

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 (Guided) Epidural Steroid Injection
 - Transforaminal Epidural Steroid Injection
 - Epidural Blood Patch
- Selective Nerve Root Injections
- Facet Joint Injections
 - Medial Branch Block
 - Intra-articular Facet Joint Injection
- Radiofrequency Ablation / Neurolysis / Denervation
 - Medial Branch Nerve
 - Intra-articular Nerve
- Pulsed Radiofrequency Interference
- Intrathecal Pumps
 - DDT / Neurolysis / Neurolysis
 - Pains Due to Compression / Neurolysis
 - Opioid Therapy
 - Functional Anesthetic Therapy
- Sympathetic Nerve Blocks
 - Stellate Ganglion Block
 - Celiac Plexus Block
 - Lumbar Sympathetic Plexus Block
 - Superior Hypogastric Plexus Block
 - Ganglion impar Block
- Sympathetic Nerve Neurolysis / Ablation
 - Stellate Ganglion Neurolysis
 - Celiac Plexus Neurolysis
 - Lumbar Plexus Neurolysis
 - Superior Hypogastric Plexus Neurolysis
 - Ganglion impar Neurolysis
- Neuromodulation
 - Spinal Cord Stimulation
 - Peripheral Nerve Stimulation
 - Sacral Nerve Root Stimulation
 - Intrathecal Medication Delivery
- Vertebral Interventions for Compression Fractures
 - Vertebroplasty
 - Cementation
- Peripheral Nerve Blocks
 - Brachial plexus
 - Brachial plexus
 - Cervical plexus
 - Intercostal
 - Occipital
 - Suprascapular
 - Suprascapular
 - Pudendal
- Joint Injections
 - Hip
 - Knee
 - Sacroiliac
 - Shoulder
- Bursa Injections (Bursitis)
- Intravenous Medication (Diagnostic, Infusion)
- Trigger Point Injections
- Botulinum Injections

Palliative/Neoplastic

Osseous and/or Soft Tissue Lesions

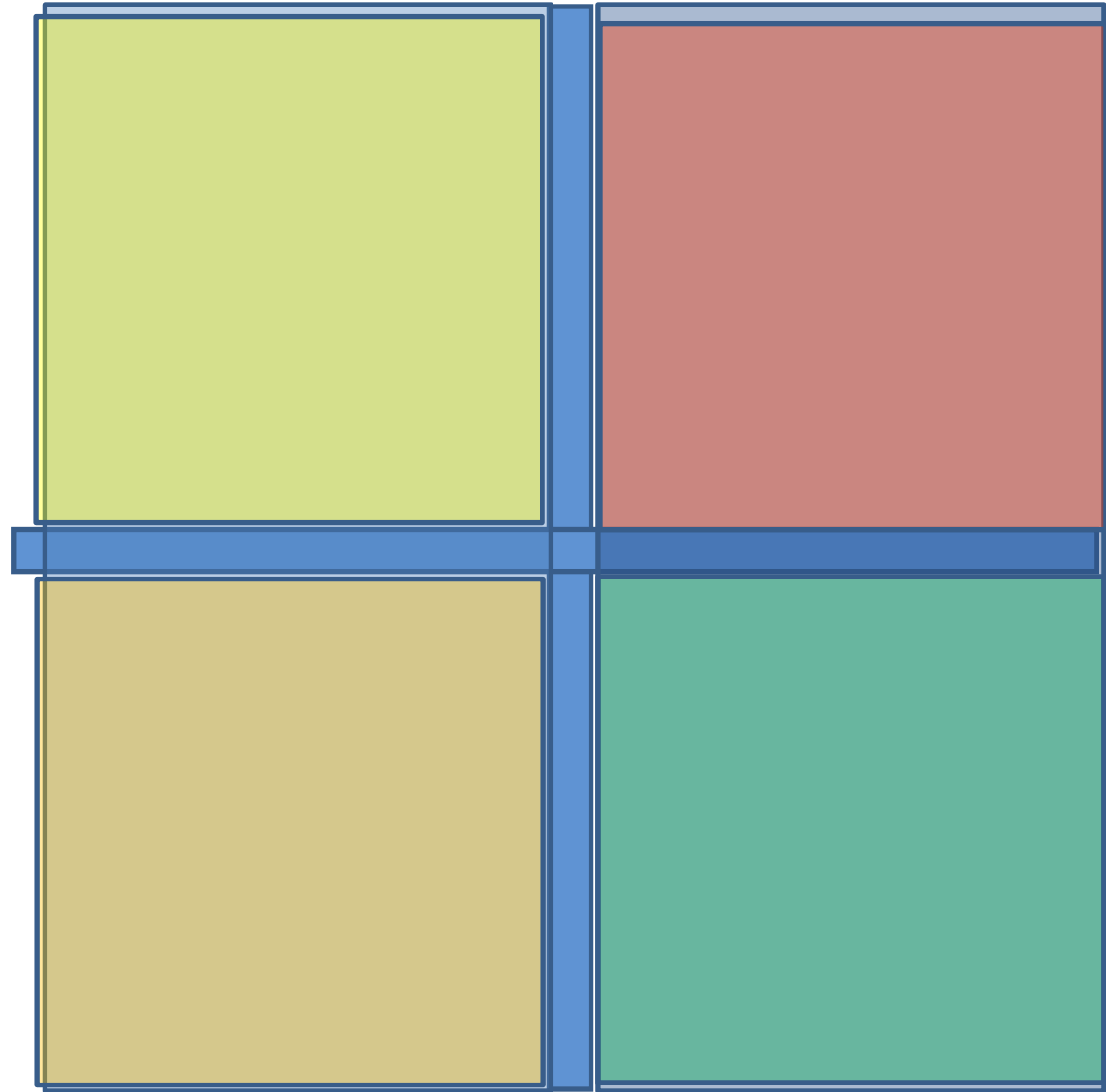
Ablative Techniques

Catheter Techniques

Nerve Ablations

Cancer?

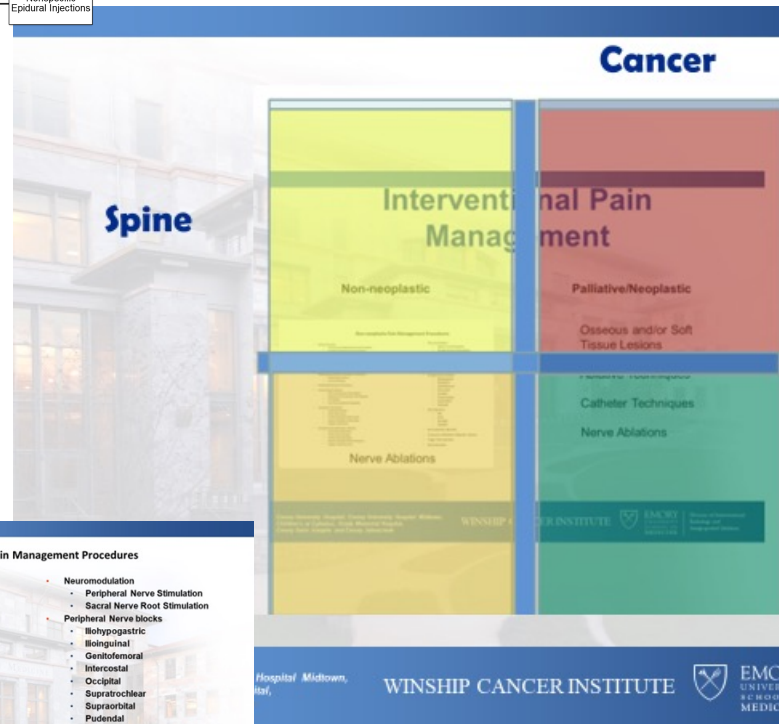
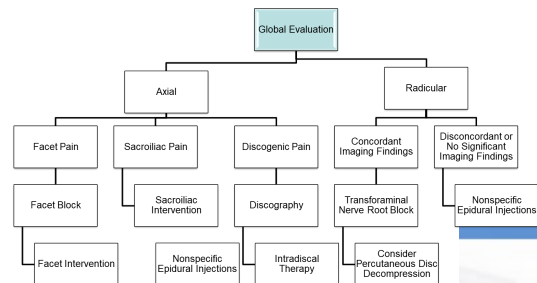
Spine?



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

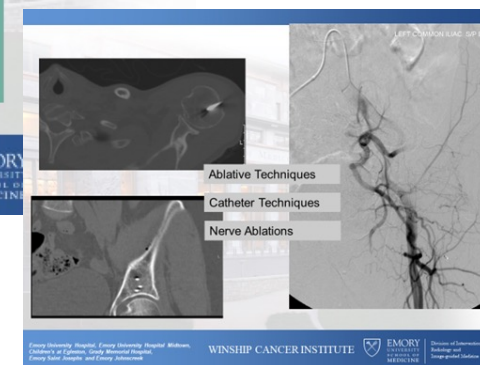
Nerve Ablations

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

57-Year-Old with Pain

Spine

Cancer

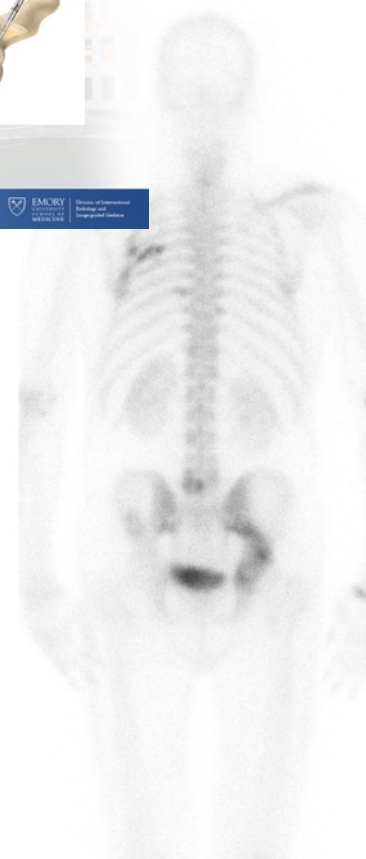
Interventional Management Non-neoplastic	Interventional Management Pain/neoplastic Osseous and/or Soft Tissue Lesions
Nerve Ablations	Catheter Techniques Nerve Ablations

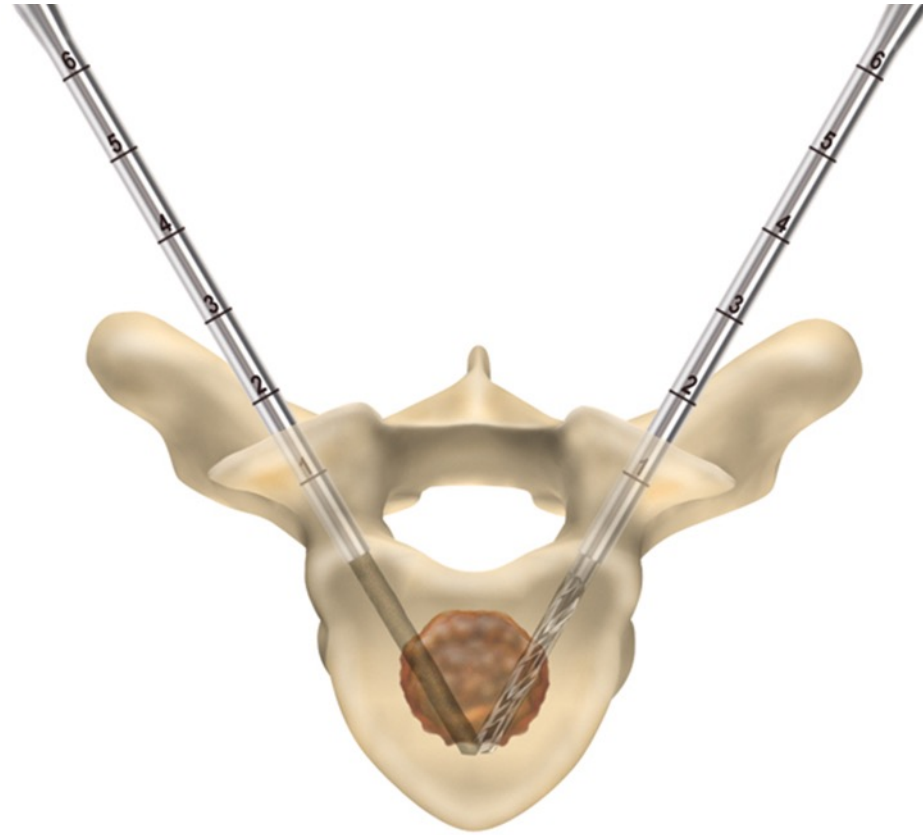
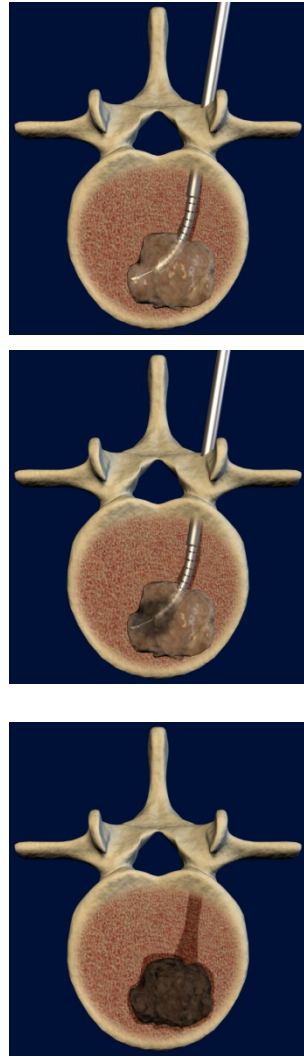
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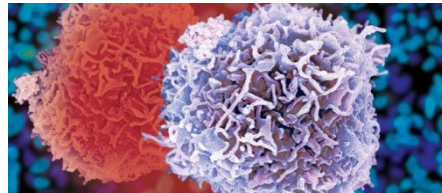
Evolution of Technology



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

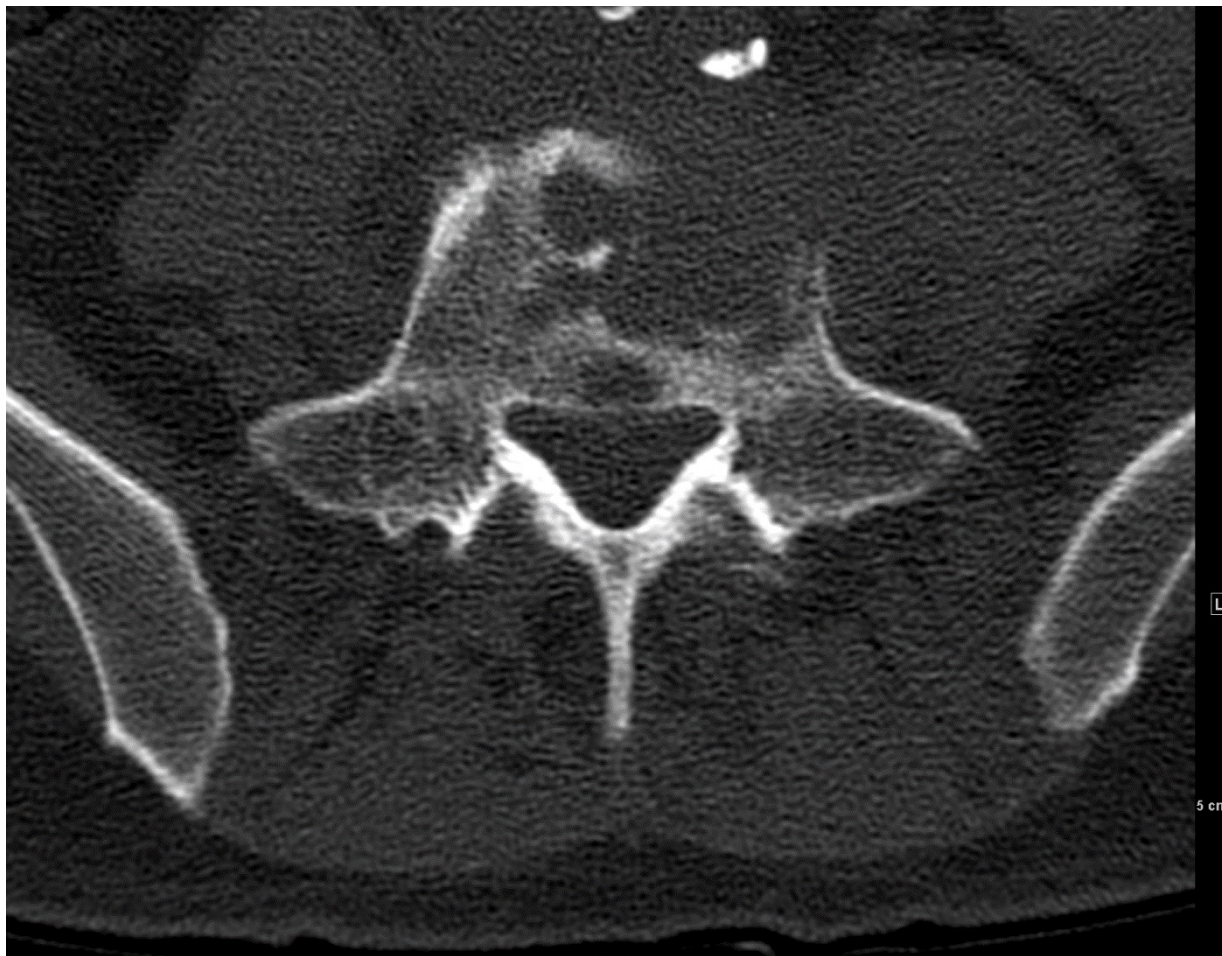
Treatment Goal... **Rapid & Lasting Pain Relief**

- Stabilize
- Debulk & decompress
- Minimize active bone destruction

Fracture

Prophylaxis

Local Control





Next Day

Spine

Cancer

Interventional Pain Management

Non-neoplastic	Palliative/Neoplastic
Osseous and/or Soft Tissue Lesions	Osseous and/or Soft Tissue Lesions
Nerve Ablations	Catheter Techniques Nerve Ablations

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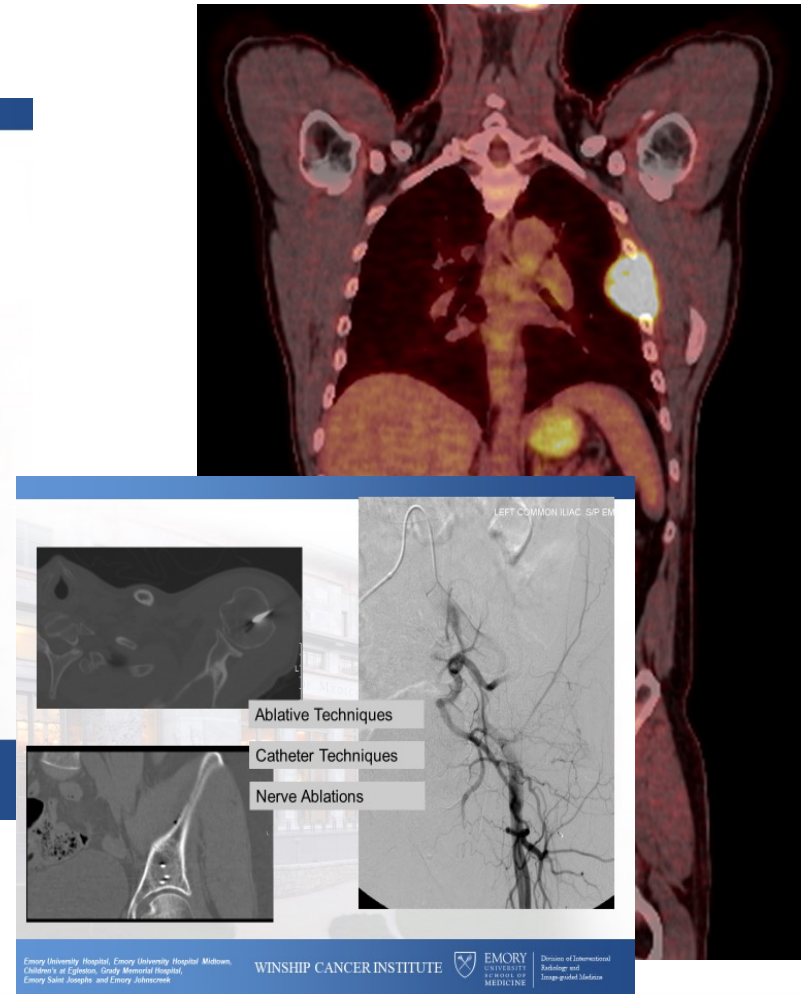
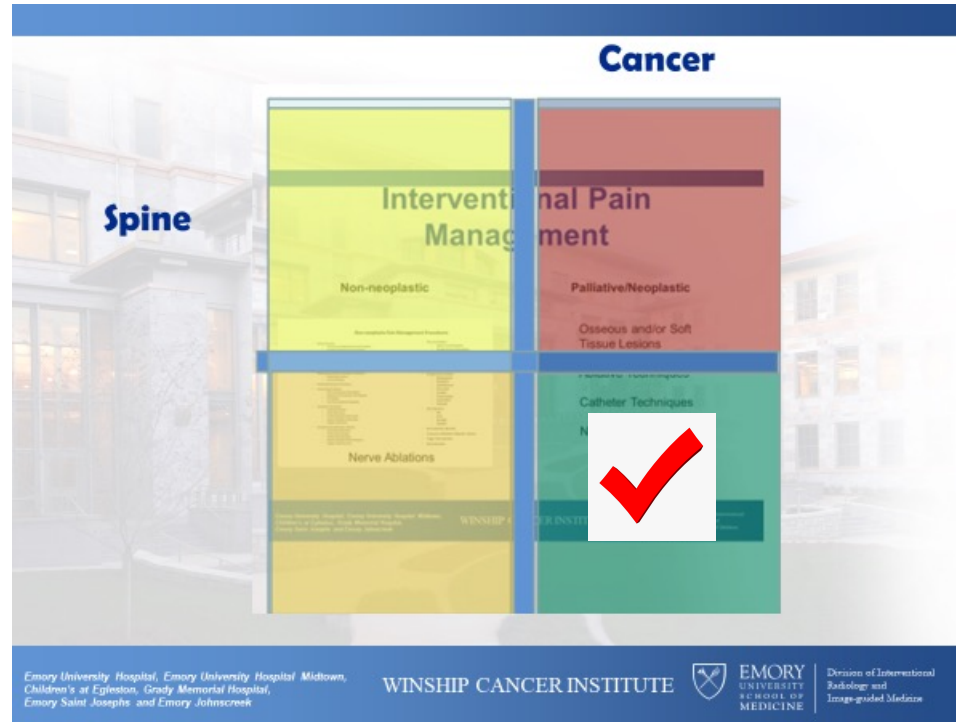
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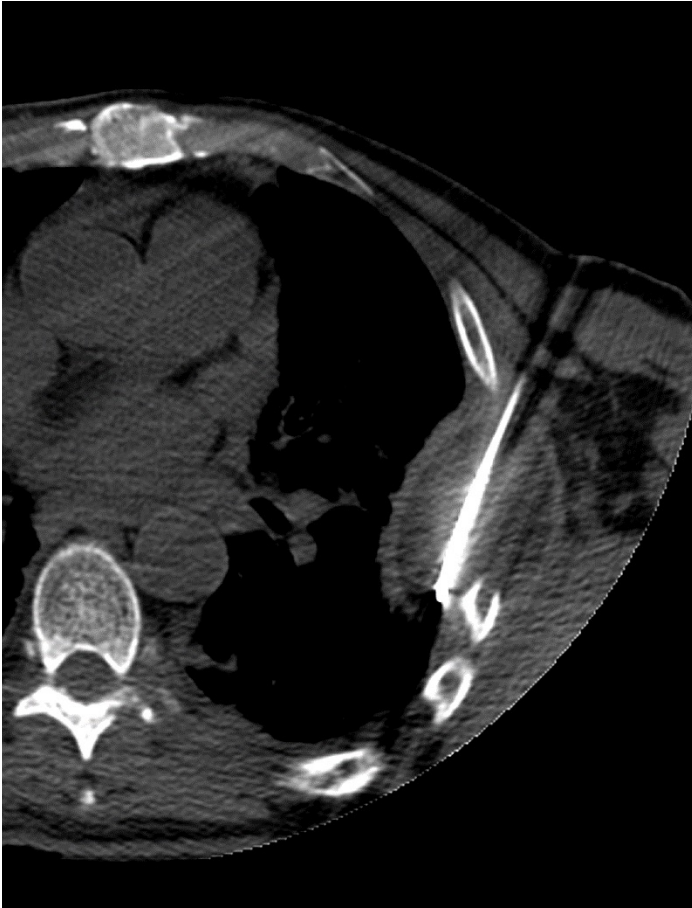
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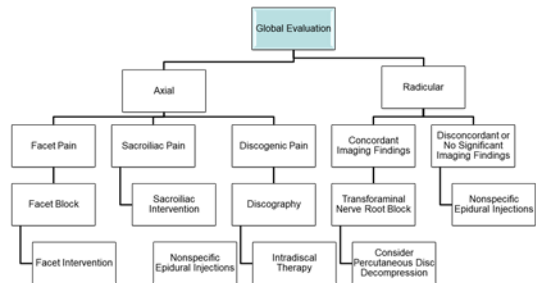
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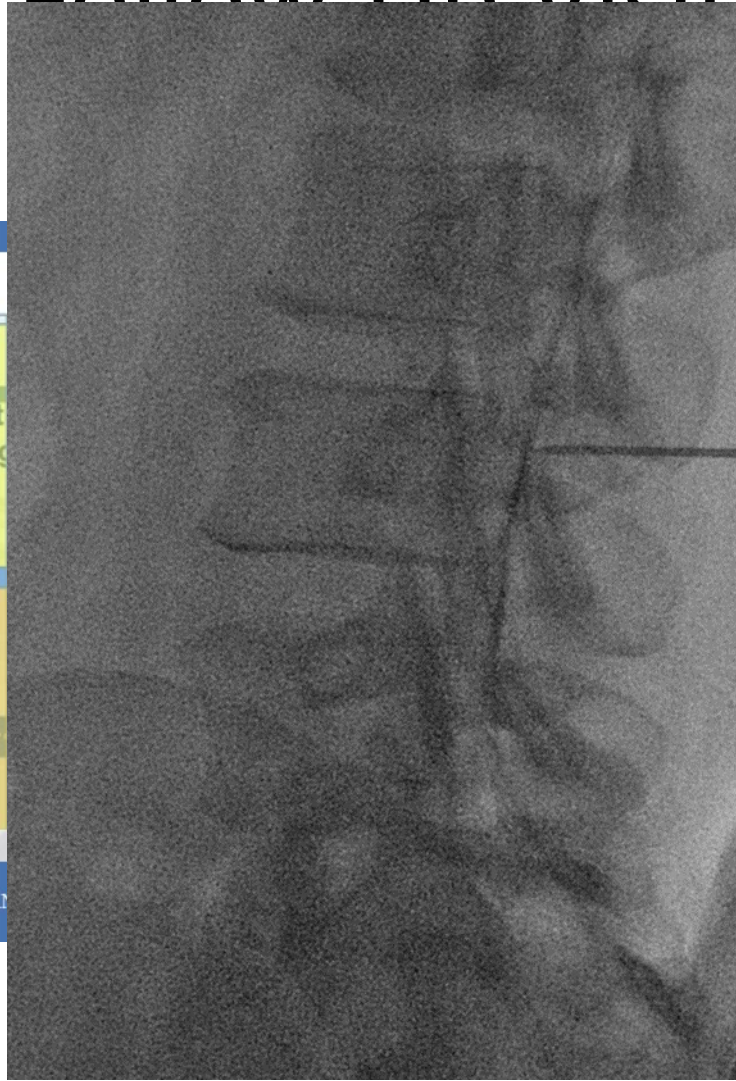
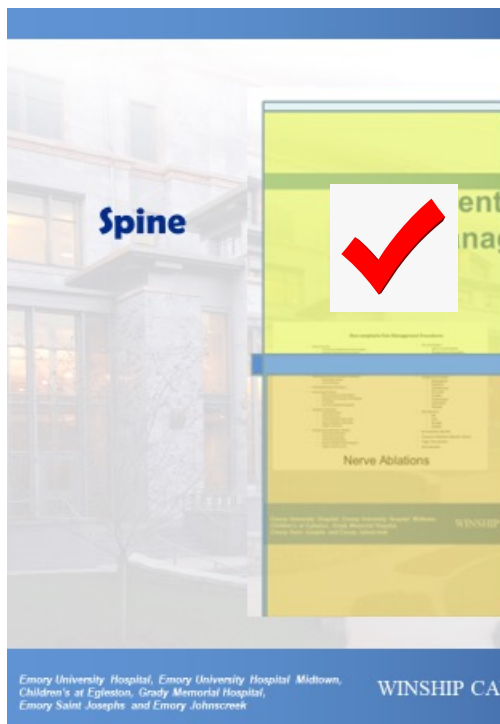
Follow-Up Visit








Follow Up Visit



45-Year-Old with Pain

- Started after herniorrhaphy




Cancer

Spine

Interventional Pain Management

Non-neoplastic



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Nerve Ablations

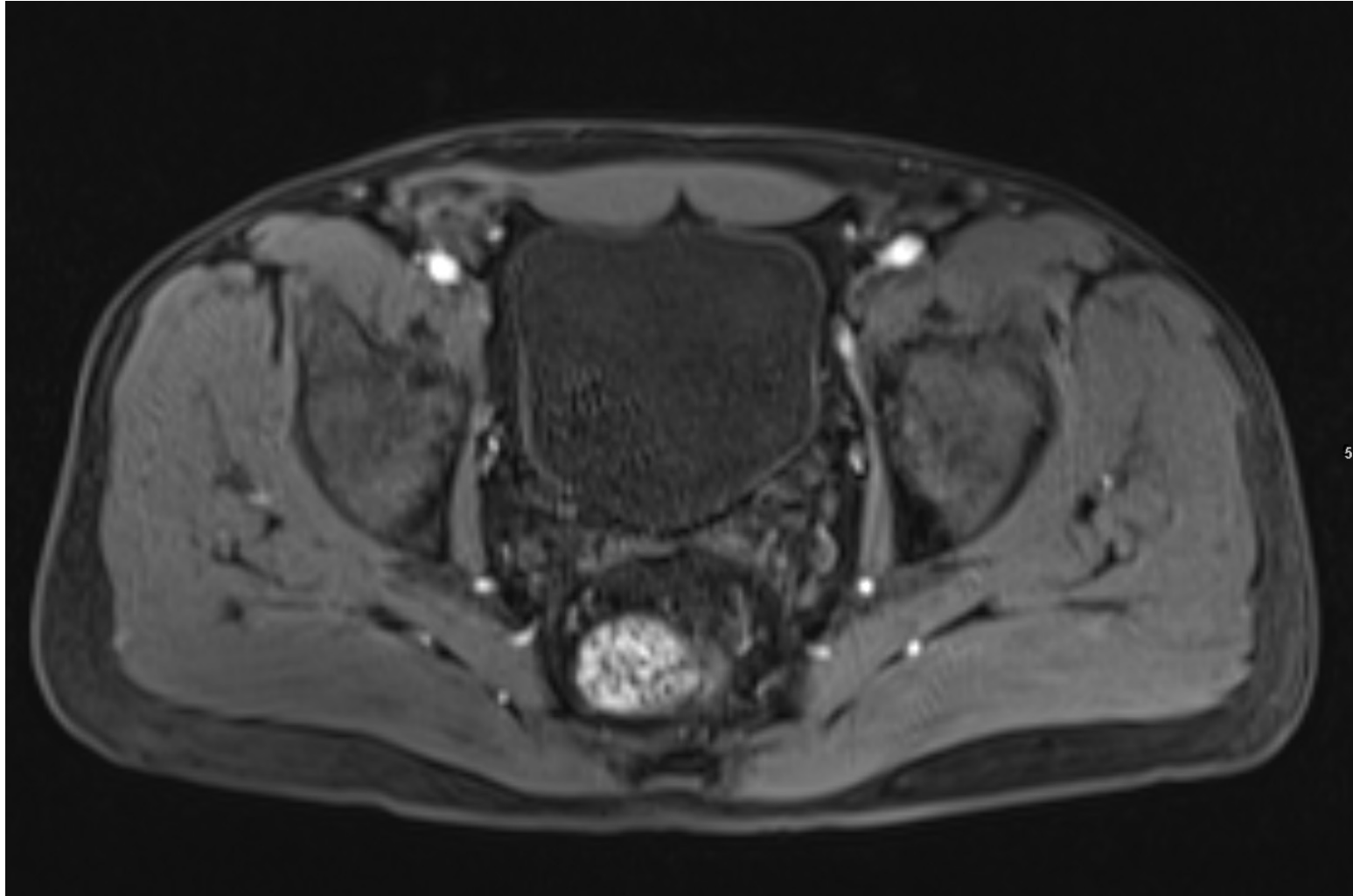
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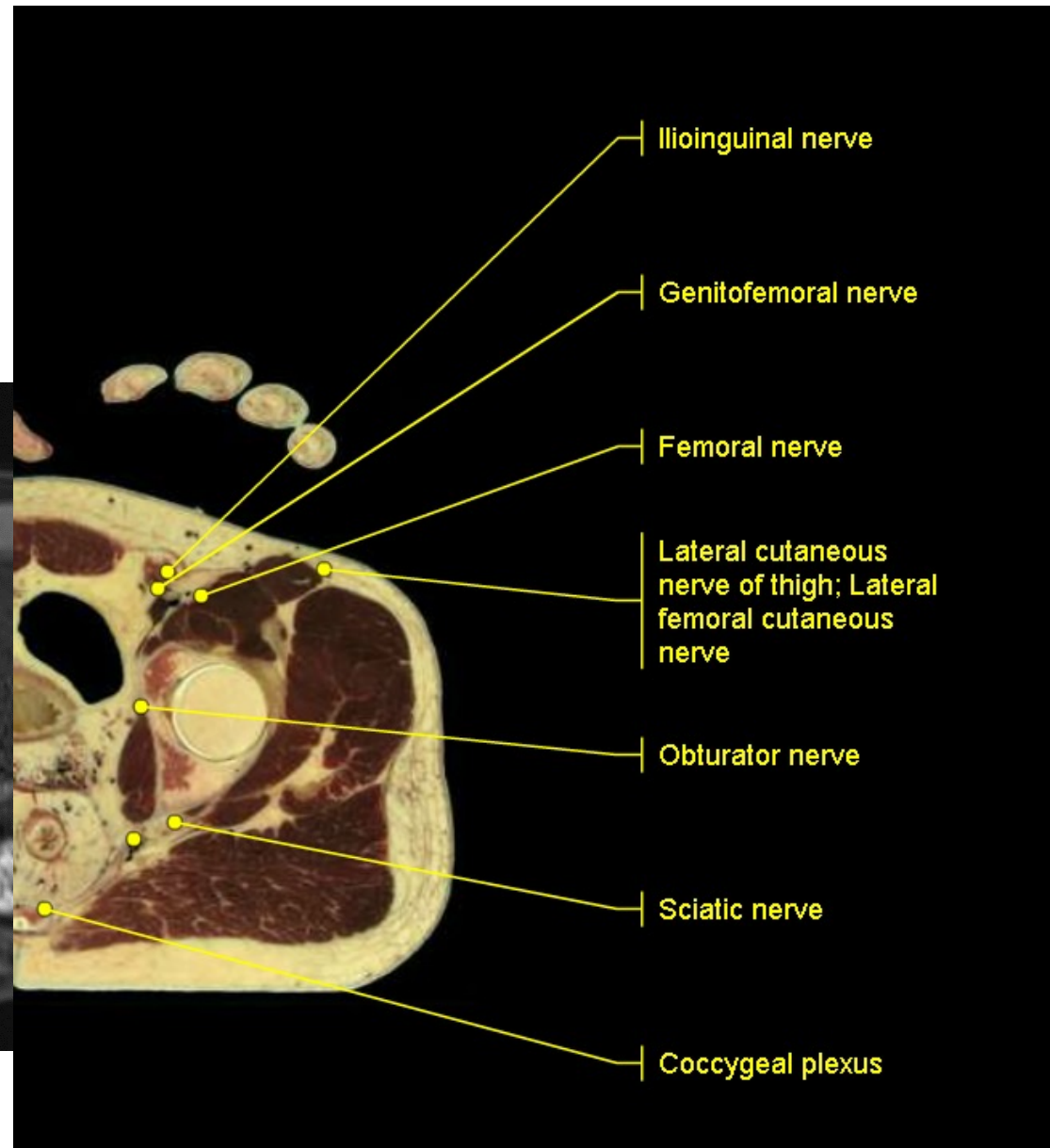
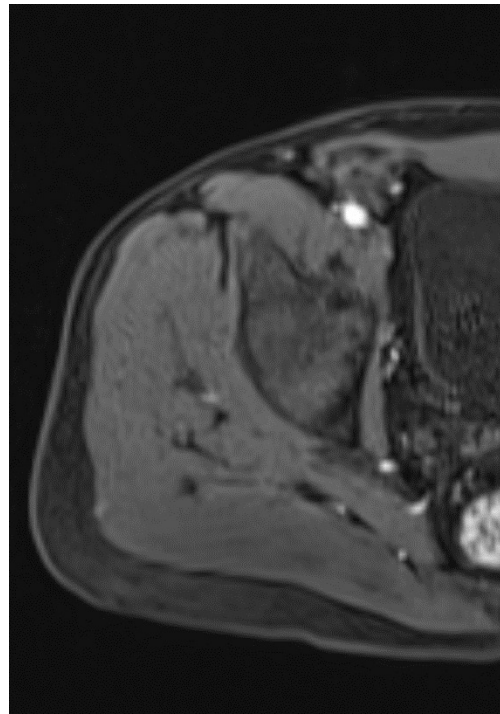
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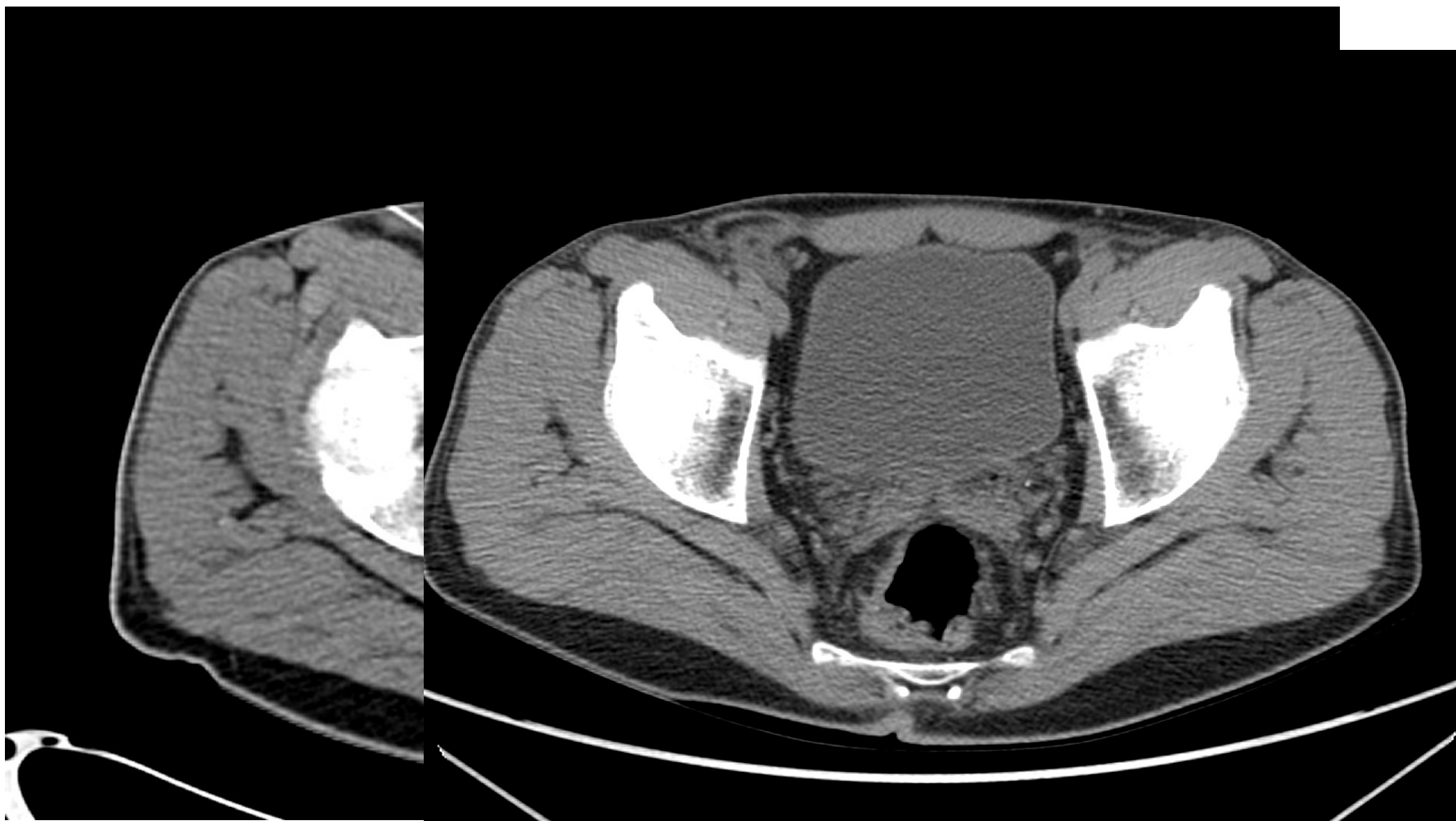
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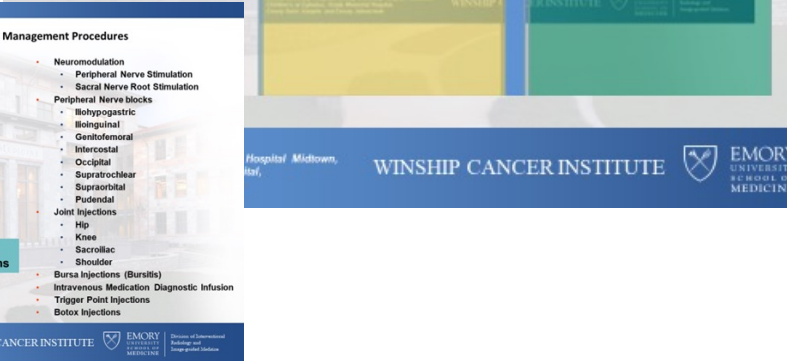
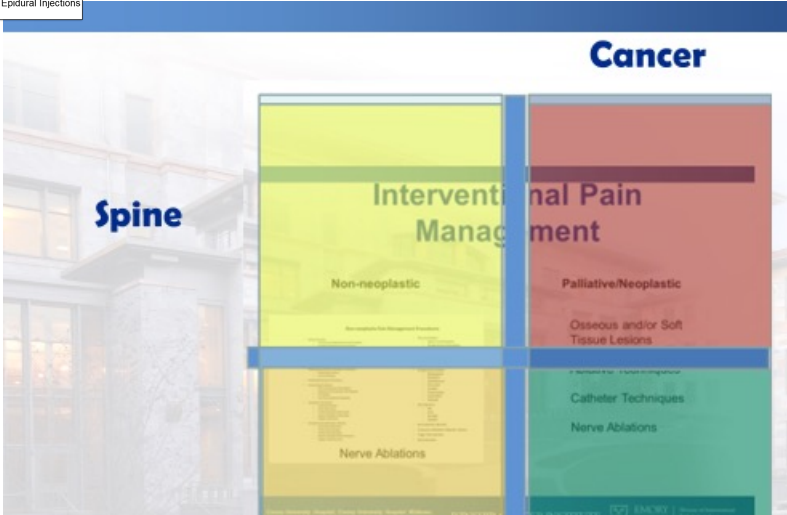
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Questions?

