



Marcus Neuroscience Institute
BAPTIST HEALTH SOUTH FLORIDA

Techniques for Improving Anterior Cervical Outcomes

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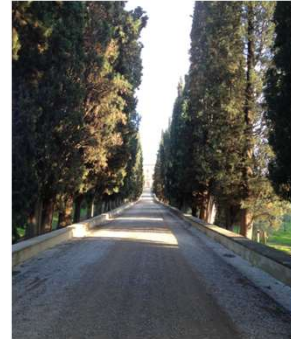
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Objectives

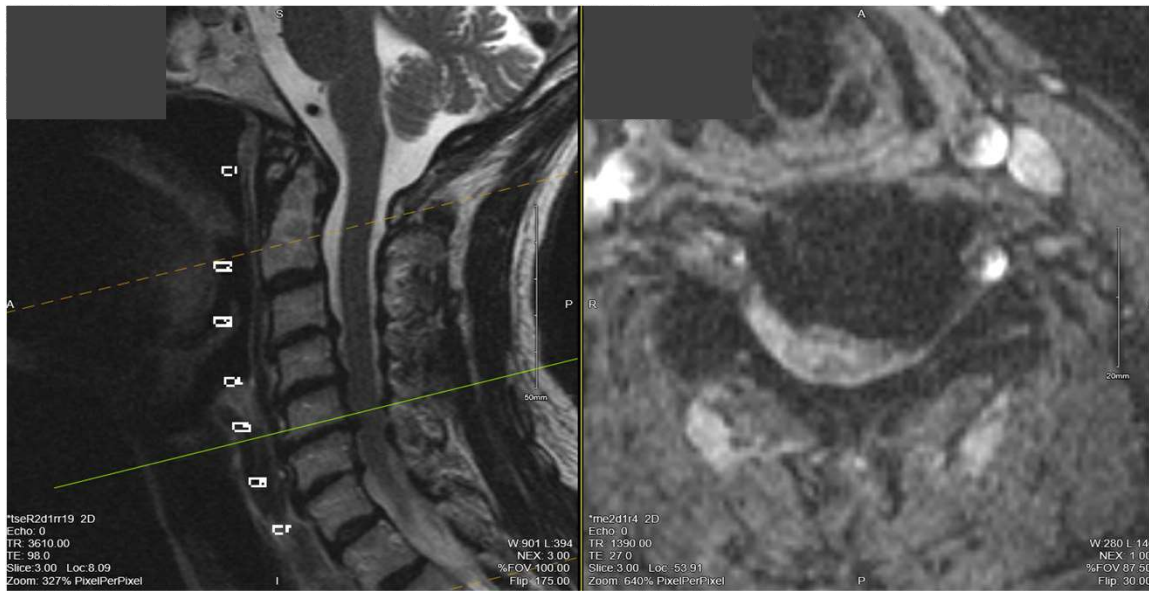
- Understand current review of surgical decision making for cervical myelopathy
- Optimization and pearls for anterior approaches
- Compare MNI recommendations using patient case (exit quiz)



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ANTERIOR versus POSTERIOR

- Symptoms and Exam
- Root.....>.....mixed.....<.....Cord
- (motor/sensory/pain)

- Anatomy
- MRI/ CT scan / X-rays
- (location/lordosis/levels)



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ADDITIONAL DECISION FACTORS

- Medical risks/morbidities of Anterior v. Posterior
 - General health
 - Prior neck procedures(spine, esophagus, trachea, thyroid)
 - Vascular (anatomy, atherosclerosis, collagen diseases, radiation)



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What factors influence surgical decision-making in anterior versus posterior surgery for cervical myelopathy? A QOD analysis.

- Journal of Neurosurgery Spine November 10, 2023
- 32 authors
- Duke, Mayo Clinic, Columbia, Ochsner, University of Utah, Neuroscience Institute Carolinas, Goodman Campbell Brain and Spine, Semmes Murphey, University of Miami, Weil Cornell, Atlantic Neurosurgery Specialists, University of Michigan, Marion Bloch Neuroscience, Saint Luke's, University of Virginia, Barrow Neurological Institute, Washington University-St.Louis, Atlanta Brain and Spine, UCSF



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Review Parameters:

- 841 patients reviewed
- Anteriors (ACDF, ACCF-corpectomy, CDR-replacement, Hybrid)
- Posteriors (Laminectomy, Laminectomy with fusion, Laminoplasty)



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APPROACH v COMPRESSION-IMAGE FINDING

- | | | | |
|---------------------------|--------|---------------------------|--------|
| • CHOSE ANTERIOR | | • CHOSE POSTERIOR | |
| • If Disc herniation | 30.7 % | • If disc herniation | 9.2 % |
| • With foraminal stenosis | 48.6 % | • With foraminal stenosis | 41.5 % |
| • With central stenosis | 72.2 % | • With central stenosis | 90.8% |

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PRE-OP CHARACTERISTICS

- | | | | |
|-------------------|-------|-------------------|-------|
| • ANTERIORS | | • POSTERIORS | |
| Radicular deficit | 34.6% | Radicular deficit | 23.8% |
| Arm pain | 56.1% | Arm pain | 30.4% |
| VAS pain score | 5.2 | VAS pain score | 4.4 |
| Report M deficit | 58.7% | Report M deficit | 67.0% |

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NUMBER of LEVELS DONE v GROUP

- | | |
|------------------|--------------------|
| • ANTERIOR | • POSTERIOR |
| • 65.4 % 2 level | • 8.6 % 2 level |
| • 29.9 % 3 level | • 19.5 % 3 level |
| • 4.7 % 4 level | • 71.9 % 4 or more |

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LENGTH of STAY

- | | |
|------------|-------------|
| • ANTERIOR | • POSTERIOR |
| • 1.6 DAYS | • 3.8 DAYS |

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30 DAY REOPERATION RATES

- ANTERIOR
- 1.0 %
- POSTERIOR
- 3.2 %

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SUMMARY OF GROUP OUTCOMES:

- 63% of Anterior approaches for cervical myelopathy had excellent or good outcomes
- 54% of Posterior approaches for cervical myelopathy had excellent or good outcomes



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Study Conclusions:

- Choice is often surgeon's preference factoring in disease characteristics factoring in likely outcome and reoperation rates
- Posterior tended to be older, higher ASA class, worse myelopathy and more levels
- Outcomes depended on appropriateness of approach and ability to adequately decompress the structures



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Optimizing multilevel ANTERIOR planning:

- Lordosis correction better with multiple hyper lordotic anterior cages versus long corpectomy strut
- Construct stability/strength guidelines:
- ACDF x2 > 1 level corpectomy
- ACDF x3 > 1 ACDF + 1 corpectomy > 2 level corpectomy



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ANTERIOR APPROACH BASICS/PEARLS

- Right vs Left
- -Prior surgery
- -Prior vocal cord issue
- -Vascular anatomy
- -Hyperextension vs traction
- -Monitoring with positioning
- -Shoulder/arm traction(injuries)



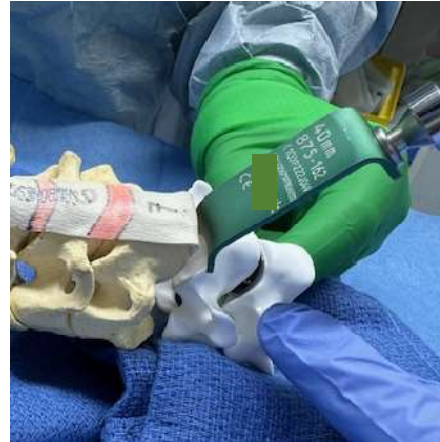
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Exposure in multi-levels:

- Transverse incision centered
- Begin at worst level
- Move retractor blades often
- Use longitudinal blade in space to access above and below
- Frequently check cuff pressure (under 25 mm)



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For Anesthesia To Know:

- Blood pressure parameters
- ETT cuff pressure



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Efficient/safer removal anterior spurring:

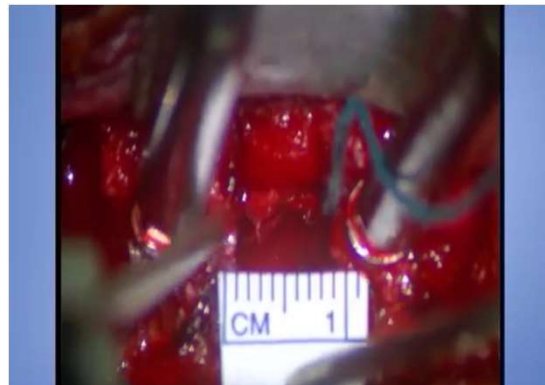
- Add lumbar right-angled hand held root retractor if drilling laterally
- Use Majeur rongeur
- Check anterior body shape in factoring lordosis



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Disc space access

- Don't over distract
- Skip distraction pins
- Less damage in osteoporotics



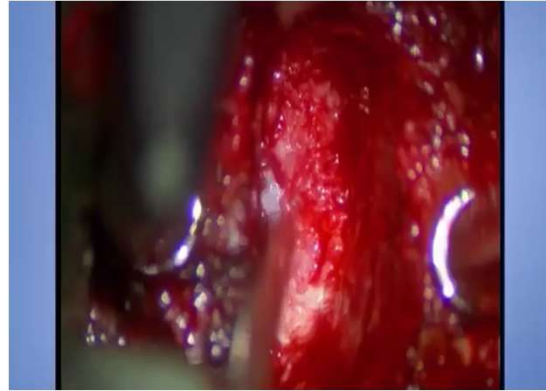
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OPTIMAL TOOLS

-trumpet discectomy vs. corpectomy

-2mm foraminotomy Kerrison

-brief lordotic rasp clean & level endplate/improve contact



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CAGE PLACEMENTS

- Minimized retraction time per level, frequently move location
- Do all discectomies and disc preparation first
- Start with cage placement inferiorly, move up
- Anesthesia to provide temporary traction with each cage

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CLOSURE TIPS

- Floseal
- Close Longus Colli



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NEW CASE

- ANATOMY alone
- Cinicals.....DiscussionTEST to follow

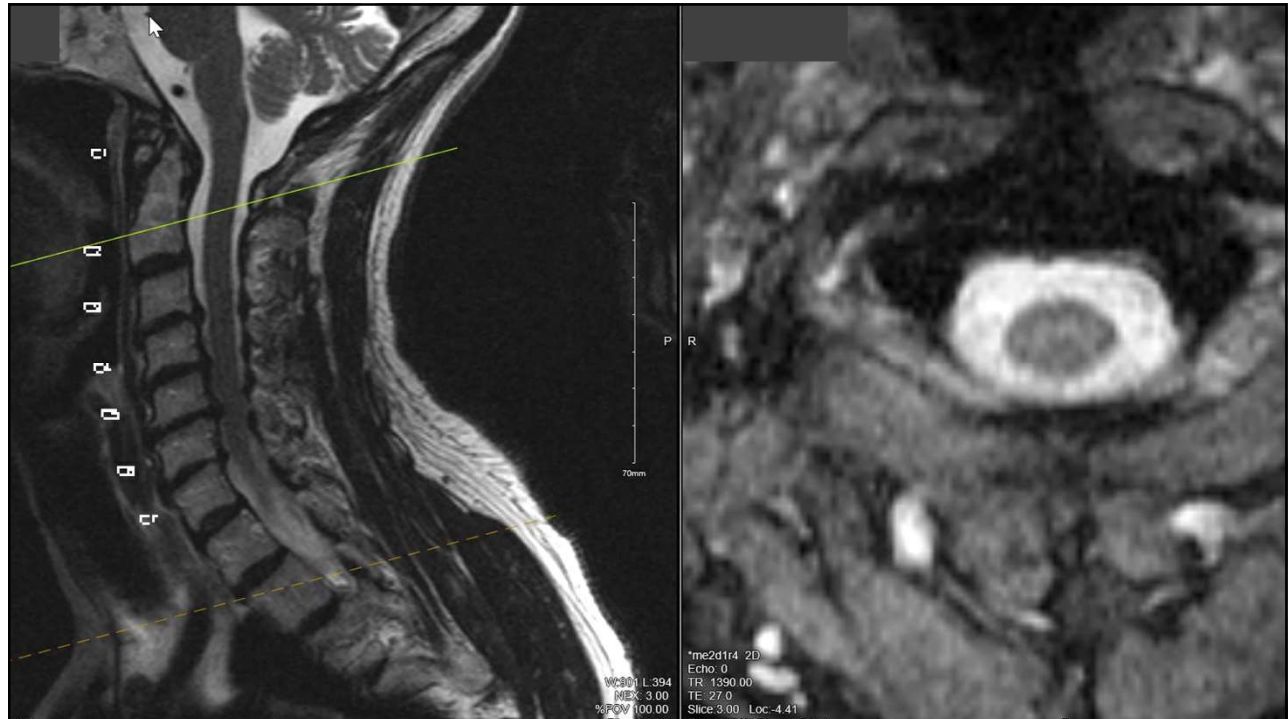
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Patient Case Review

- 82 yo female with 2 years of neck pain, left arm pain(C6) weakness and bilateral hand numbness loss of dexterity.
 - Lower ext motor 5/5
 - Hyper-reflexic U & L ext
- Tried PT, anti-inflamtories and ESI
- PMH: asthma, osteoporosis, anxiety, FMD of upper carotids
- Xray; Fl / Ext no movement



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FACTORS for ANTERIOR vs. POSTERIOR

- Compressed anatomy
(central.....foraminal.....posterior) ?
- Lordosis/instability ?
- Axial neck pain severity ?
- Radicular arm pain severity ?
- Radicular weakness ?
- Leg weakness ?

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Medical Factors /Comorbidities:

- Asthma
- Osteoporosis
- Fibromuscular dysplasia
- Aberrant Right Subclavian artery
- Anxiety disorder
- > 6 months use oxycodone 5mg bid

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AUDIENCE POLL ?????

- Anterior one level ?
- Anterior two or three levels ?
- Posterior ?
- Posterior levels ?

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SUMMARY/GOALS:

- Understand consensus review of anterior v. posterior
- Pearls to minimize risks going anteriorly
- Transient hyperextension
- Move retractor frequently, begin at worst level

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SUMMARY/GOALS:

- Foraminotomy Kerrison use
- Skip distraction pins
- Start cage placement at bottom after all discectomies
- Anesthesia provide temporary traction
- Close longus colli
- THANK YOU FOR YOUR TIME !

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Thank You.



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