

# Global Approach to the Patient with Pain in Interventional Radiology

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# Disclosures

Chief Medical Officer — Focused Cryo, Inc.

# Advanced Interventional Pain Management

## Non-neoplastic

### Non-neoplastic Pain Management Procedures

- Epidural injections
  - Interspinous Intradiscal Epidural Steroid injection
  - Transforaminal Epidural Steroid Injections
  - Epidural Blood Patch
- Sacrospinalis Block Injections
- Facet Joint Injections
  - Intradiscal Facet Joint injection
- Rhizotomy / Rhizotomy / Neurolysis
  - Medial Branch Nerves
  - Intraosseous Nerves
- Pulsed Radiofrequency Interventions
- Interventional Procedures
  - IDDT / Perineurotomy / Rhizotomy
  - Psoas Disc Decompression / Disc Incision
  - Discography
  - Functional Anesthetic Discography
- Sympathetic Nerve Block
  - Celiac Pneumolysis
  - Celiac Pneumolysis
  - Lumbar Sympathetic Pneumolysis
  - Superior Hypogastric Pneumolysis
  - Ganglion Impar Block
- Sympathetic Nerve Neurolysis / Ablation
  - Stellate Nerve Neurolysis
  - Celiac Pneumolysis
  - Lumbar Pneumolysis
  - Superior Hypogastric Pneumolysis
  - Ganglion Impar Neurolysis

- Neuromodulation
  - Spinal Cord Stimulation
  - Peripheral Nerve Stimulation
  - Sacral Nerve Root Stimulation
  - Intrathecal Medication delivery
- Vertebroplasty for Compression Fractures
  - Vertebroplasty
  - Coloplasty
- Peripheral Nerve blocks
  - Bilhopygic
  - Bilonginal
  - Genitofemoral
  - Intercostal
  - Occipital
  - Suprarenal
  - Suprorbital
  - Pudendal
- Joint Injections
  - Hip
  - Knee
  - Sacroiliac
  - Shoulder
- Bursa Injections (Bursitis)
- Intravenous Medication Diagnostic Infusion
- Trigger Point Injections
- Dotus Injections

## Palliative/Neoplastic

Osseous and/or Soft Tissue Lesions

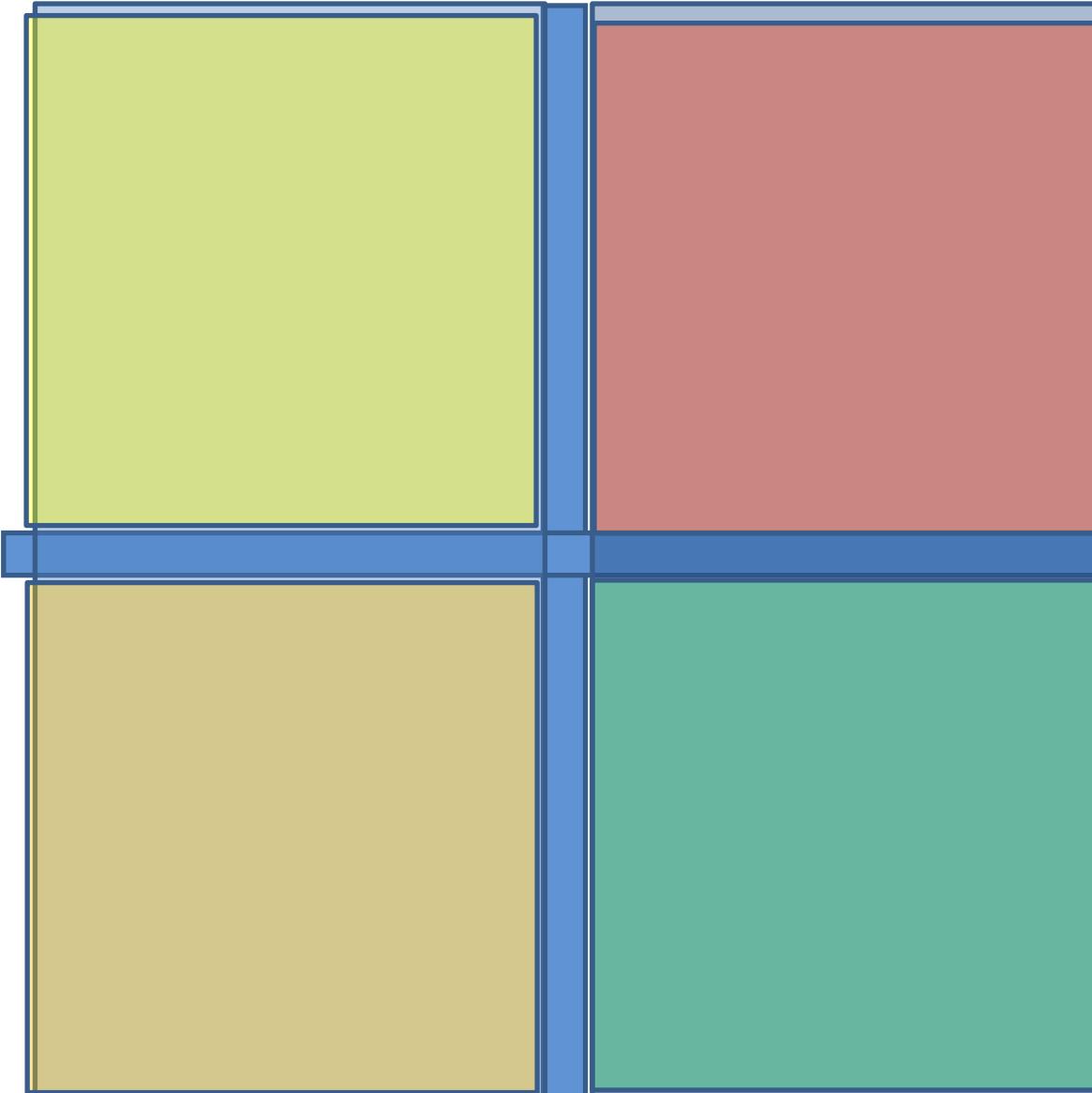
Ablative Techniques

Catheter Techniques

Nerve Ablations

**Cancer?**

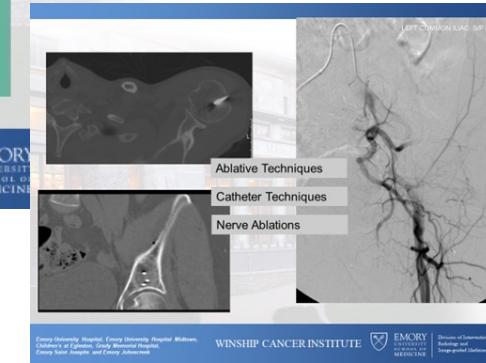
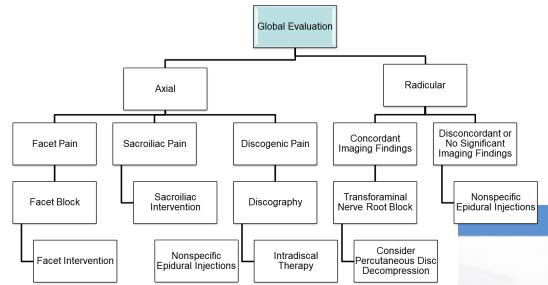
**Spine?**



# Spine

# Cancer





# 57-Year-Old with Pain

The image is a composite of three medical-related visual elements. On the left is a slide titled 'Spine' and 'Cancer' with a large red checkmark. The slide is divided into four quadrants: 'Interventional Management' (Non-neoplastic), 'Pain/Interventional Management' (Pain/neoplastic), 'Nerve Ablations' (Non-neoplastic), and 'Nerve Ablations' (Pain/neoplastic). The right side features a 3D anatomical model of a human sacrum with two needles inserted into it, and a bone scan image of a human torso showing increased uptake in the spine and pelvis. The bottom of the image contains the text 'Emory University Hospital, Emory University Hospital Midtown, Children's at Eggleston, Grady Memorial Hospital, Emory Saint Josephs, and Emory Johns Creek' and the logos for 'WINSHIP CANCER INSTITUTE', 'EMORY UNIVERSITY SCHOOL OF MEDICINE', and 'Division of Interventional Radiology and Image-guided Medicine'.

**Spine**

**Cancer**

Interventional Management

Non-neoplastic

Pain/Interventional Management

Pain/neoplastic

Osseous and/or Soft Tissue Lesions

Catheter Techniques

Nerve Ablations

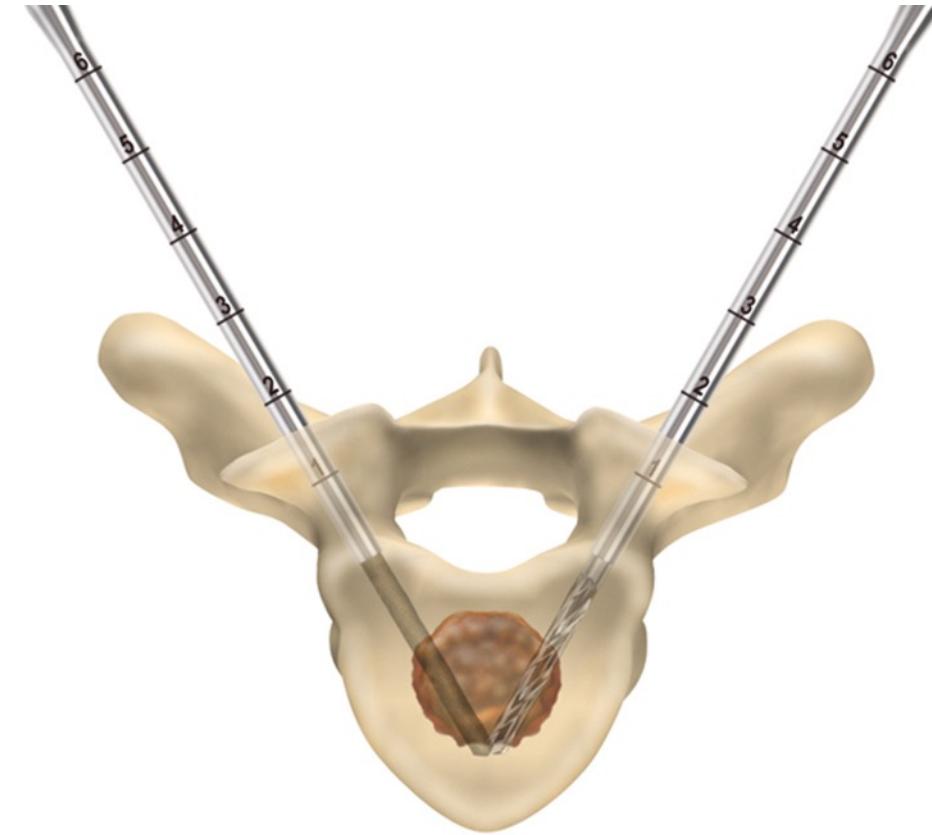
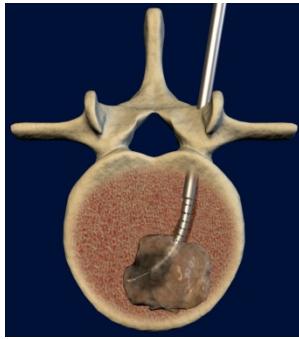
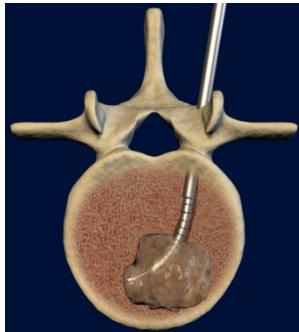
Nerve Ablations

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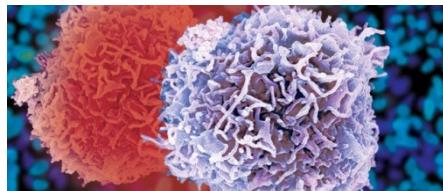


# Evolution of Technology



## Mechanical Pain

1. Instability from pathologic micro-fractures



## Biological Pain

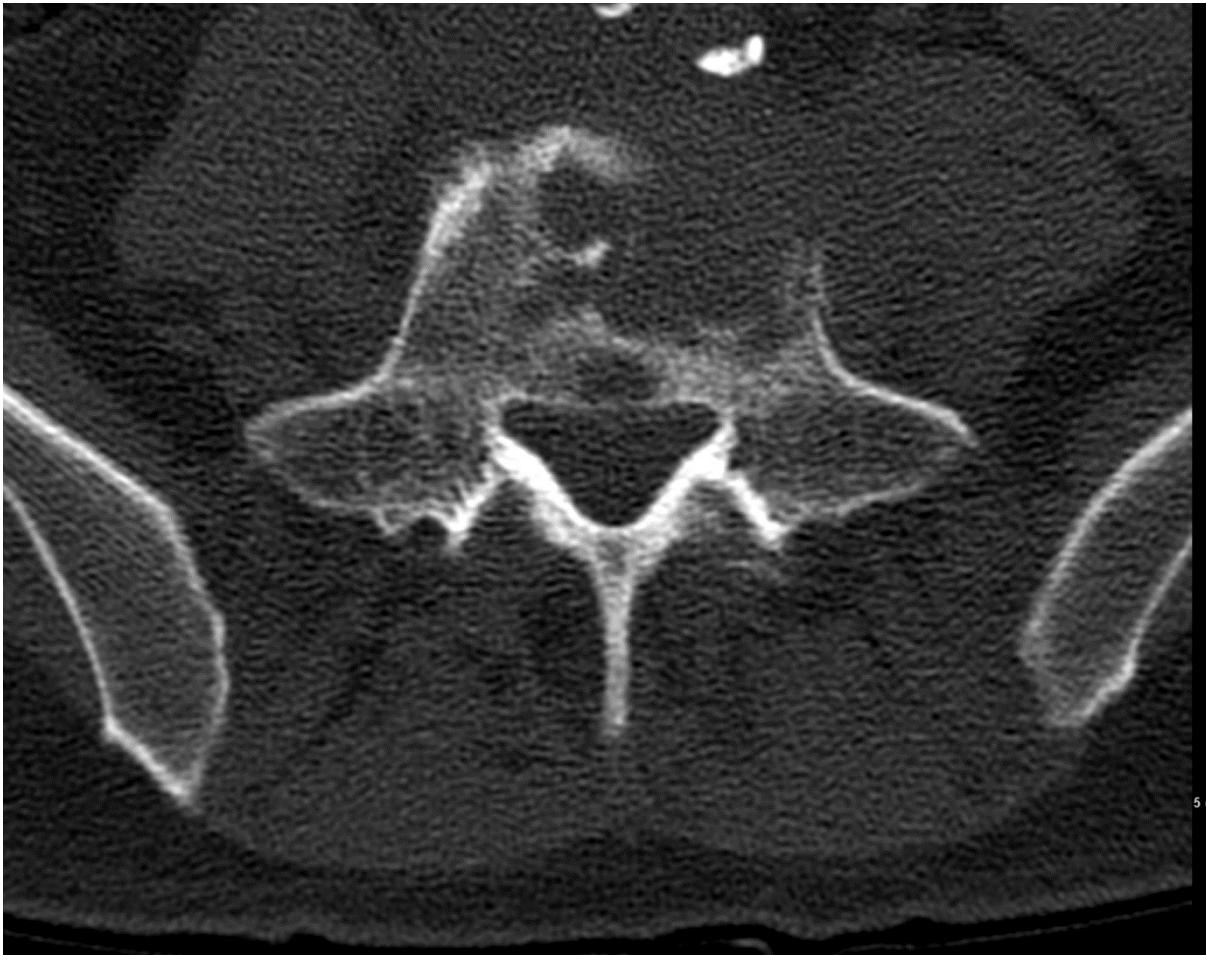
2. Stretching of the periosteum: secondary to tumor growth
3. Tumor growth into the surrounding nerves and tissues
4. Endosteal nerve stimulation caused by bone destruction (osteoclastic activity) and its associated chemical releases

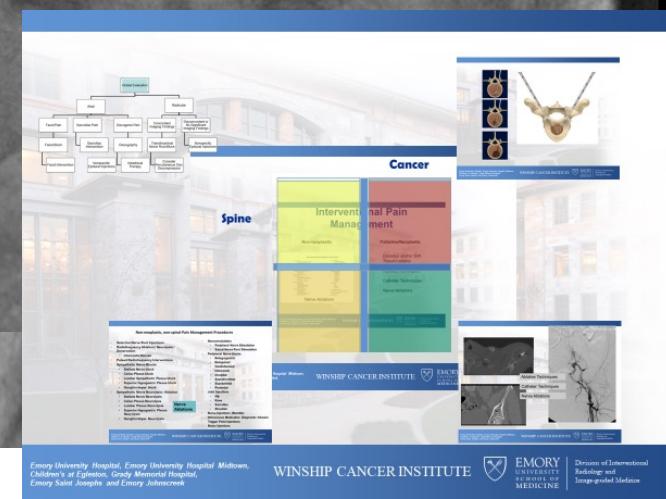
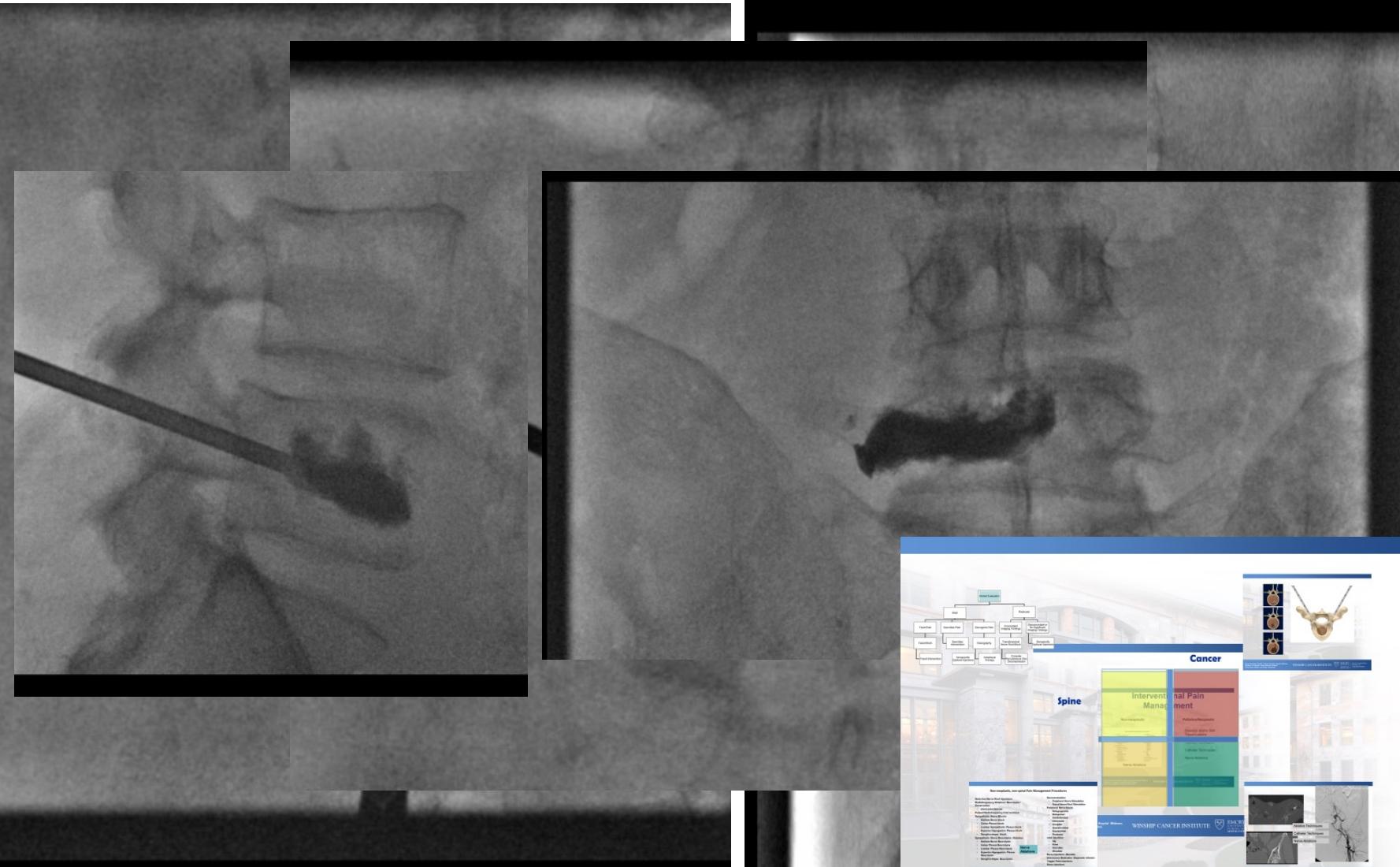
### Treatment Goal... **Rapid & Lasting Pain Relief**

- Stabilize
- Debulk & decompress
- Minimize active bone destruction

**Fracture  
Prophylaxis  
Local Control**

Rybak, et al. *Radiol Clin N Am.* 2009. Callstrom, et al. *Skeletal Radiol.* 2006.





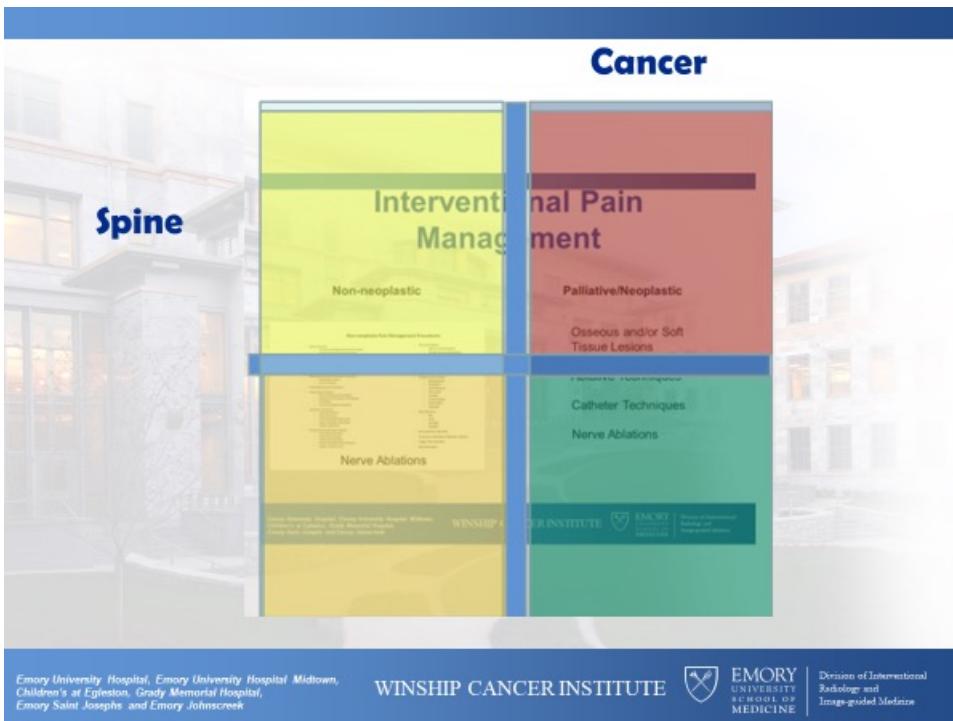
Emory University Hospital, Emory University Hospital Midtown,  
Children's of Georgia, Grady Memorial Hospital,  
Emory Saint Josephs and Emory Johns Creek

WINSHIP CANCER INSTITUTE

Emory  
UNIVERSITY  
MEDICINE

Divisions of  
Interventional  
Radiology and  
Imagined Medicine

# Next Day



**Spine**

**Cancer**

**Interventional Pain Management**

Non-neoplastic

Palliative/Neoplastic

Osseous and/or Soft Tissue Lesions

Catheter Techniques

Nerve Ablations

Emory University Hospital, Emory University Hospital Midtown, Children's at Eggleston, Grady Memorial Hospital, Emory Saint Josephs and Emory Johns Creek

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The slide content includes a grid of four quadrants: Non-neoplastic (yellow), Palliative/Neoplastic (pink), Catheter Techniques (blue), and Nerve Ablations (green). The bottom right quadrant contains logos for Winship Cancer Institute, Emory University School of Medicine, and the Division of Interventional Radiology and Image-guided Medicine.



# Follow-Up Visit

**Spine**

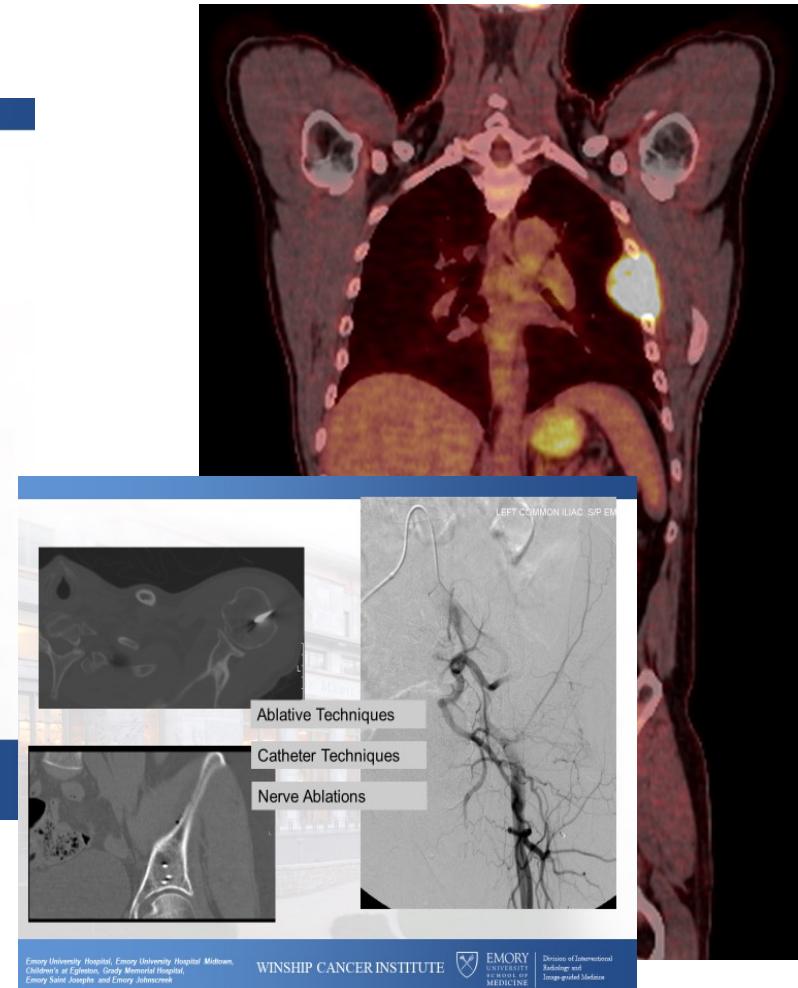
**Cancer**

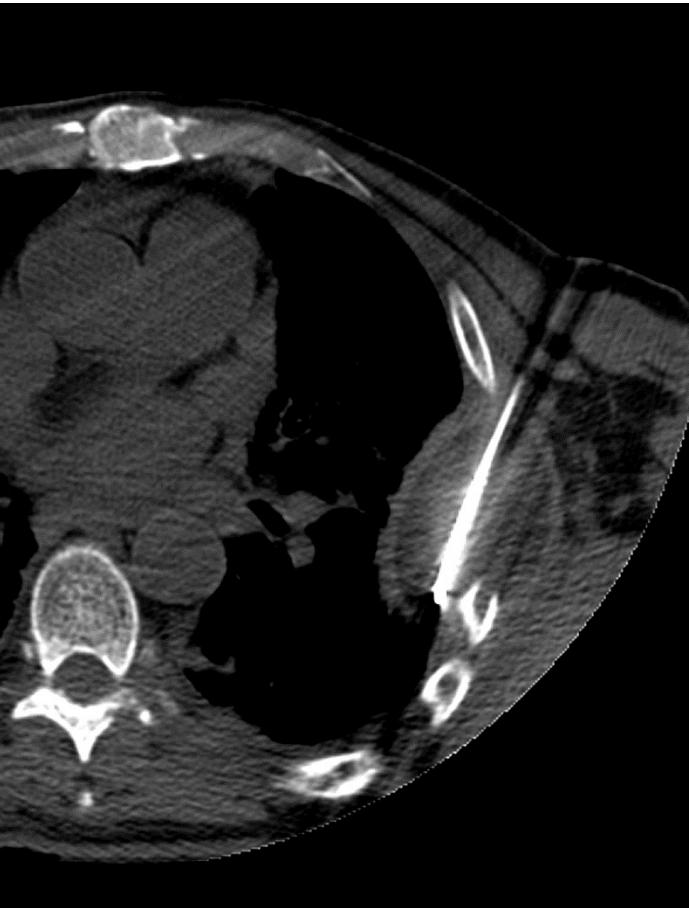
Emory University Hospital, Emory University Hospital Midtown, Children's at Eggleston, Grady Memorial Hospital, Emory Saint Josephs, and Emory Johns Creek

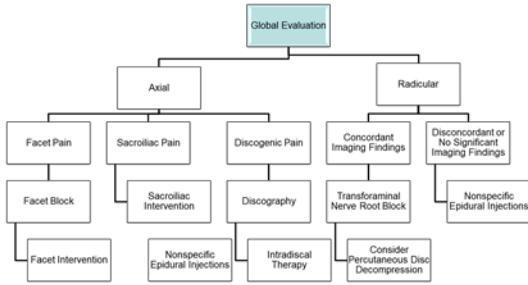
WINSHIP CANCER INSTITUTE

EMORY UNIVERSITY SCHOOL OF MEDICINE

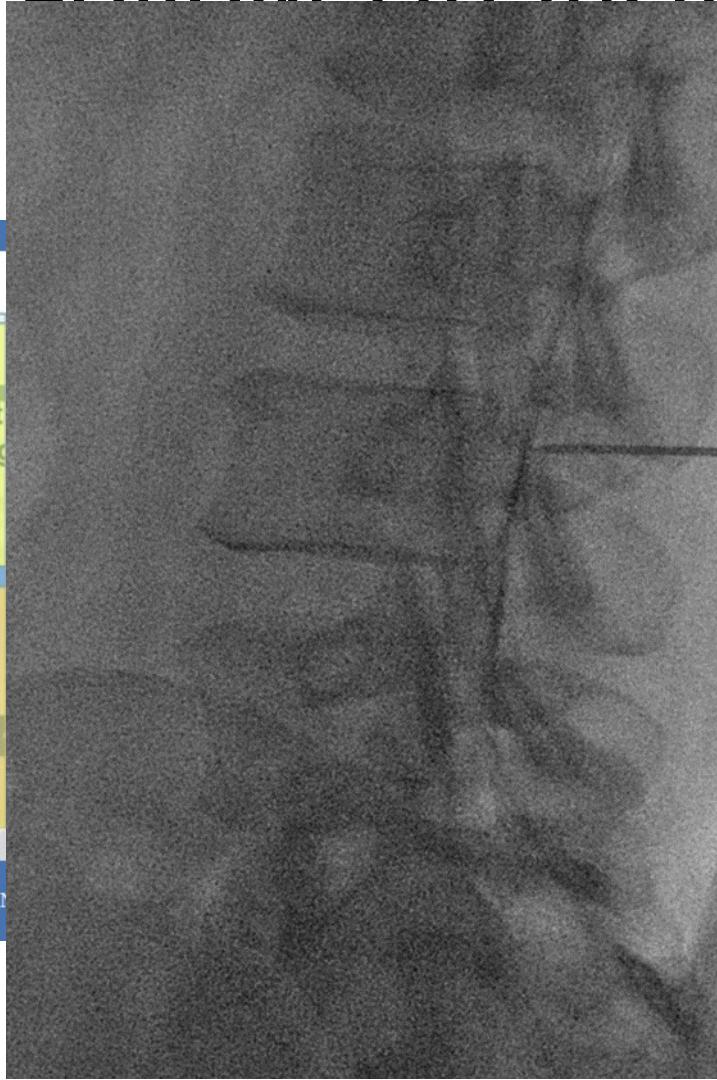
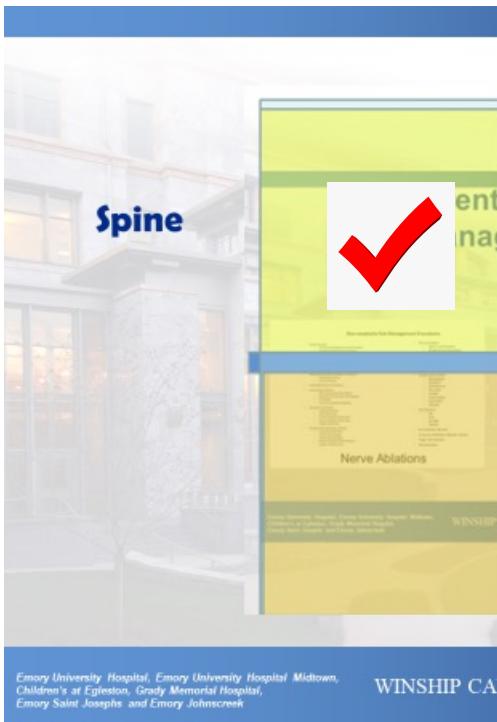
Division of Interventional Radiology and Image-guided Medicine







# Follow Up Visit



# 45-Year-Old with Pain

- Started after herniorrhaphy

The image consists of two parts. On the left is a slide from Winship Cancer Institute titled 'Cancer' with a sidebar for 'Spine'. The sidebar contains a large red checkmark. The slide lists various pain management procedures under 'Non-neoplastic, non-spinal Pain Management Procedures' and 'Nerve Ablations'. On the right is a detailed anatomical diagram of a human spine, showing the vertebrae, intervertebral discs, and surrounding soft tissue in cross-section.

**Cancer**

**Spine**

**Non-neoplastic, non-spinal Pain Management Procedures**

- Selective Nerve Root Injections
- Radiofrequency Ablation / Neurolysis / Denervation
  - Intercostal Nerves
  - Pulsed Radiofrequency Interventions
- Sympathetic Nerve Blocks
  - Stellate Nerve block
  - Celiac Plexus block
  - Lumbar Sympathetic Plexus block
  - Superior Hypogastric Plexus block
  - Ganglion Impar block
- Sympathetic Nerve Neurolysis / Ablation
  - Stellate Nerve Neurolysis
  - Celiac Plexus Neurolysis
  - Lumbar Plexus Neurolysis
  - Superior Hypogastric Plexus Neurolysis
  - Ganglion Impar Neurolysis

**Nerve Ablations**

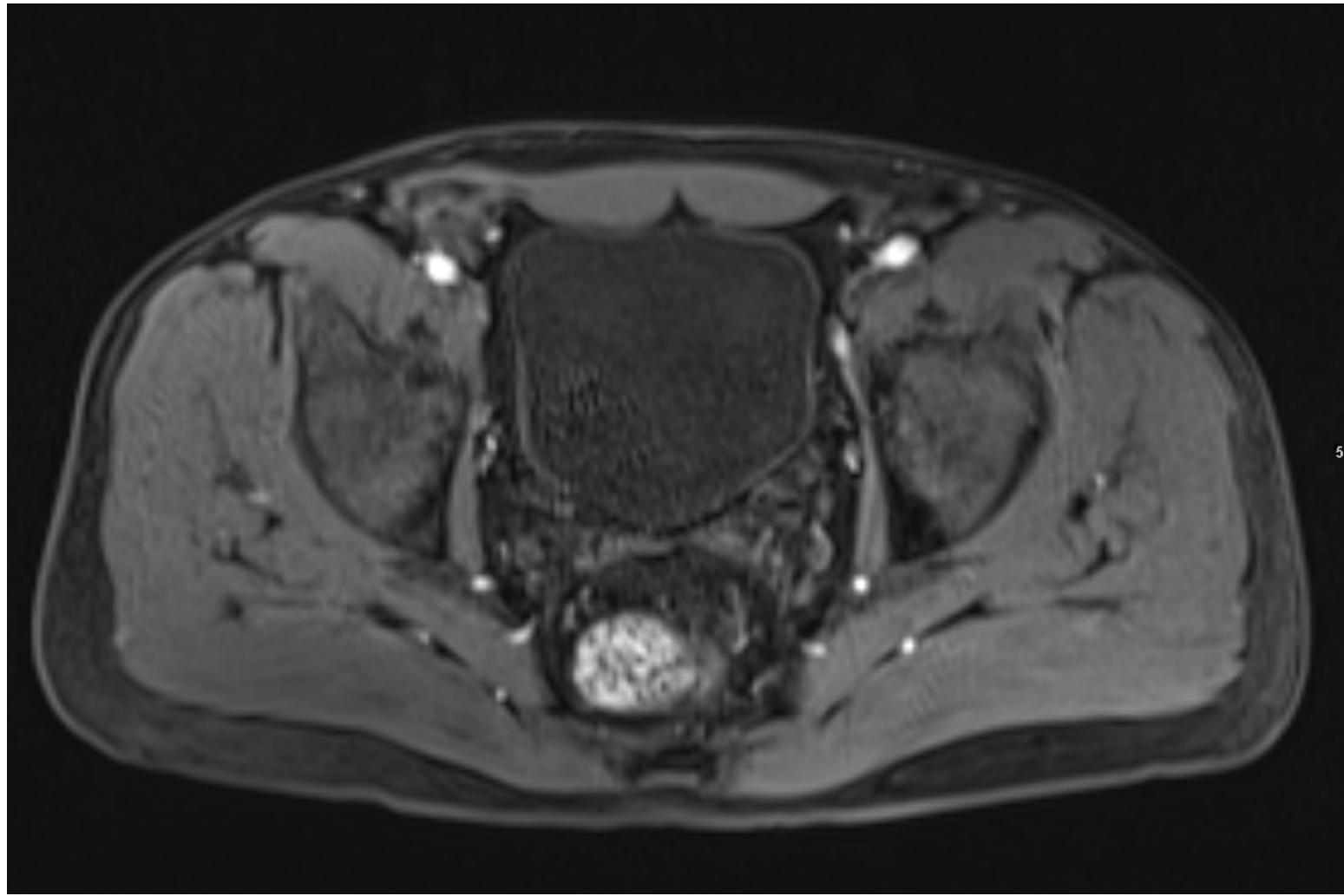
- Neuromodulation
  - Peripheral Nerve Stimulation
  - Sacral Nerve Root Stimulation
- Peripheral Nerve blocks
  - Iliohypogastric
  - Iliinguinal
  - Genitofemoral
  - Intercostal
  - Occipital
  - Supratrochlear
  - Supraorbital
  - Pudendal
- Joint Injections
  - Hip
  - Knee
  - Sacroiliac
  - Shoulder
- Bursa Injections (Bursitis)
- Intravenous Medication Diagnostic Infusion
- Trigger Point Injections
- Botox Injections

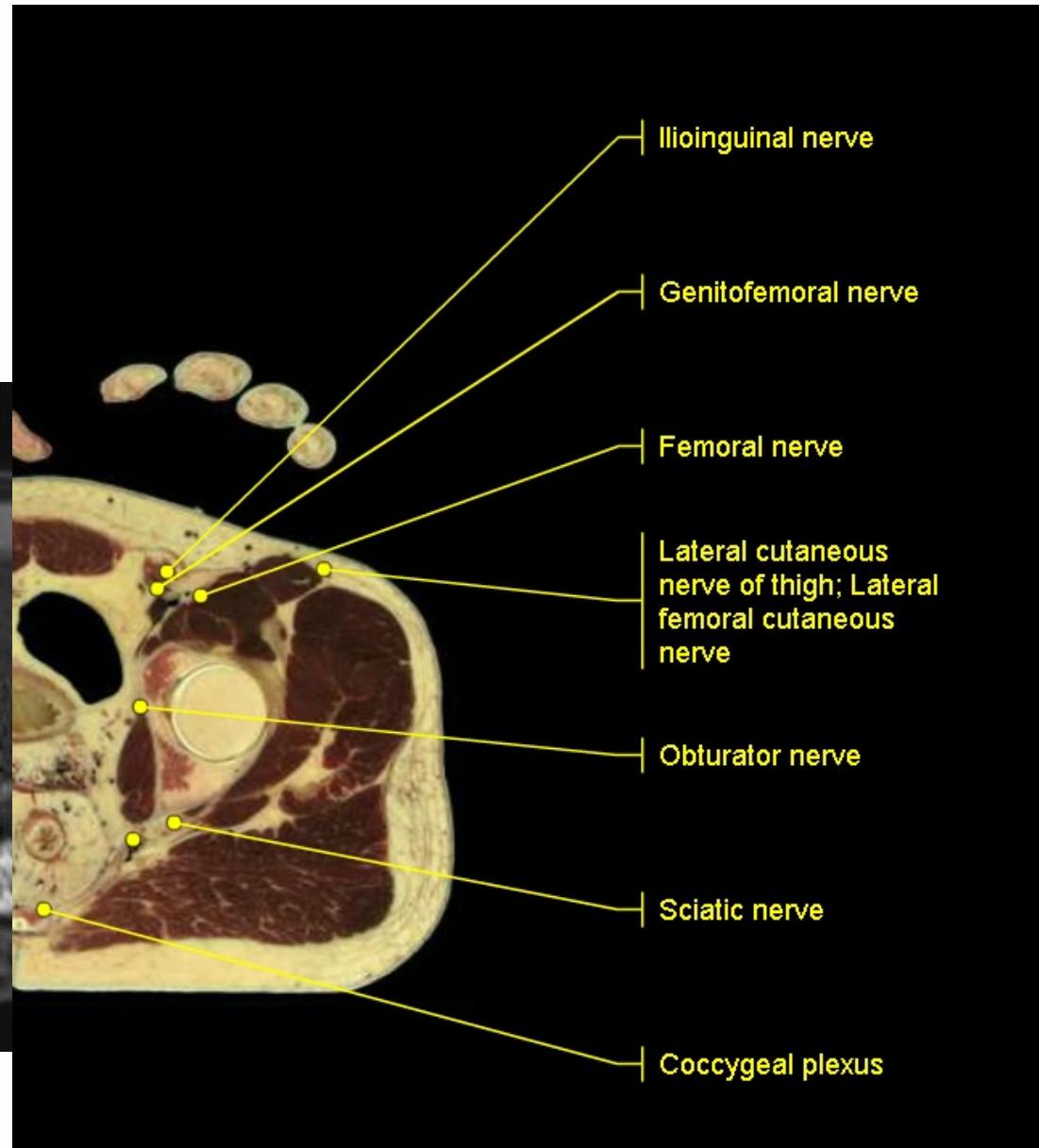
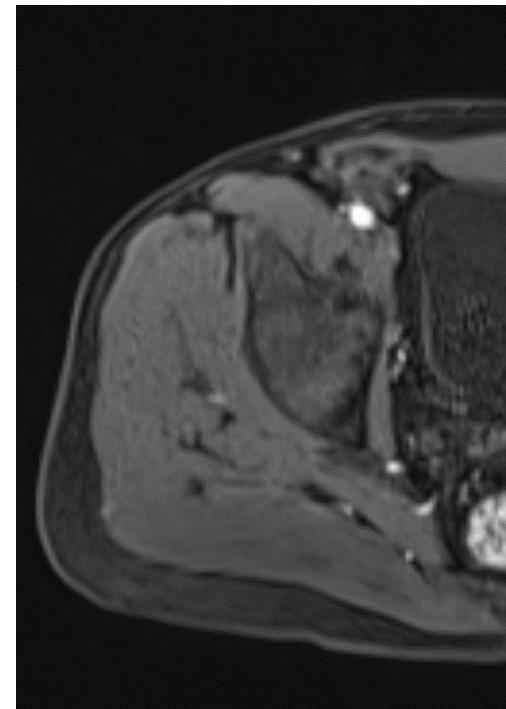
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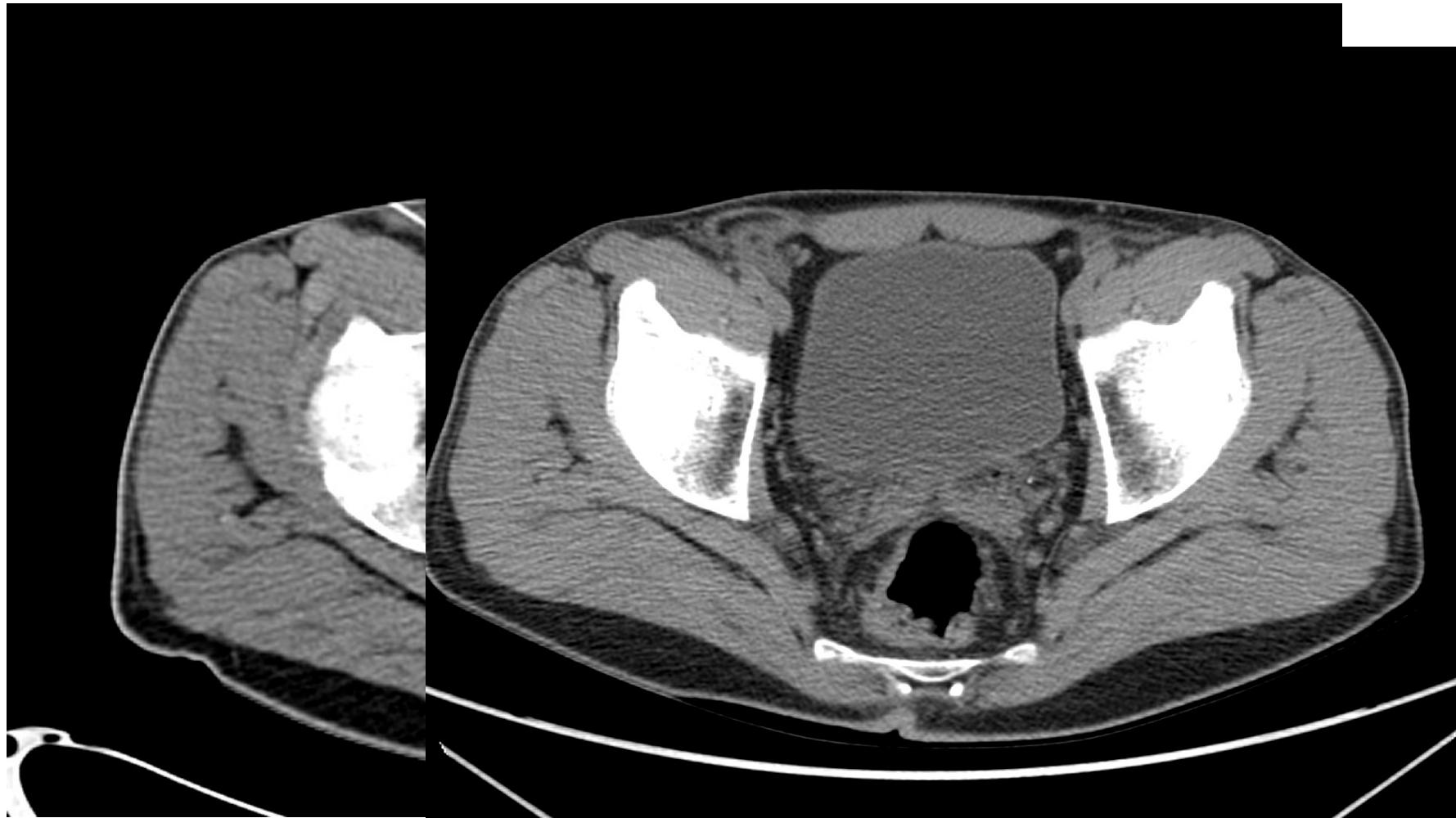
**WINSHIP CANCER INSTITUTE**

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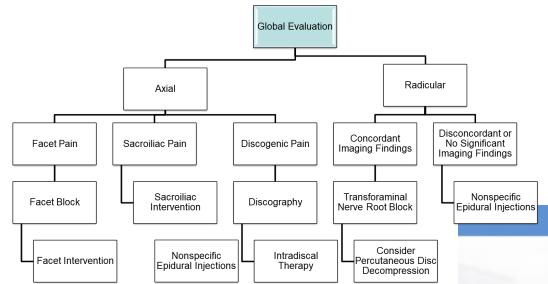
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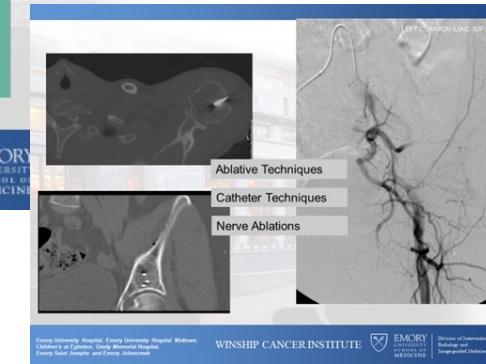






Bittman R, et al. *Semin Intervent Radiol.* 2018;35(4): 342-349.

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# Questions?

