

Cervical Disc Arthroplasty



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*Work Related Injuries Workshop
April 30th & May 1st, 2018*



Disclosures

- NOTHING TO DISCLOSE

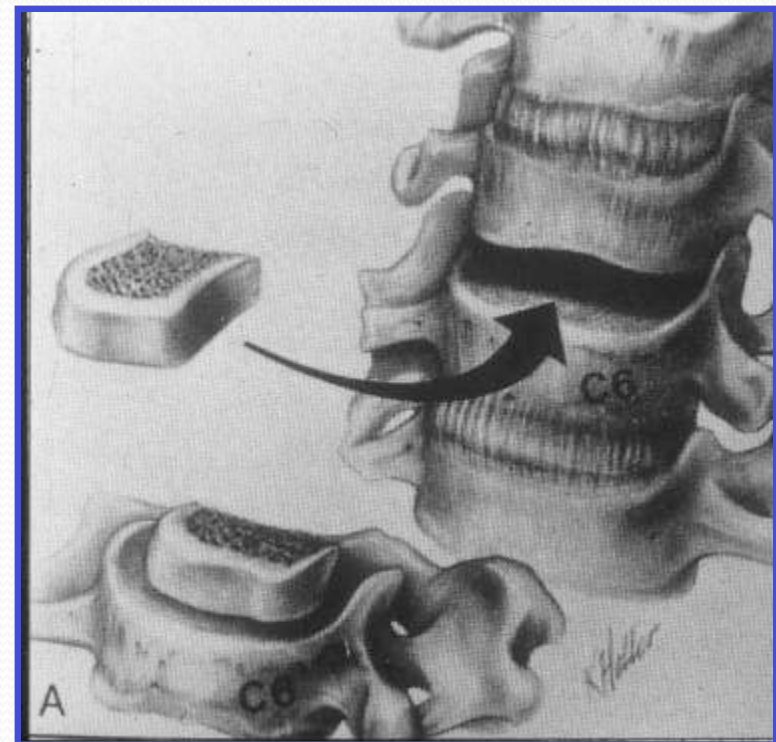
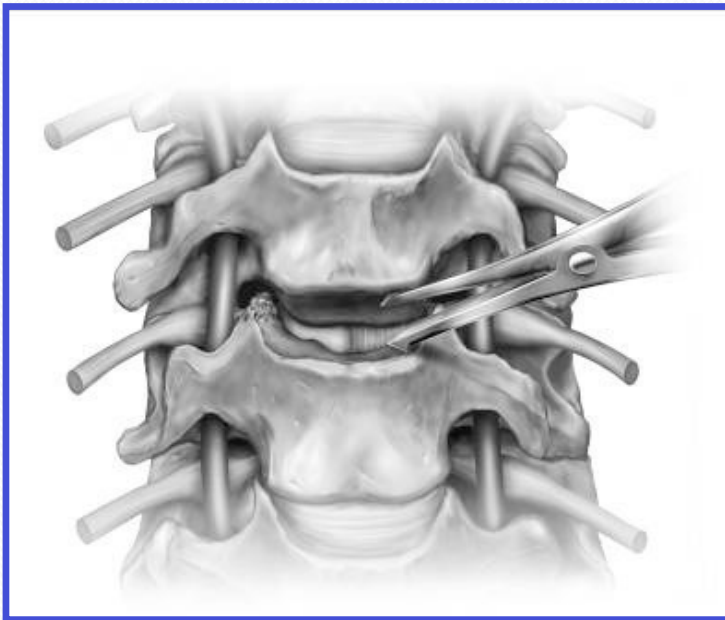


Cervical disc disorders

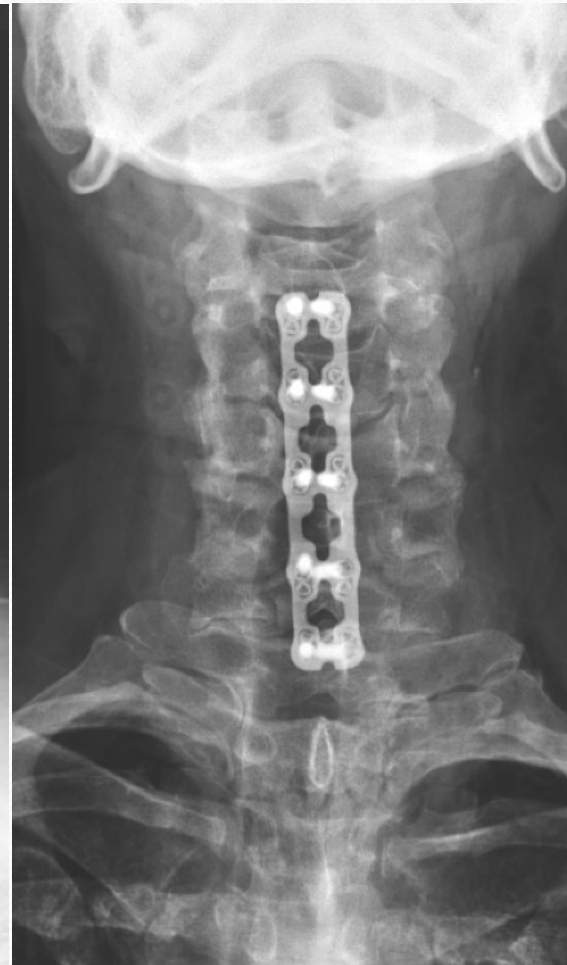
- Cervical Radiculopathy
- Cervical Myelopathy
- Neck Pain
- Referred Discogenic Pain (shoulder, periscapular)

Surgical Treatment

- ACDF



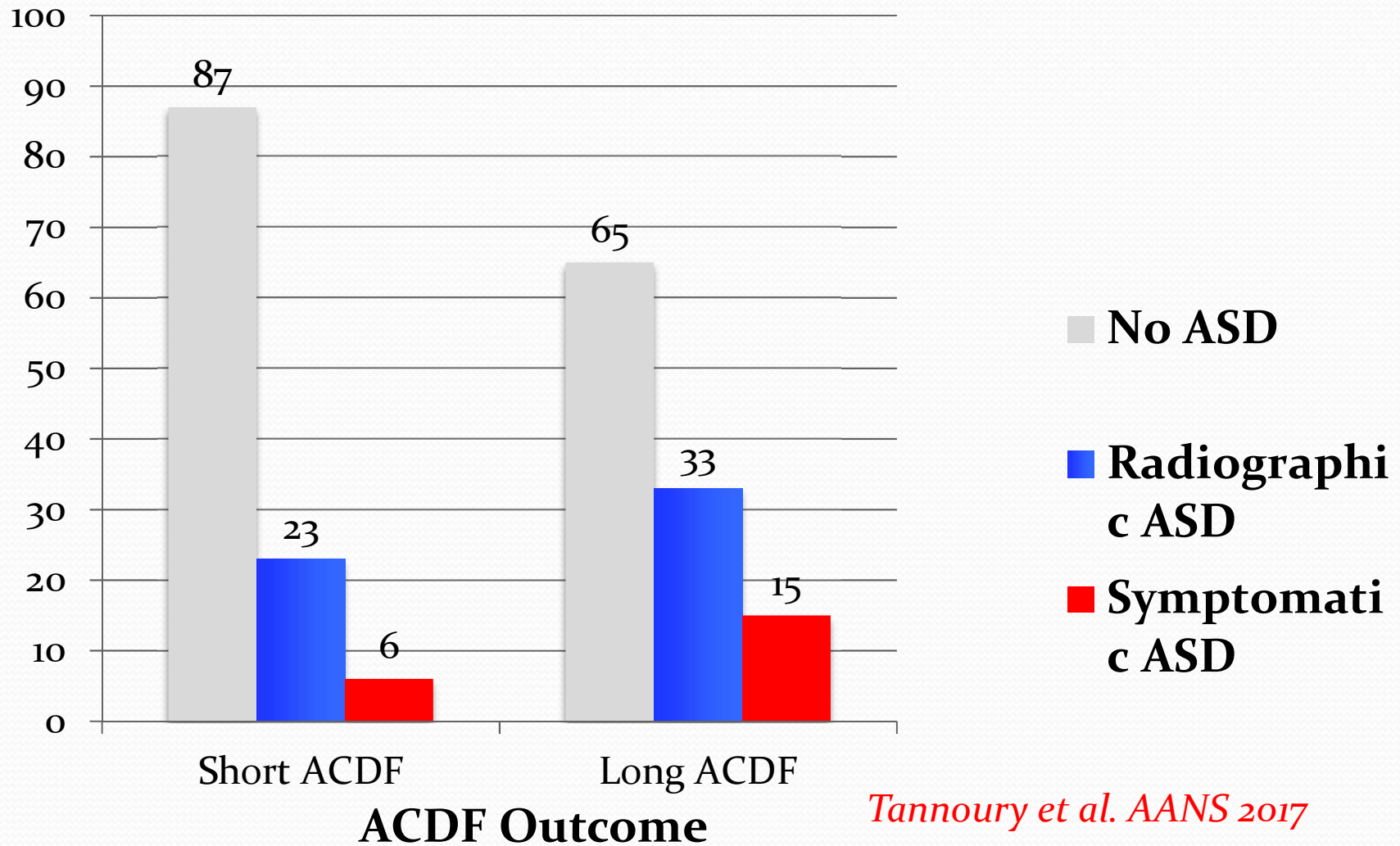
Multilevel disk disease



Shortcomings!

- Neck Stiffness
- Decreased ROM
- Adjacent segment disease

Retrospective 229 (116S+113L)



Other Literature

- Hilibrand (1999) Symptomatic adjacent segment disease in 2.9%/yr, 2/3 require surgery
- Goffin (2000) 92% of 180 fused patients showed radiographic adjacent DDD at 8.5 years post-operatively, equal incidence in trauma and DDD
- Brumley *et al.* (2000) Abnormal motion adjacent to fusion

Disc Arthroplasty (replacement)

- Discectomy and neural elements decompression
- Placement of “arthroplasty” device:
 - Allows range of motion
 - Decrease stress on adjacent segments
- 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)



PCM



Bryan



Mobi-C



Cervidisc



Prestige



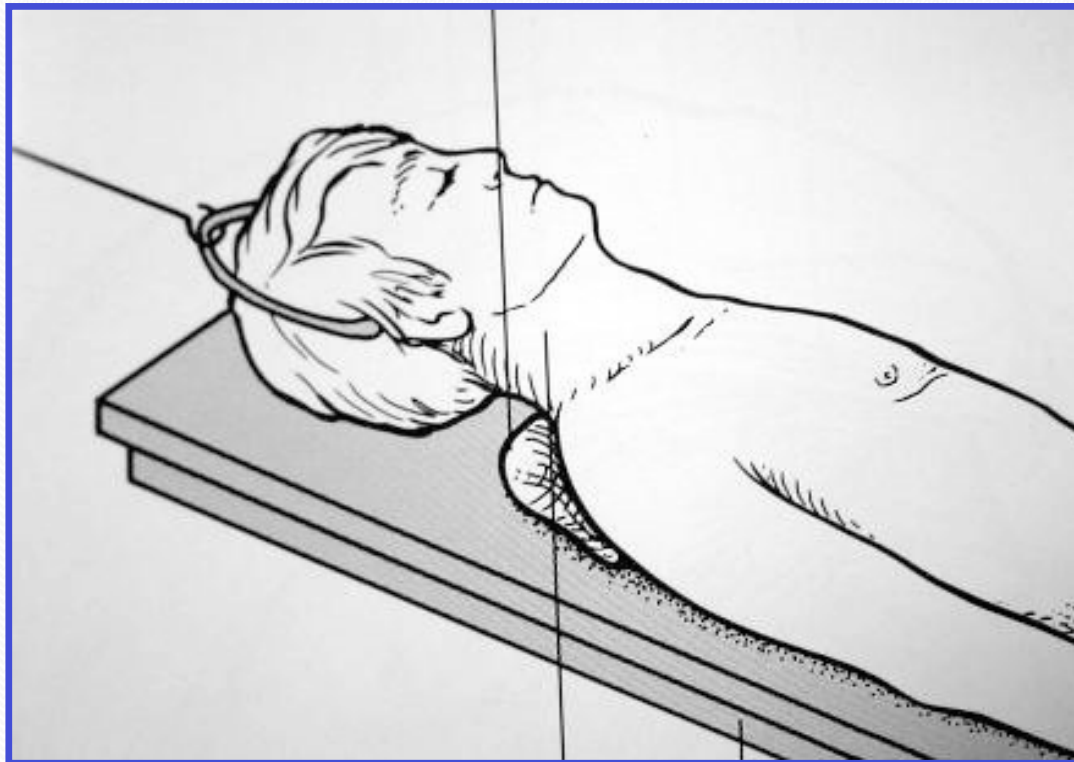
Prodisc

Instruments/Technique

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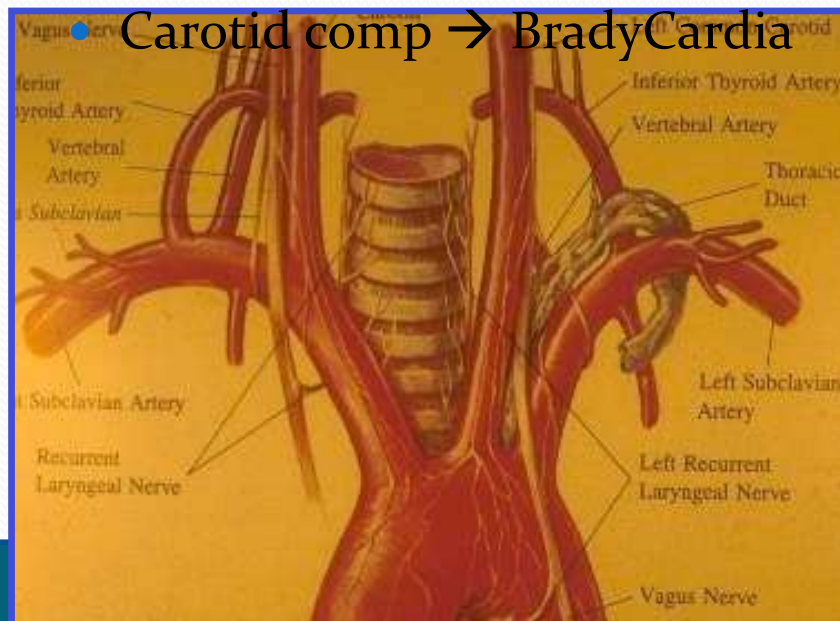
Positioning and Anatomy

- Mild Neck extension

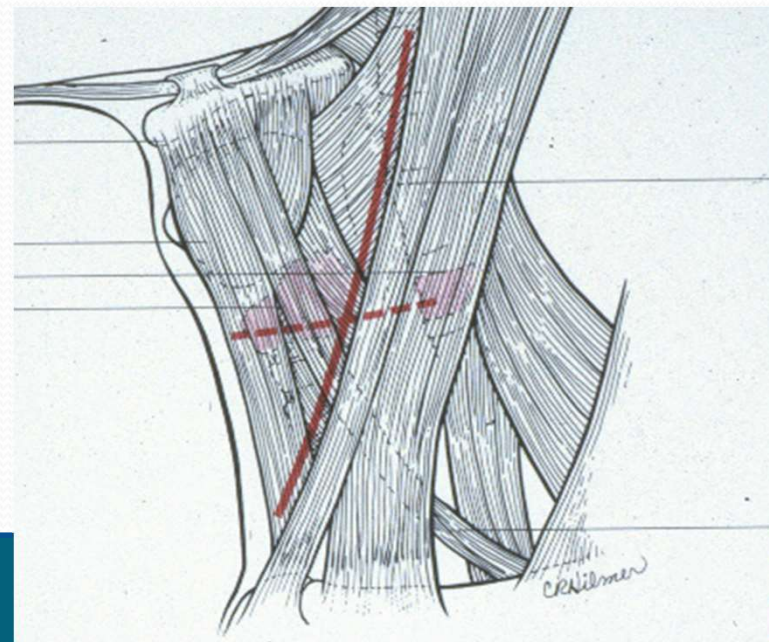


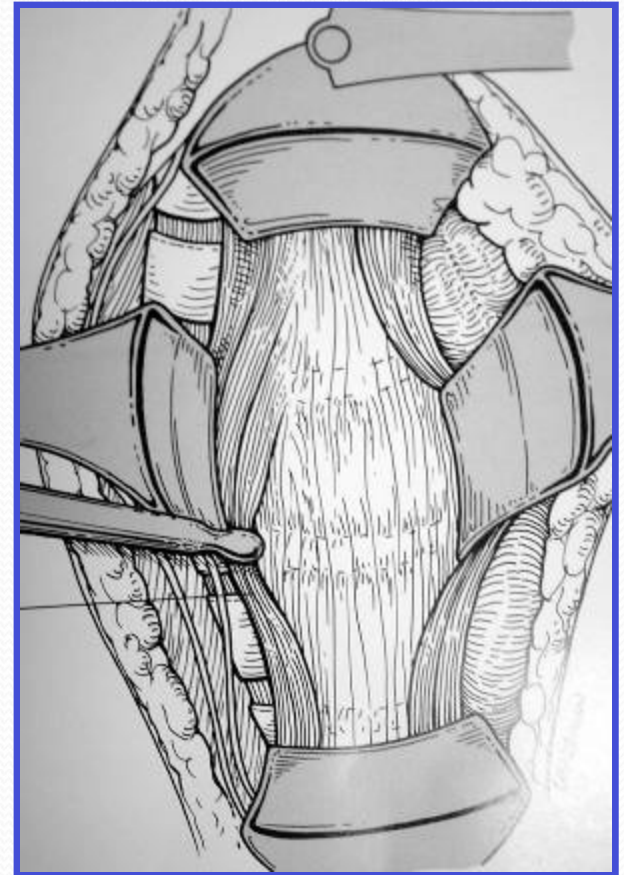
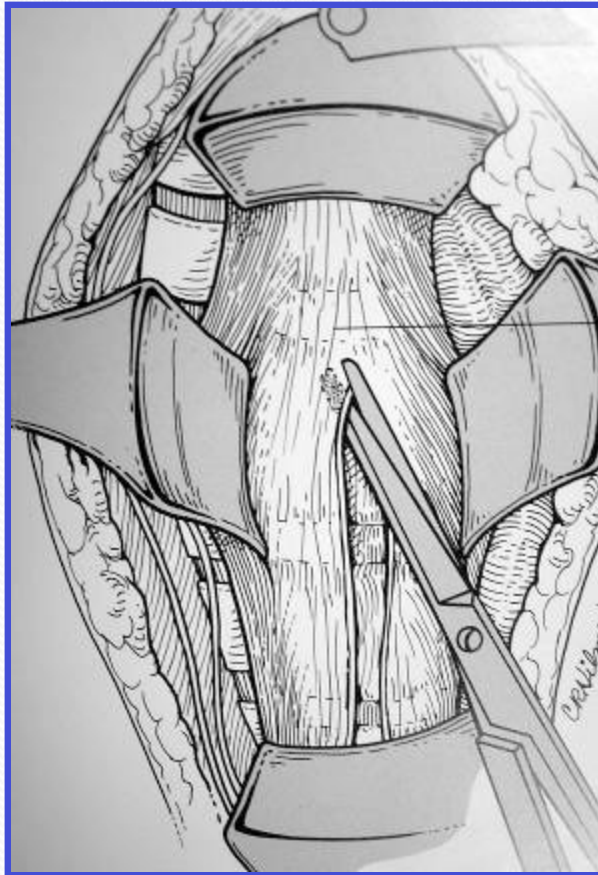
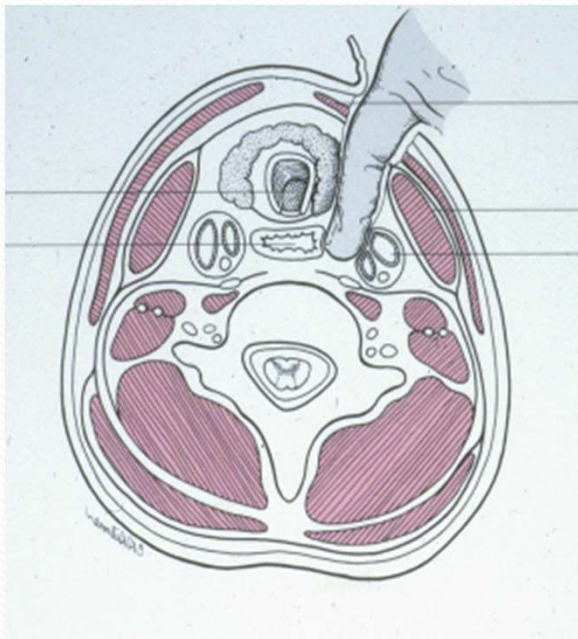
Anatomy

- RLN:
 - Predictable course on L
 - Apfelbaum: deflate/inflate tube dec risk vocal cord paralysis



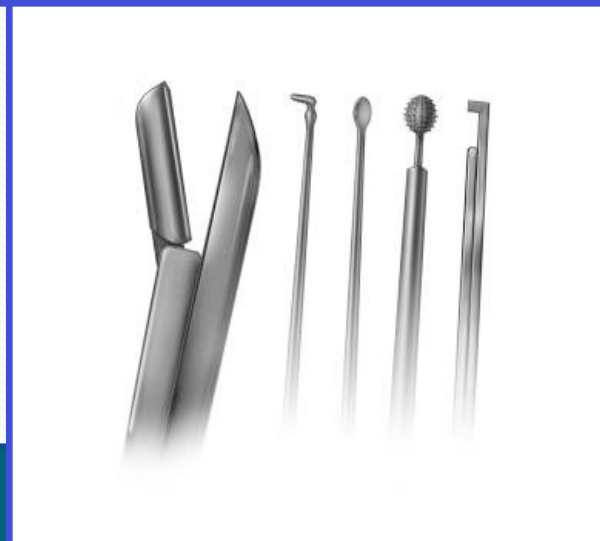
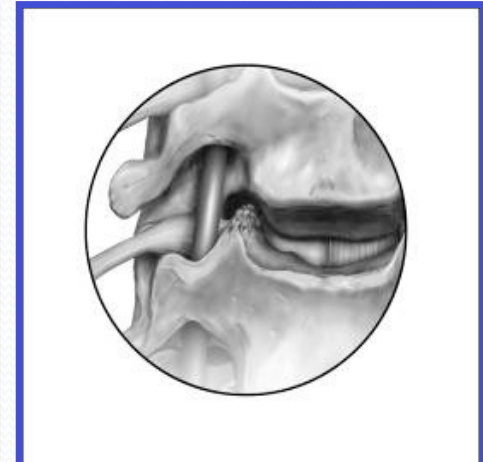
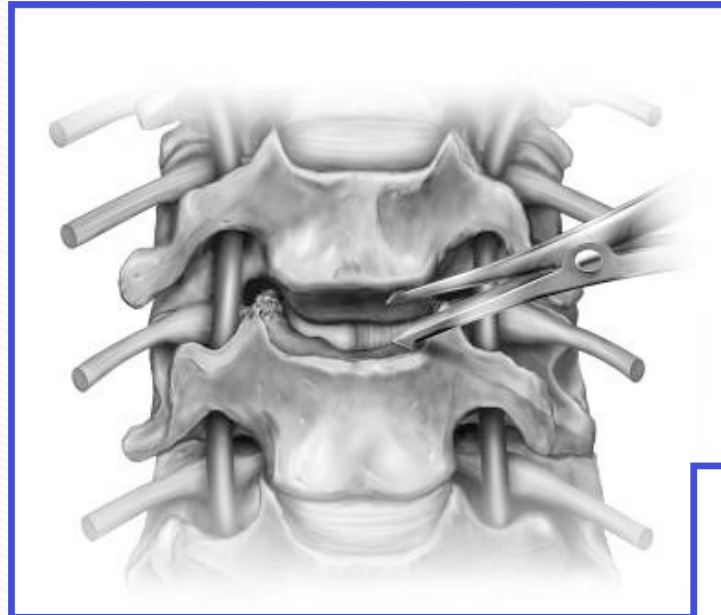
- C₃ → Hyoid
- C₄₋₅ → Thyroid Cartilage
- C₆ → Cricoid Cartilage
- C₆ → Chassaignac tubercle
- C₇-T₁ → Inferior thyroid Vx/thoracic duct



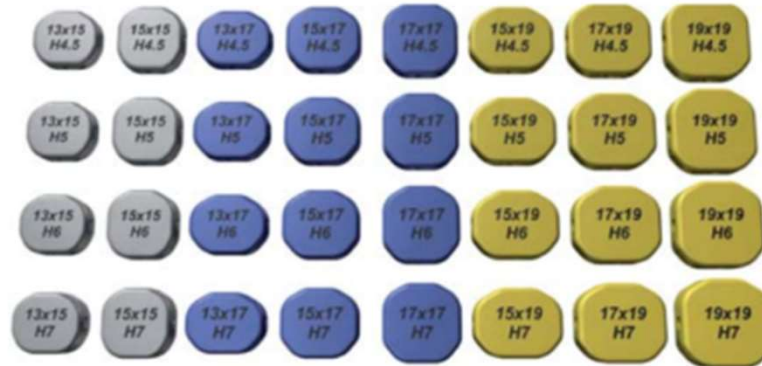


Discectomy and Decompression

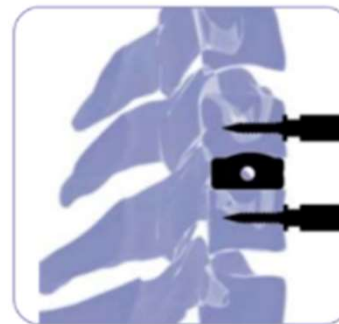
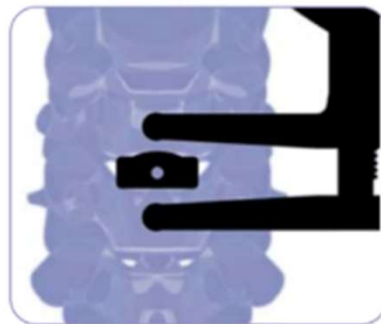
- HT: 5-10mm
- W: 10-15mm
- Depth: 12-17mm



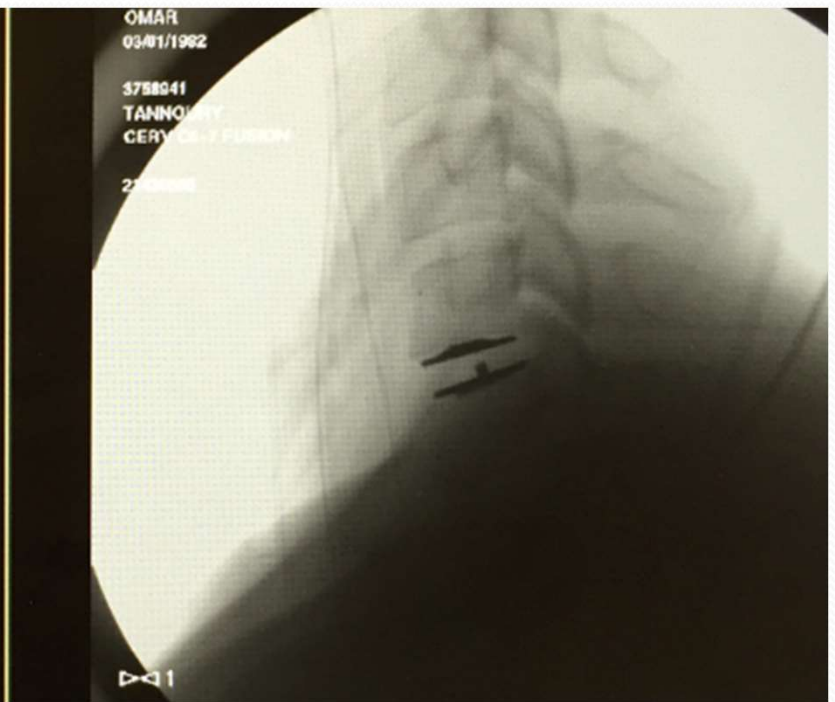
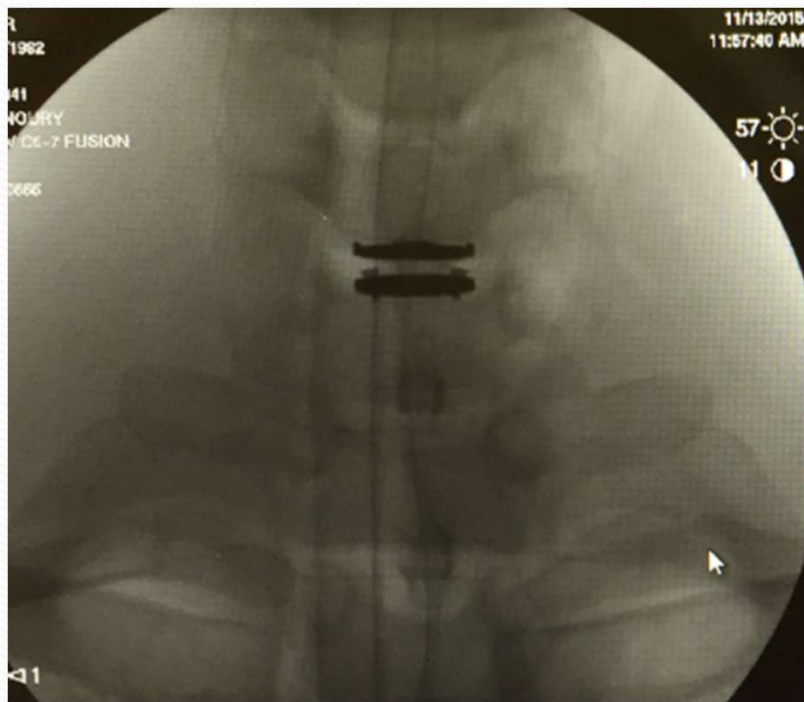




* Product availability may vary upon markets.



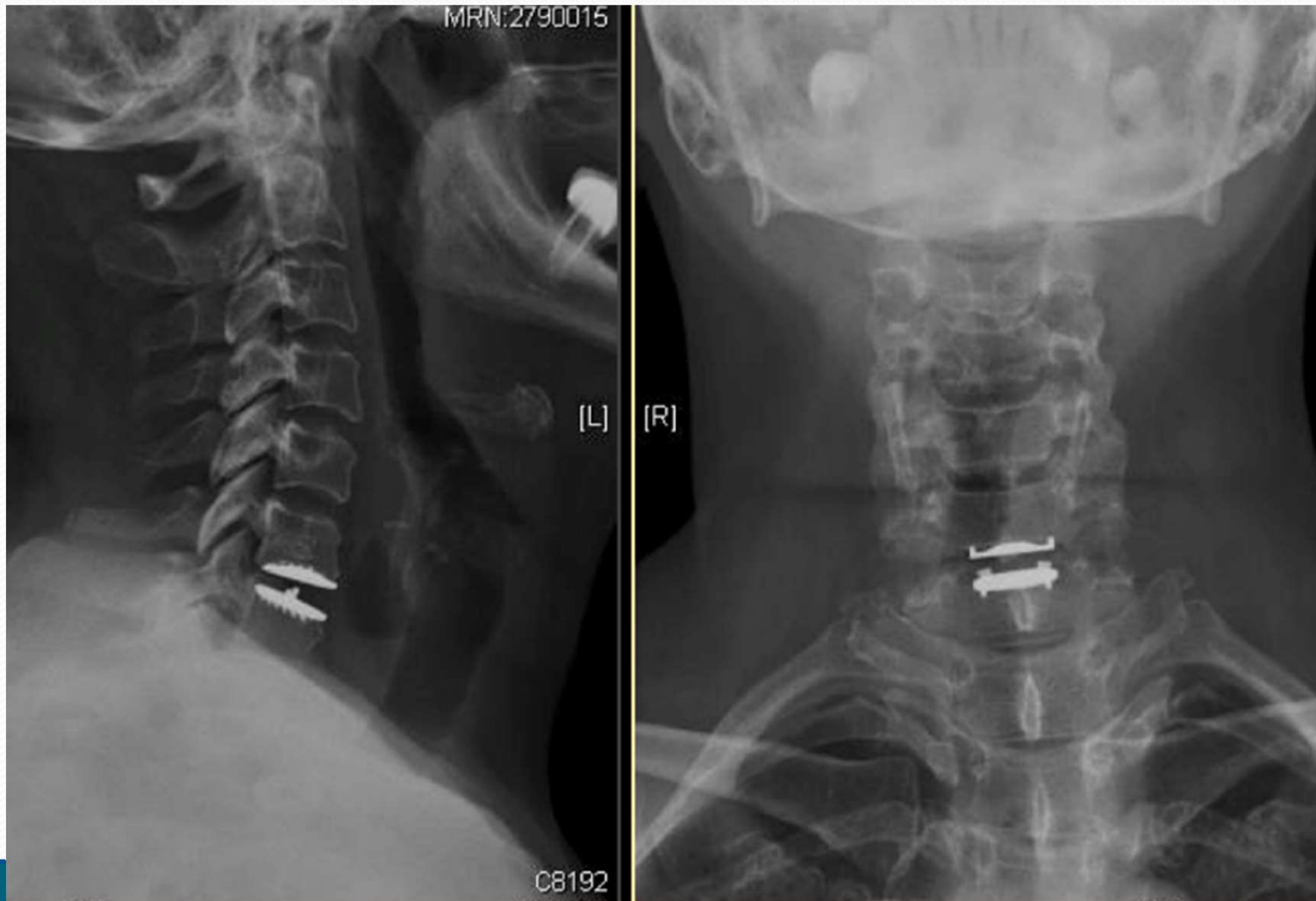




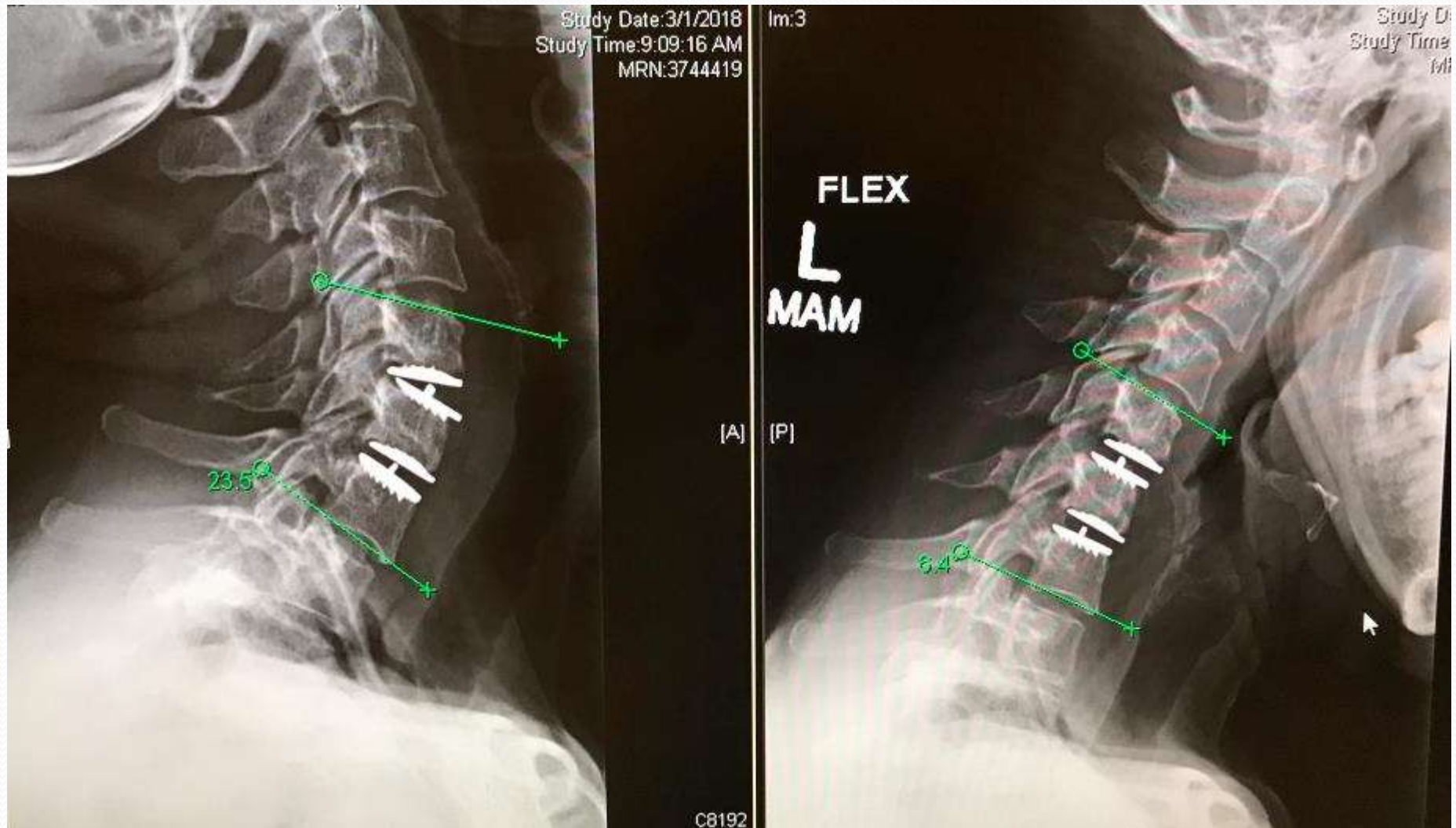
39 y M w C7 Radiculopathy



45 y F with C7 radiculopathy



ROM ~ 25 – 30 degrees



*Mobi-C (Biomet Zimmer) the only FDA approved for 2 contiguous levels

NASS Coverage Policy Recommendations: Cervical Artificial Disc Arthroplasty 2015

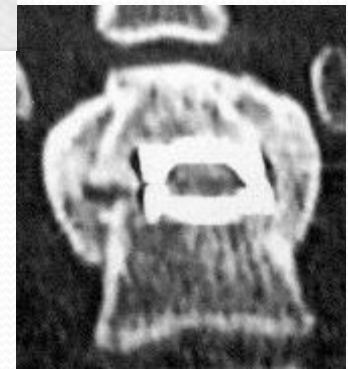
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Outcomes

- Maintaining cervical ROM *Lord et al. 2017*
- Improved QOL TDR vs. ACDF *Hu et al. 2016*
 - Better: NDI – VAS – SF-36
 - Lower: Implant related complications, ASD
- 2 level disease (ACDF vs. TDR): 2-4 yrs f-up (6-7)
 - TDR: significant maintaining ROM
 - ACDF: Higher reoperation rate (11.4% vs. TDR 3.1%)
Davis et al. 2013, 2015

Pitfalls

- Complications:
 - Migration
 - Subsidence
 - Ossification
- Longevity??
- COI - Outcomes reporting?
 - Conflicted authors (90.9% favorable outcomes)
 - Non-conflicted authors (70.4% favorable outcomes)



Narain et al. 2017

Summary

- Promising technology: 1 – 2 level disease
- Equivalent to superior outcomes to ACDF
- Utilization rate: ACDF >>> TDR
 - GOLD STANDARD = ACDF
- Future considerations:
 - Complications?
 - longevity?