

Cervical Disc Disease & Surgical Options



Chadi Tannoury, MD

Medical Director, Orthopedics

Director, Spine Research

Assistant Professor, Orthopedic Spine Surgery

Boston University Medical Center

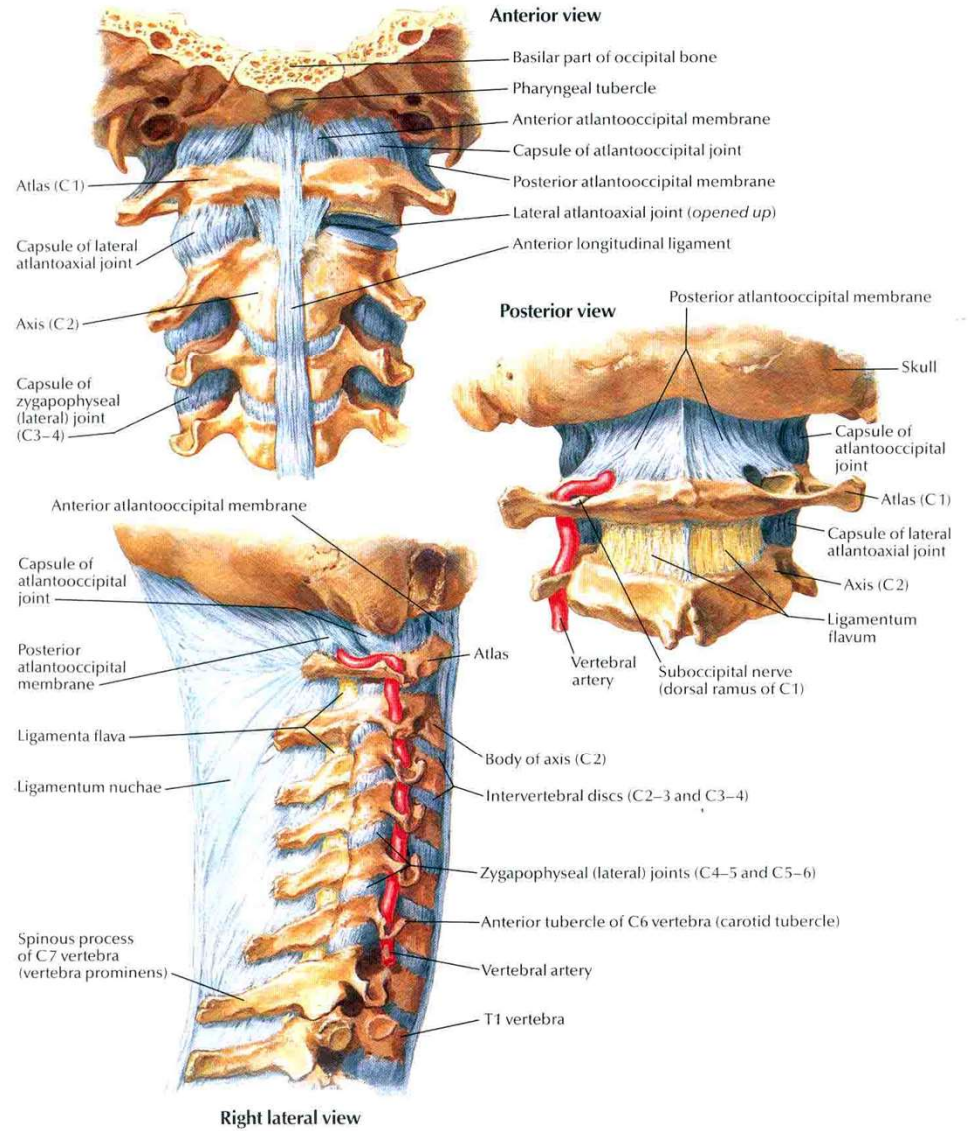
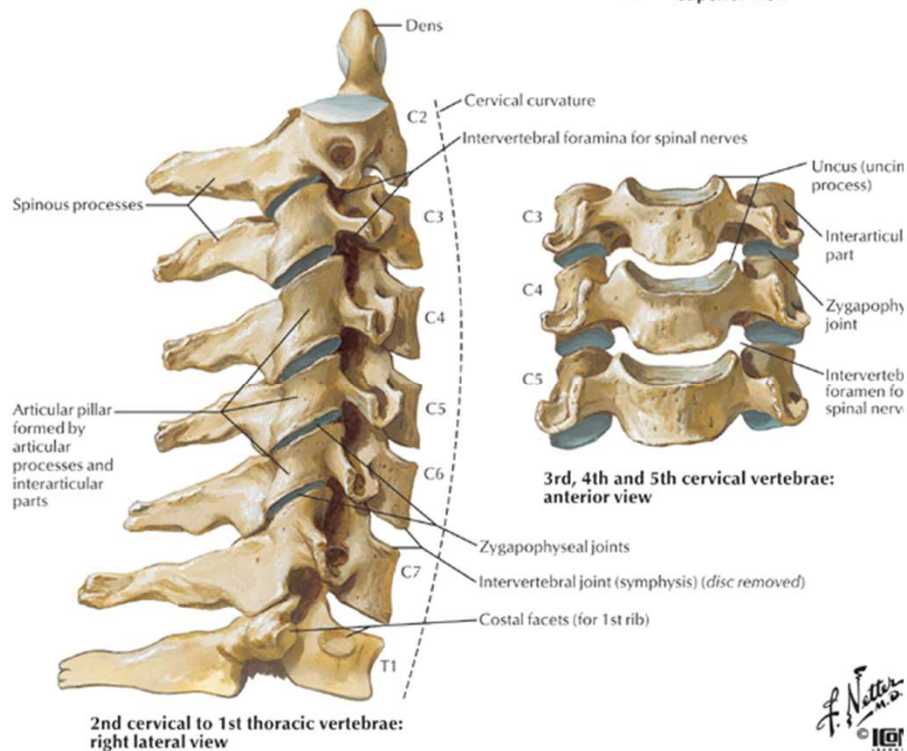
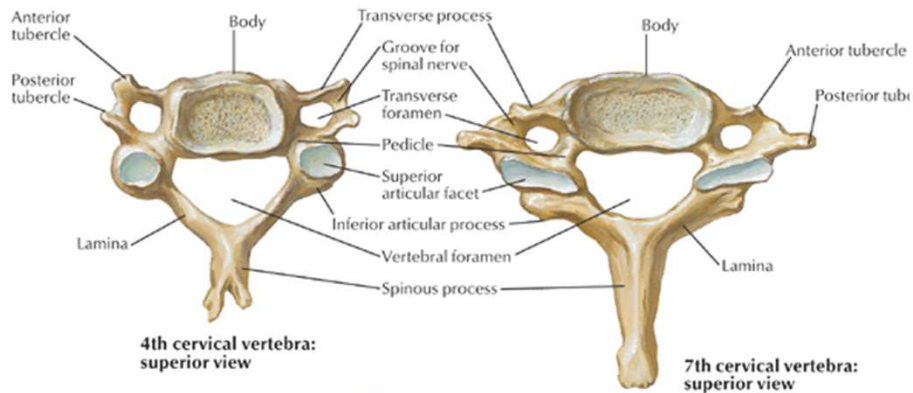
*Work Related Injuries Workshop
March 24th & 25th, 2019*



Disclosure

- Stocks: 4Web
- Consultant: DePuy-Synthes J&J
- Publishing Royalties: Wolters-Kluwer

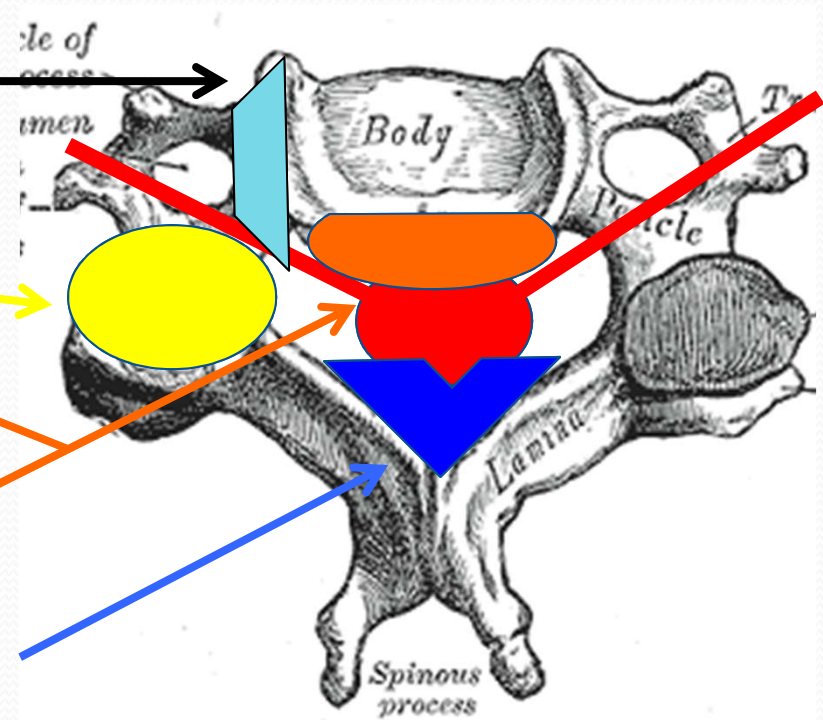
Anatomy

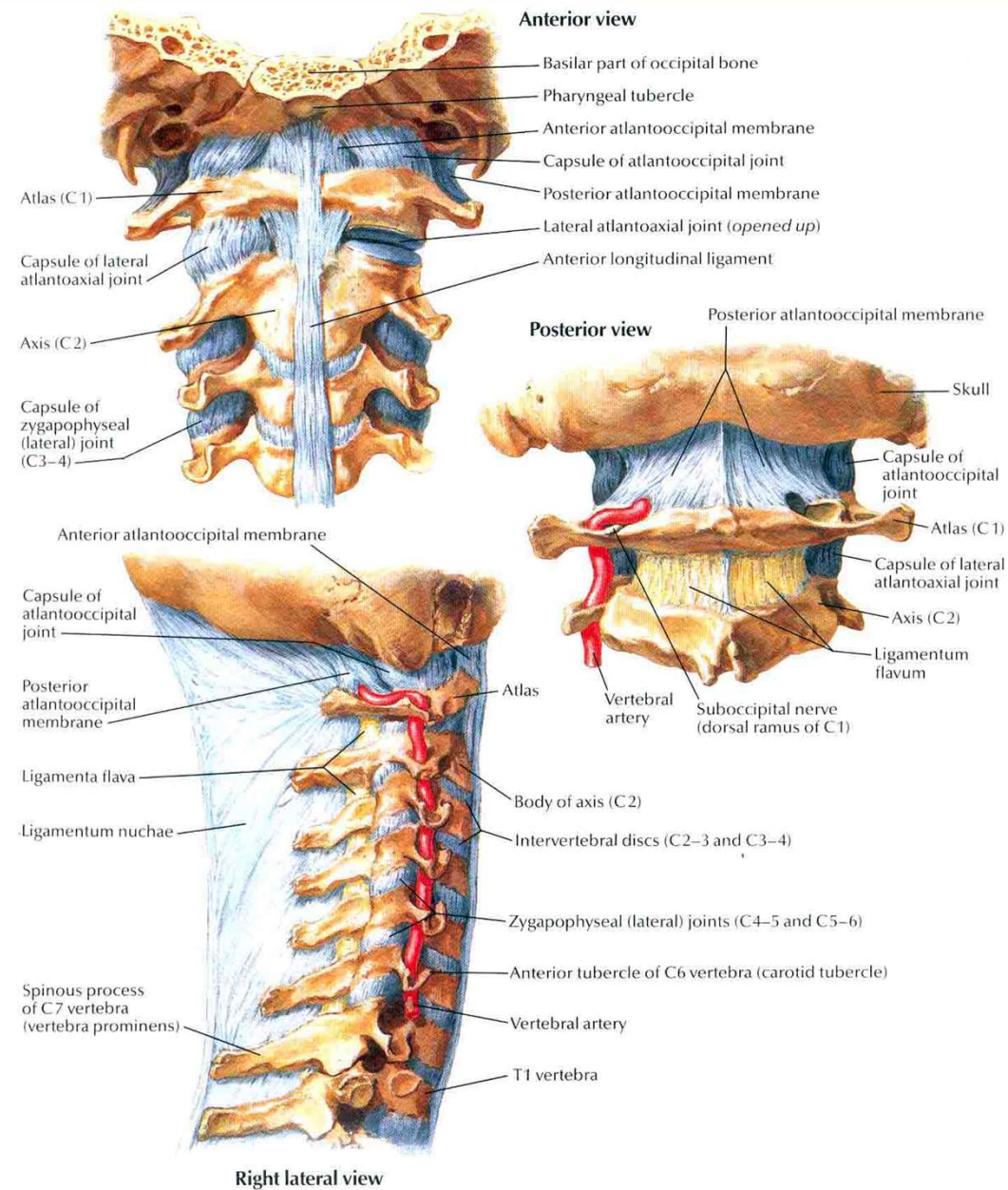


Radiculopathy/ Myelopathy - Pathophysiology:

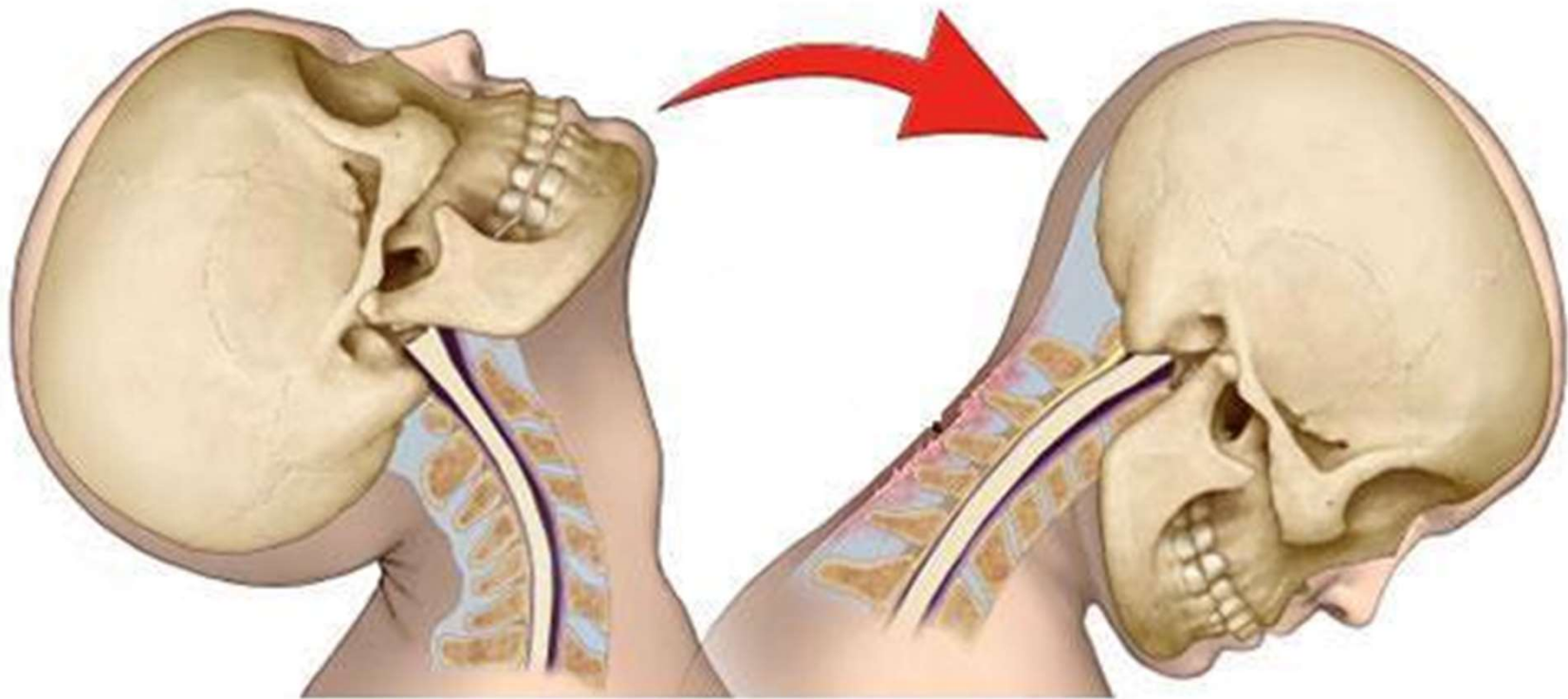
- Direct Mechanical compression NRoot/Cord:

- Uncus joint
- Facet joint
- Disk Osteophyte Complx
- Disc Herniation - OPLL
- Infolding Ligamentum flavum

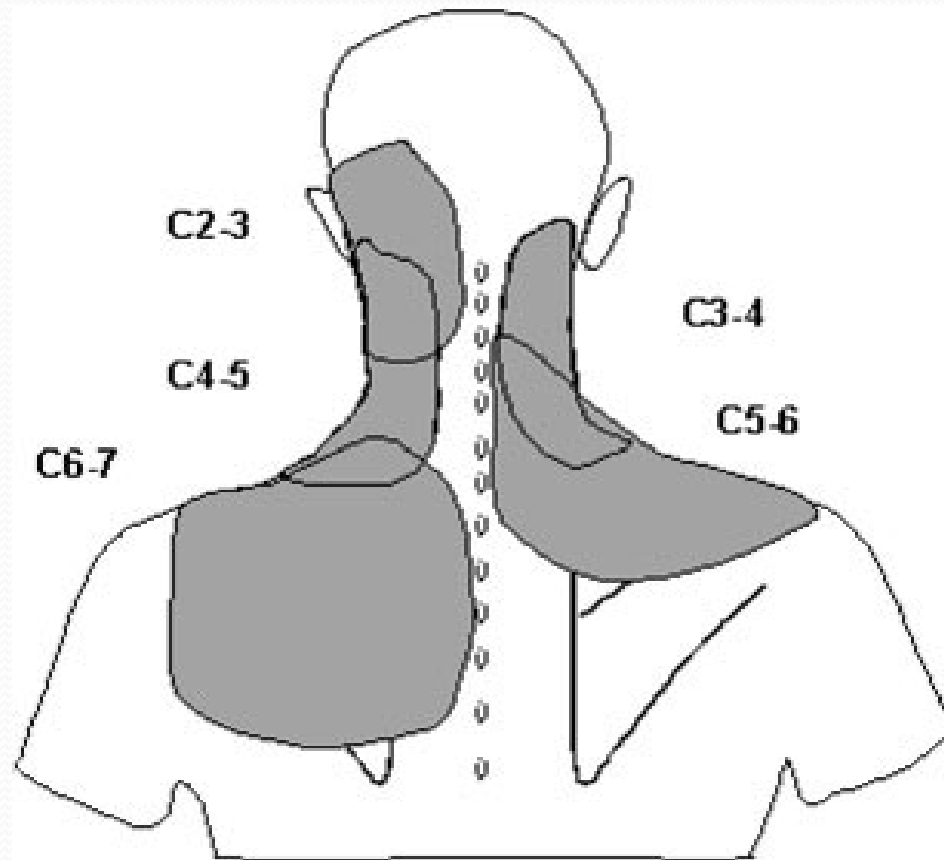




Cervical Sprain / Whiplash

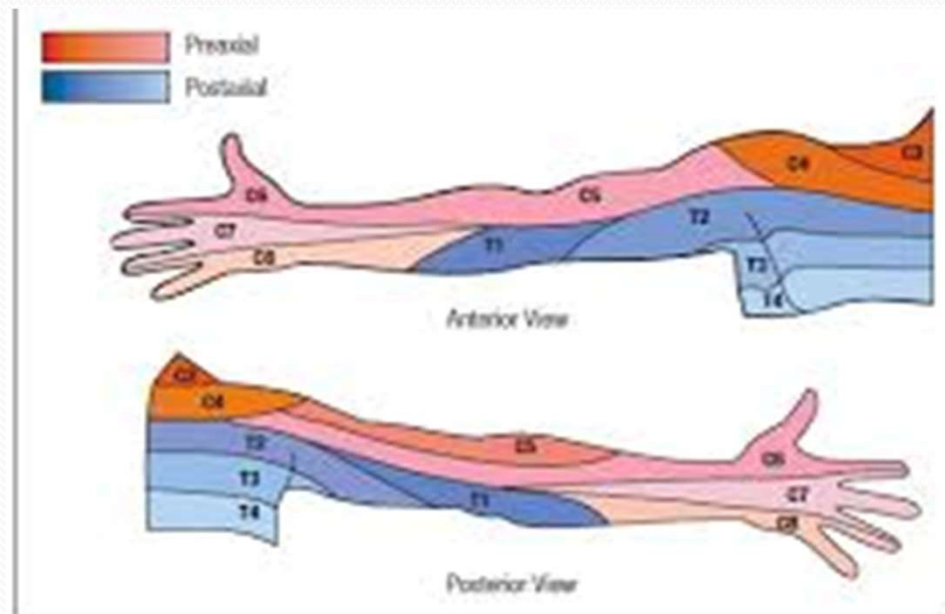


Discogenic Pain (Spondylosis)



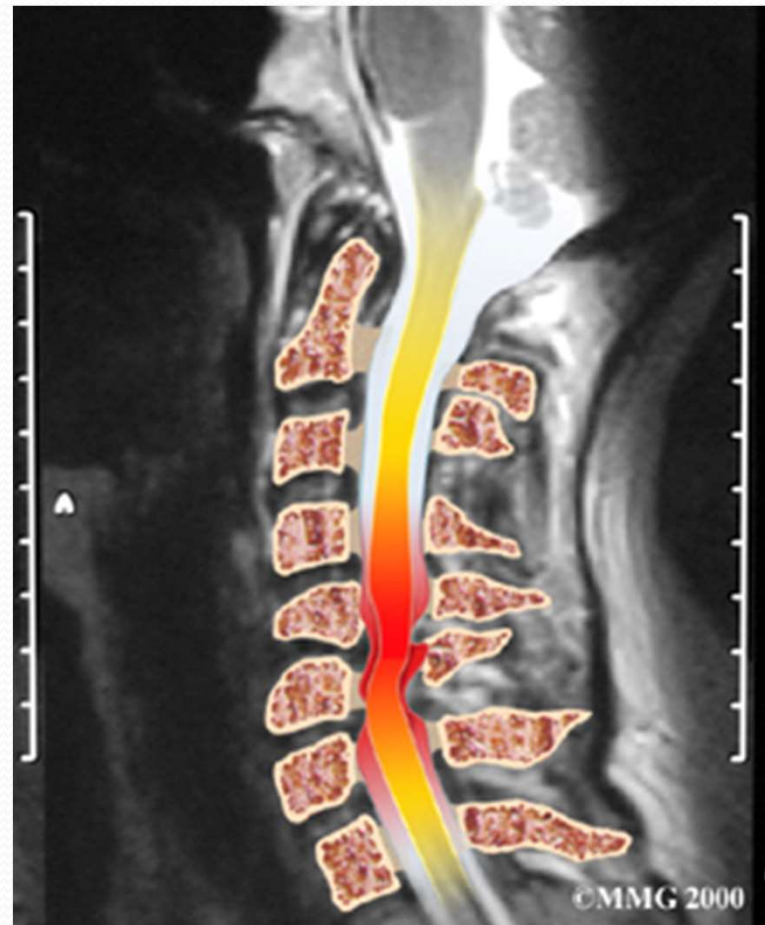
Cervical Radiculopathy

- PINCH'ed NERVE
- Pain is often accentuated by maneuvers that stretch the involved nerve root. Some examples include:
 - Coughing
 - Sneezing
 - Reaching



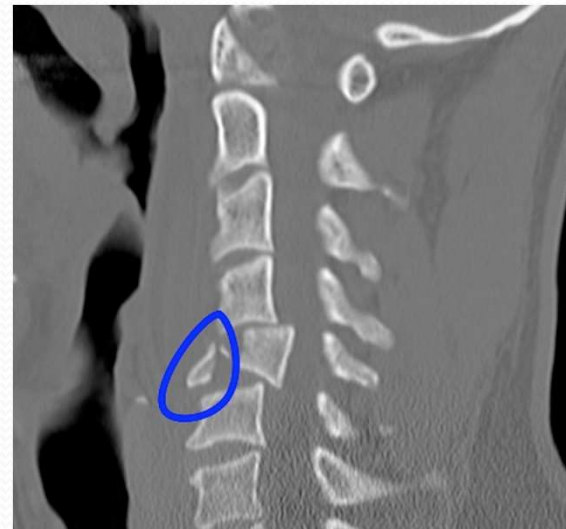
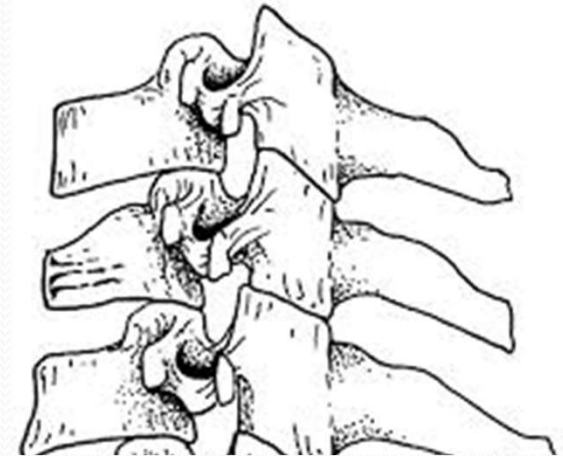
Spinal Cord Compression: Myelopathy

- Neck Pain
- UE:
 - Radiculopathy
 - Weakness/N/T
 - Clumsiness
- LE:
 - Loss of Balance
 - Frequent Falls
 - Gait disturbances



Cervical Fractures

- Vertebral Body:
 - Compression fractures
 - Burst fractures
- Facet fractures
 - Subluxation
 - Dislocation



Facet Fractures / Dislocation





MANAGEMENT - Terminology

- Axial Neck Pain (without neurologic deficits):
 - Typically conservative mgmt (PT)
 - Facet block? RFA?
- Arm Pain: Radiculopathy
 - PT/ Traction / Injections
 - Surgery: if conservative management fails
- Surgery: Weakness, Myelopathy, Instability (Fracture, Stenosis, HNP, Infection, Tumor, etc)

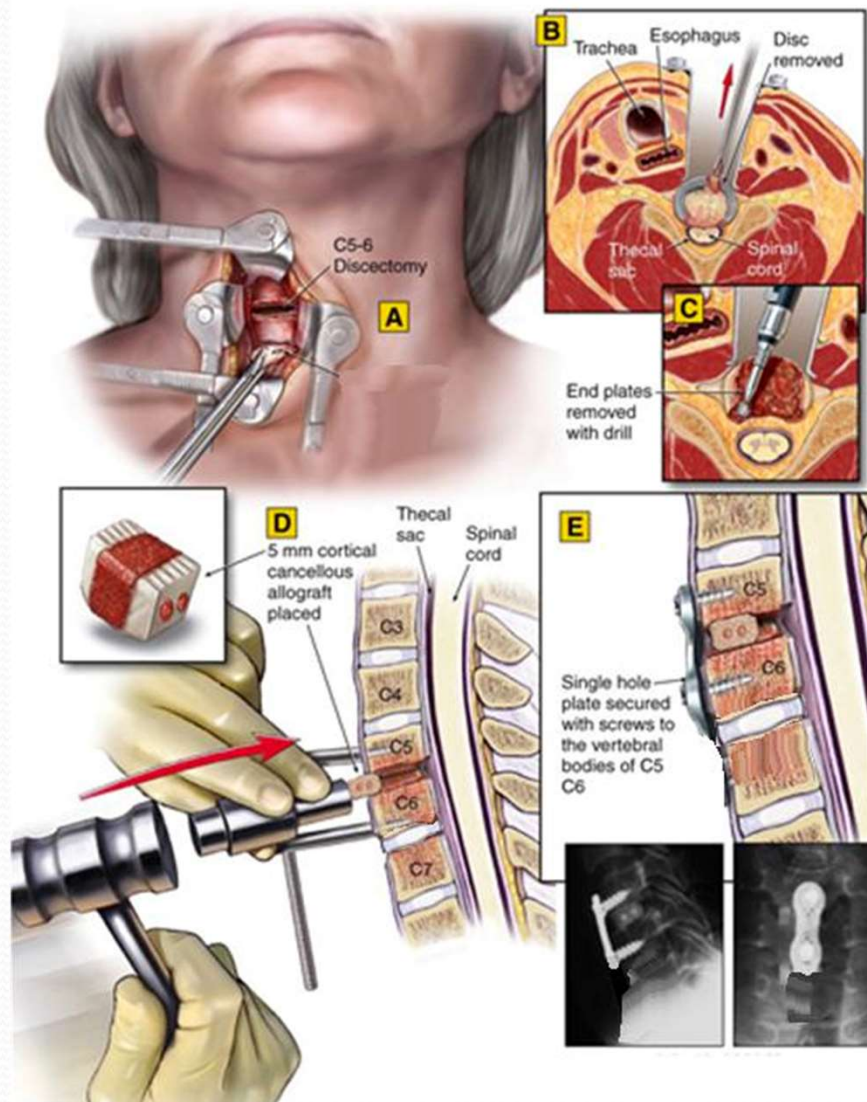


Surgical Options - Terminology

- Anterior cervical diskectomy and fusion (ACDF)
- Anterior cervical corpectomy and fusion (ACCF)
- Cervical disk arthropasty – replacement (cTDR)

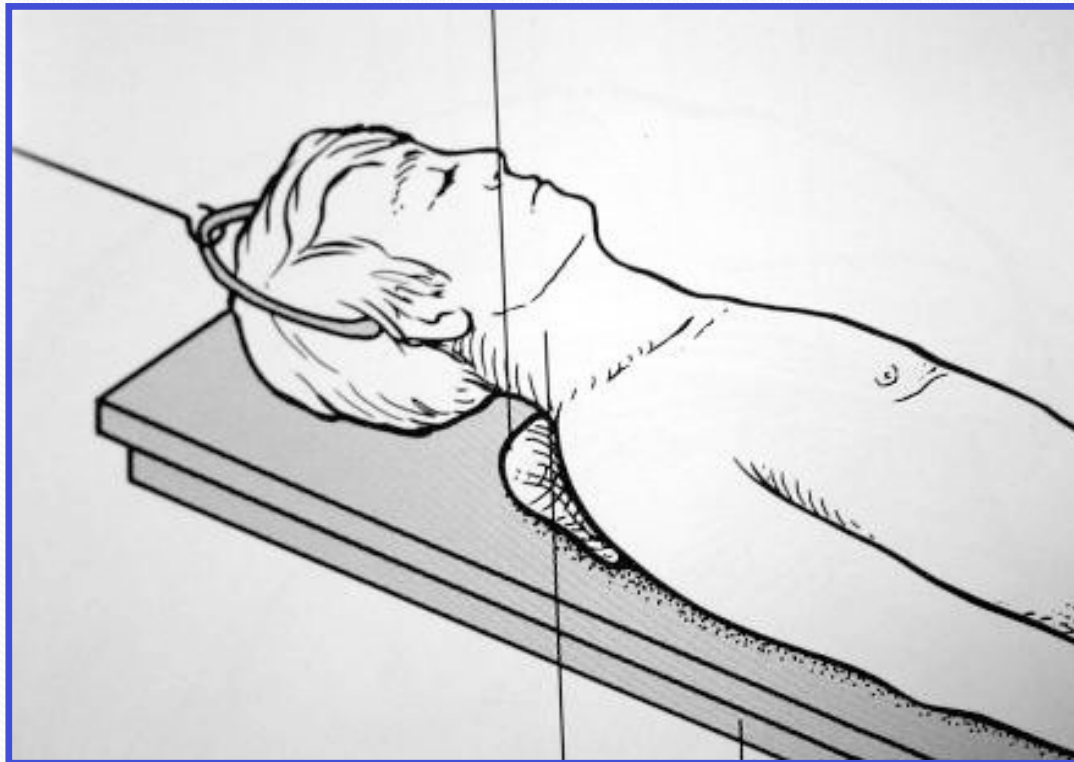
- Posterior cervical laminotomy - Foraminotomy
- Posterior cervical laminectomy & Fusion
- Posterior cervical laminoplasty

ACDF

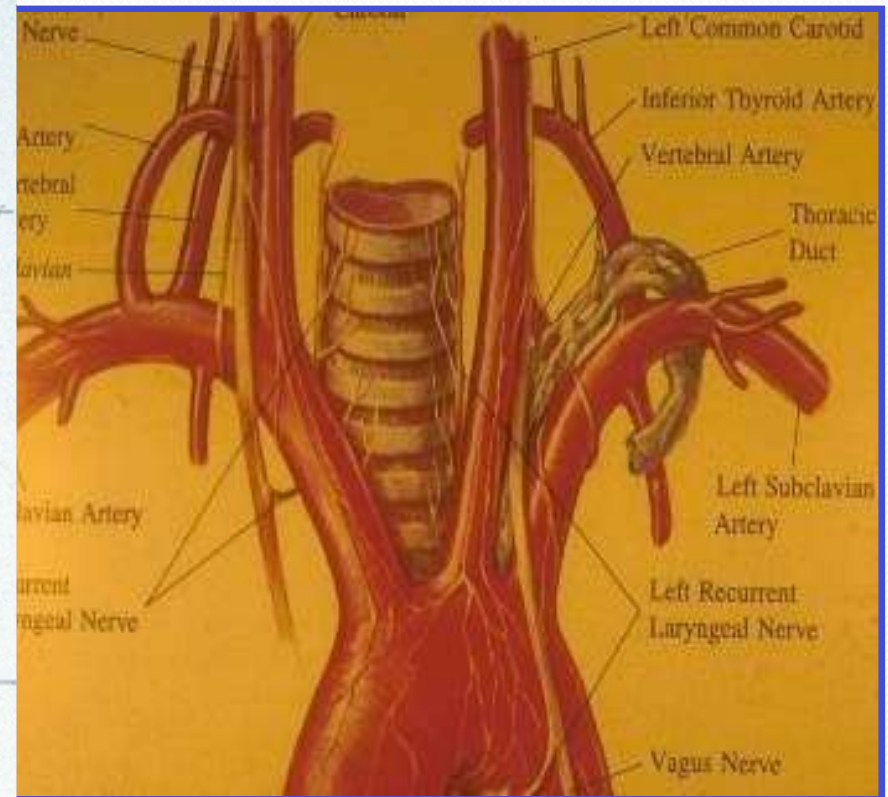
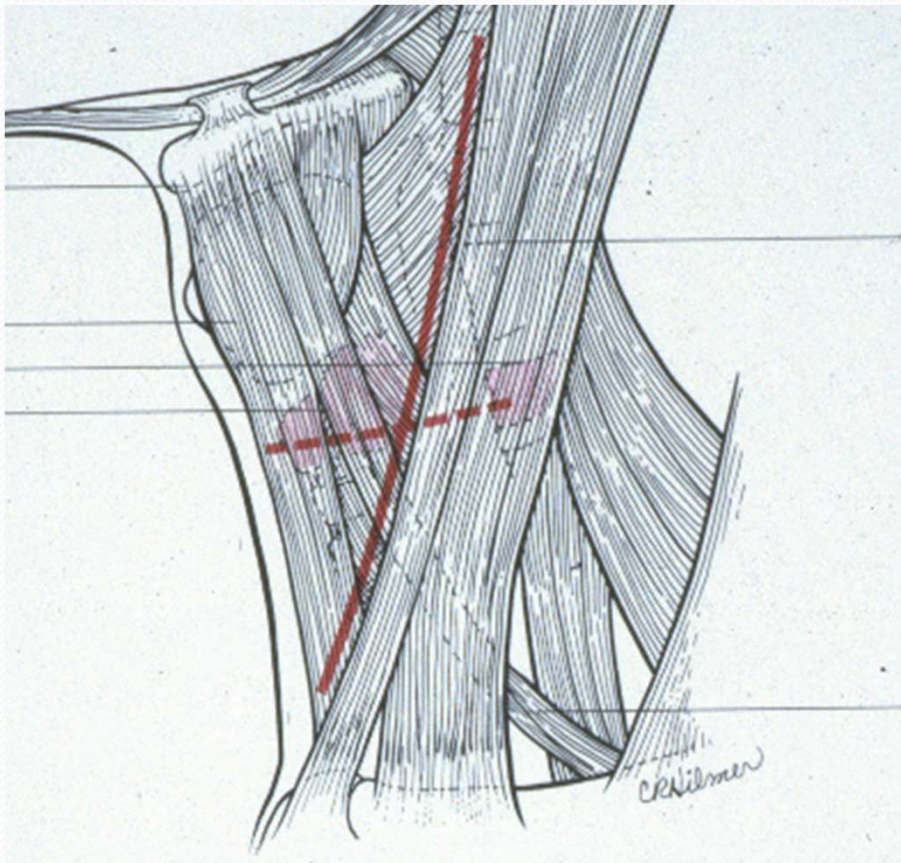


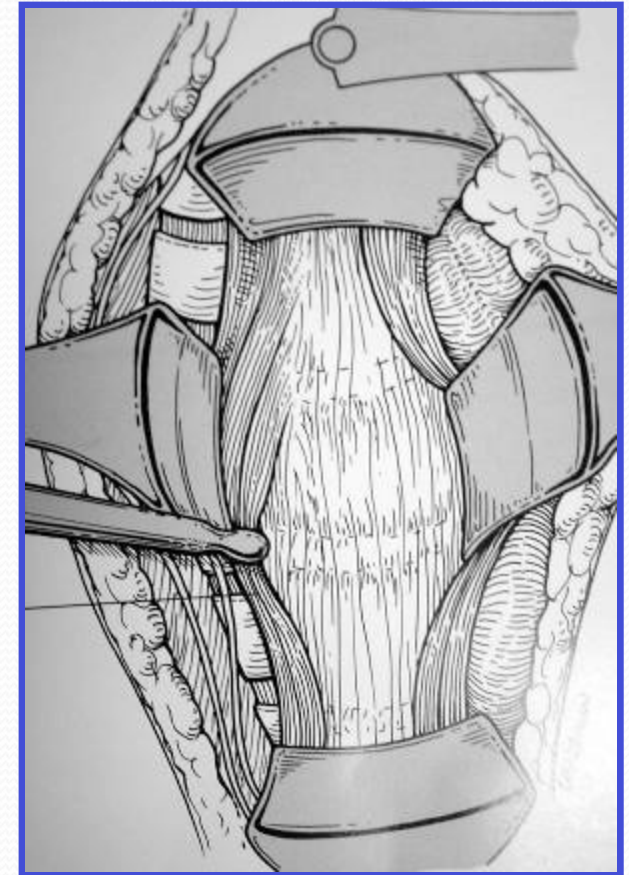
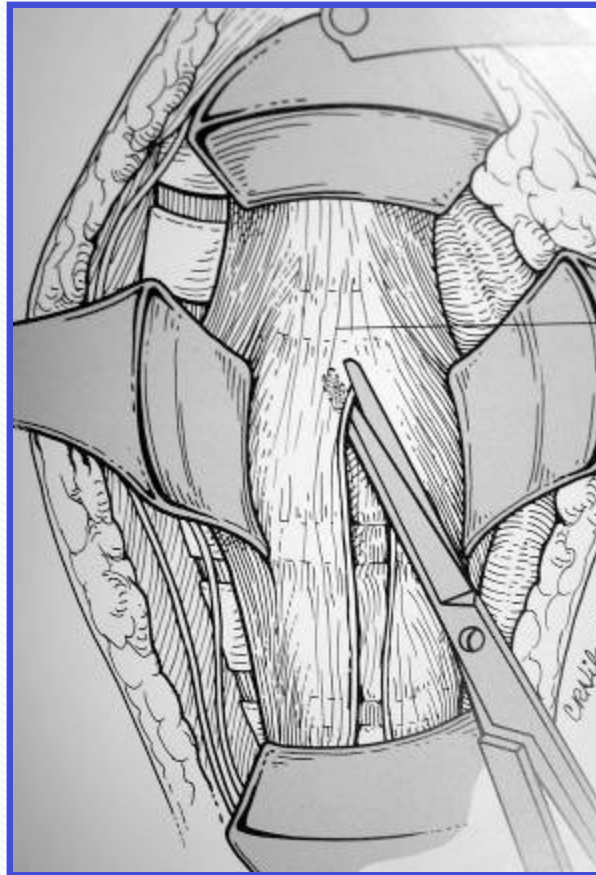
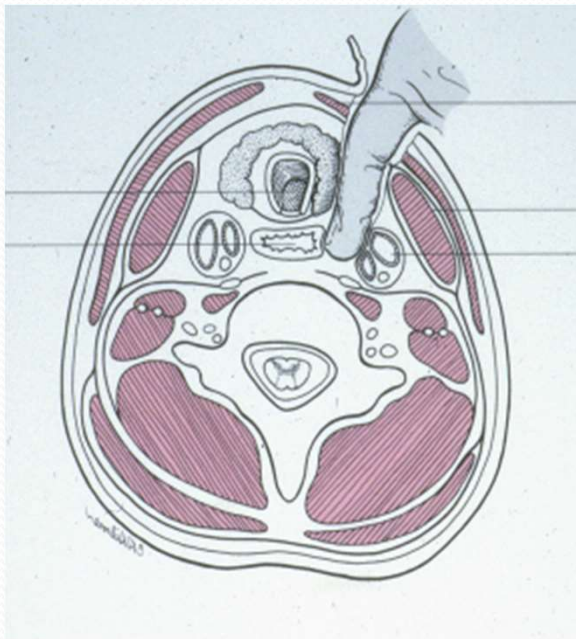
Positioning and Anatomy

- Mild Neck extension



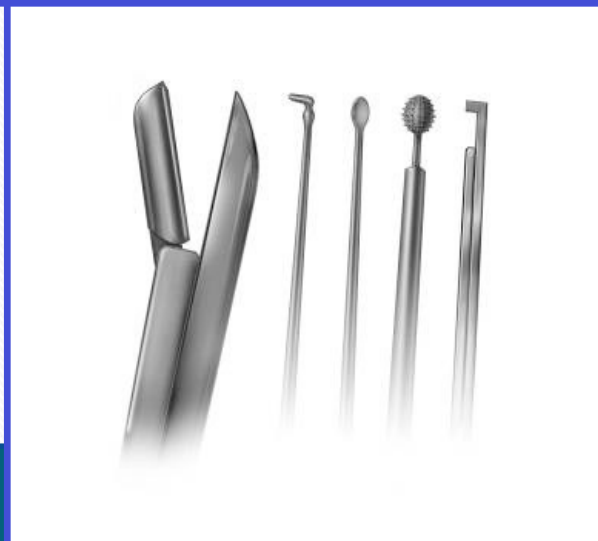
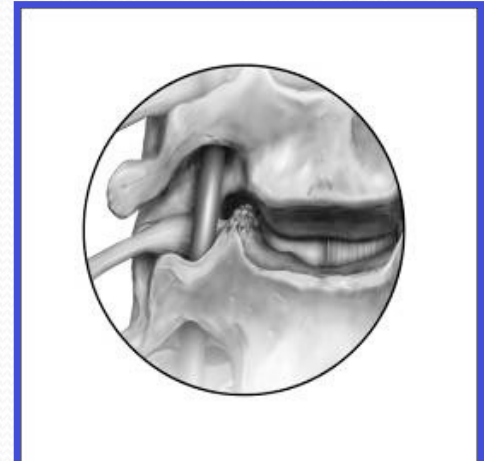
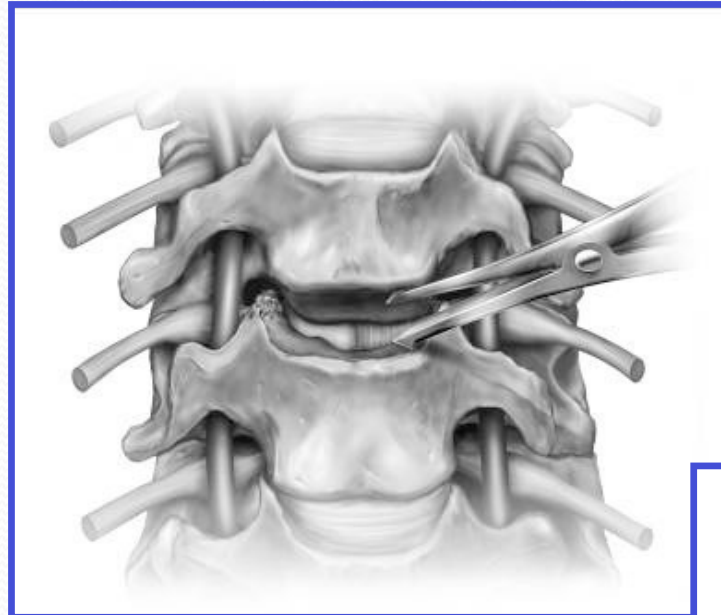
Anatomy



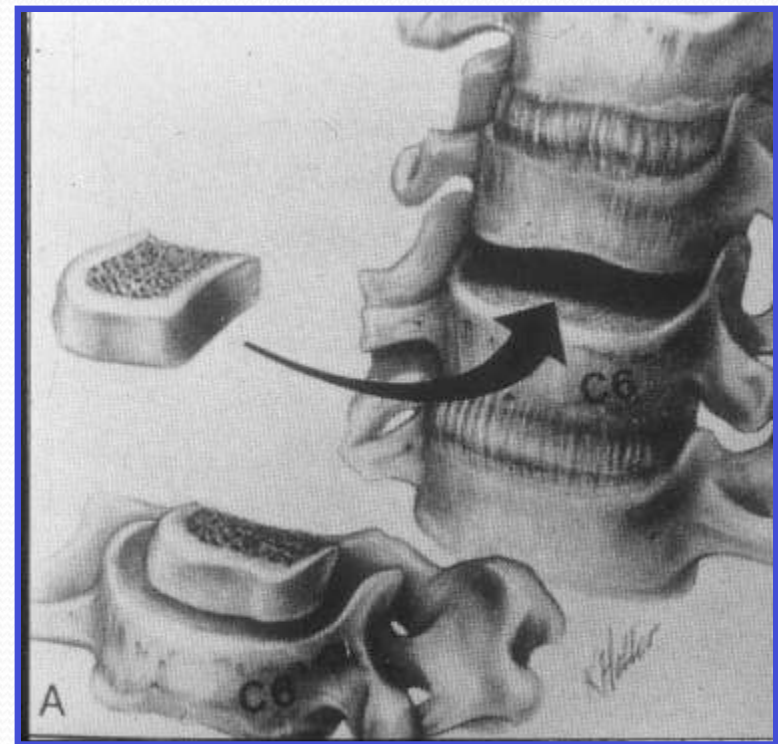
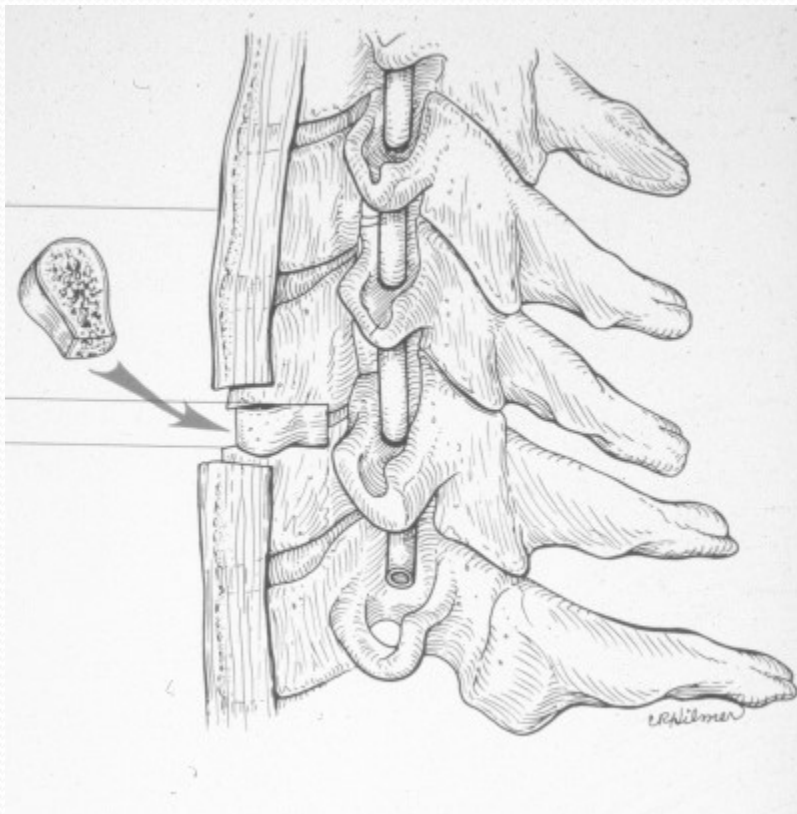


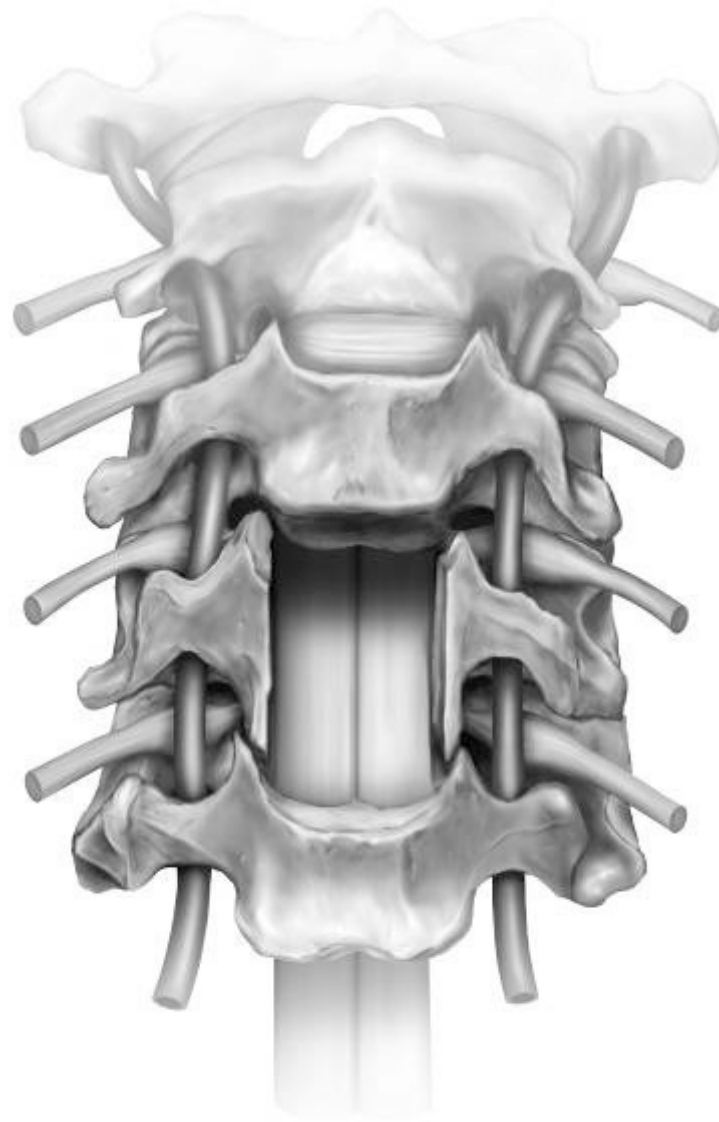
Discectomy and Decompression

- HT: 5-10mm
- W: 10-15mm
- Depth: 12-17mm

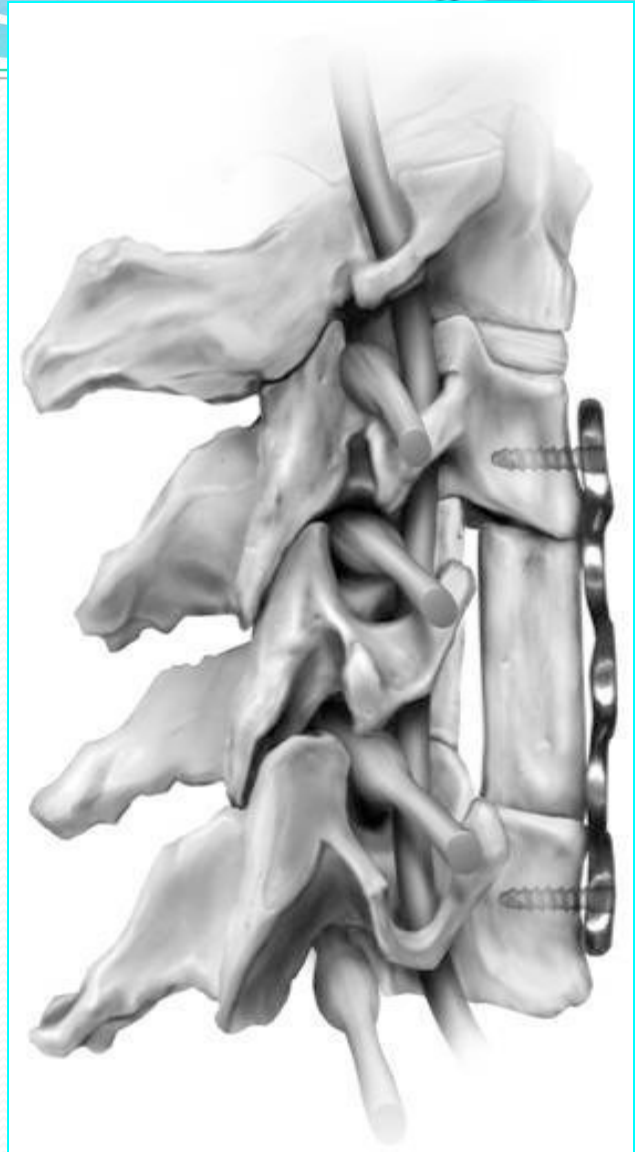
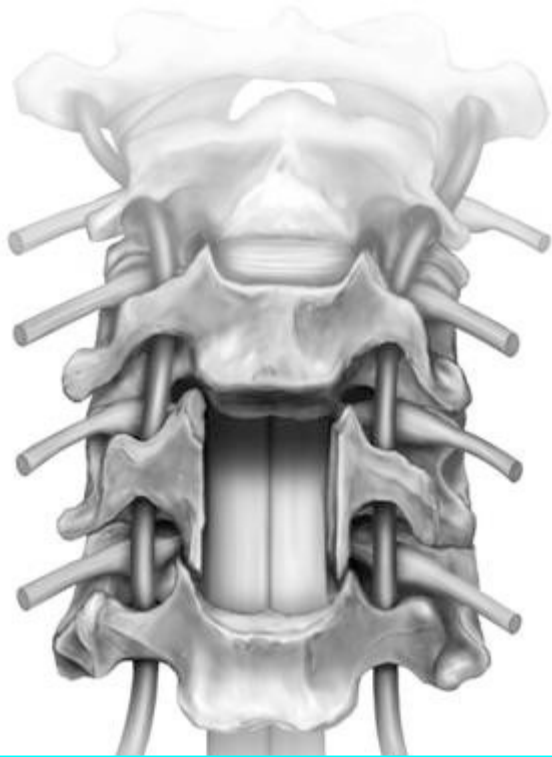


Bone Graft Placement





corpectomy



fusion and plating



Anterior Plating

Anterior
View



Lateral
View



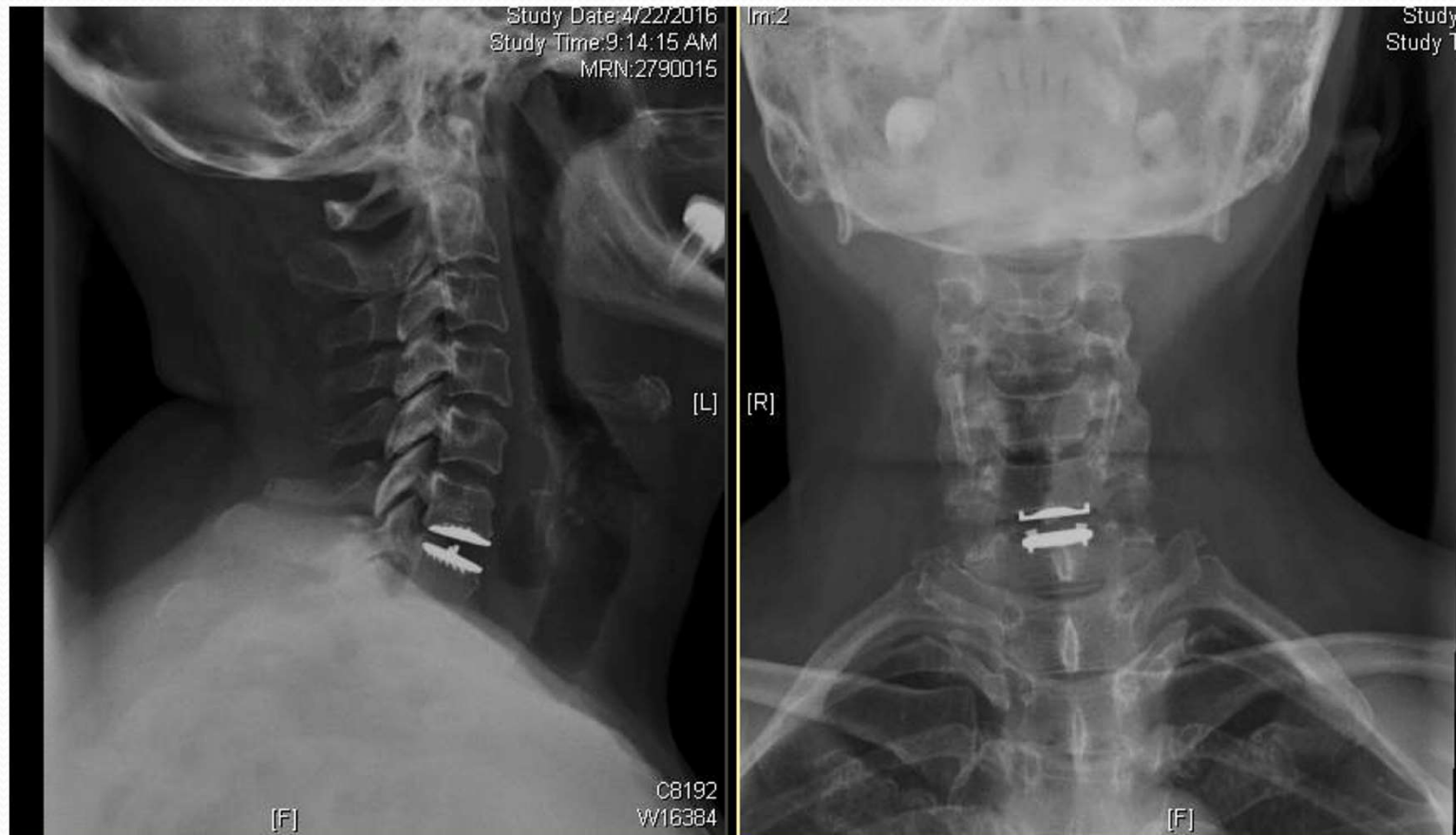
Cervical Disc Arthroplasty

- Artificial disc replacement
- Preserves ROM
- Decrease risk of adjacent DD
 - ***Decrease Reoperation rate***
 - 1 level: ACDF 17.3% vs cTDR 4.5%
 - 2 level: ACDF 21% vs. cTDR 7.3%



Jackson JNS 2016 (5 yr f-up)

45 y F with C7 radiculopathy

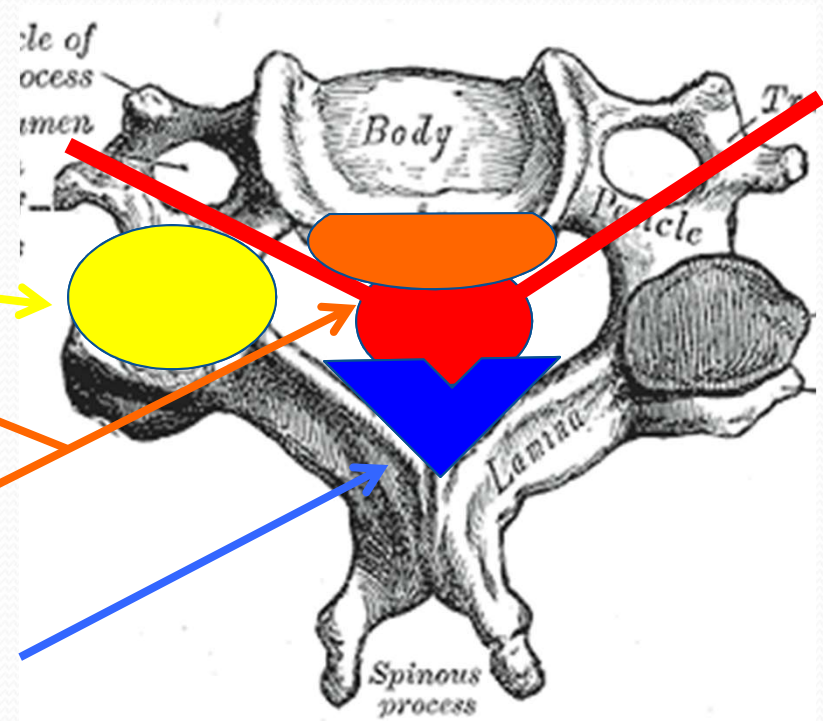


Posterior Cervical Options

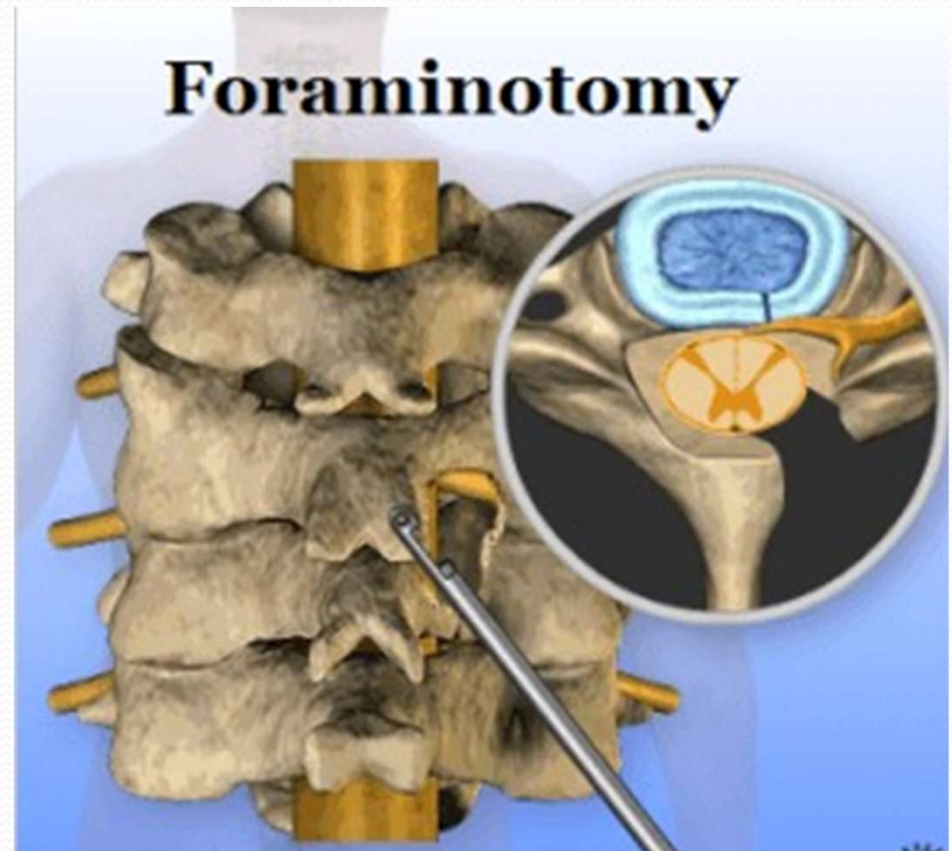
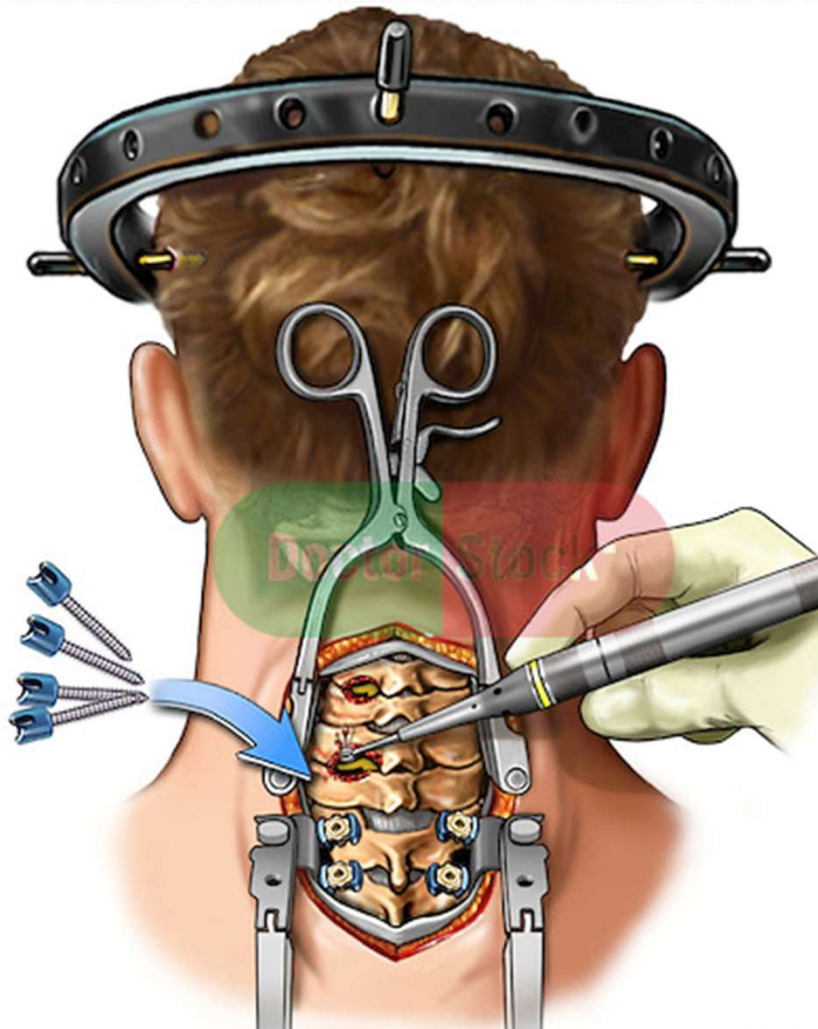
Radiculopathy/ Myelopathy - Pathophysiology:

- Direct Mechanical compression NRoot/Cord:

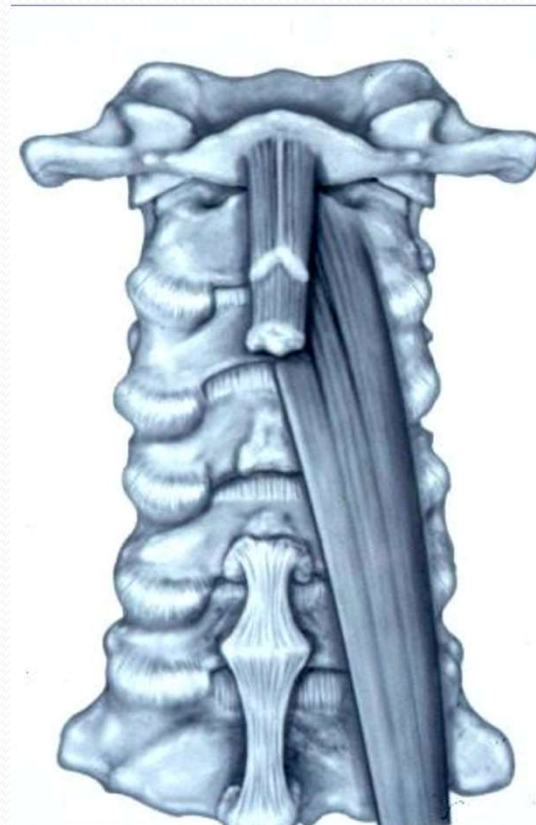
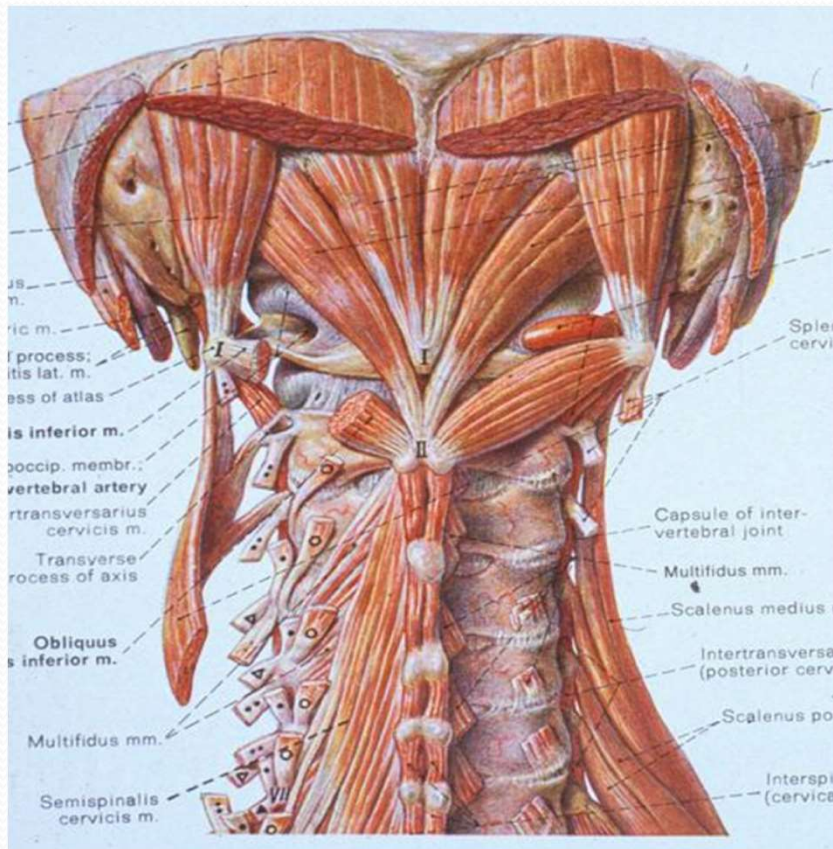
- Facet joint
- Disk Osteophyte Complx
- OPLL
- Infolding Ligamentum flavum



Cervical Foraminotomy



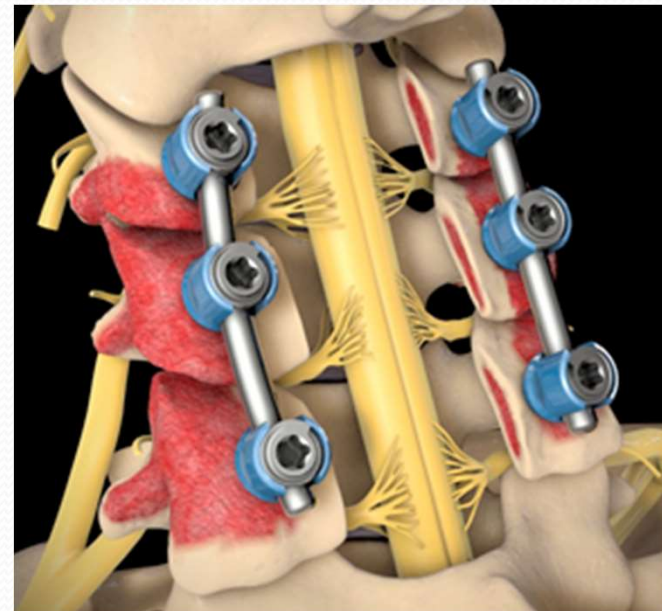
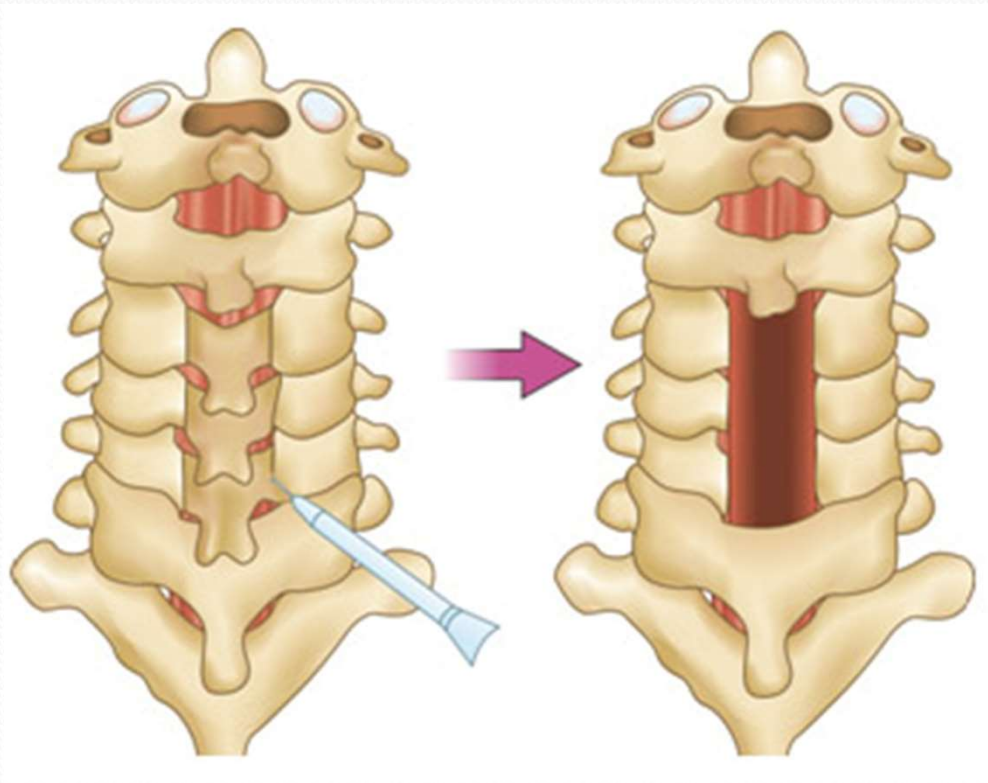
Not tissue preserving!



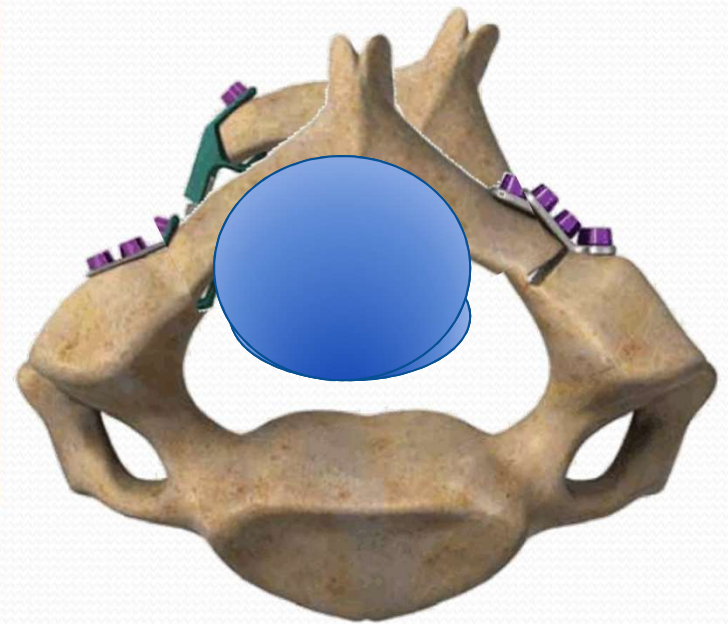
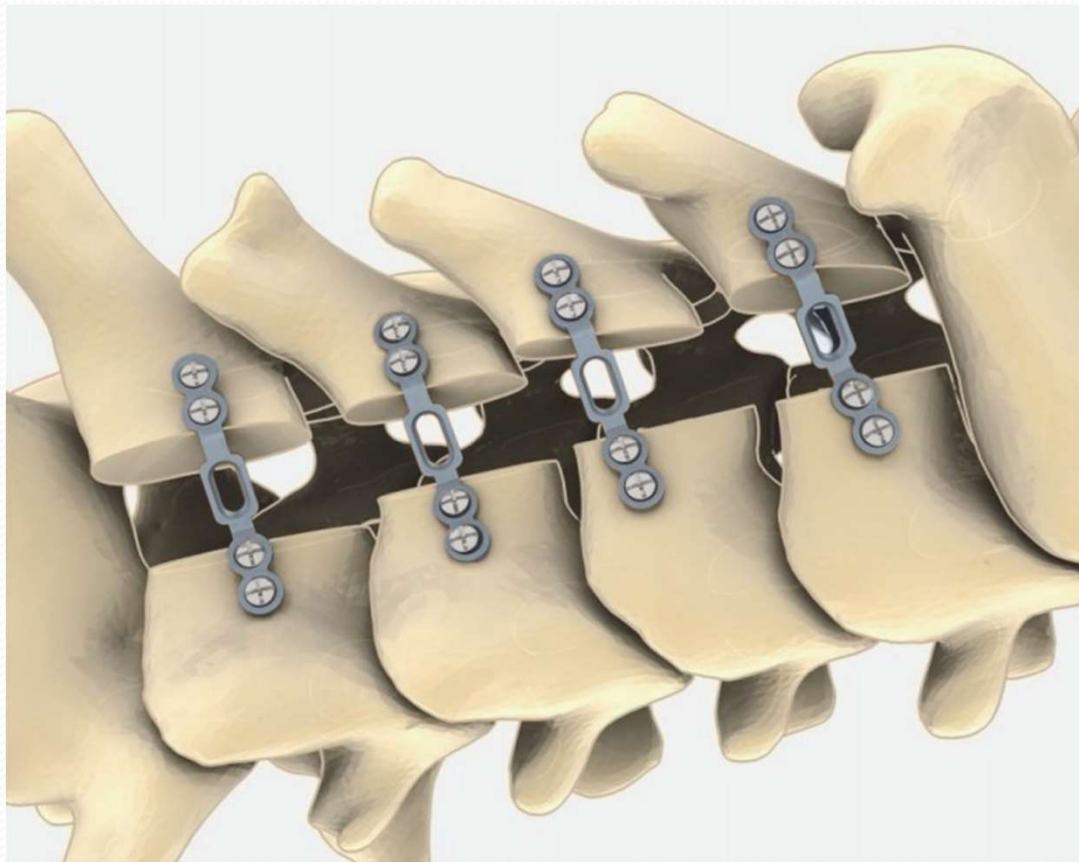
Multifidus is destroyed !!

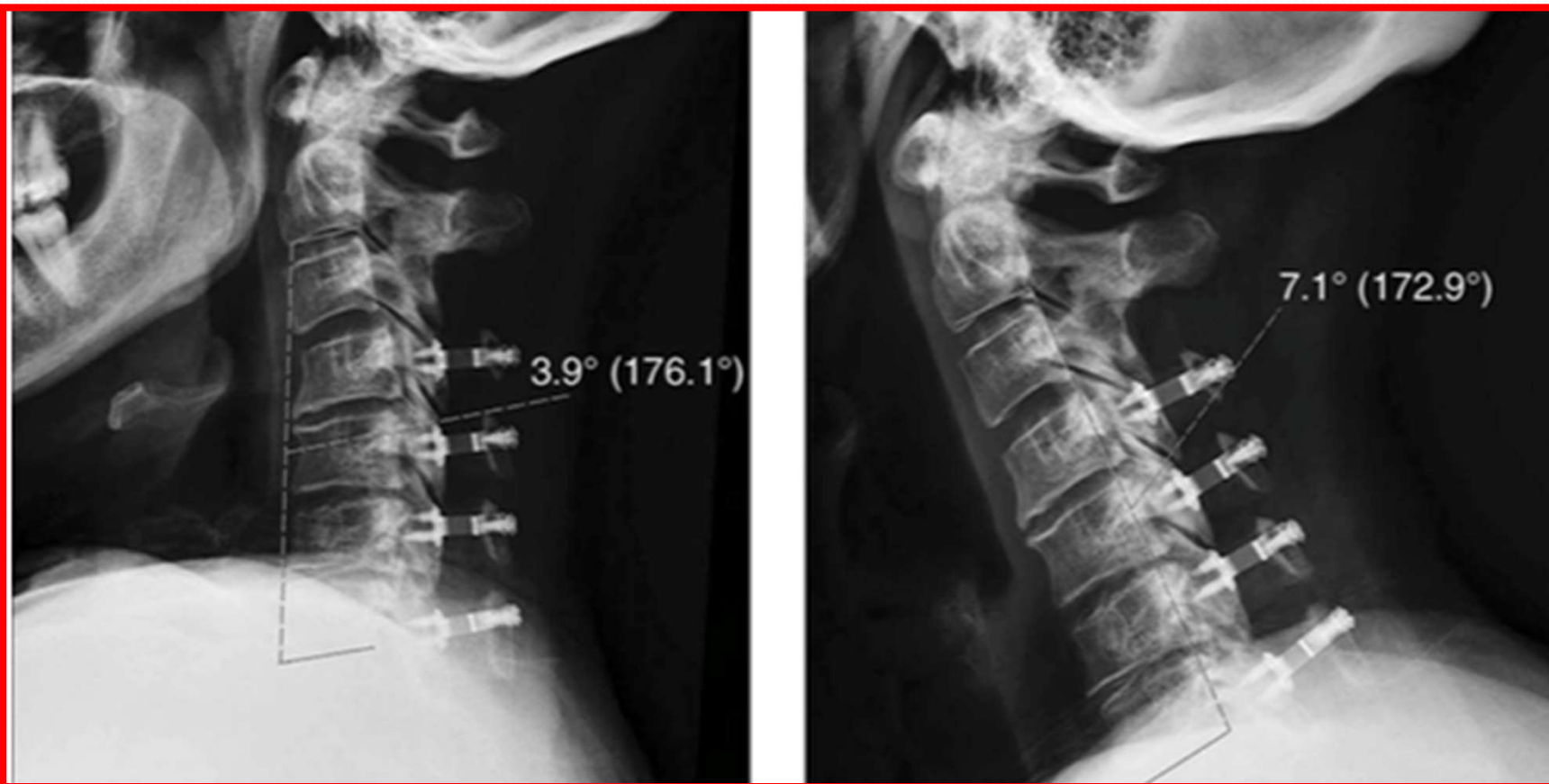
Work Related Injuries Workshop
March 24th & 25th, 2019

Cervical laminectomy and fusion

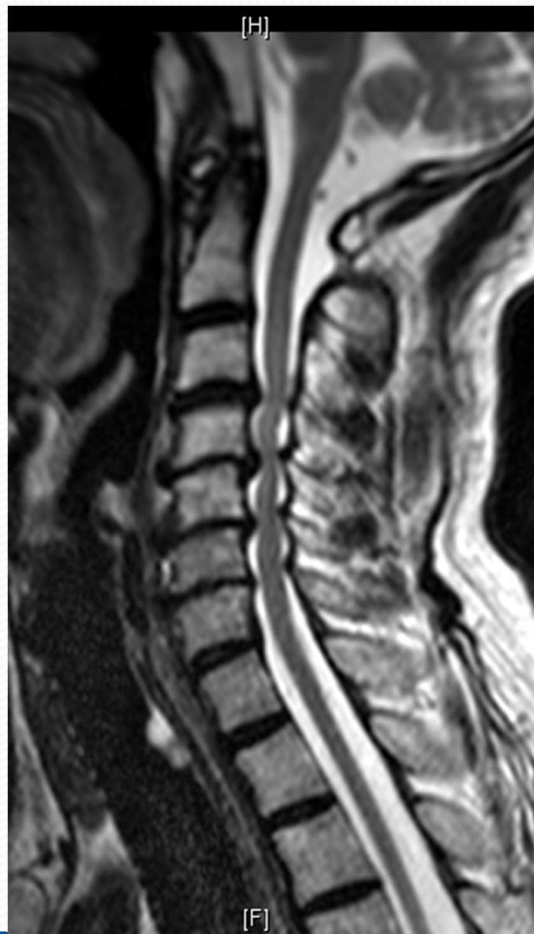


Cervical Laminoplasty

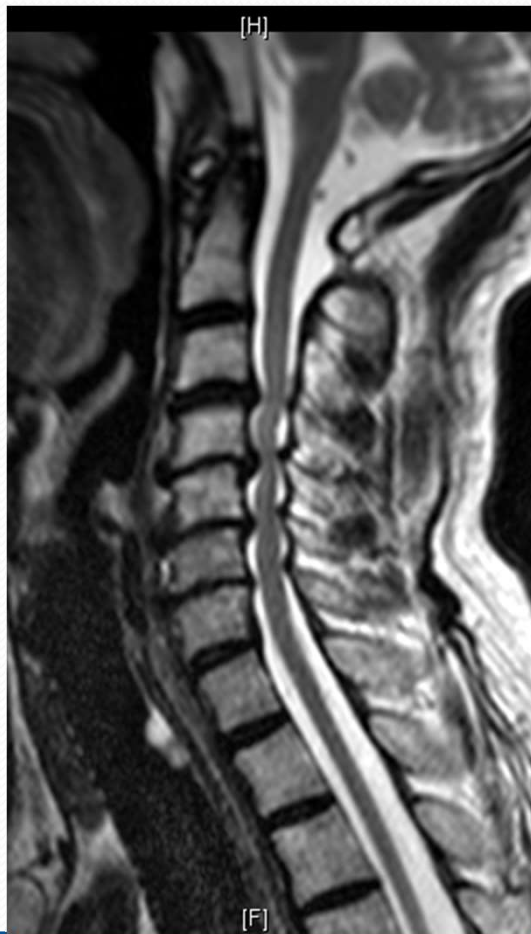




56 y M w Myelopathy

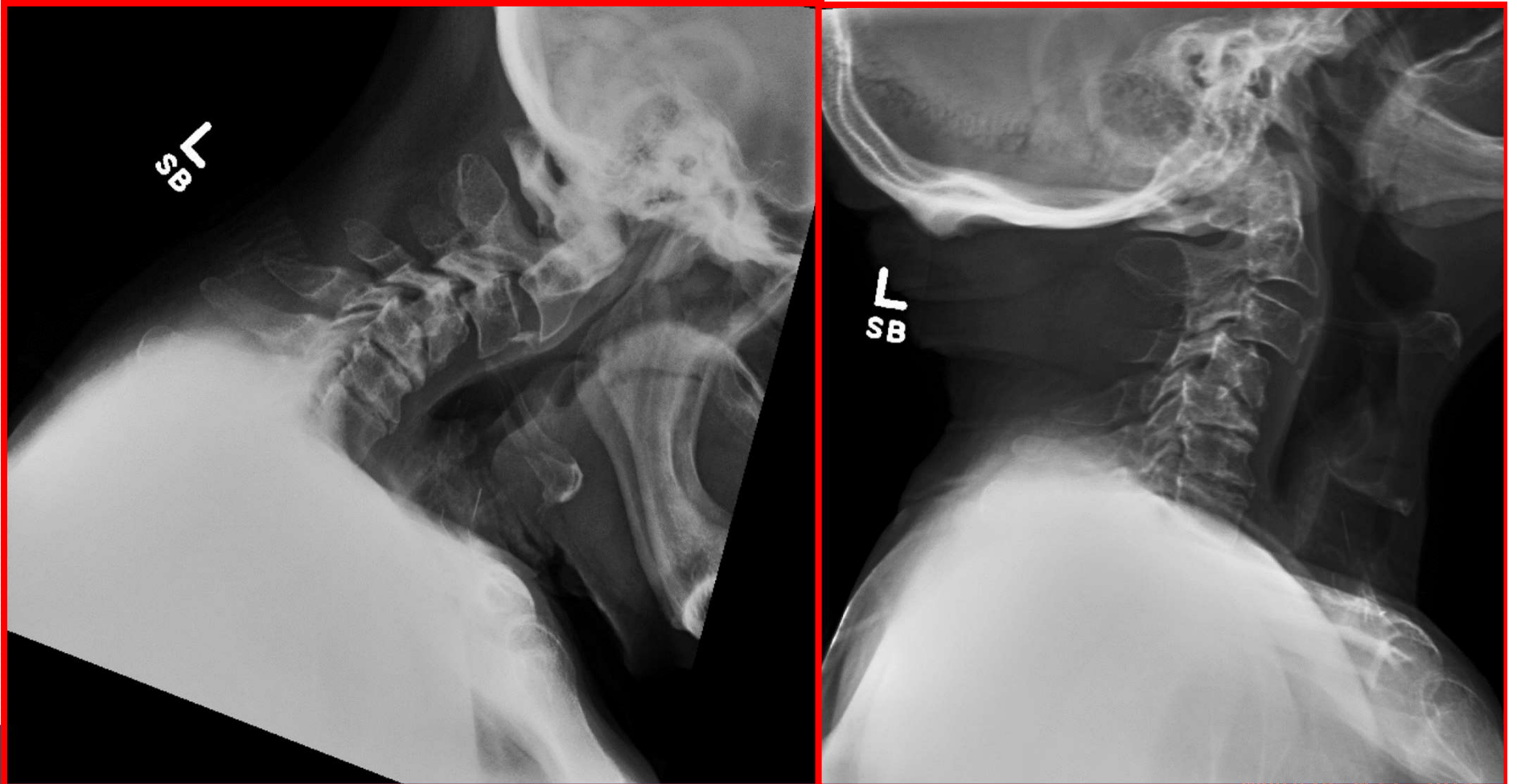


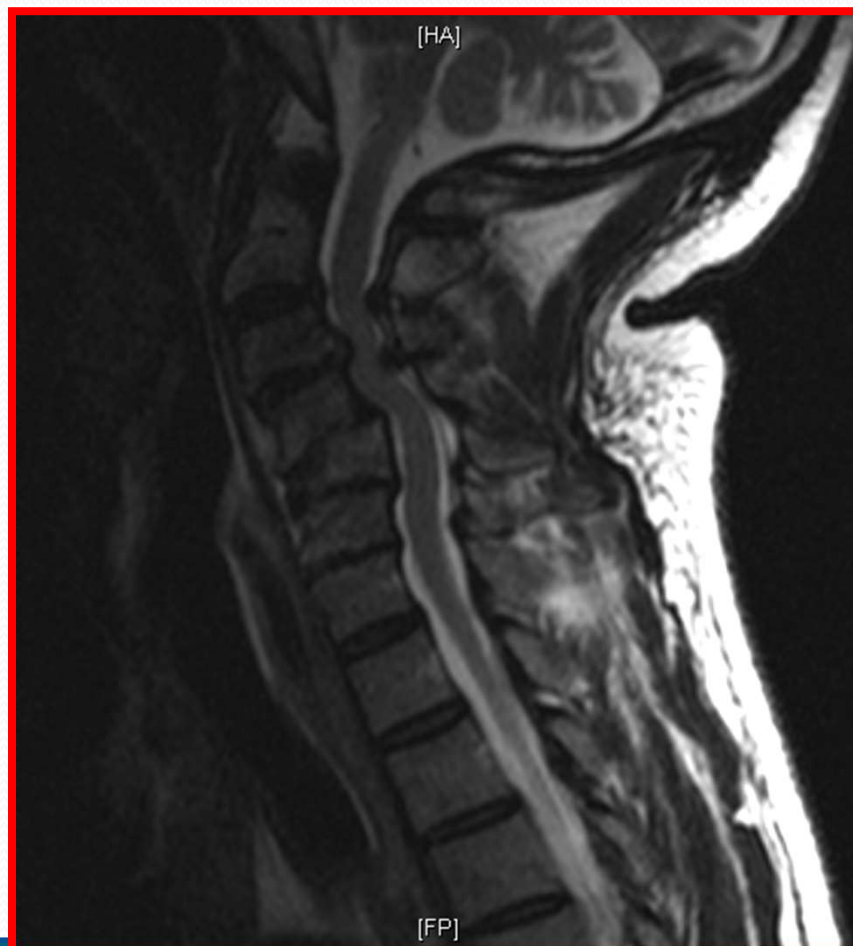
56 y M w Myelopathy



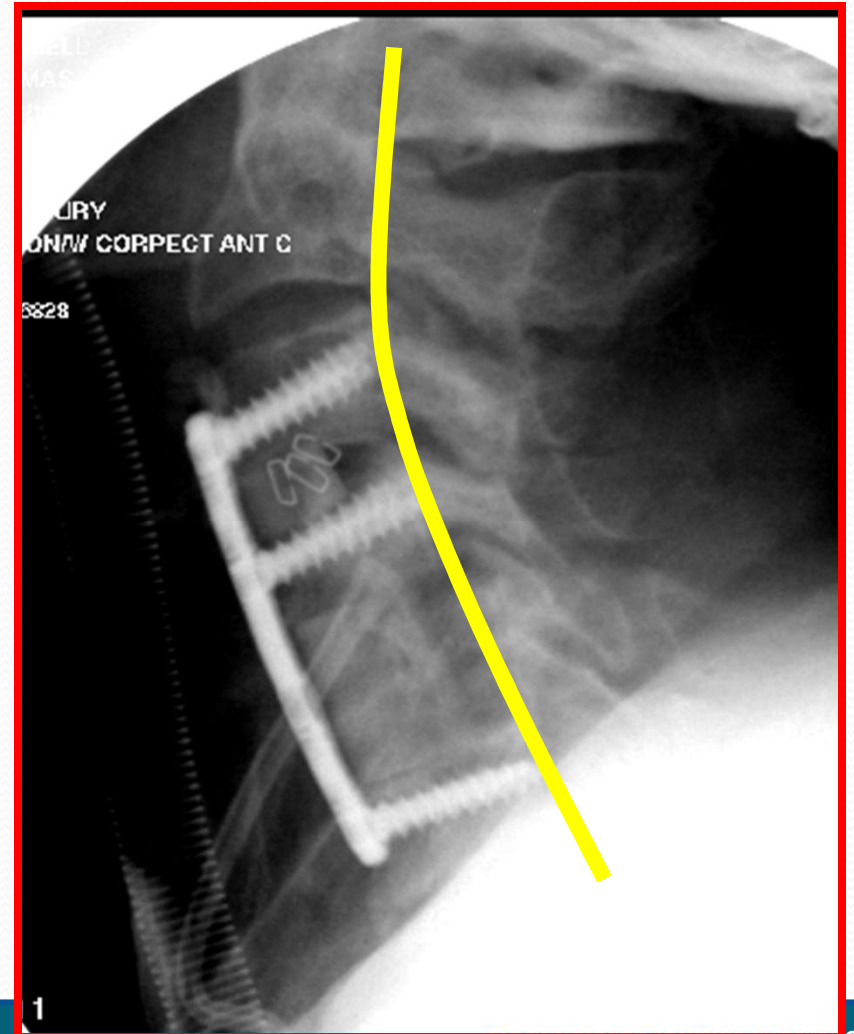
Combined Ant-Post CF

60 y M w severe myelopathy

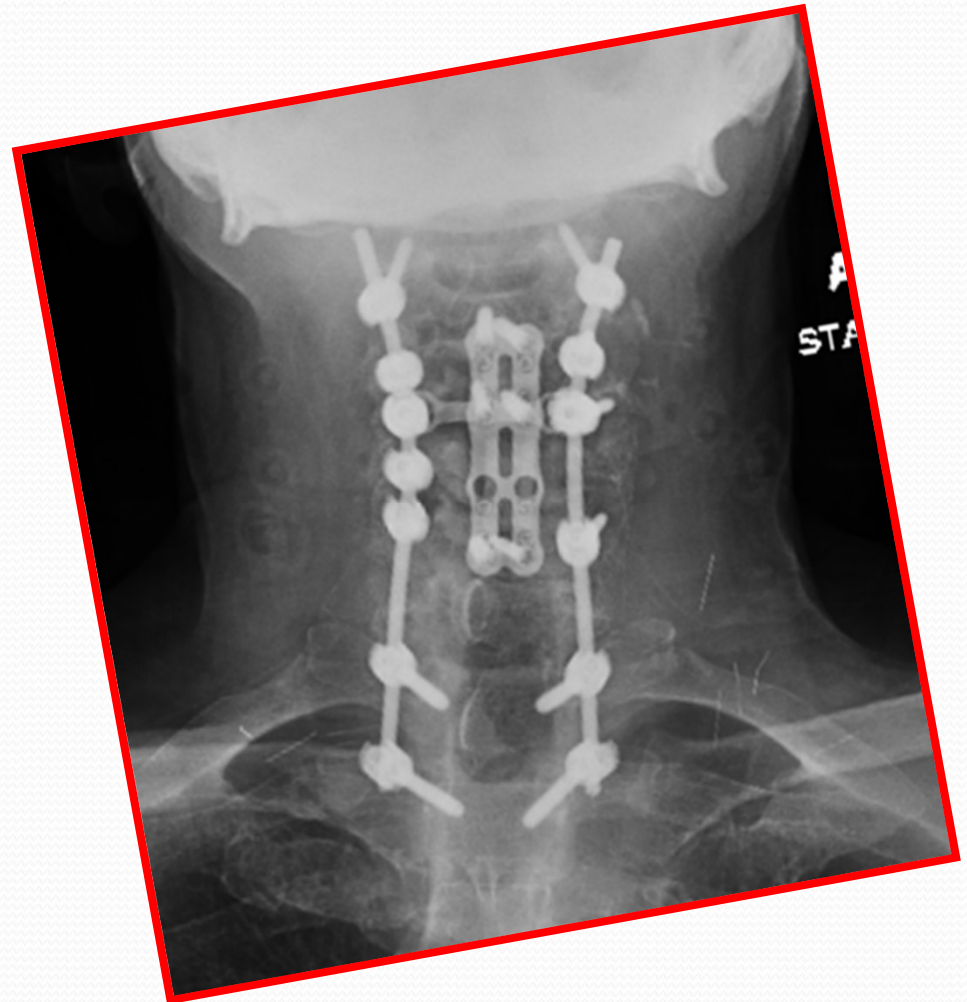




Stage I: Corpec C5-ACCF C3-6



Stage II – Post Lami Fusion



CONCLUSION

UNDERSTANDING Anatomy & Pathology

- Anterior:
 - ACDF/ACCF
 - cTDR
 - Anterior fixation
- Posterior:
 - Laminectomy/foraminotomy +/- Fusion
 - Laminoplasty
 - Instrumentation – fusion (Fracture stabilization)
- Combined

Thank You



*Work Related Injuries Workshop
March 24th & 25th, 2019*