

# Failed Back Surgery Syndrome

UZONDU F. AGOCHUKWU MD  
PROFESSOR  
PROGRAM DIRECTOR, ORTHOPAEDIC SURGERY RESIDENCY  
CO-DIRECTOR, SPINE AND RECONSTRUCTIVE SURGERY FELLOWSHIP  
MCG ORTHOPAEDICS @WELLSTAR MCG HEALTH

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## DISCLOSURES

- ▶ SPINAL ELEMENTS
  - ▶ CONSULTING & ROYALTIES
- ▶ ULRICH MEDICAL
  - ▶ CONSULTING & ROYALTIES
- ▶ GLOBUS MEDICAL
  - ▶ TEACHING
- ▶ ALPHATEC SPINE
  - ▶ TEACHING
- ▶ AO Spine North America
  - ▶ Fellowship Support
- ▶ AO Spine North America Research Committee



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## OUTLINE

- ▶ Definition of FBSS
- ▶ Pathogenesis
- ▶ Risk factors
  - ▶ Preoperative, intraoperative, and patient
- ▶ Work-up
- ▶ Case examples



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### Failed Back Surgery Syndrome (FBSS)

- ▶ As defined by the International Association for the Study of Pain
  - ▶ Lumbar spinal pain of unknown origin either
    - ▶ Persisting despite surgical intervention
    - ▶ Appearing after surgical intervention
    - ▶ For spinal pain originally in the same topographical location

Thus, failed back surgery syndrome is a syndrome with many causative etiologies and marked heterogeneity among patients

Baber Z, Erdek MA. Failed back surgery syndrome: current perspectives. J Pain Res. 2016;9:979-987



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### Failed Back Surgery Syndrome (FBSS)

- ▶ Increasing volume of spinal surgery
  - Aging population
  - Evolving spinal technologies
  - Expanding surgical indications
  - Lack of consensus and standards
- ▶ Increasing volume of failed back surgery



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### Failed Back Surgery Syndrome

- ▶ 500,000 lumbar surgeries / year
- ▶ The number of primary lumbar fusions increased by 170% from 1998 to 2008
- ▶ Failure rate: Vary, higher with increased complexity
  - ▶ Lumbar fusion 30-46%
  - ▶ Microdiscectomies 19-25%
- ▶ Reoperation rate: 12- 15%
- ▶ 25% fail to return to original job
- ▶ 10% are unable to work

Shapiro CM. The failed back surgery syndrome: pitfalls surrounding evaluation and treatment. Phys Med Rehabil Clin N Am. 2014 May;25(2):319-40



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### Why does back surgery fail ?

- ▶ The three W's of surgical failure:
  - ▶ The wrong diagnosis
  - ▶ The wrong patient
  - ▶ The wrong surgery
- ▶ Complications
- ▶ New Diagnosis

FBSS: Dx of Exclusion!!!!

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### The Wrong Diagnosis

- ▶ Conditions presenting with back/leg symptoms
  - ▶ Sacroiliac Joint Pain
  - ▶ Facet Joint Pain/Syndrome
  - ▶ Hip/knee osteoarthritis
  - ▶ Vascular claudication
  - ▶ Peripheral neuropathies (DM, ETOH, Vit def.)
  - ▶ Nerve sheath tumor
  - ▶ Aortic aneurysm
  - ▶ Pelvic disease
  - ▶ Chronic pain syndrome, fibromyalgia

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This is not a strut graft

Vascular clinic consultation!

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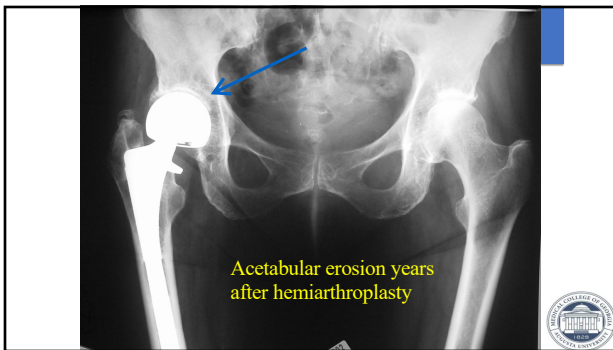
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### The Wrong Patient

- ▶ Abnormal psychological profile
  - ▶ Depression, Anxiety
- ▶ Narcotic dependency
- ▶ Hx of drug/ETOH abuse
- ▶ Worker's Compensation
- ▶ Litigation (personal injury)
- ▶ Chronic pain syndromes

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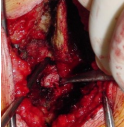

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### The Wrong Surgery

- ▶ Incomplete decompression:
  - Lateral recess/foramen
  - Minimal access approaches
- ▶ Inadequate stabilization
  - Failure to recognize instability
- ▶ Incorrect level:
  - Intraoperative imaging
- ▶ Operating at a single level when pathology spans several levels



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### Inappropriate Spinal Surgery

- ▶ North: Neurosurgery 1991
  - ▶ 102 patients with repeat surgery
  - ▶ 5 year follow-up
  - ▶ 50% had not met the accepted criteria for the primary procedure



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### Failed Back Surgery

- ▶ Complications
  - ▶ Neural injury: neuropathic pain
  - ▶ Infection: wound, discitis
  - ▶ Pseudomeningocele
  - ▶ Hardware misplacement
  - ▶ Pseudoarthrosis



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**Failed Back Surgery:**

- ▶ New Pathology
  - ▶ Recurrent disc herniation
  - ▶ Lateral recess stenosis
  - ▶ Adjacent level canal stenosis
- ▶ Instability:
  - Iatrogenic
  - Adjacent level
  - Hardware/fusion failure



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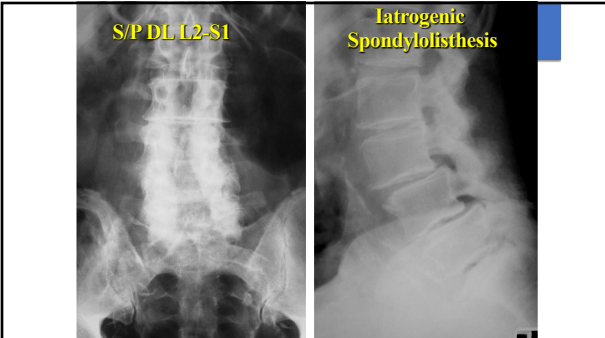
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**Managing the Patient with Significant Psychosocial Overlay**

- ▶ Ignore your bias – work them up
- ▶ Acknowledge their pain
- ▶ Know your limitations
- ▶ Define your limitations to the patient
- ▶ Rigidly adhere to surgical indications
- ▶ Guide them to the appropriate next step



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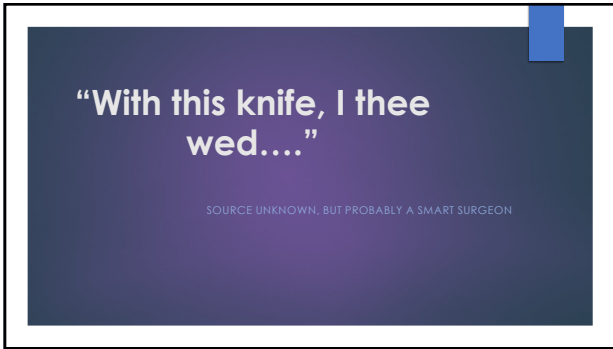
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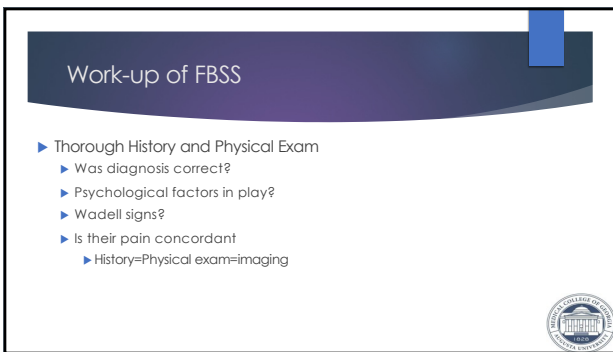
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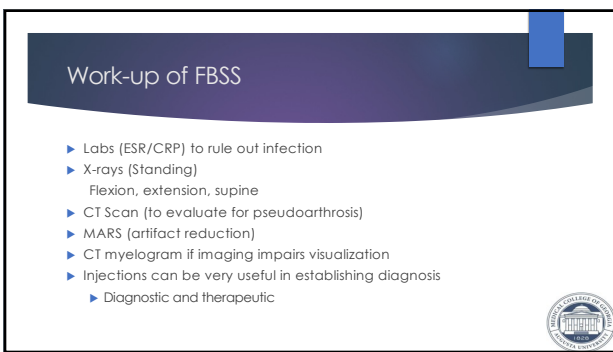
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Case 1

- ▶ 70 yo female who presents with the complaint of left leg pain
- ▶ Underwent a right sided L4-5 microdiscectomy 3 months ago
- ▶ Notes initial improvement, but has had severe left leg pain x 3 weeks
- ▶ Denies any weakness



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Case 1

- ▶ Physical Exam
  - ▶ Motor strength 5/5 in L3-S1 distribution bilaterally
  - ▶ Decreased sensation on the right at L4 and L5, otherwise intact
  - ▶ + straight leg raise on the right



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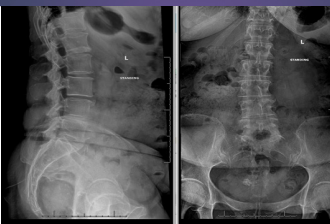
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Upright Radiographs



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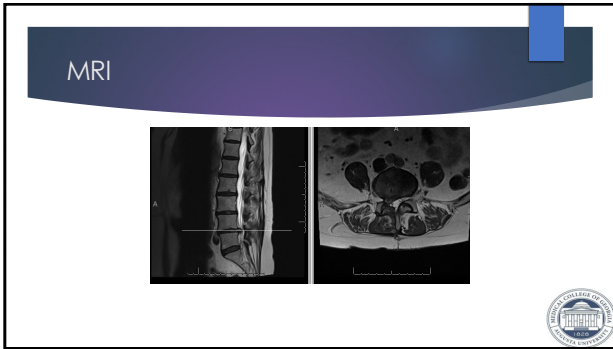
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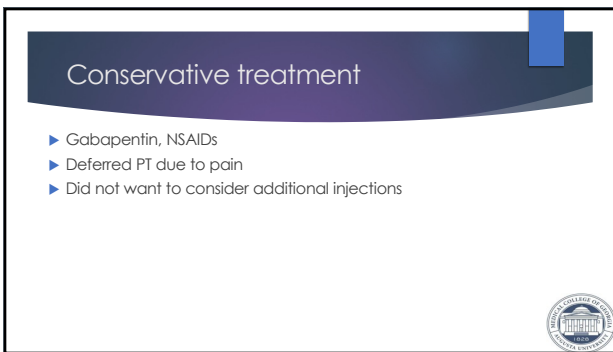
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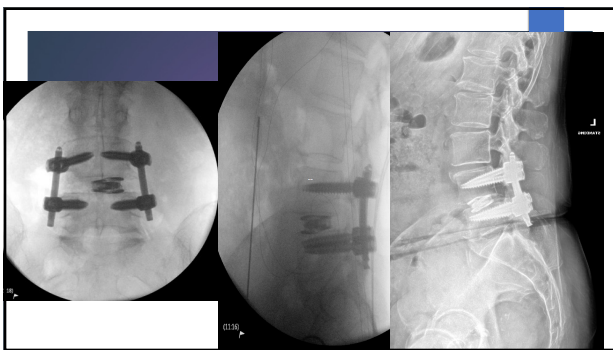
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Case 2

- ▶ 64 y/o male with LBP and walking intolerance
- ▶ S/P L3-S1 decompression and fusion 5 years ago
- ▶ Works full time
- ▶ Requires a walker
- ▶ 6'3" & 350lbs
- ▶ Smokes ½ ppd
- ▶ No narcotics



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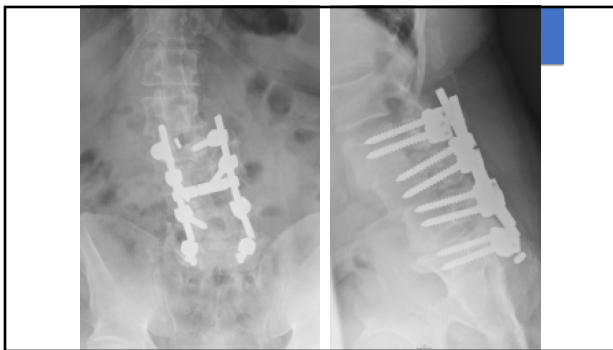
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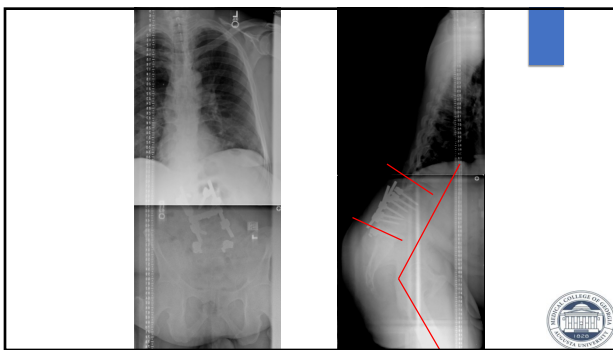
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What is the deformity?

1. Assumed lumbar kyphosis
2. Fixed lumbar kyphosis
3. Assumed hip flexion contracture
4. Fixed hip flexion contracture
5. Undetermined



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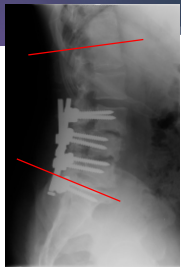
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Exam

- ▶ Neurologically nrl
- ▶ Sagittal imbalance
  - ▶ But he can assume a supine position
  - ▶ No hip flexion contracture



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What is the etiology of the pseudoarthrosis?

1. Smoker
2. Hardware failure
3. Infection

- ▶ Infection labs nrl
- ▶ Tagged white cell study nrl



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After smoking cessation, what do you recommend?

1. Posterior revision L2-S1
2. Anterior/posterior revision L2-S1
3. Posterior revision – longer construct to ilium
4. Combined ant/post longer construct to ilium



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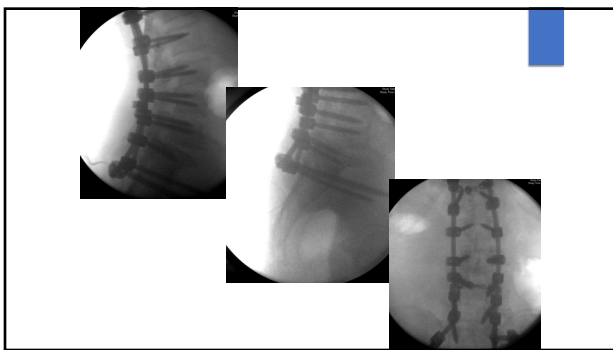
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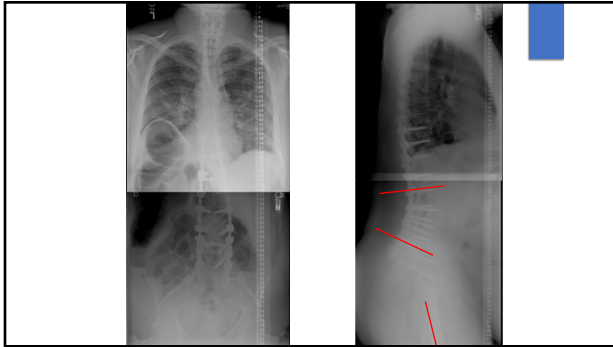
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### Case 3

- Patient History and Exam
- 71 yo male with left greater than right leg pain
- Has been present since 2010. Had a L5-S1 PSF in 2012 w/o relief
- Symptoms are worsened with prolonged walking or standing
- Relieved with bending forward or sitting
- 5/5 strength in L3-S1 distribution. Normal sensation in L3-S1 distribution
- Negative straight leg raise
- PSHx: Open prostate and bladder cancer surgery (radiation as well)



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### IMAGING

- Has prior instrumented fusion from L5-S1
- Haloing of S1 screws
- Stacking of L4 on L5, and L5 on S1, indicating likely foraminal stenosis
- Grade 1 spondylolisthesis of L5-S1



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**Treatment Options?**

- ▶ Conservative treatment
- ▶ Symptoms worsened with physical therapy
- ▶ Significant improvement with L4-5 and L5-S1 epidural injections, relief last 1-2 weeks



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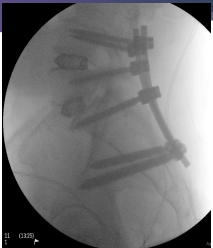
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**Final Imaging/Results**

- Pt with 2 prior abdominal surgeries
- Significant retroperitoneal scarring



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**Case 4**

- ▶ 54 yo female who presents 1.5 years s/p L3-S1 decompression and fusion. Did well initially. Presented 10/2019 with worsening leg and back pain
- ▶ Primary complaint anterior thigh pain R>L and back pain
- ▶ 5/5 strength L3-S1 bilaterally
- ▶ Hypoesthesia's bilaterally at L3



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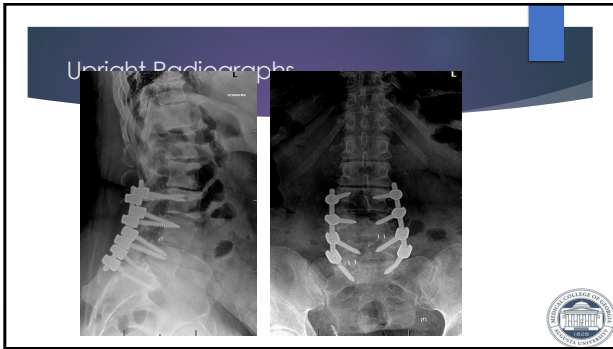
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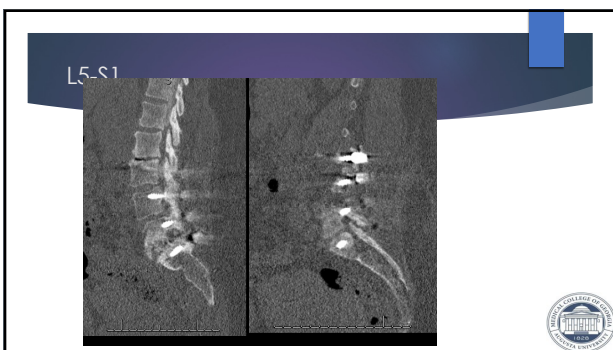
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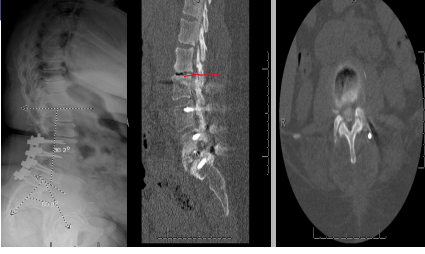
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### Alignment Films, CT

PI 40  
LL 36.2  
Mismatch 13.8



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### Conservative Care

- ▶ Failed 4 months PT
- ▶ Normal exam
- ▶ 90% resolution of leg pain with L2-3 TFESI, lasted for 2 weeks



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### Thoughts?



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Case 5

- ▶ 72 yo male presented with 4 year history of low back pain
- ▶ Underwent L3-S1 MIS TLIF 2 years ago. Pain was unchanged after surgery
- ▶ Primary complaint was low back pain. Has never had leg pain
- ▶ PMHx: noncontributory



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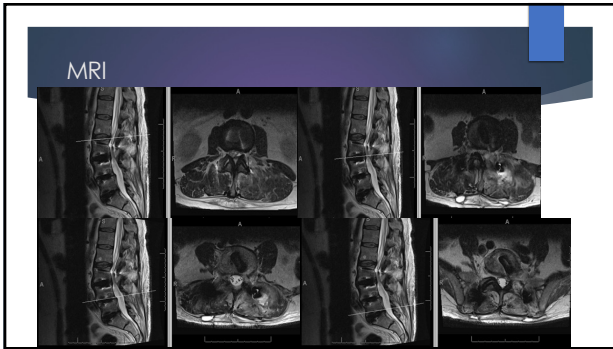
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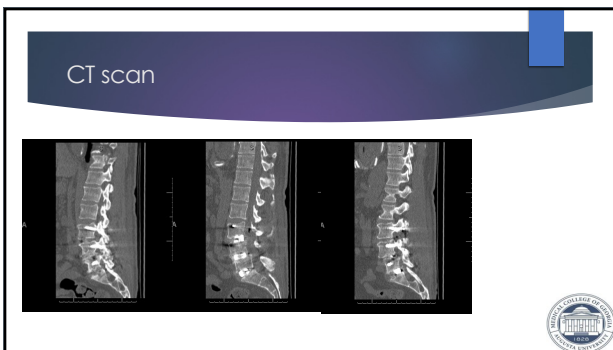
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▶ Underwent an additional 3 months of physical therapy without relief

▶ Referred to pain management. Underwent epidural and facet injections without relief

▶ Spinal cord stimulator trial resulted in 80% relief of low back pain

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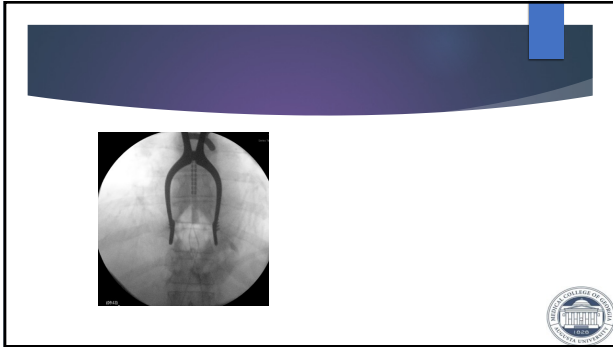
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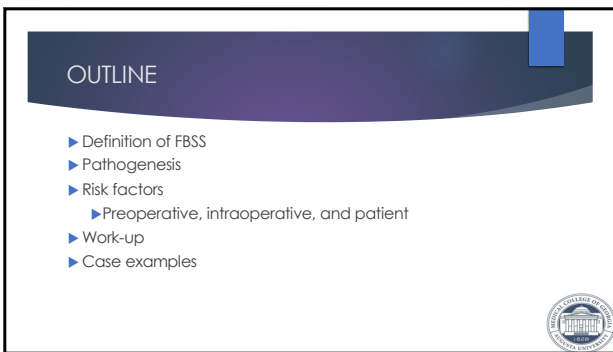
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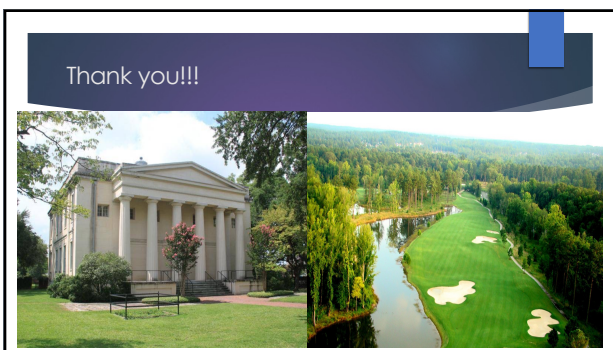
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