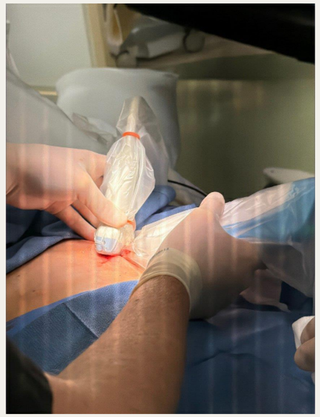


Fig. 1. iovera° probe under ultrasound; almost no subcutaneous tissue (BMI 13 kg/m²).

Limitations: single case; 3-week follow-up; pleural depth estimated in real time.

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