

Thermal Ablation for Musculoskeletal Lesions: How I Do It

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Disclosures

Consultant – Johnson and Johnson/Neuwave,
Medtronic

Grant Support – EDDA, BTG/Galil Medical

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Case-Based MSK Ablation

Displacement to Avoid Injury

CO₂

Fluid

Avoid Articular Surfaces

Bipolar RFA

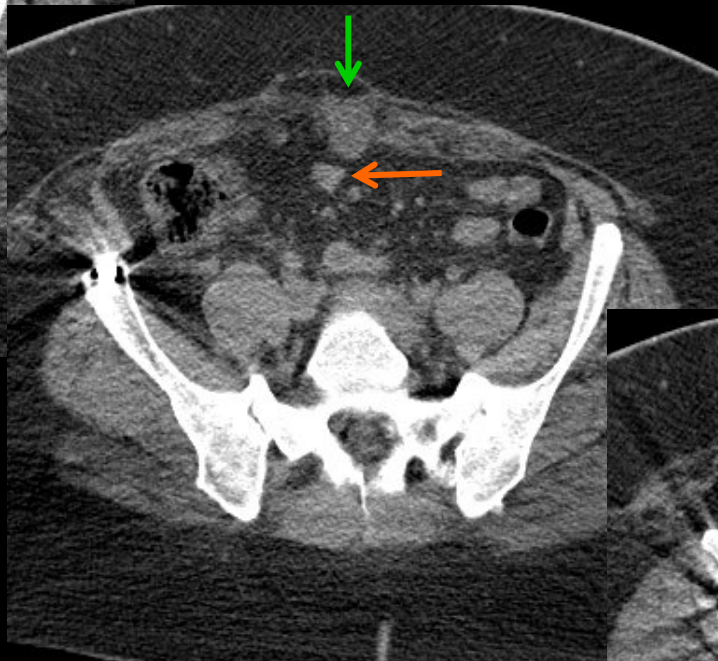
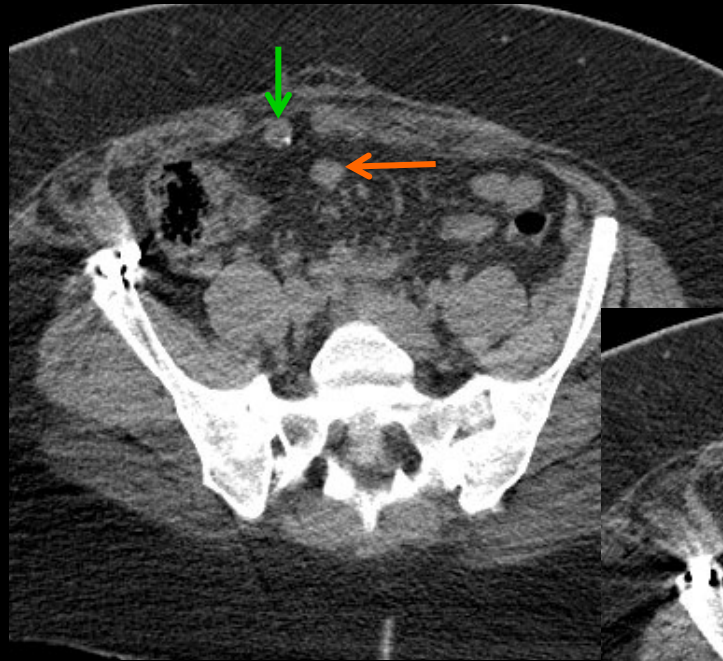
Cryoablation

Periacetabular Ablation and Cement

Balloons for Void Filling

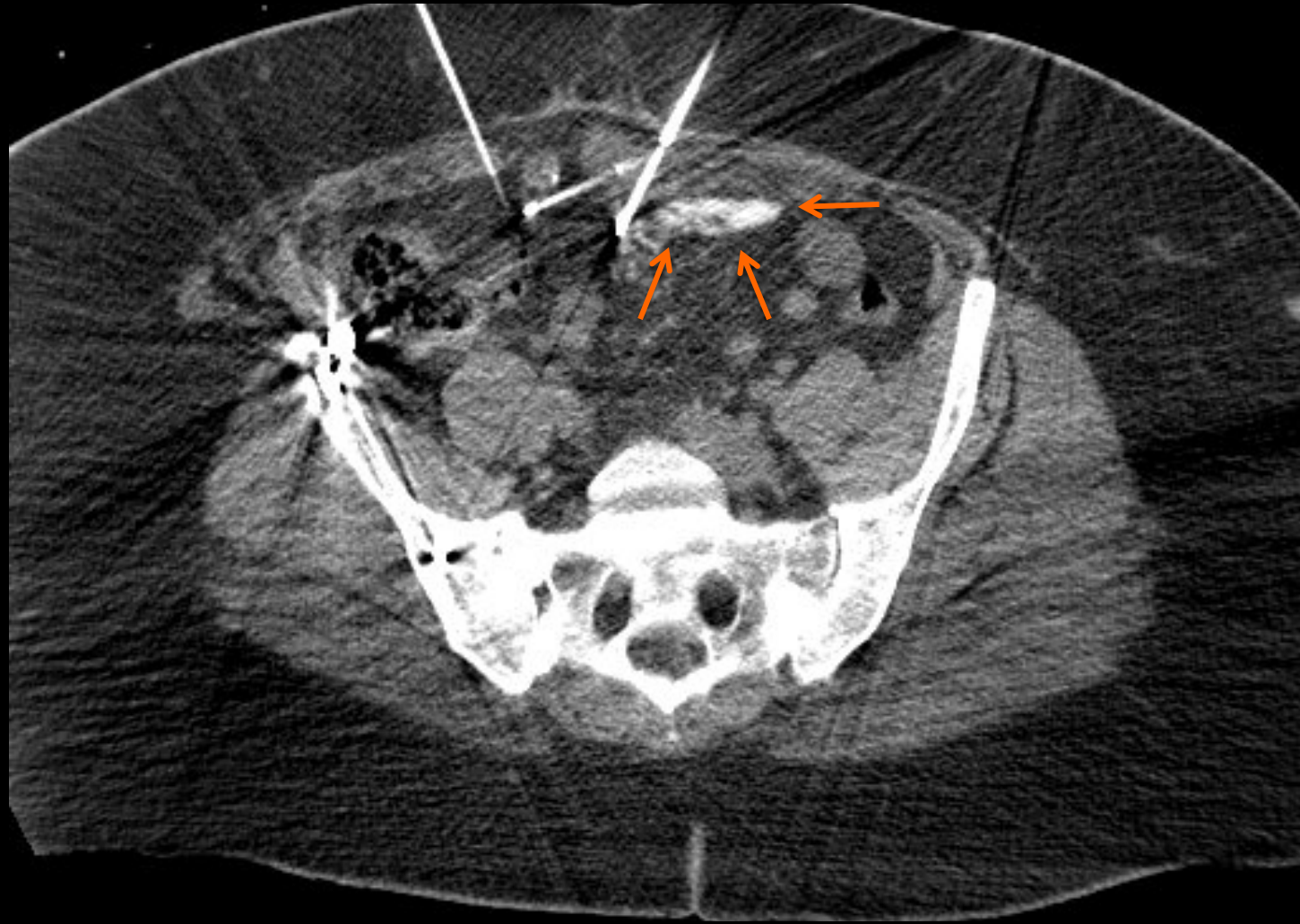
Femoral Nerve

Case — 52-YO-Female with Metastatic Chondrosarcoma

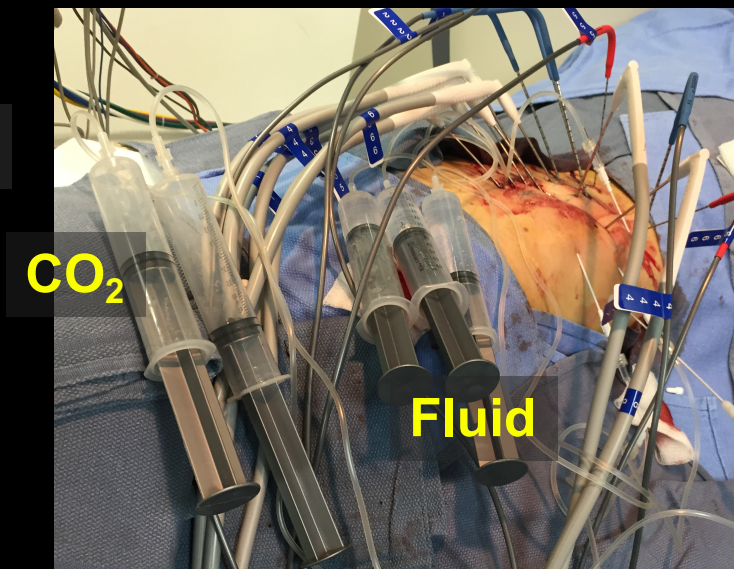
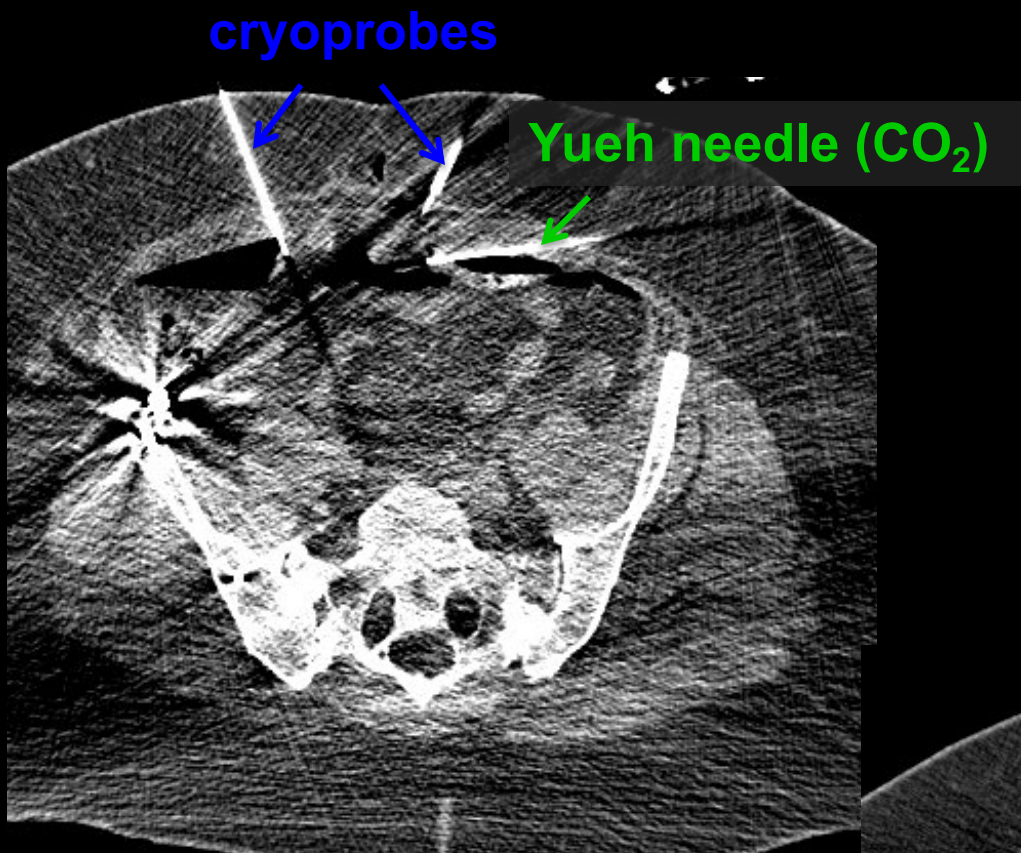


Three small nodules

Adjacent small bowel

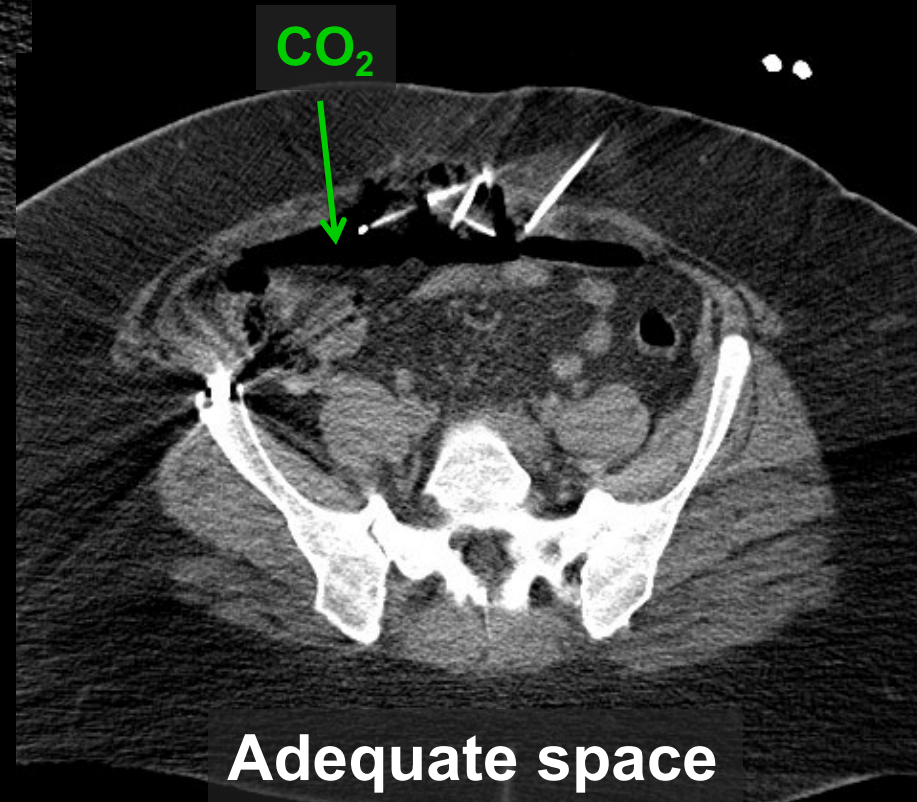


Fluid instillation — didn't stay in region

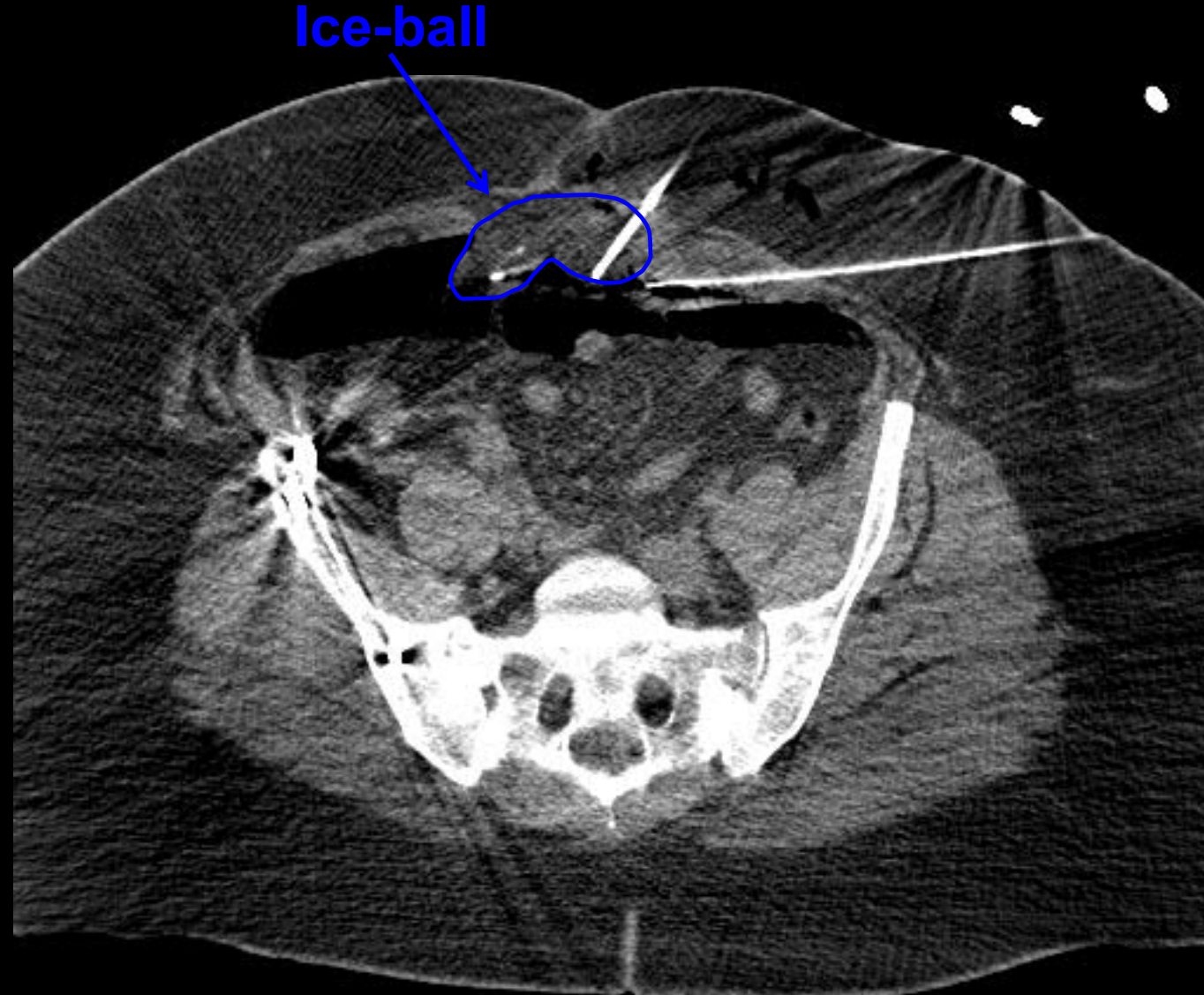


Switch to CO₂

*Target gap to anterior
abdominal wall*



Use CO₂ for Anterior Displacement

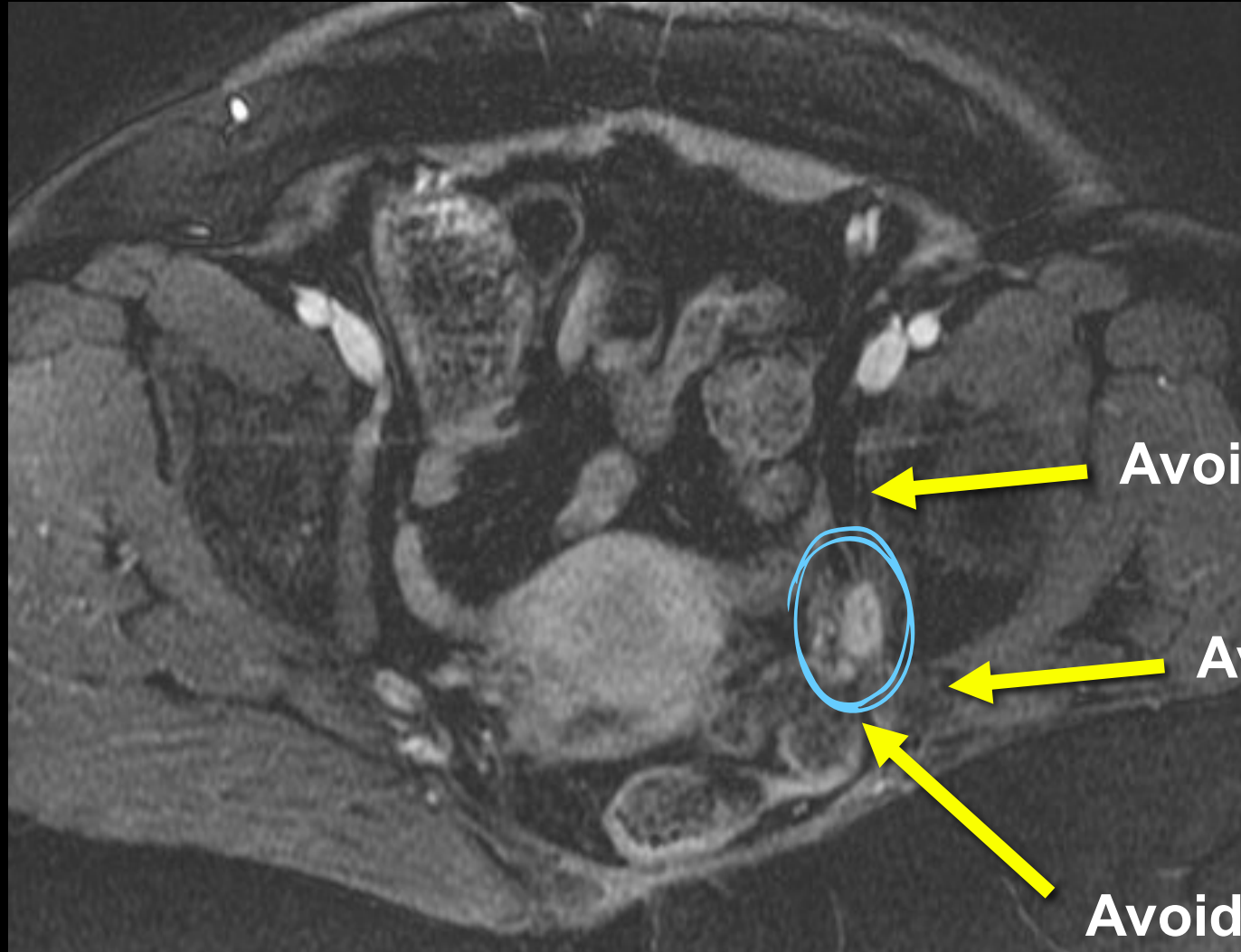


Safe boundary from adjacent bowel



Post ablation CT — local control at 6 mos.

Recurrent Ependymal Cell Tumor *Concerns?*



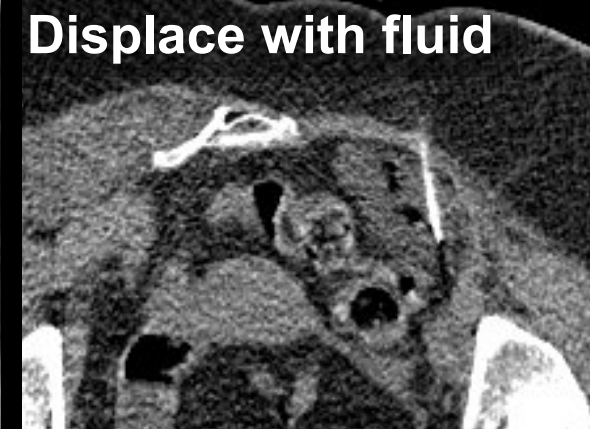
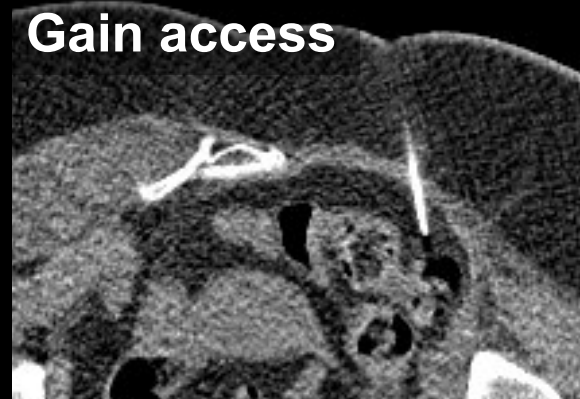
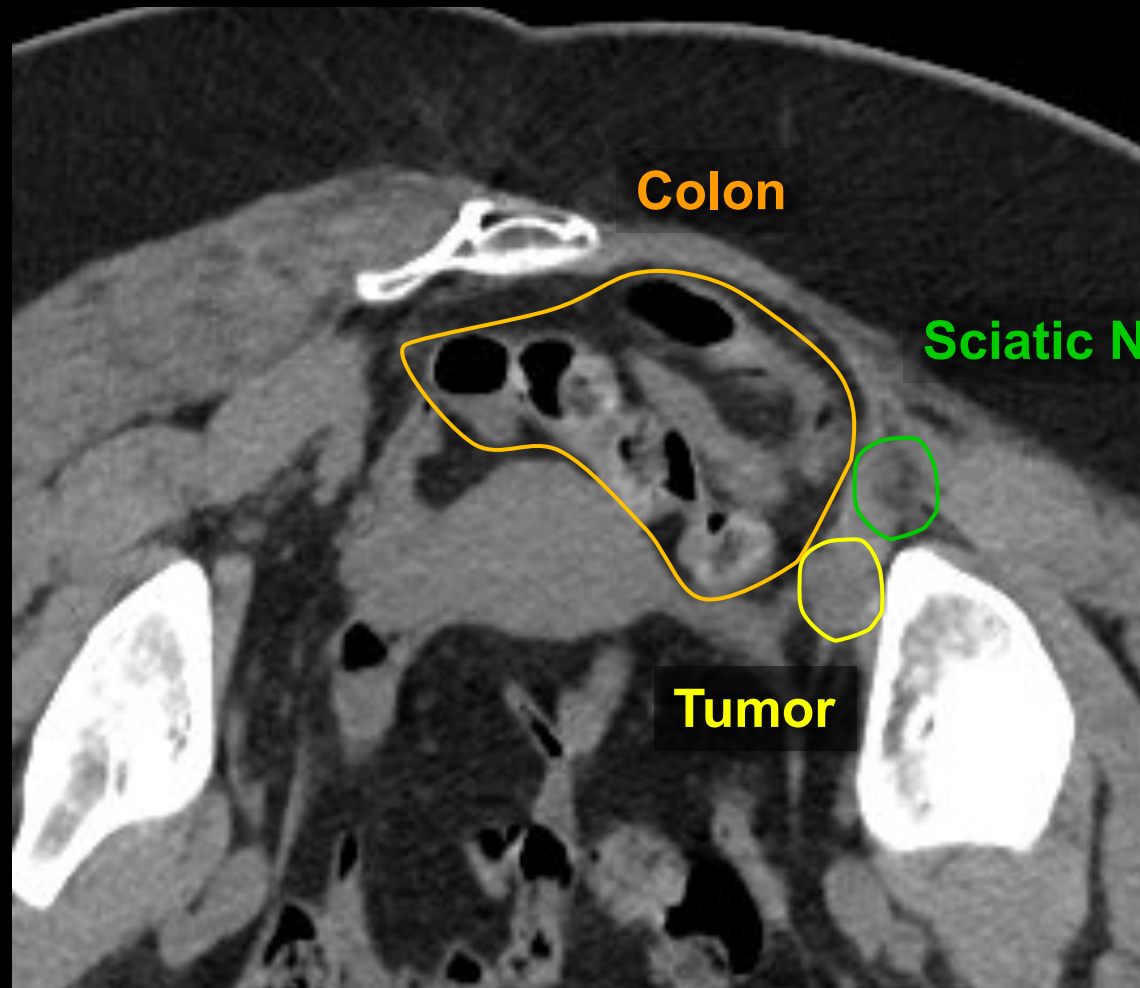
Avoid Obturator N

Avoid Sciatic N

Avoid Ccolon

Recurrent Ependymal Cell Tumor

Fluid Displacement Strategy

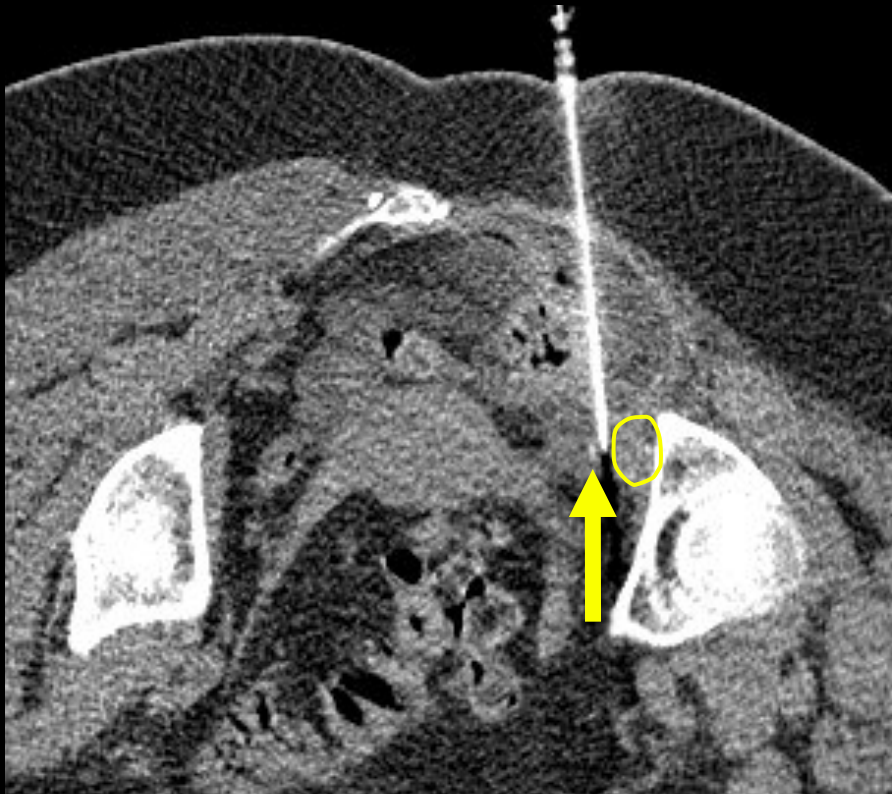


Recurrent Ependymal Cell Tumor

Fluid Displacement Strategy

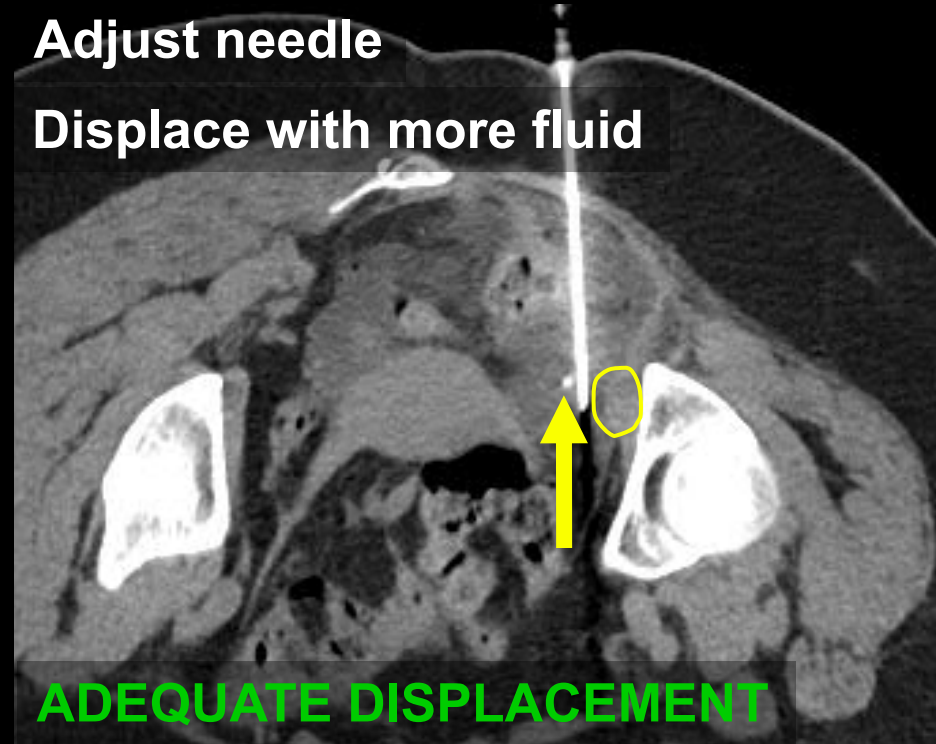
Where's the ureter?

Give IV contrast



Adjust needle

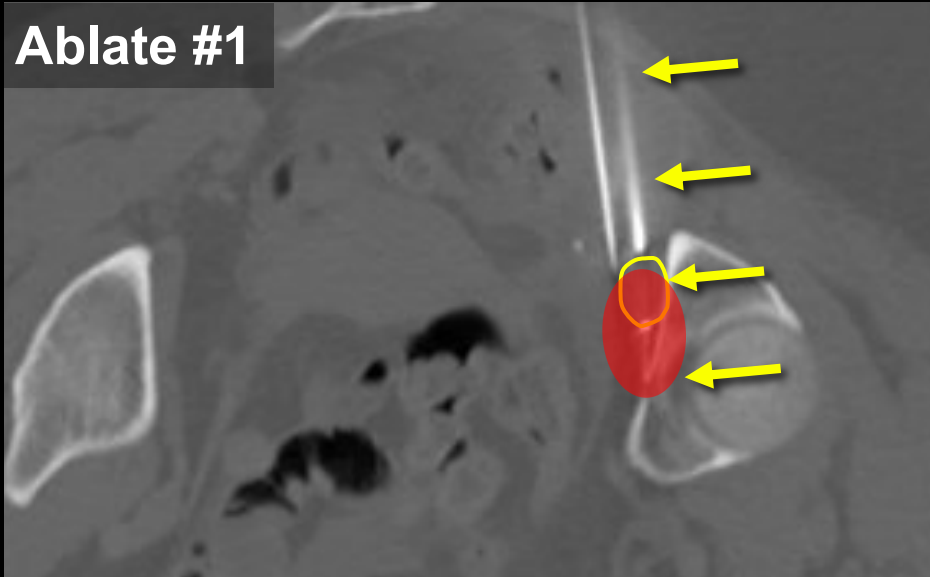
Displace with more fluid



Recurrent Ependymal Cell Tumor

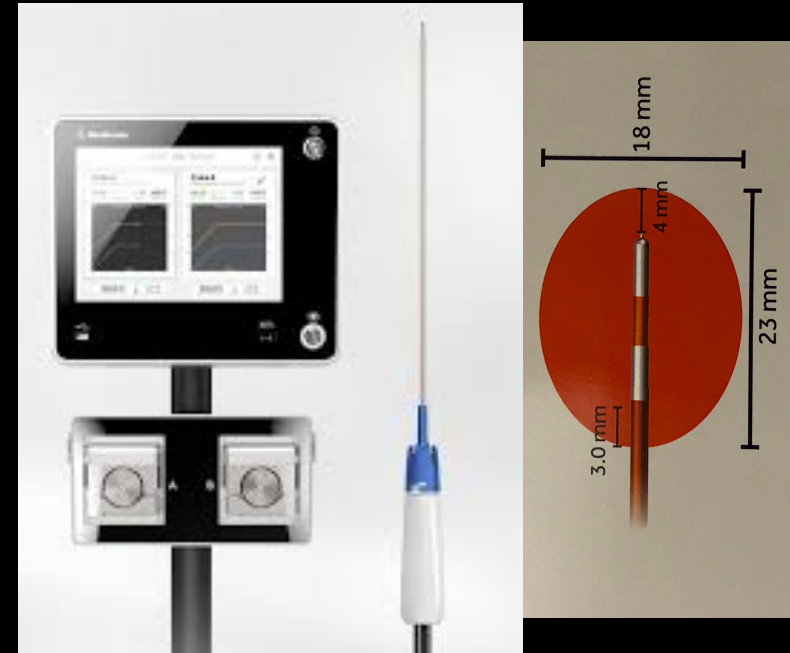
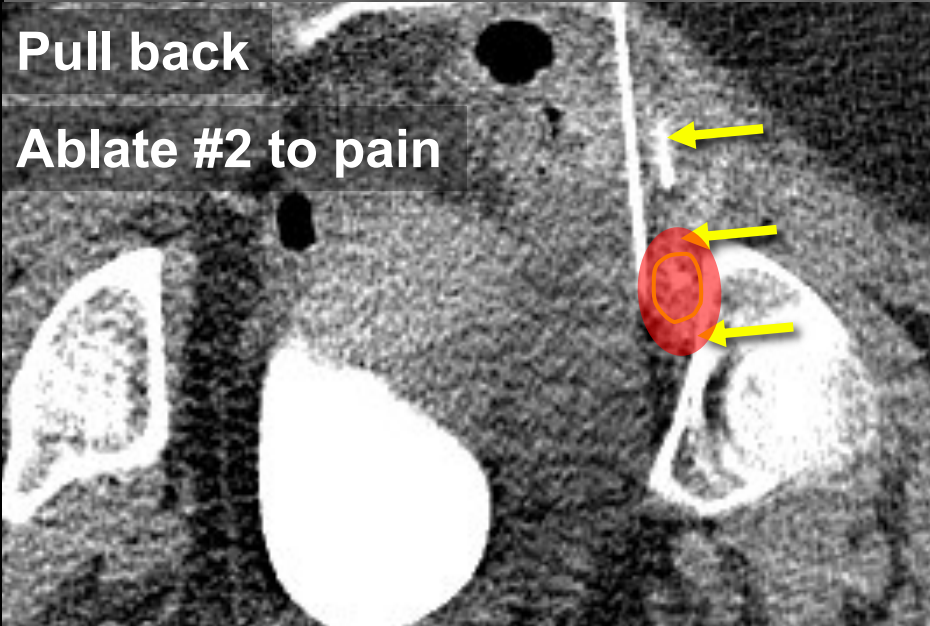
Bipolar RFA — Conscious Sedation

Ablate #1

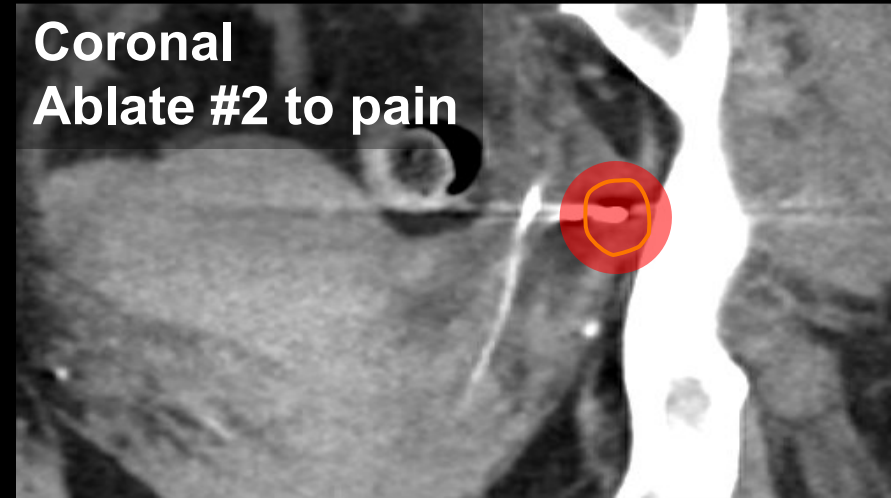


Pull back

Ablate #2 to pain

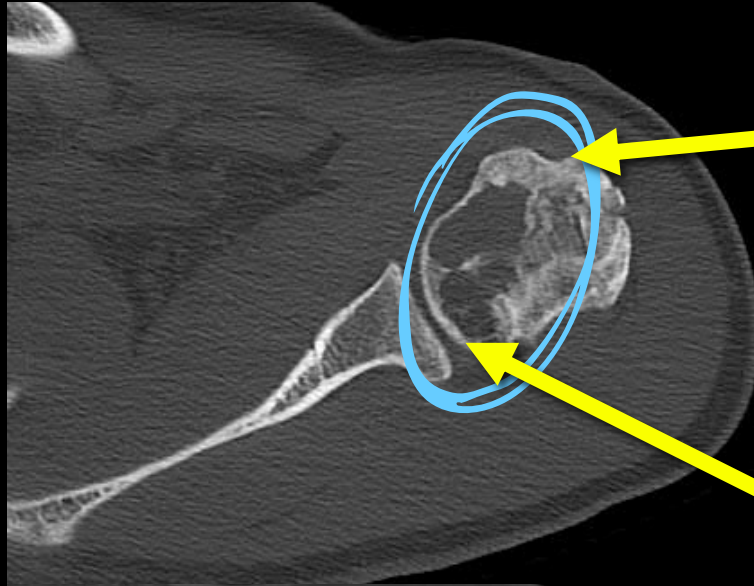


Coronal
Ablate #2 to pain

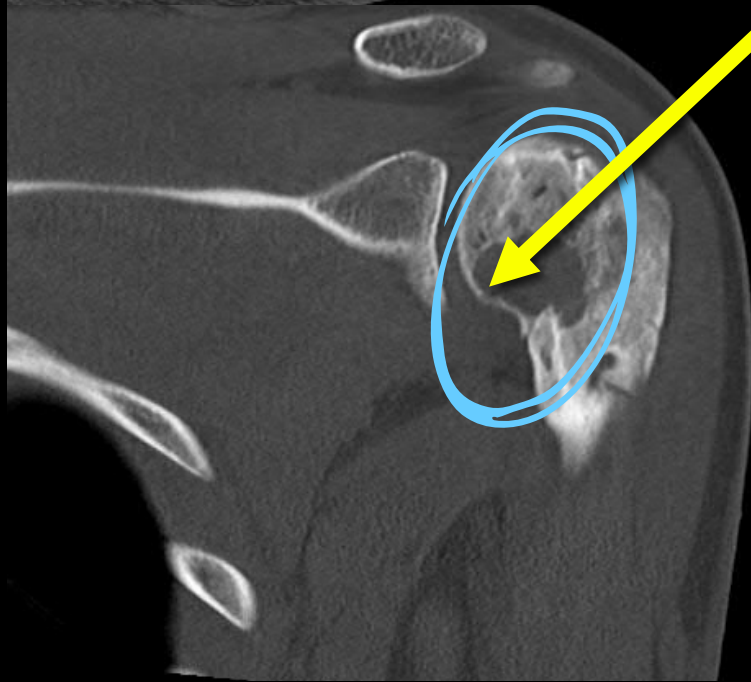


Recurrent Giant Cell Tumor

Concerns?



Avoid biceps tendon



Concern for articular surface

Treatment options?

Surgery

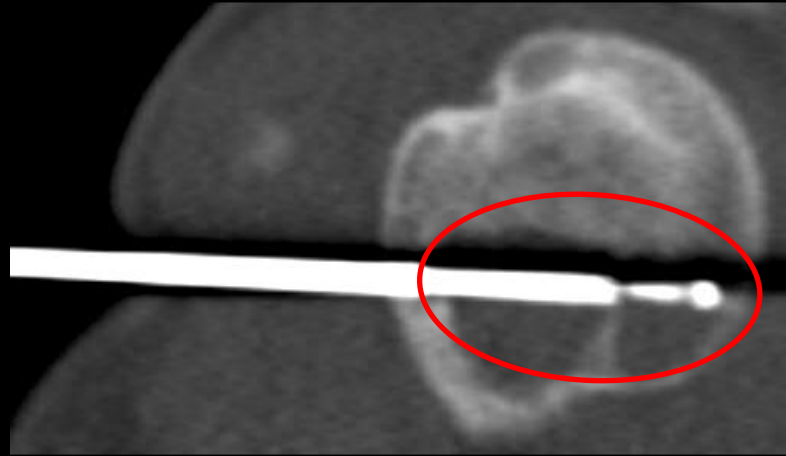
Cryoablation

Radiofrequency ablation

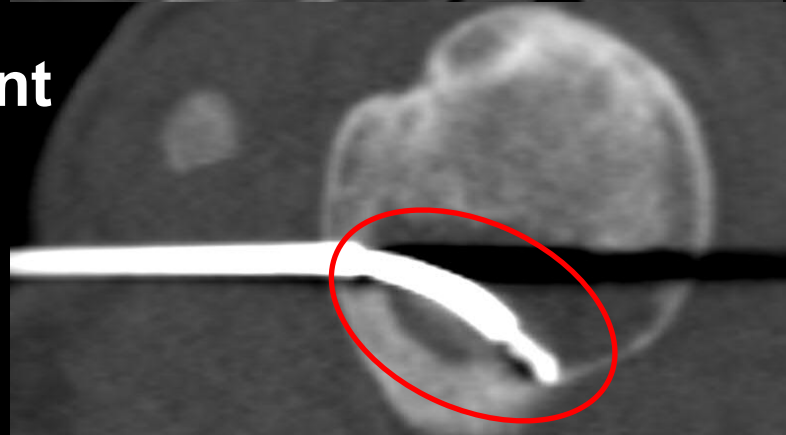
Avoid Articular Surface

Bipolar RFA

Controlled size

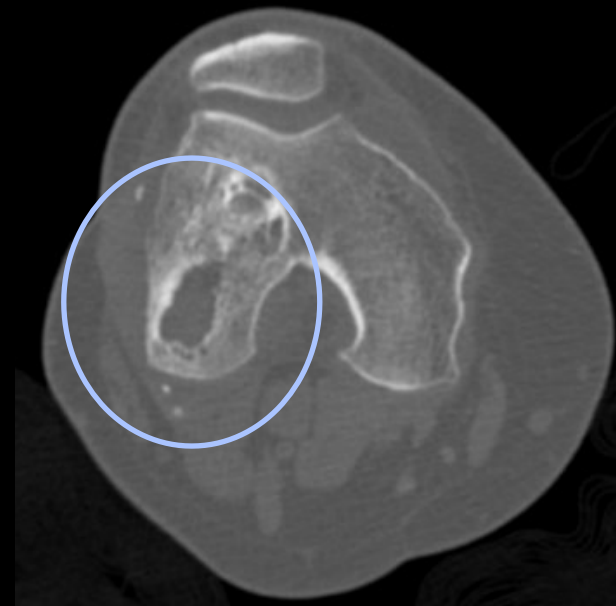
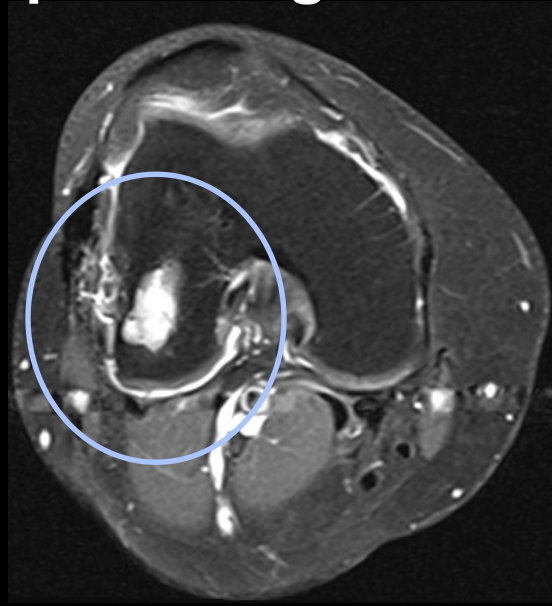


Articulated placement

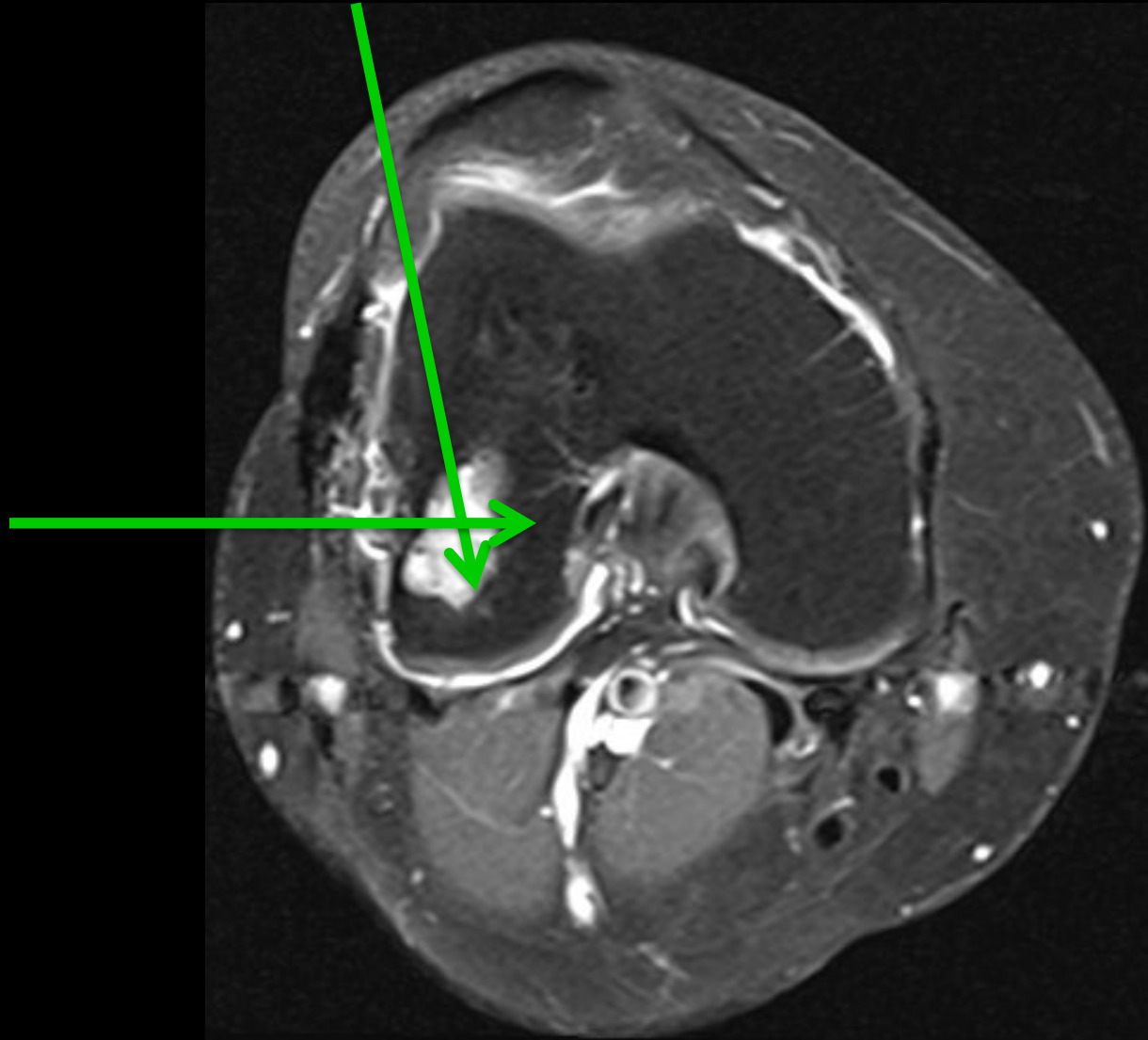


Recurrent Giant Cell Tumor

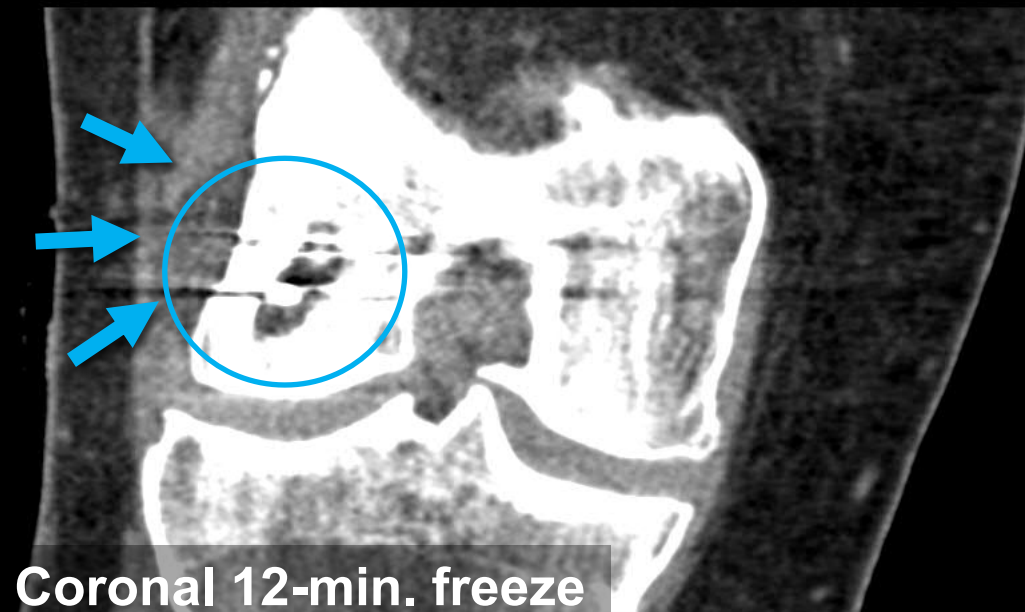
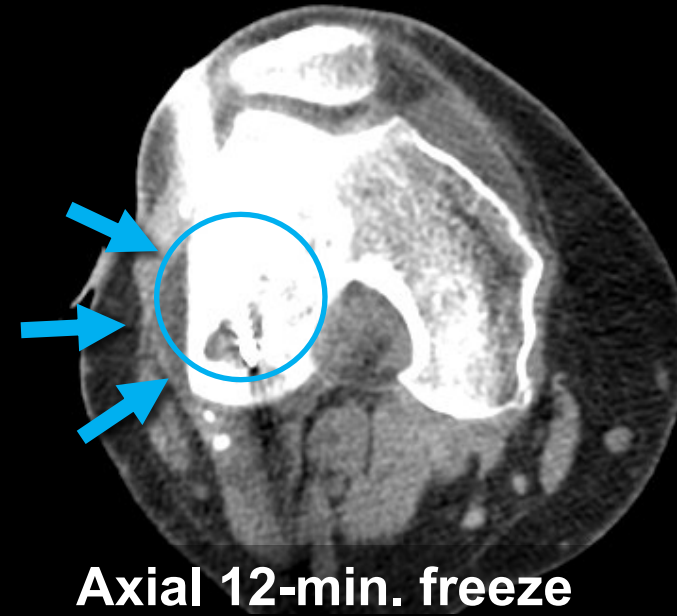
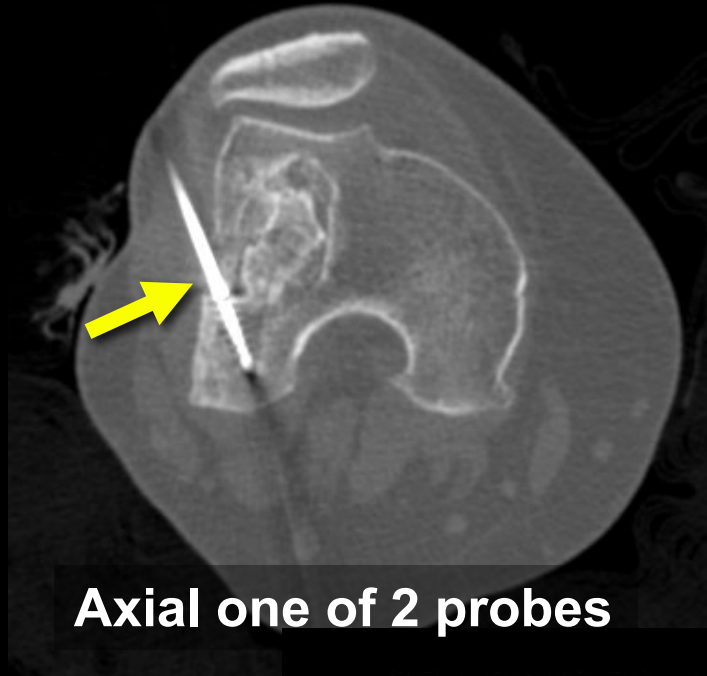
38 yo with 3 prior surgeries



Technical Approach?



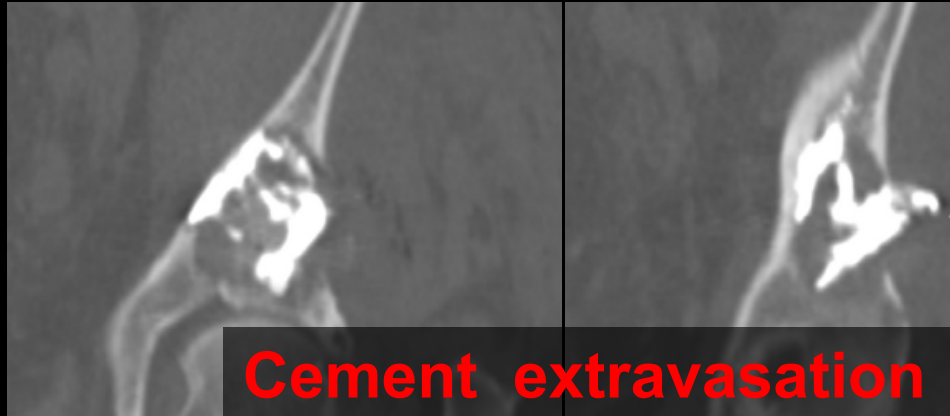
Avoid Articular Surface



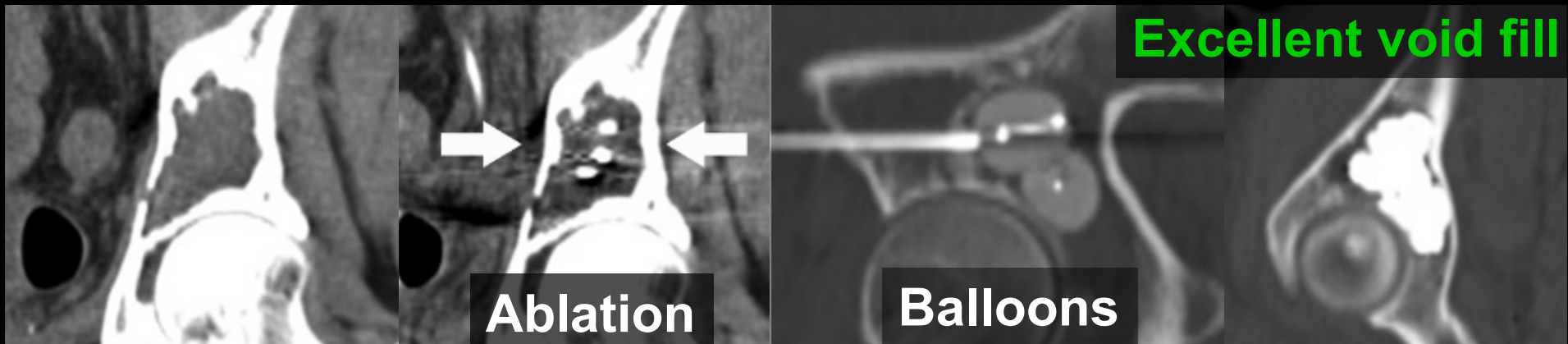
Balloon-Assisted Osteoplasty of Periacetabular Tumors following Percutaneous Cryoablation

A. Nicholas Kurup, MD, Jonathan M. Morris, MD, Grant D. Schmit, MD, Thomas D. Atwell, MD, John J. Schmitz, MD, Peter S. Rose, MD, and Matthew R. Callstrom, MD, PhD

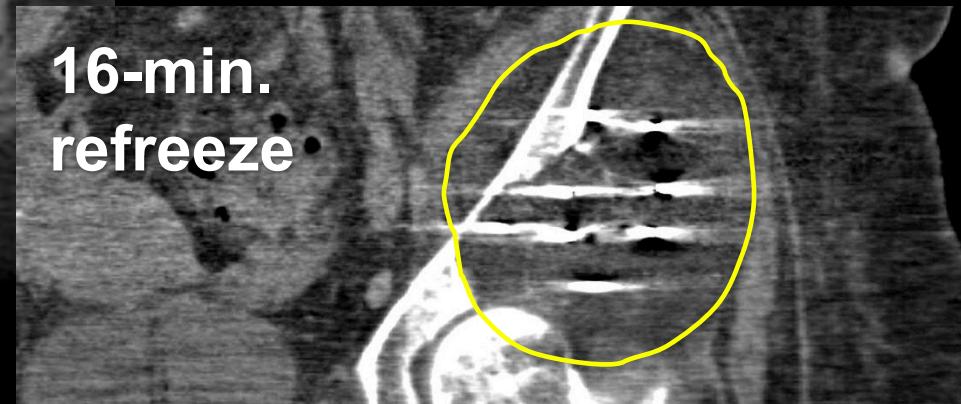
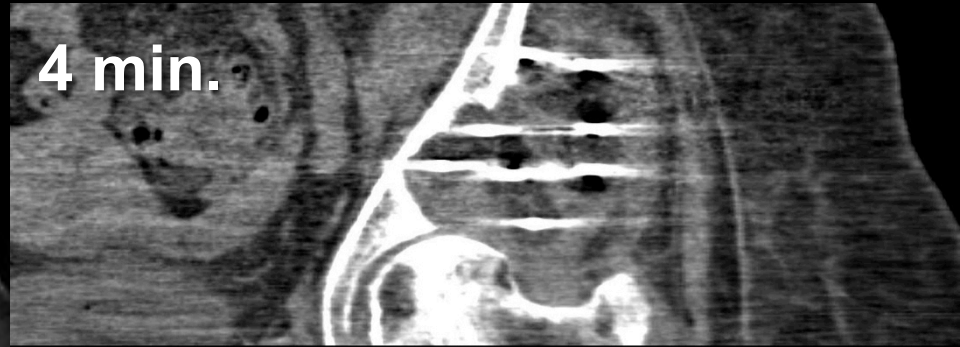
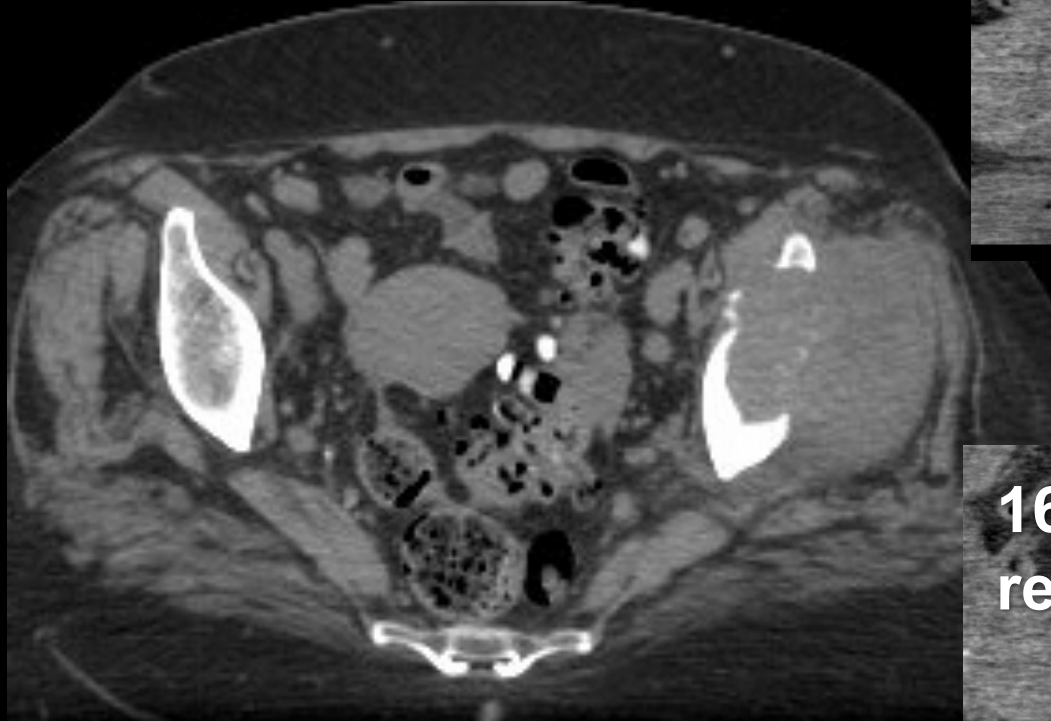
Ablation Followed by Osteoplasty



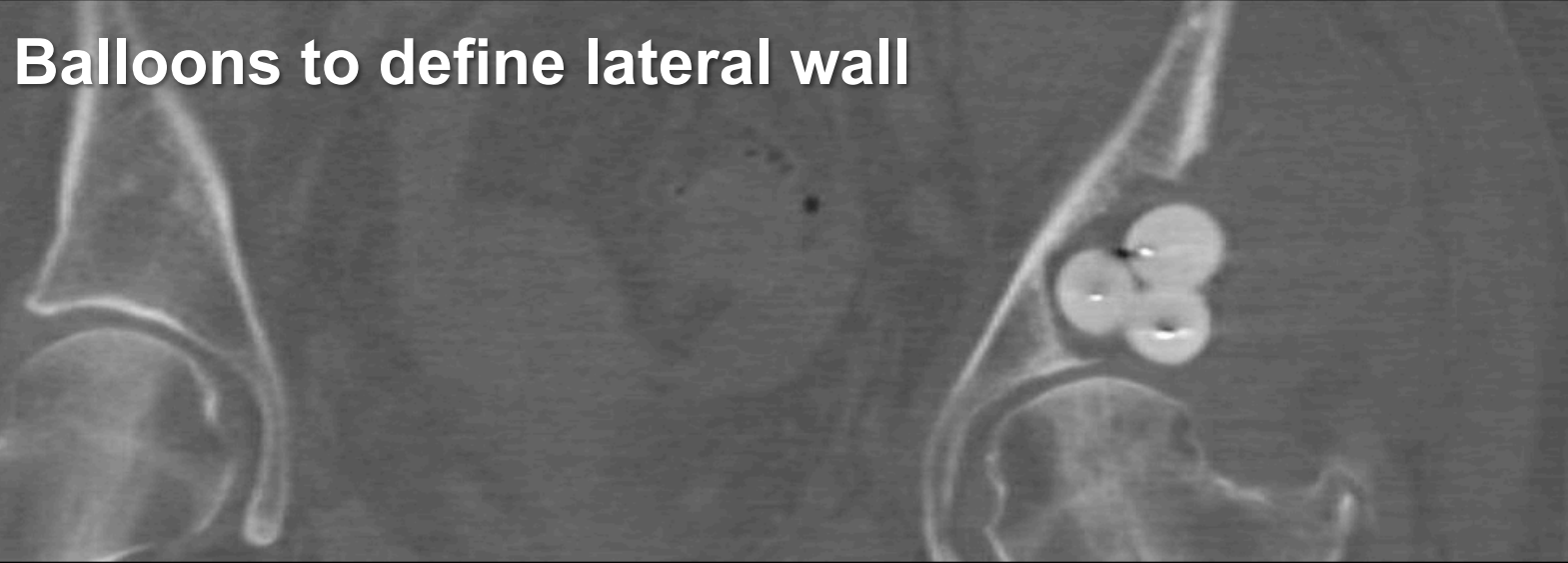
Ablation Followed by Kyphoplasty and Osteoplasty



Periacetabular Mass — Prevent Fracture



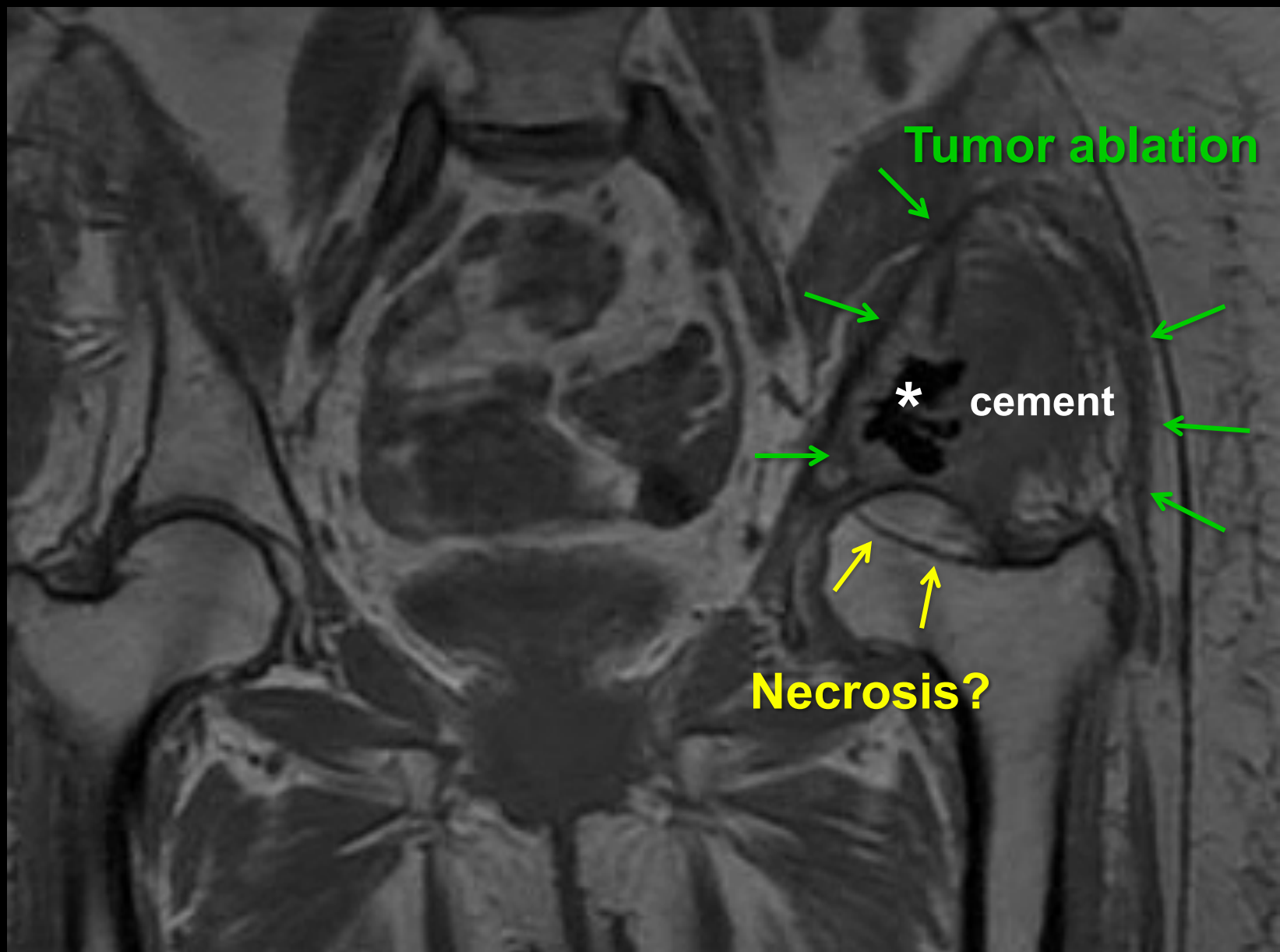
Balloons to define lateral wall



Post cementoplasty

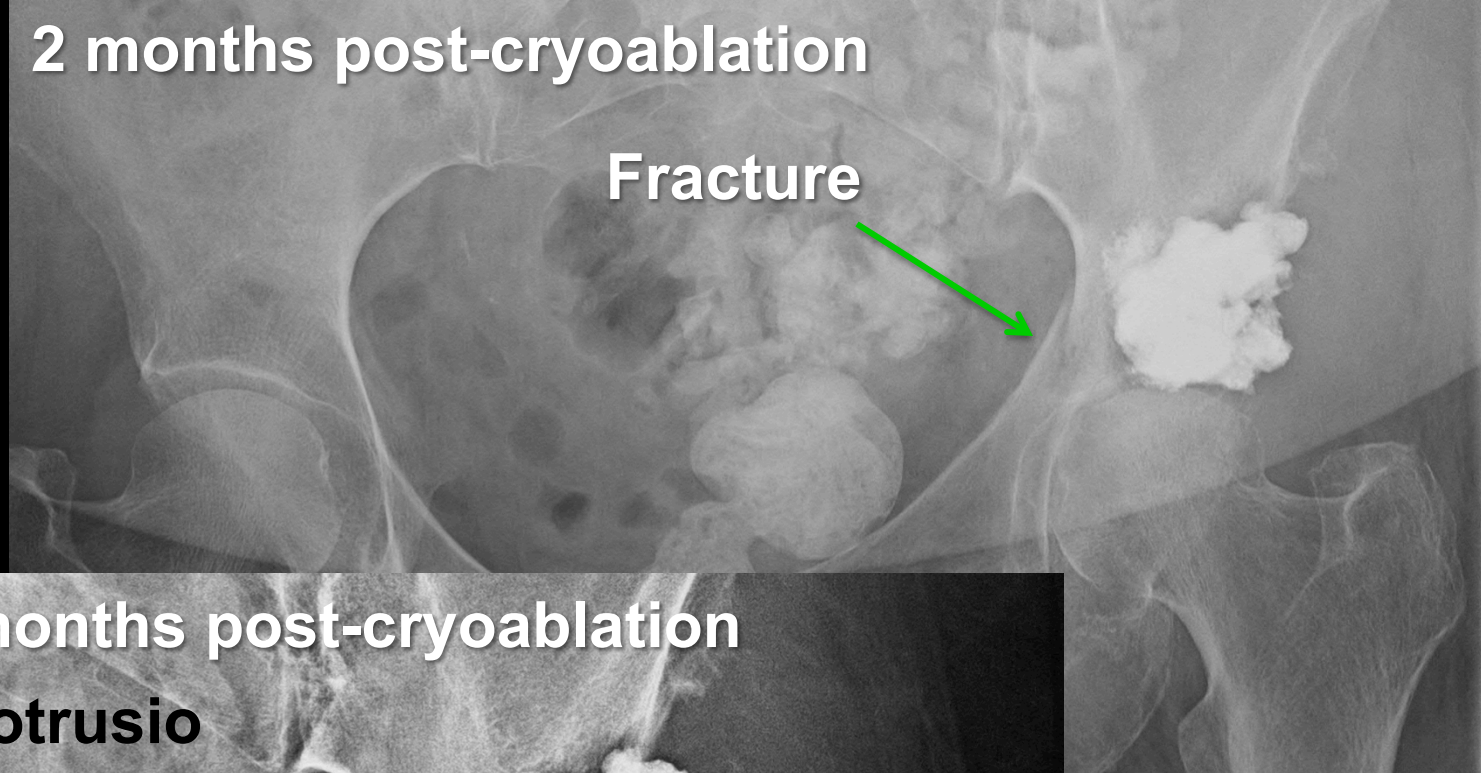


Excellent void filling without extravasation



2 months post-cryoablation

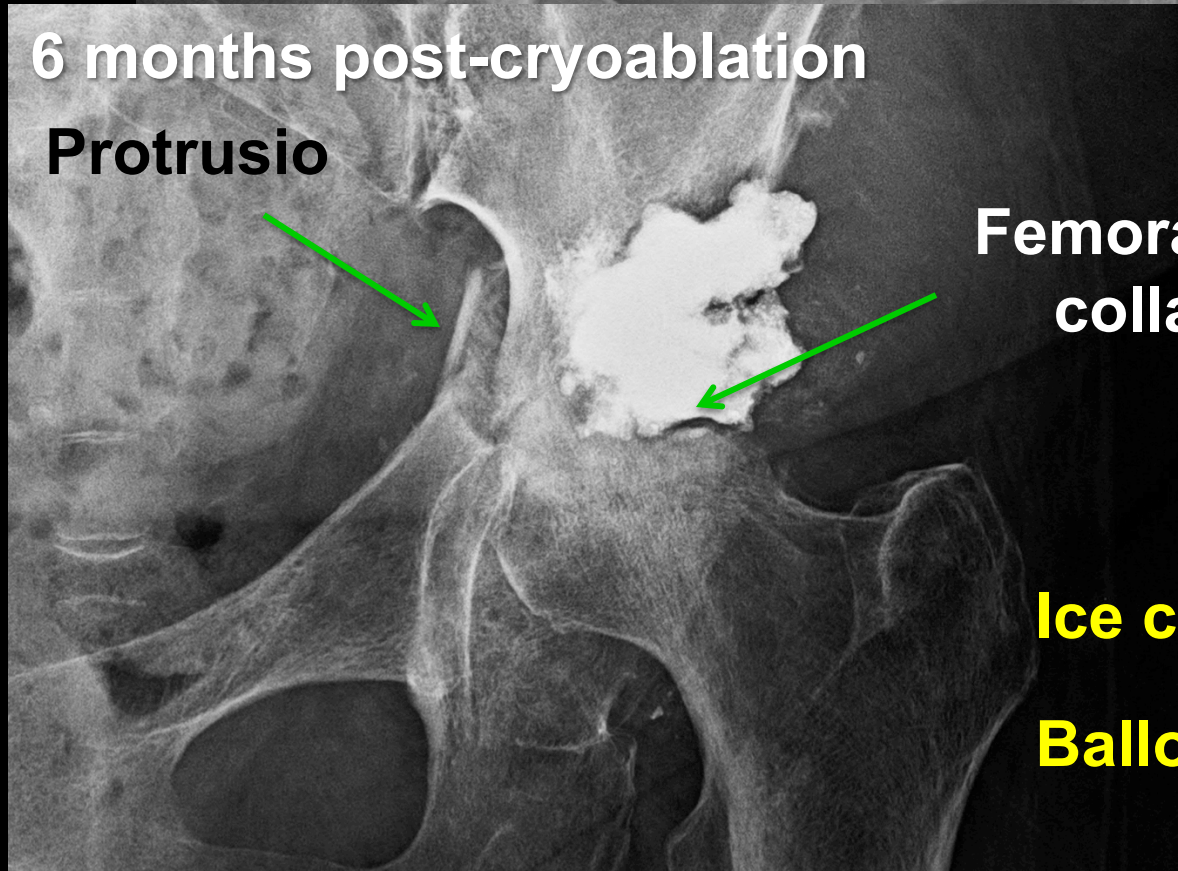
Fracture



6 months post-cryoablation

Protrusio

**Femoral head
collapse**

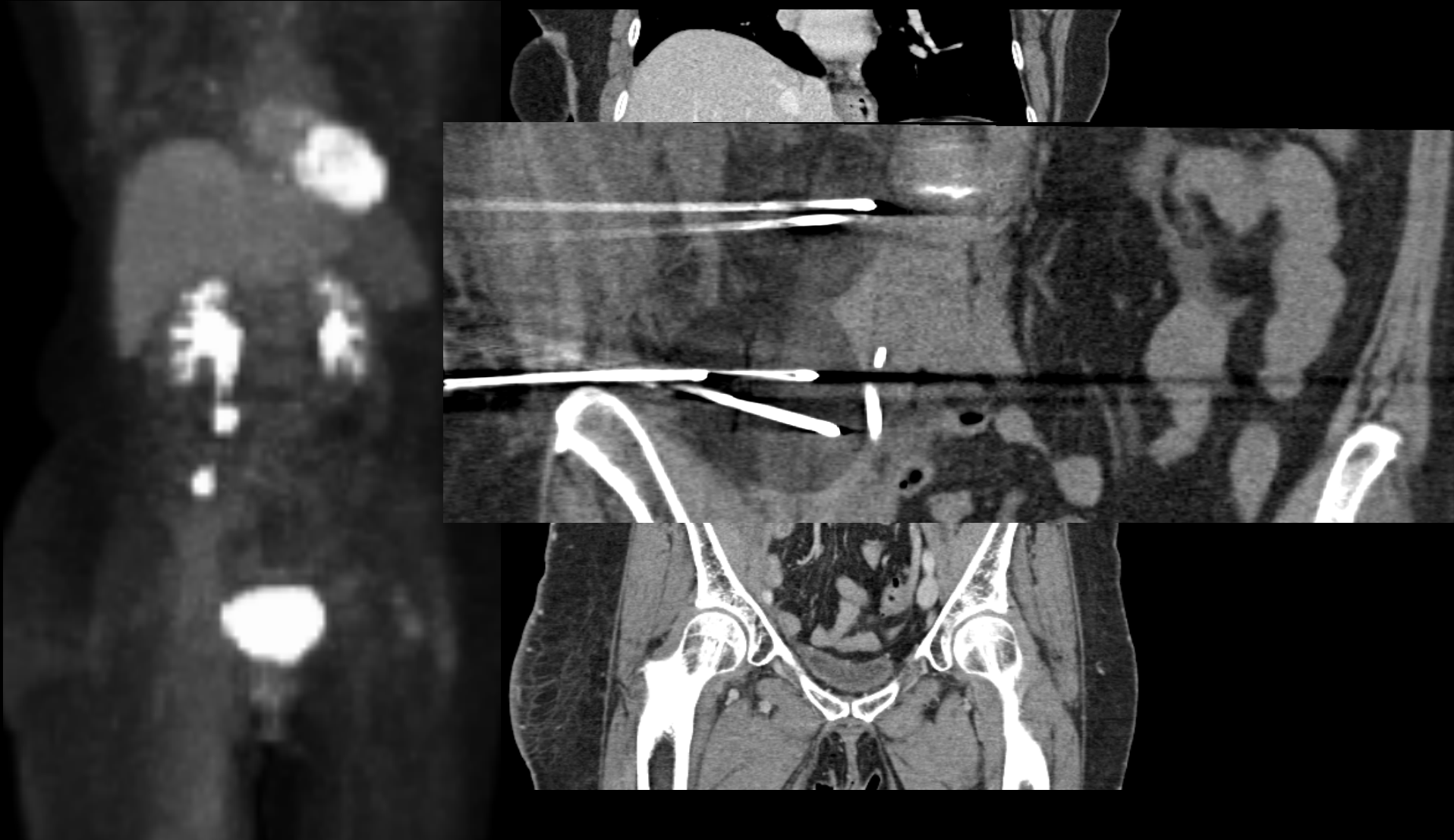


Lessons:

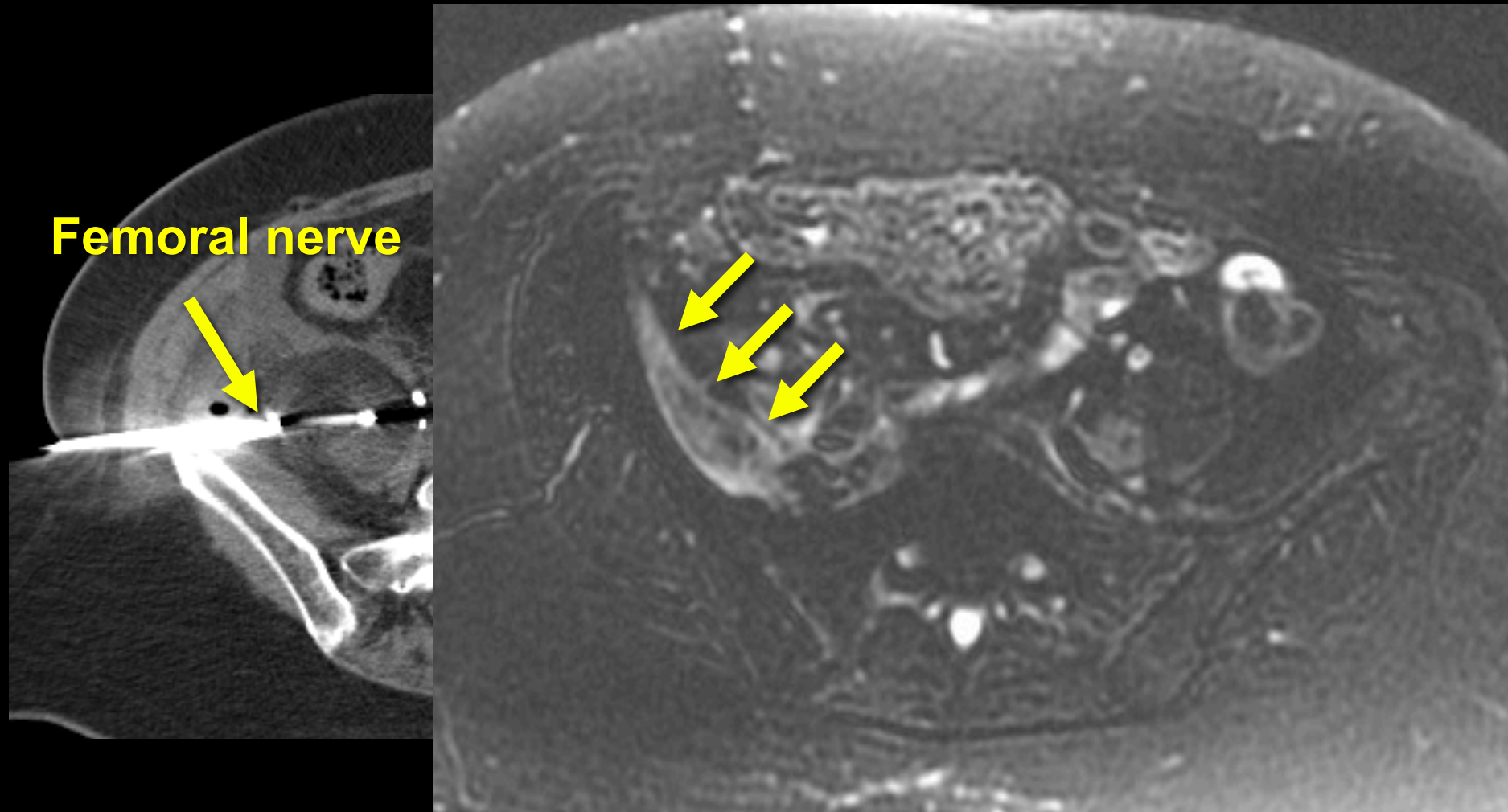
Ice can cause fracture

Balloons define cavity

Femoral nerve

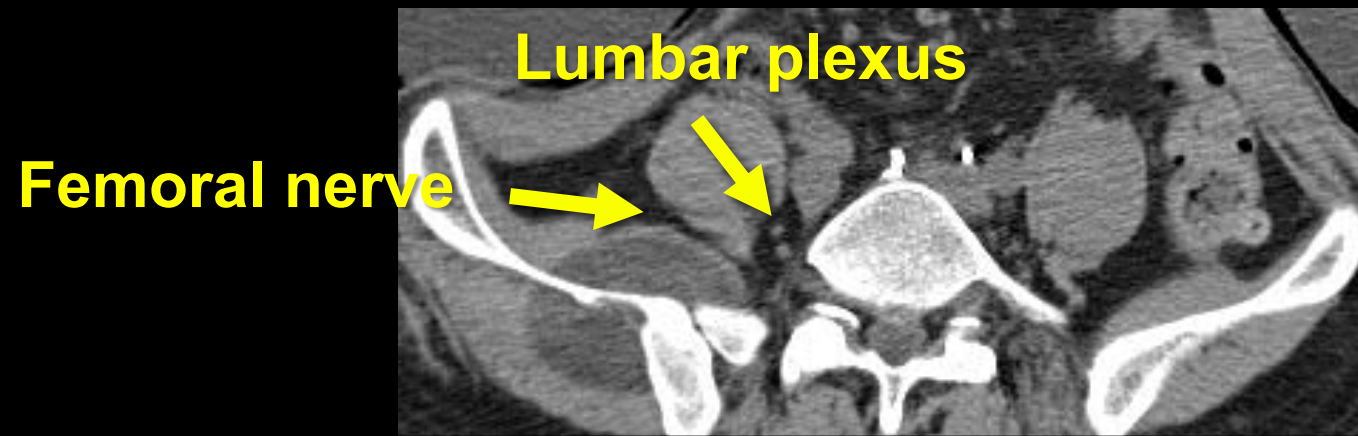
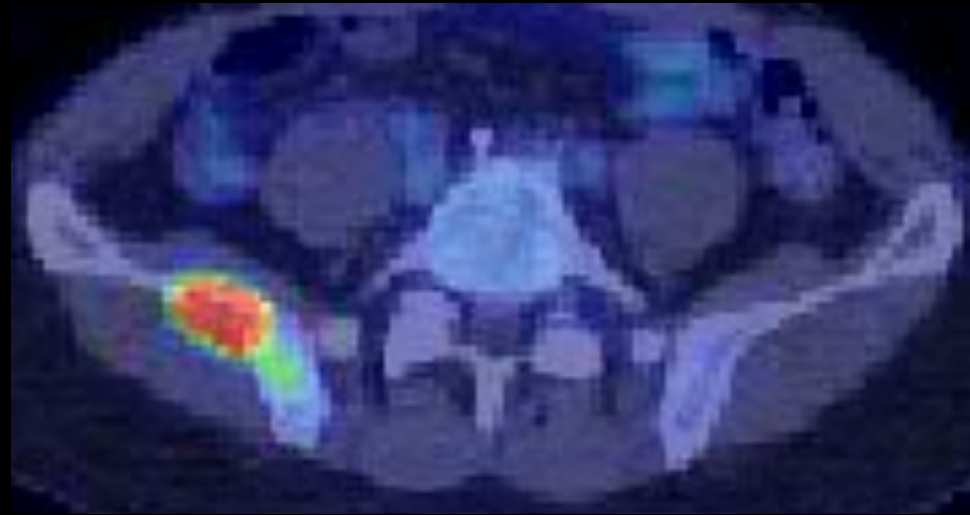


Femoral nerve



Loss of iliopsoas and quadriceps function improved over 6 mos.

Lumbar plexus and femoral nerve



Pain palliation — no neural injury

Thermal Ablation for MSK Lesions: How I Do It

Lessons Learned

Fluid and CO₂ for Tissue Displacement

Avoid Articular Surfaces

Bipolar RFA and Cryoablation

Periacetabular Tumors

Avoid Ablation into Femoral Head

Void Filling with Kyphoplasty Balloons

Femoral Nerve

Recognize Complex Path