



28th Annual Gabor Racz Advanced Interventional
Pain Conference and Workshop
Budapest, Hungary **August 25-27, 2025**

Cryoanalgesia and Cryoablation for Oncology Pain

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Conflict of Interest / Financial Disclosure

Andrea Trescot MD FIPP CIPS
Jacksonville, FL (USA)

- Atricare – Scientific advisor
- Metrum Cryoflex – Course faculty
- Epimed Painblocker – Consultant
- Pacira iovera – Consultant

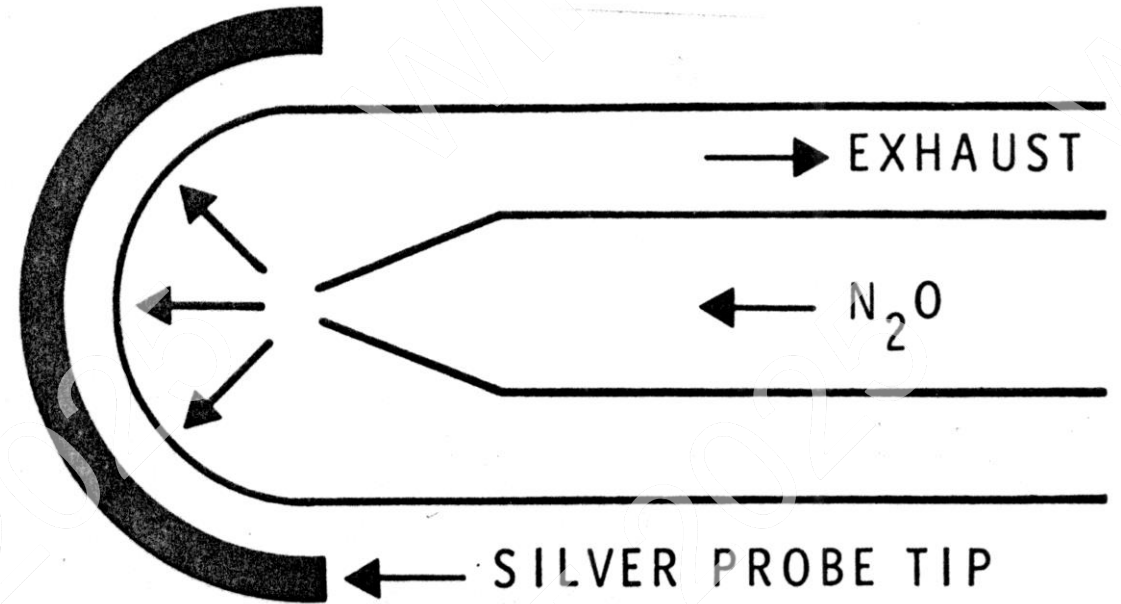


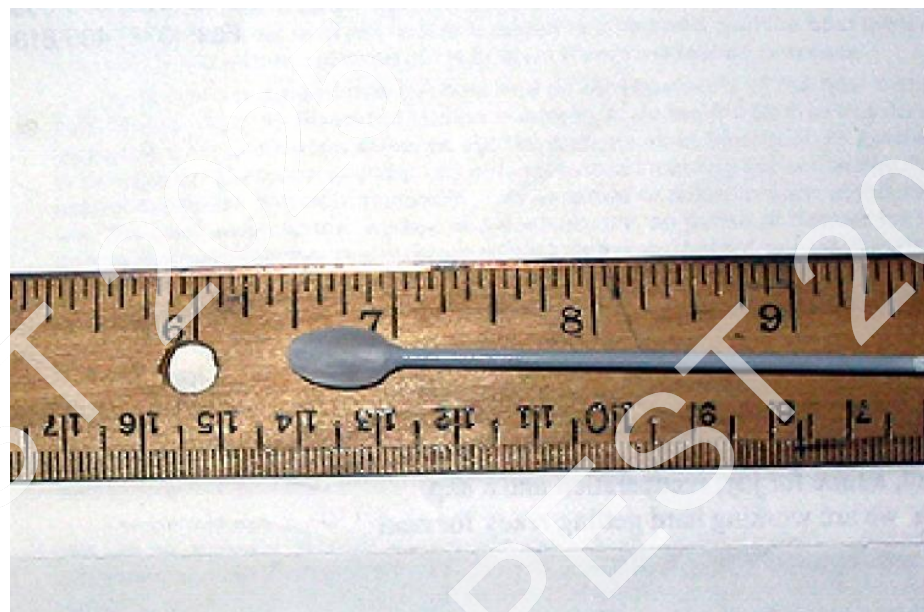
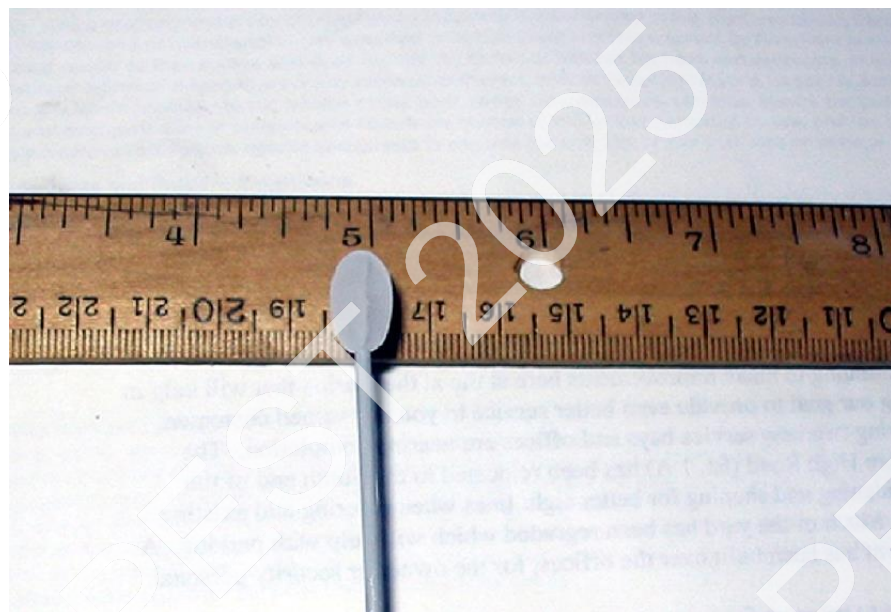
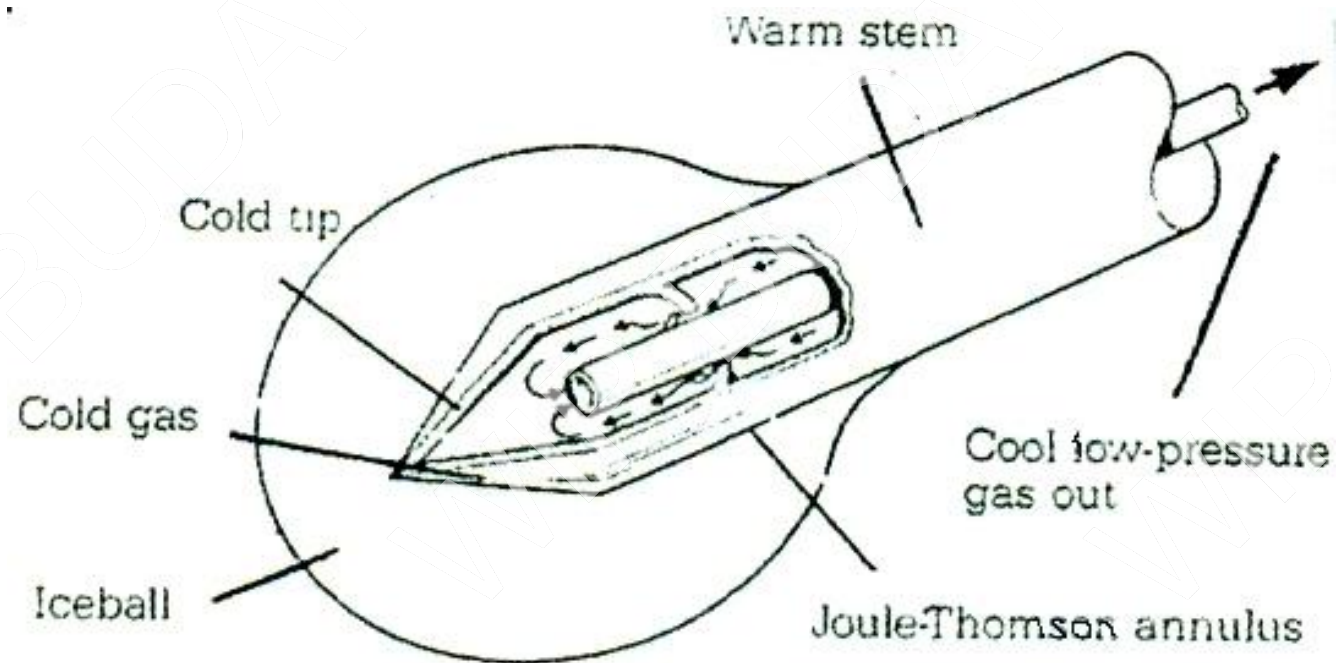
History

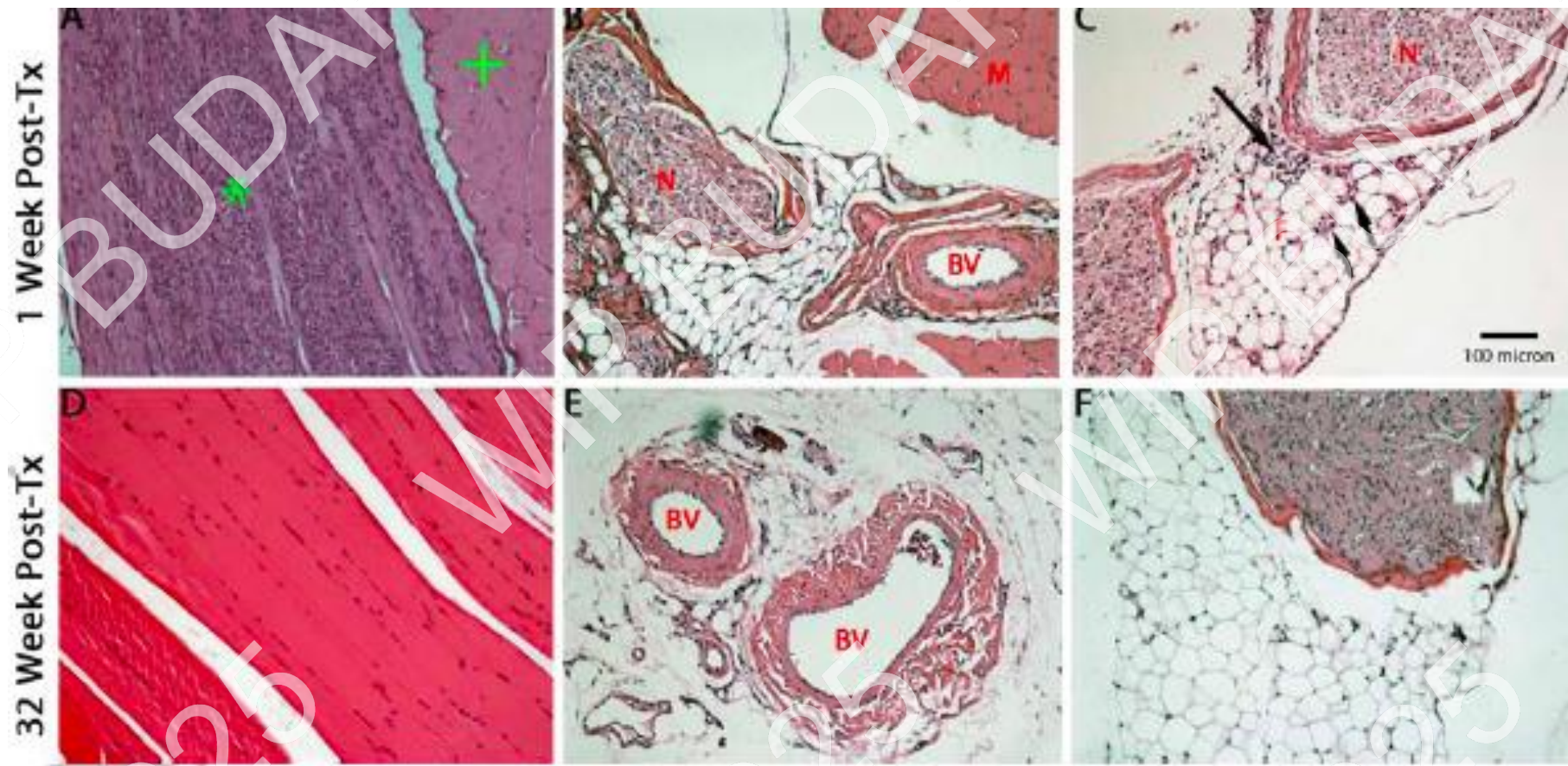
- 1777 John Hunter described tissue destruction after cooling rooster combs. Noted good healing and recovery
- 1919 W. Trendelenburg noted freezing caused severe damage to nerves
 - Prolonged loss of function but eventual healing without scarring
- 1961 Cooper developed 1st cryo probe
- 1976 Lloyd coined the term “cryo-analgesia”

Cryo Physics

- A compressed gas (CO₂ or nitrous) is released through a tiny opening and expands
- The tip goes to -70° C (Joules-Thomson effect)







MUSCLE

BLOOD VESSELS

FAT

No damage to adjacent structures (muscles, blood vessels, or fat)

Hsu M, Stevenson FF. Wallerian degeneration and recovery of motor nerves after multiple focused cold therapies. Muscle Nerve. 2014.

Cryo Machines

- Built in nerve stimulator (sensory and motor)
- Thermister
- Gas flow monitor
- Defrost cycle



Image courtesy of Metrum Cryoflex



Image courtesy of Inomed



Image courtesy of Epimed



Images courtesy of Iovera Pacira

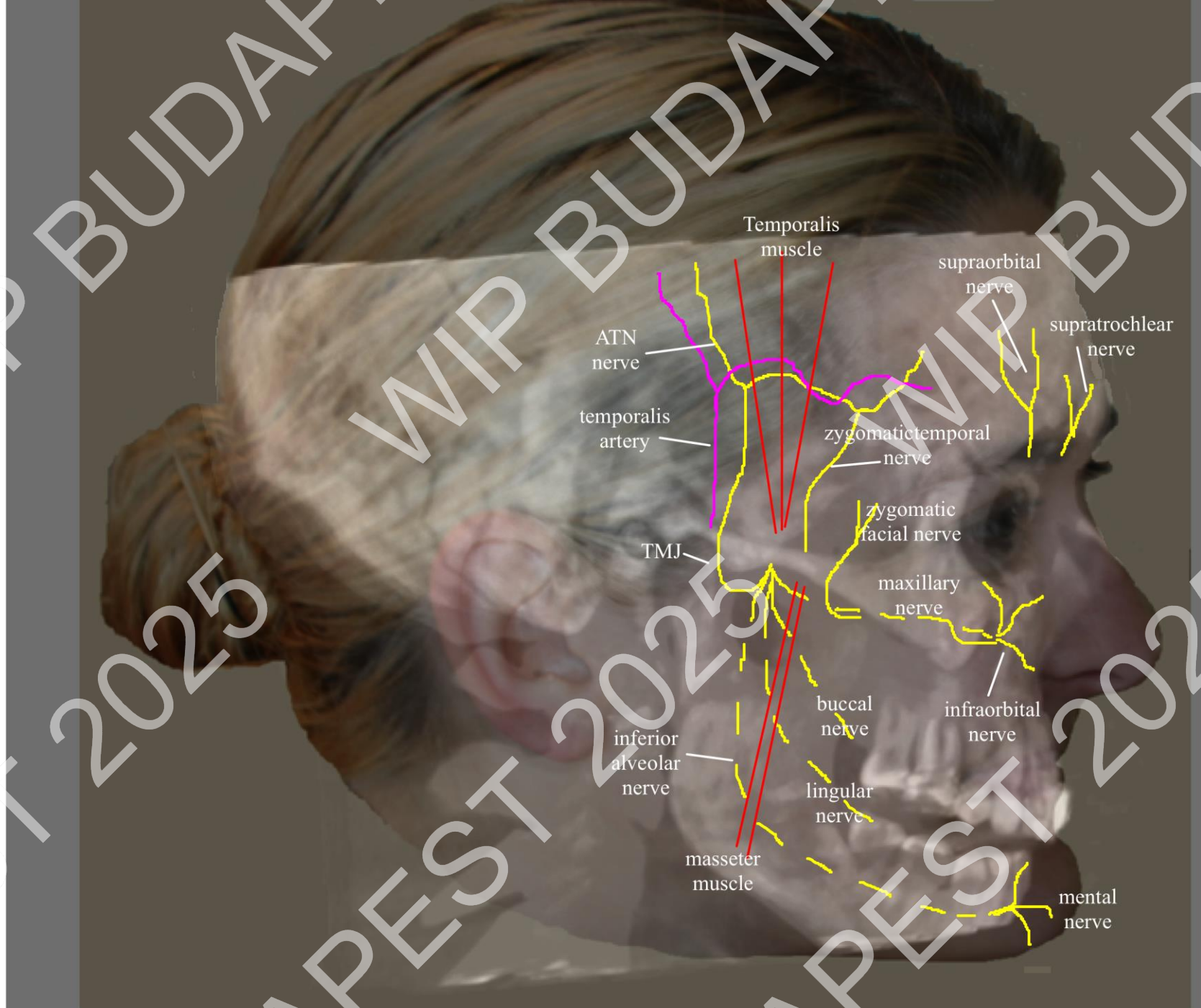


Images courtesy of Atricure

Facial Cancer



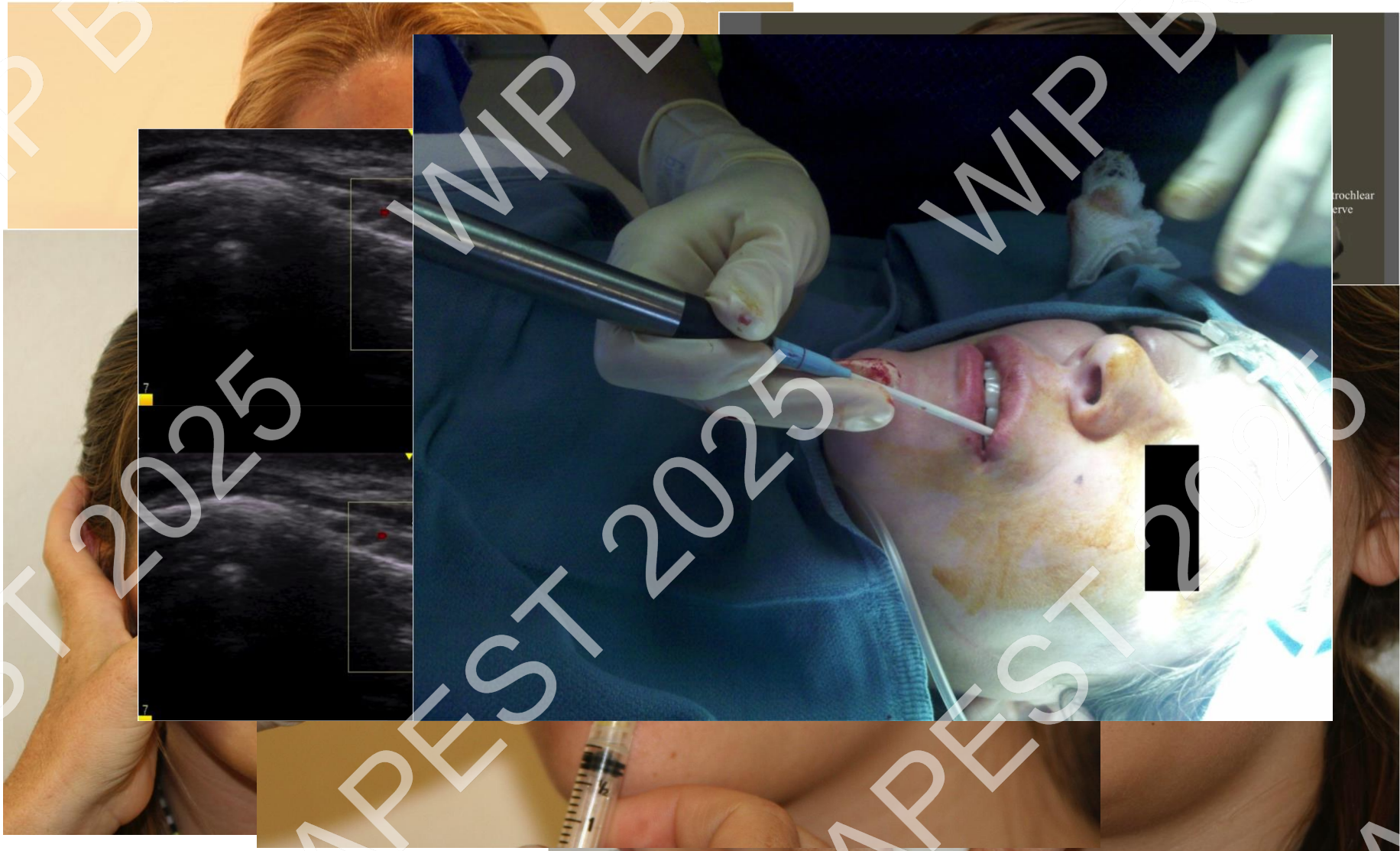
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Supraorbital Neuralgia



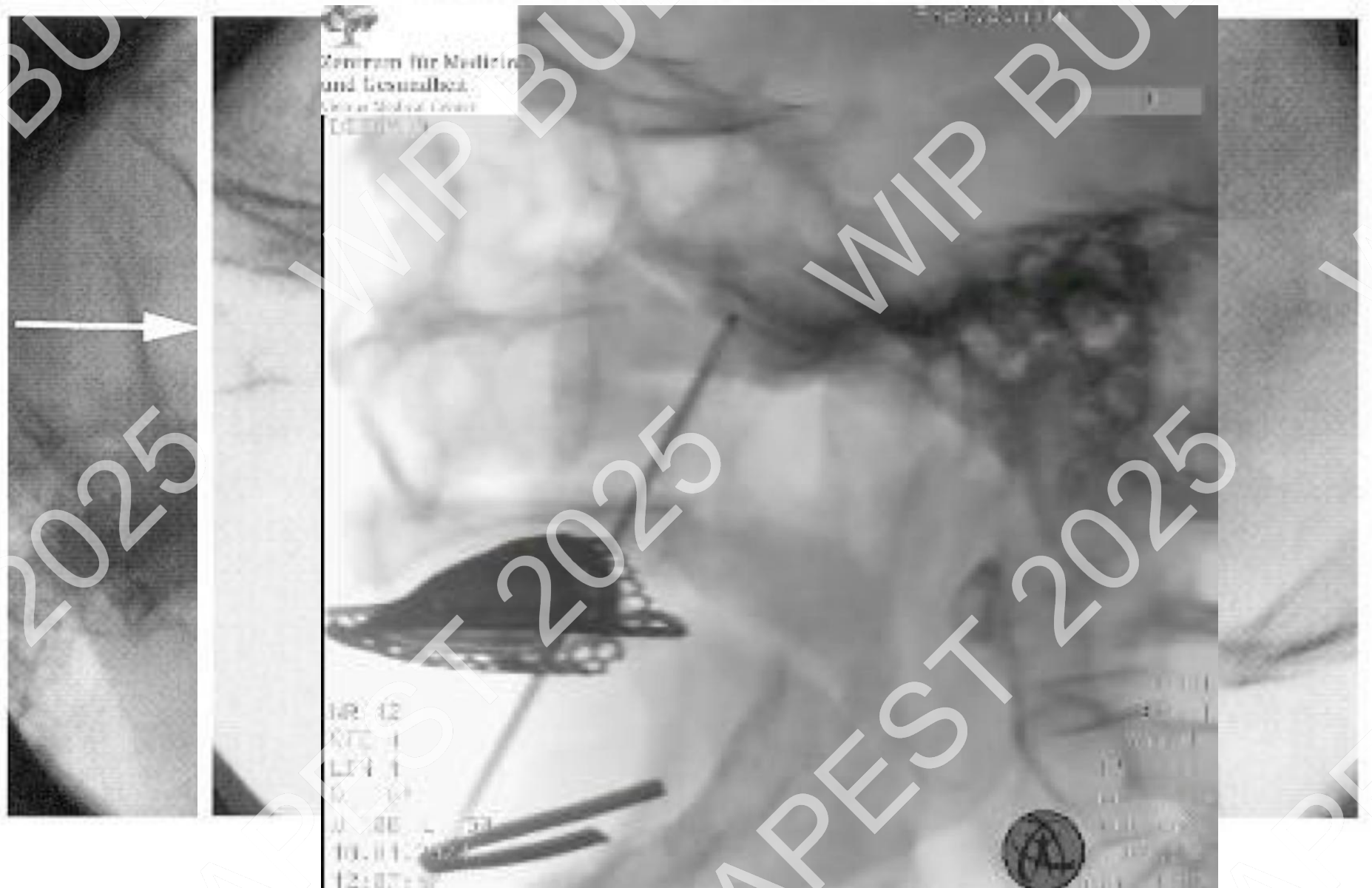
Infraorbital Neuralgia



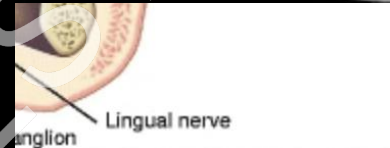
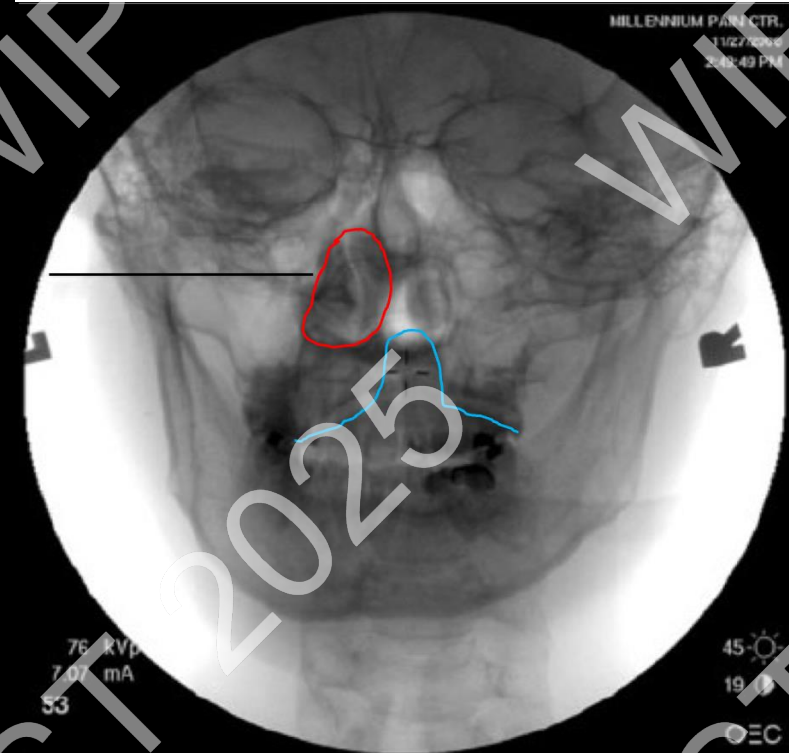
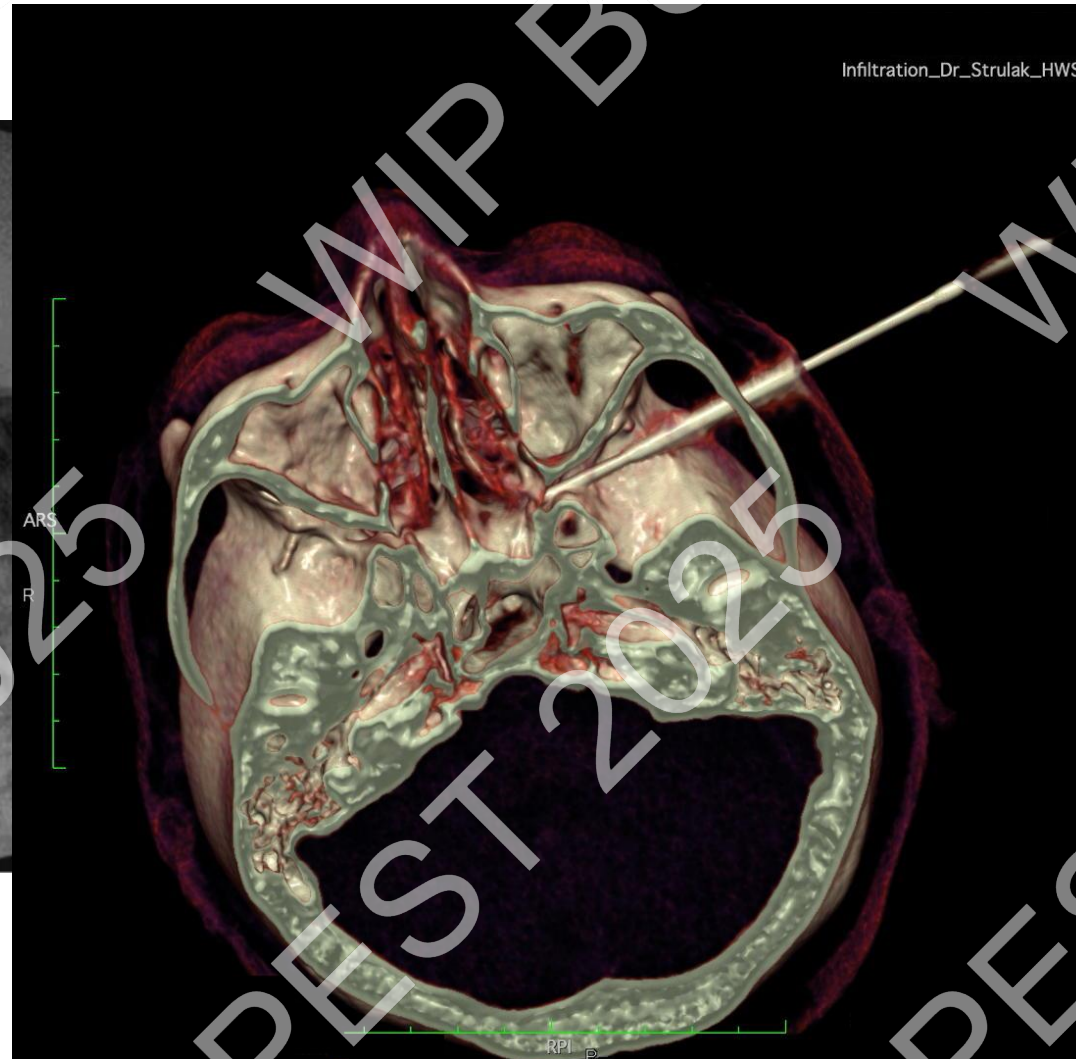
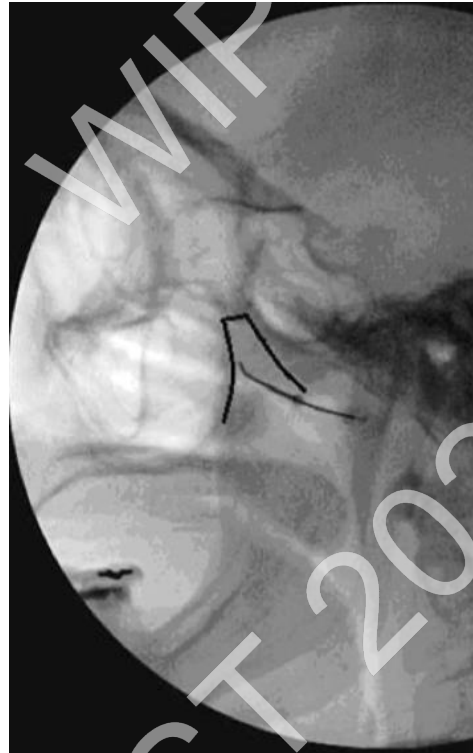
Mental Neuralgia



Trigeminal Ganglion



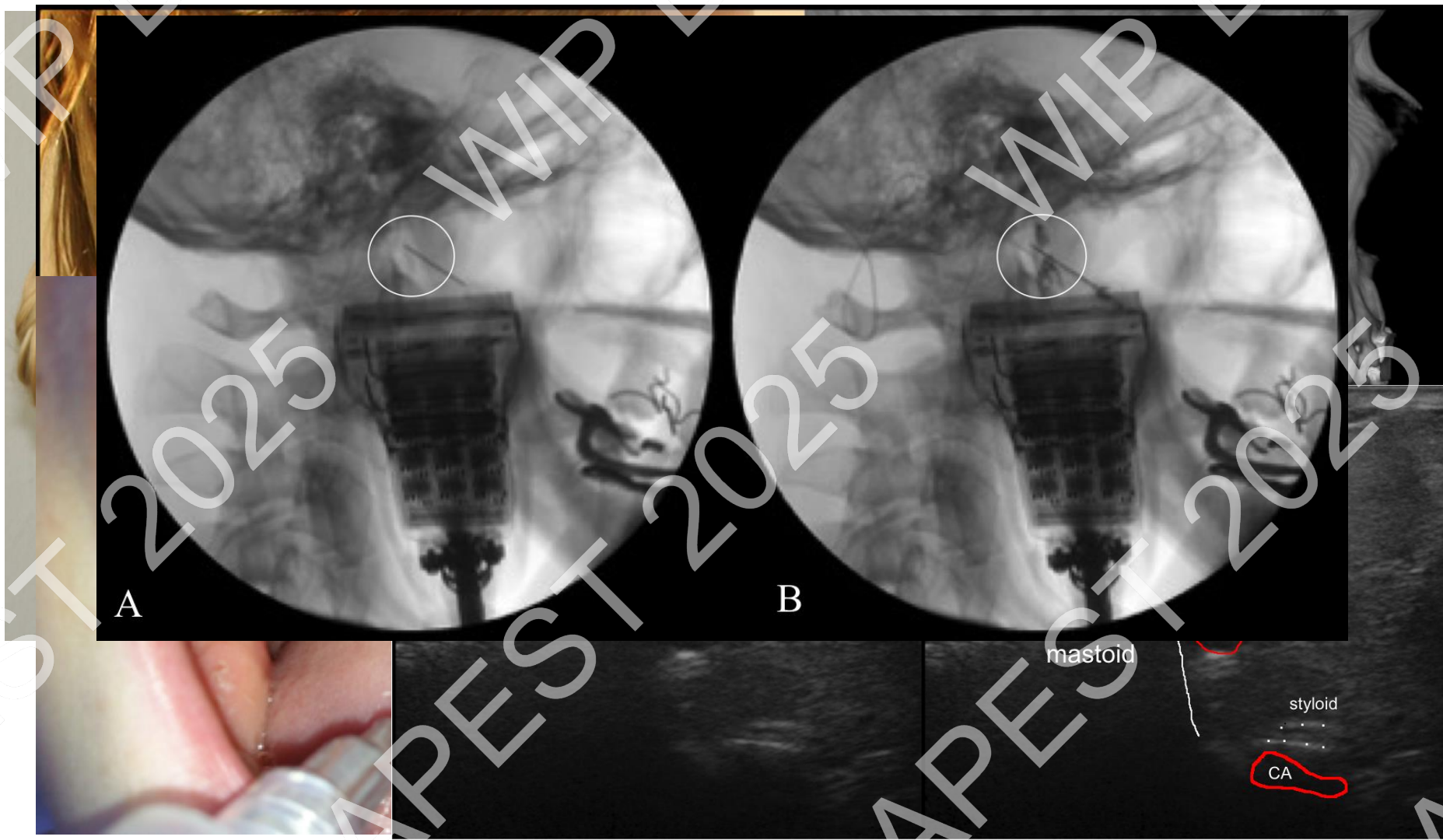
Sphenopalatine Ganglion



Neck and Throat Cancers/Neck Pain



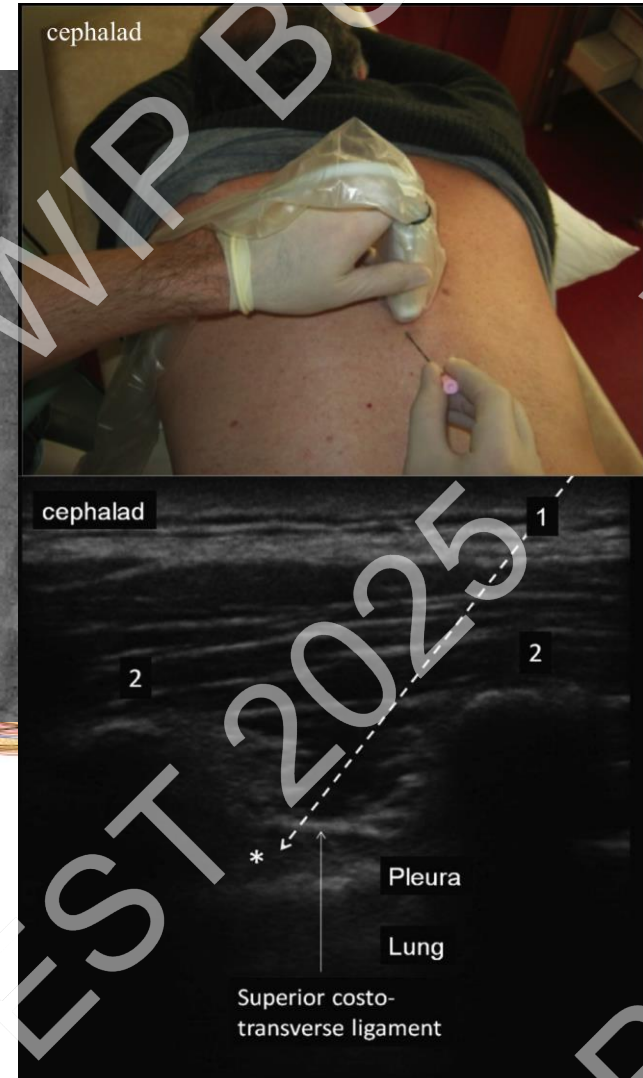
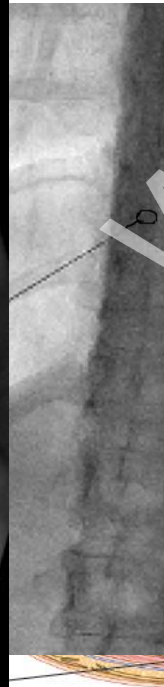
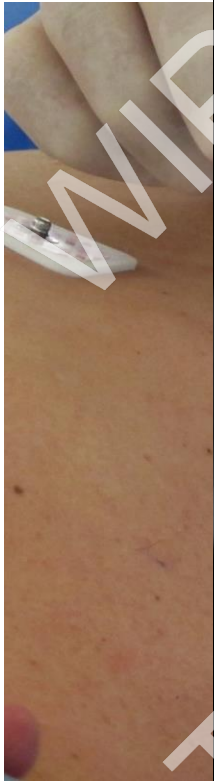
Glossopharyngeal Neuralgia



Chest Wall Cancer/Post Mastectomy

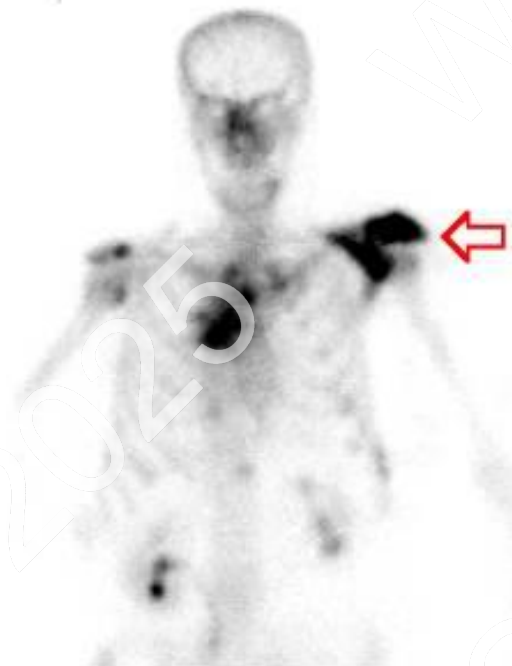


Intercostal Neuralgia



Metastatic Cancer/Shoulder Pain

bone scan



shoulder X-ray



Bone Mets to Left Shoulder

Suprascapular Neuralgia



Upper Extremity Cancer



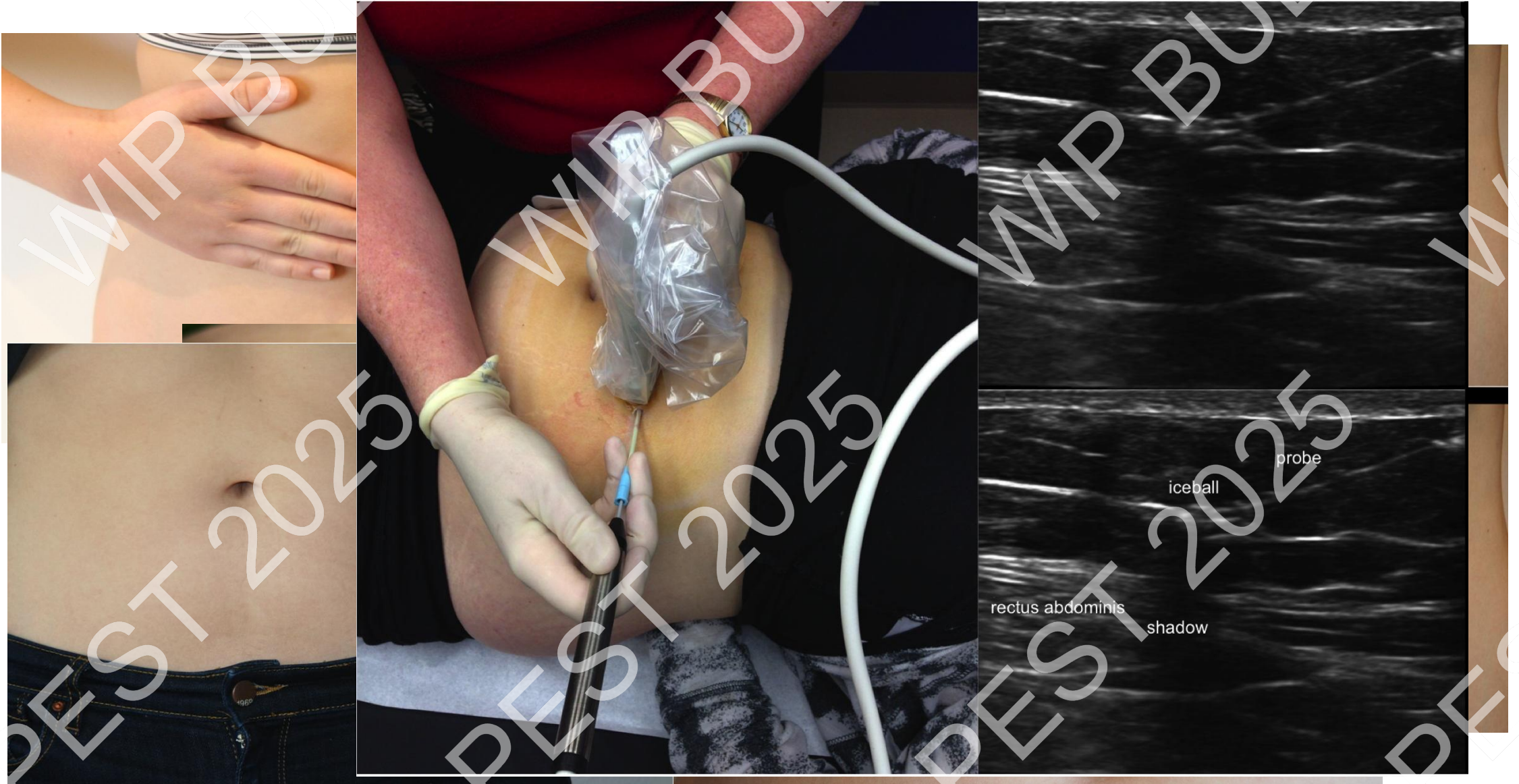
Radial Neuralgia at the Wrist



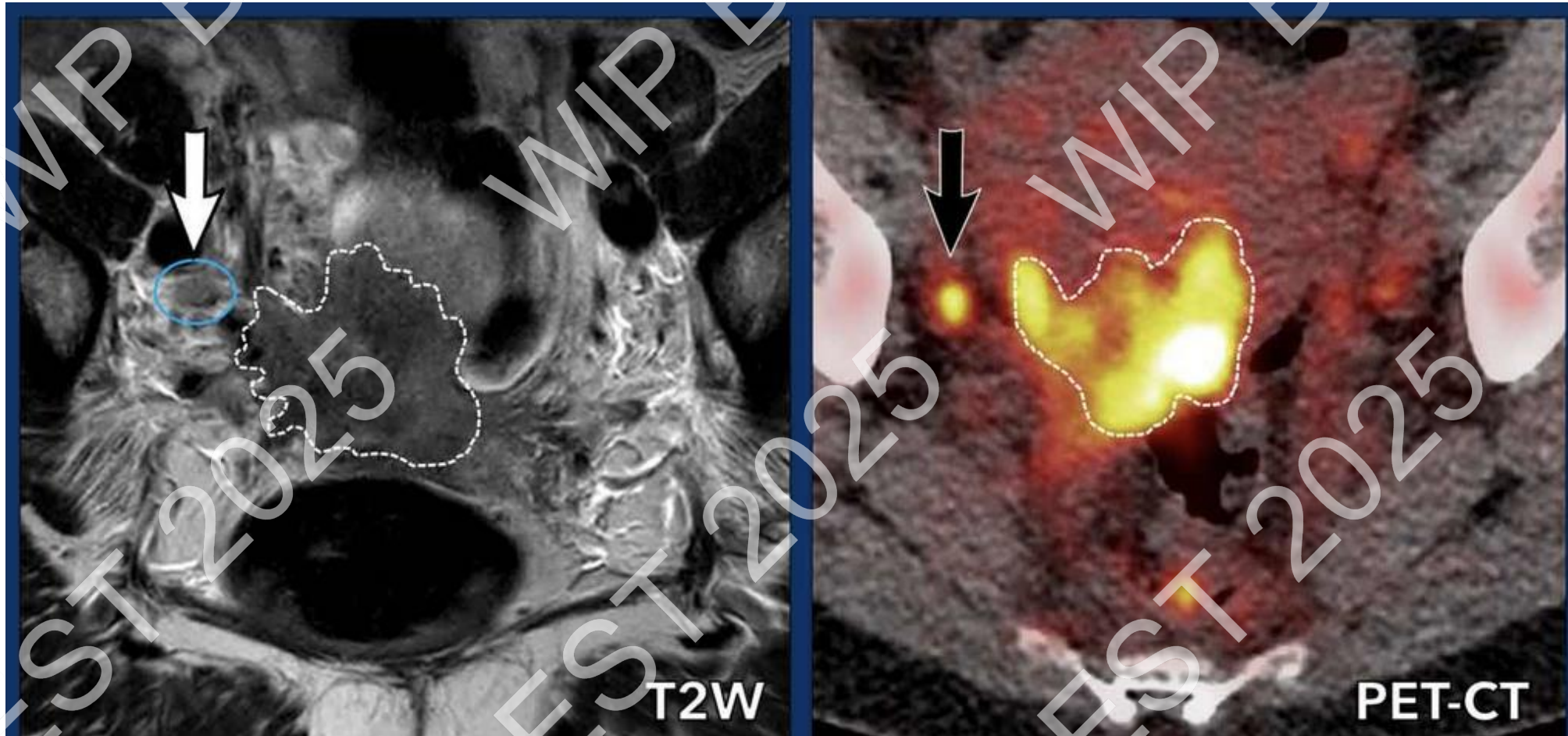
Abdominal Wall Cancer



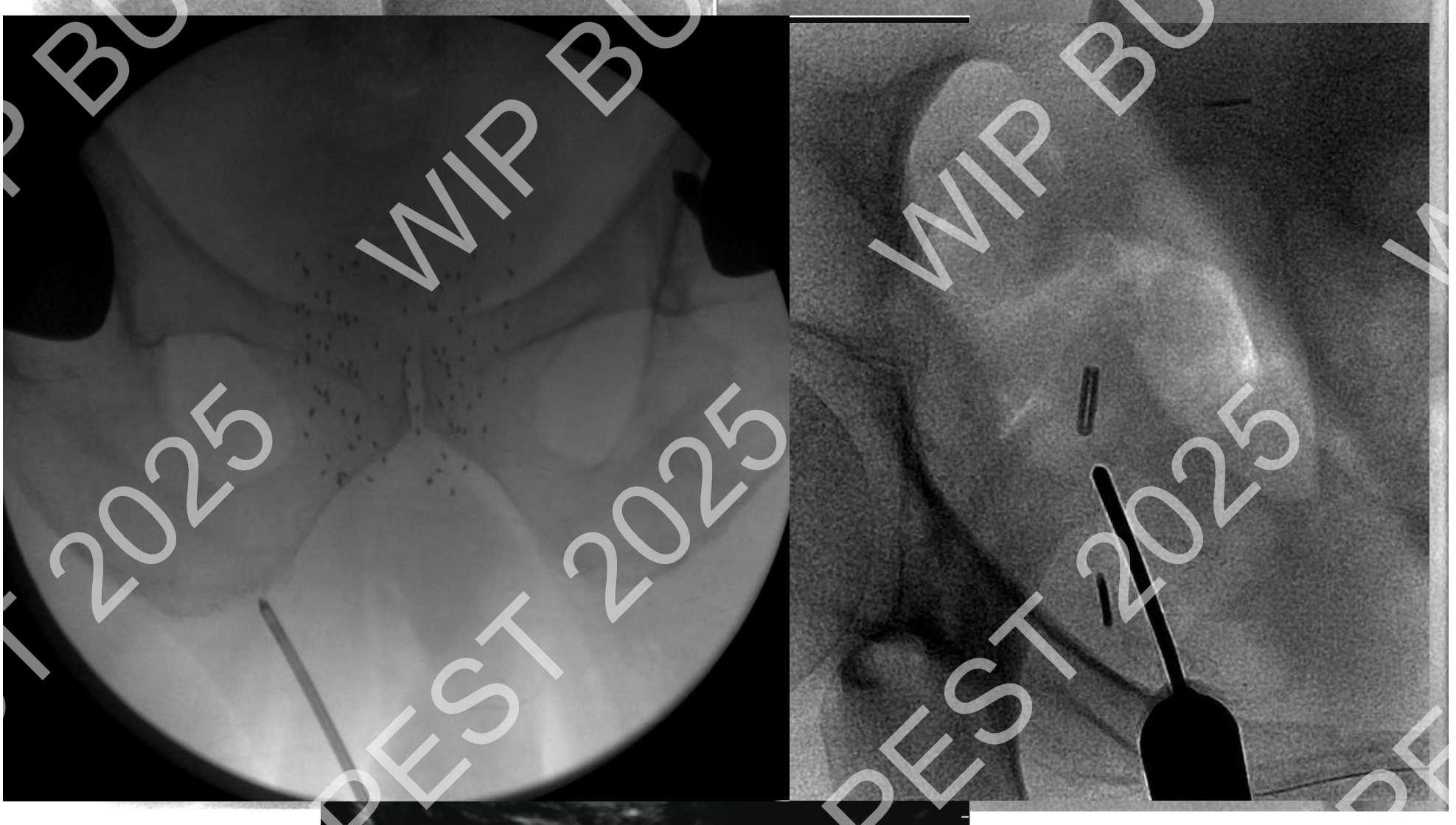
Abdominal Wall Nerves



Pelvic Cancer



Pudendal Neuralgia



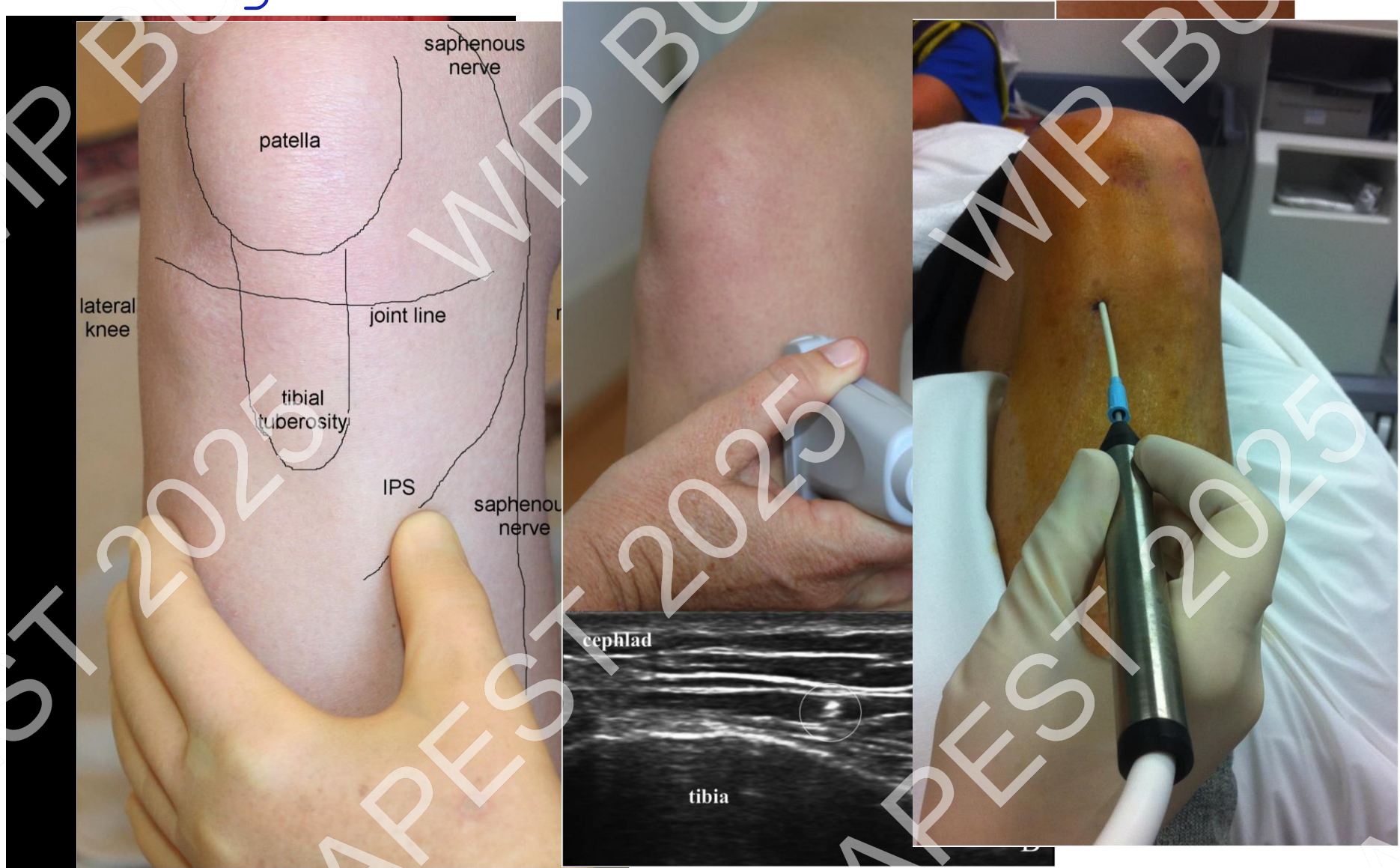
Cryo for Ganglion Impar



Extremity Cancer/Limb Pain



Infrapatellar Saphenous Neuralgia



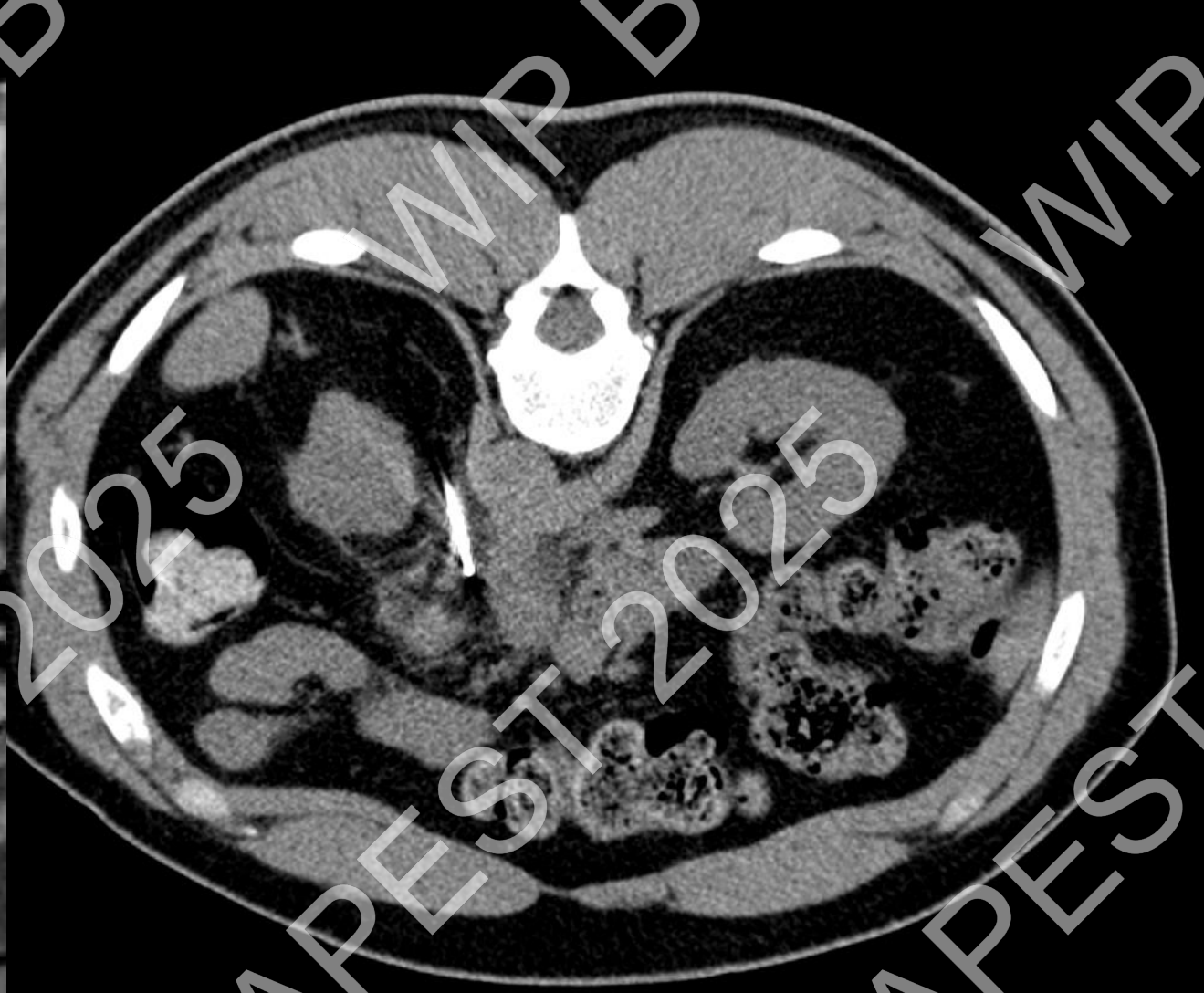
Phantom Limb Pain



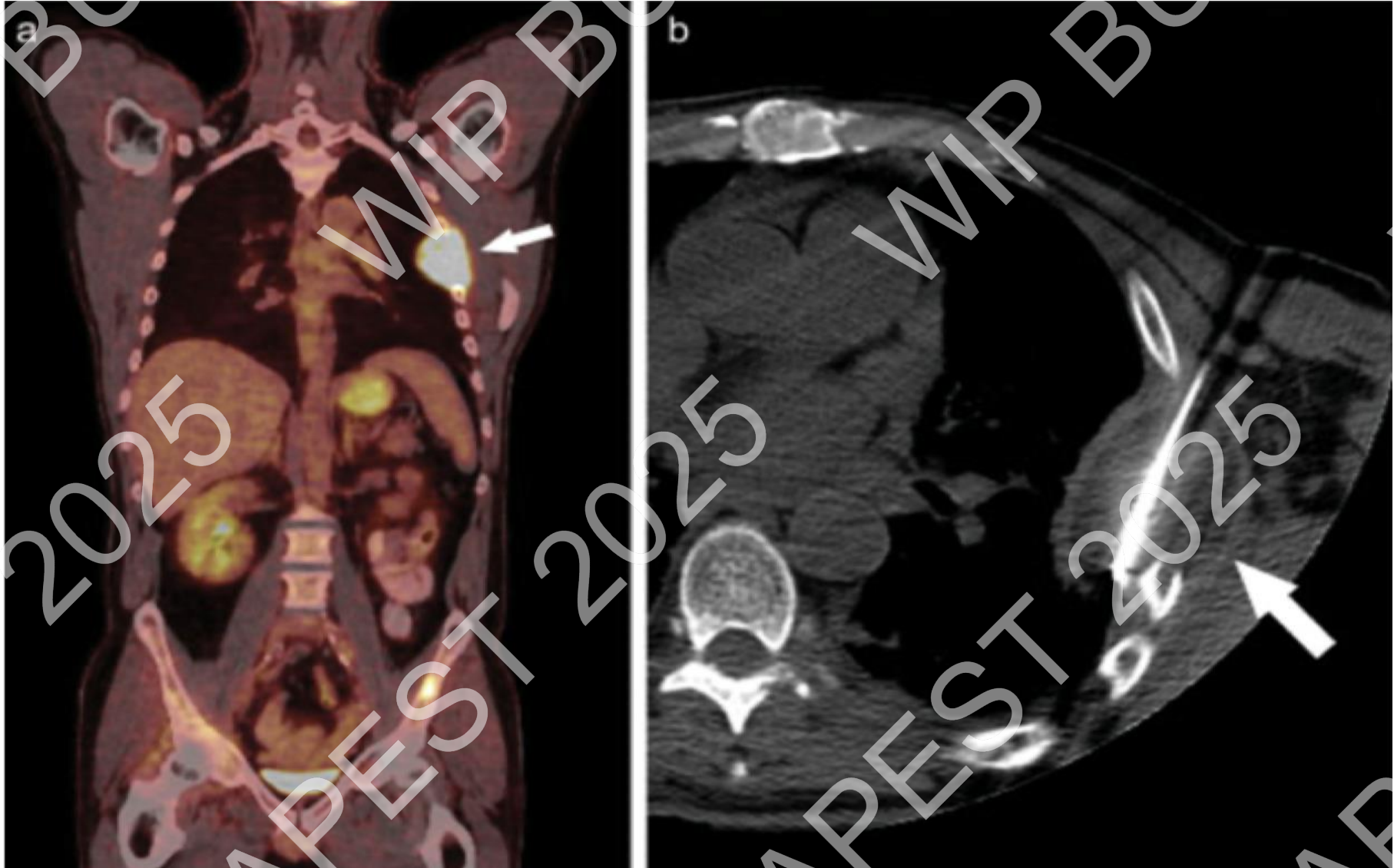
Cryo Neuroma



Splanchnic and Celiac Cryo



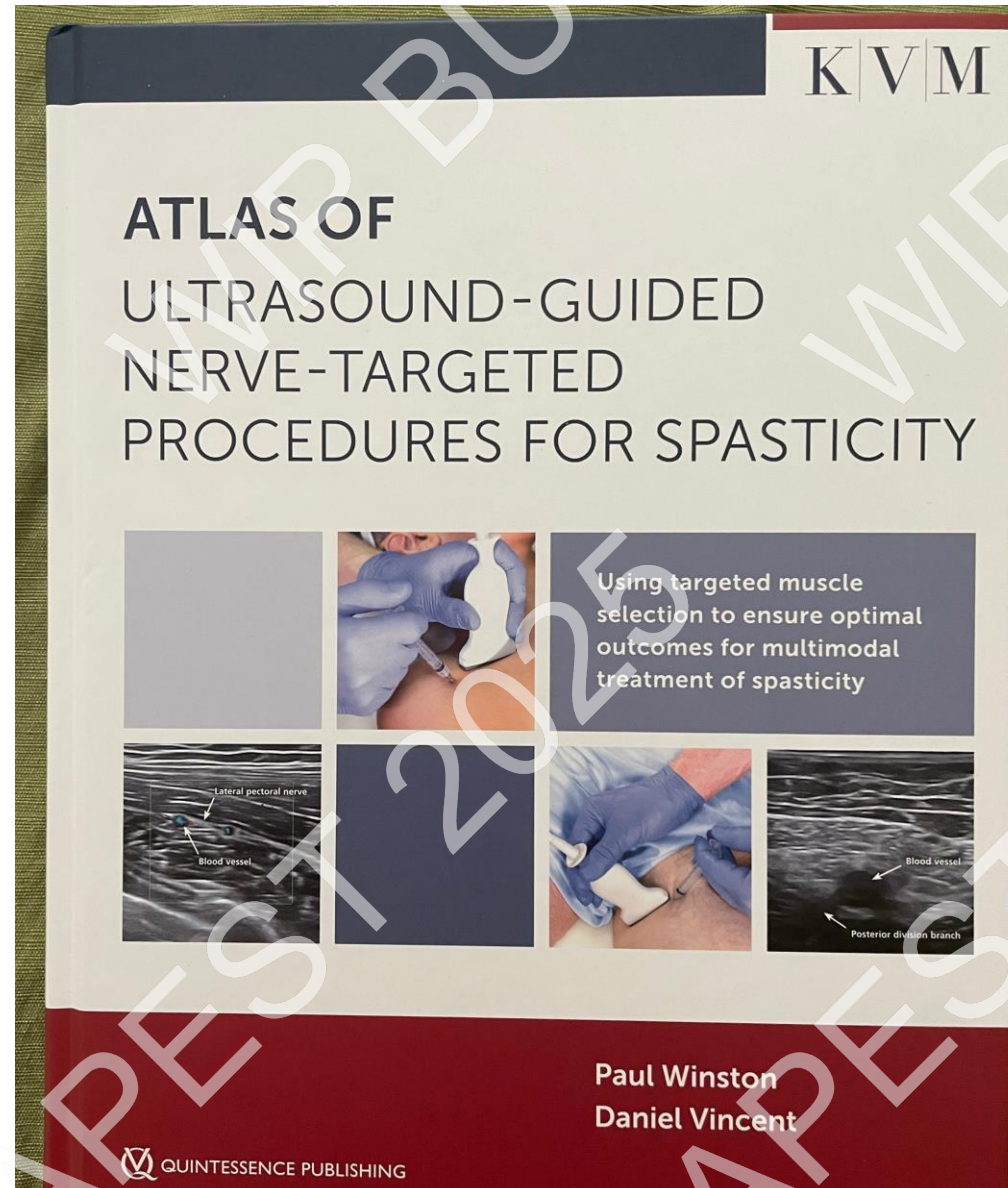
Cryoablation For Direct Tumor Treatment



OPEN EDITOR Ming The F Unive REVIEW Israel Unive Unite Calvir The C China	Reference	Population	Ablative technique	Co-administered treatment(s)	Significant findings in combined treatment cohorts versus control and/or pre-treatment cohorts
	Gu et al., 2011 (54)	Advanced EGFR-mutated NSCLC	Percutaneous cryoablation	Gefitinib	Increased partial regression (55.6% versus 27.8% with gefitinib alone, $p < 0.05$). Prolonged PFS (8.4 months versus 5.2 months with gefitinib alone, $p < 0.05$). Increased 1-year survival (66.7% versus 33.3% with gefitinib alone, $p < 0.05$)
	Yuanying et al., 2013 (55)	Stage IV NSCLC	Percutaneous cryoablation	Intravenous DC-CIK immunotherapy and/or platinum-based chemotherapy	Longer median OS at 20 months versus 10 months (when multimodal treatment protocol included cryoablation versus did not include, $p < 0.0001$). Longer median OS at 27 months (chemotherapy, cryoablation, and DC-CIK) compared to other treatment groups ($p < 0.001$). Longer median OS at 18 and 17 months (cryoablation with chemotherapy or with DC-CIK, respectively) versus 8.5 and 12.5 months (chemotherapy alone and chemotherapy with DC-CIK, respectively, $p < 0.001$)
	Lin et al., 2017 (56)	Stage III and IV NSCLC	Percutaneous cryoablation	Intravenous allogenic NK cell immunotherapy	Post-cryoablation peripheral blood total T cell and CD8 ⁺ T cell populations increased by 1.1-fold each compared to pre cryoablation ($p < 0.05$). Peripheral blood IL-2 and IFN- γ increased by 2.5 and 3.4-fold, respectively (combined treatment, $p < 0.001$), and by 1.9 and 2.3-fold (cryoablation alone, $p < 0.01$), respectively, compared to pre-cryoablation. Improved clinical response rates 3 months post-treatment (63.3% with combined treatment versus 43.3% with cryoablation alone, $p < 0.05$)
	Takaki et al., 2017 (57)	Lung, colorectal, soft tissue, and gynecologic malignancies	Percutaneous cryoablation, MWA or RFA	None	Peripheral blood CTL increased from 27.5% to 30.2% post-ablation ($p < 0.03$). Peripheral blood CTL/Tregs increased from 18.8% to 21.6% post-ablation ($p < 0.05$). In 5/19 treated with percutaneous cryoablation, no significant changes in peripheral blood CTL/Tregs or CTL population.
	Leppelman et al., 2021 (58)	Stage IV melanoma, NSCLC, various malignancies	Percutaneous cryoablation, SIRT, heat-based ablation, transarterial embolization	Pembrolizumab, nivolumab, atezolizumab	Immunotherapy-related adverse events: 3/7 occurred in cryoablation group (42.8%). Procedural complications greater in the SIRT group compared to cryoablation group (93.3% vs 54.5%)
	Feng et al., 2021 (59)	Advanced stage NSCLC	Percutaneous cryoablation	Nivolumab	All adverse effects were manageable and no significant difference was noted between the two groups ($p > 0.05$). Significantly increased number of total T cells, CD8 ⁺ T cells and CD4 ⁺ T cells in the cryo-nivolumab group ($p < 0.05$). Significant increase in IL-2 and TNF-beta in cryo-nivolumab group compared to cryoablation group ($p < 0.05$)

EGFR, epidermal growth factor receptor; NSCLC, non-small cell lung cancer; PFS, progression free survival; DC-CIK, dendritic cell-cytokine induced killer; OS, overall survival; NK, natural killer; RFA, radiofrequency ablation; MWA, microwave ablation; CTL, cytotoxic T lymphocyte; Treg, regulatory T cell; SIRT, selective internal radiation therapy; SCLC, small-cell lung cancer; ORR, objective response rate; DCR, disease control rate.

Cryo For Spasticity





Summary

- Peripheral nerve treatment can help dramatically with pain from cancer.
- Cryo may be much safer and more effective than alcohol or phenol, with less postop pain than RF
- Cryo creates a large but discrete lesion, done under local anesthetic, and either landmark, fluoro, or US guidance.



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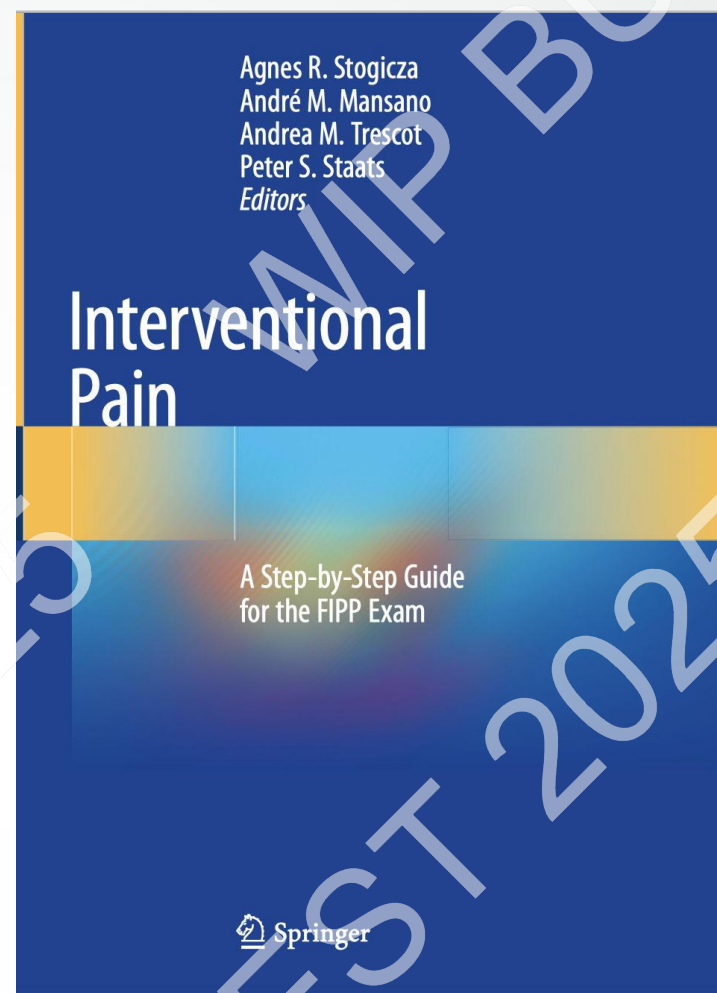
2026 January-May, weekly

- Theory
- Live Procedure Demo
- Discussion





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Thank you
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