

Cervical TDR and Hybrid Versus ACDF Secondary Surgery Rates over 8 to 12 Year Follow-up

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Conflict of Interest

Self-funded, no conflict of interest.

Background

- Cervical TDR in prior studies demonstrate lower secondary surgery rate vs ACDF.
- *Hybrids* (TDR combined with ACDF) is individualized tx for those with a level(s) not well suited for TDR combined with another level that is.
- Short-term studies support Hybrids have good outcomes and *may* have lower secondary surgery than multi-level ACDF.

Purpose

- Compare long-term (8 -12 year) 2ndary surgery rates of:
 - TDR, single level (n = 69).
 - ACDF, single level (n = 69).
 - “Off-label” Hybrid constructs (n = 83).
 - Multi-level ACDF (n = 83).
- ACDF groups were historical consecutive patients with elimination of patients with central stenosis, deformity or advance disc space narrowing

Methods

- Retrospective review of prospectively collected data.
- Prospective Outcomes (neck & arm VAS, NDI/ODI).
- Failure modes, TDR designs.

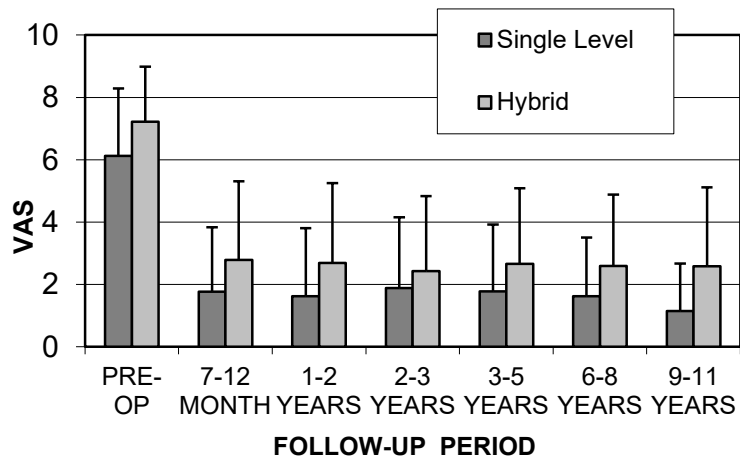


Results

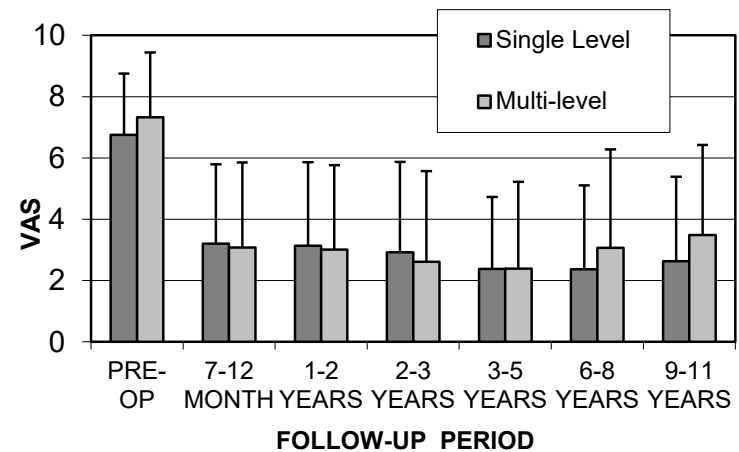
<u>TABLE 1</u>	<u>Single Level TDR (n=69)</u>	<u>Single Level ACDF (n=69)</u>
Age (years, mean +/- SD)	46.5 ± 7.9	44.0 ± 9.7
Female (%)	53	58
Smokers (%)	19	48
Work Comp/Lit (%)	26	33
Duration of symptoms (years)	3.1 ± 5.7	2.0 ± 3.5
	<u>Hybrid TDR (n=83)</u>	<u>Multi-Level ACDF (n=83)</u>
Age (years, mean +/- SD)	51.6 ± 8.8	47.7 ± 8.6
Female (%)	67	70
Smokers (%)	33	42
Work Comp/Lit (%)	24	27
Duration of symptoms (years)	5.7 ± 5.9	3.6 ± 4.6

Outcomes, n=83 each cohort

TDR NECK PAIN



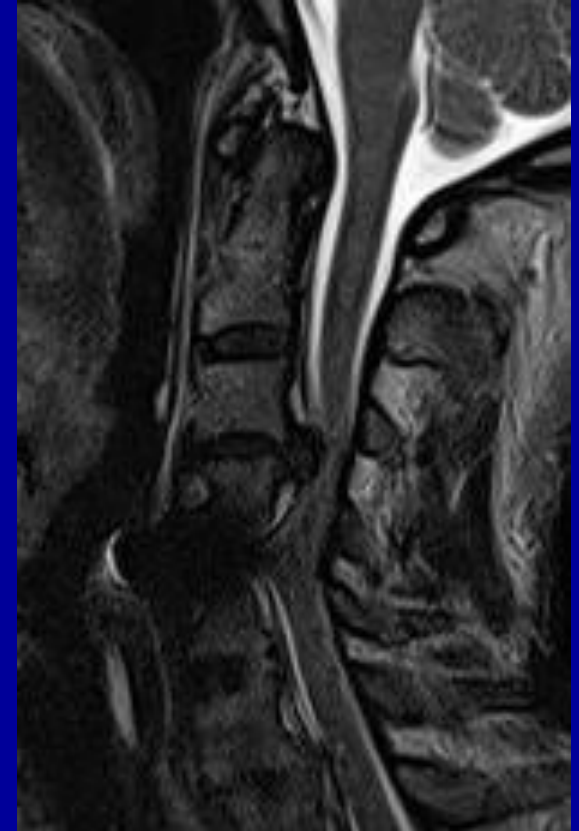
ACDF NECK PAIN



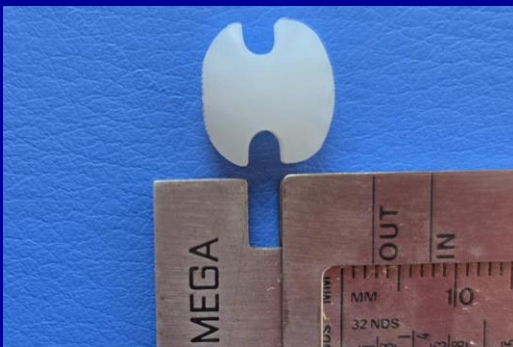
Secondary Surgery Etiology

- Adjacent segment degeneration.
- Pseudarthrosis (ACDFs and Hybrids).
- Unstable TDR (spondylolisthesis/kyphosis).
- Subsidence.
- Migration.

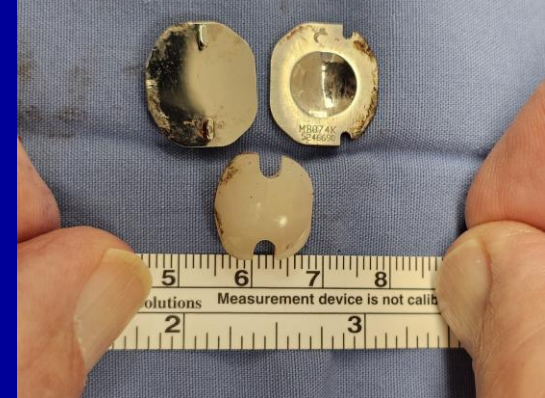
Adjacent Segment Conditions



TDR Failure - Instability



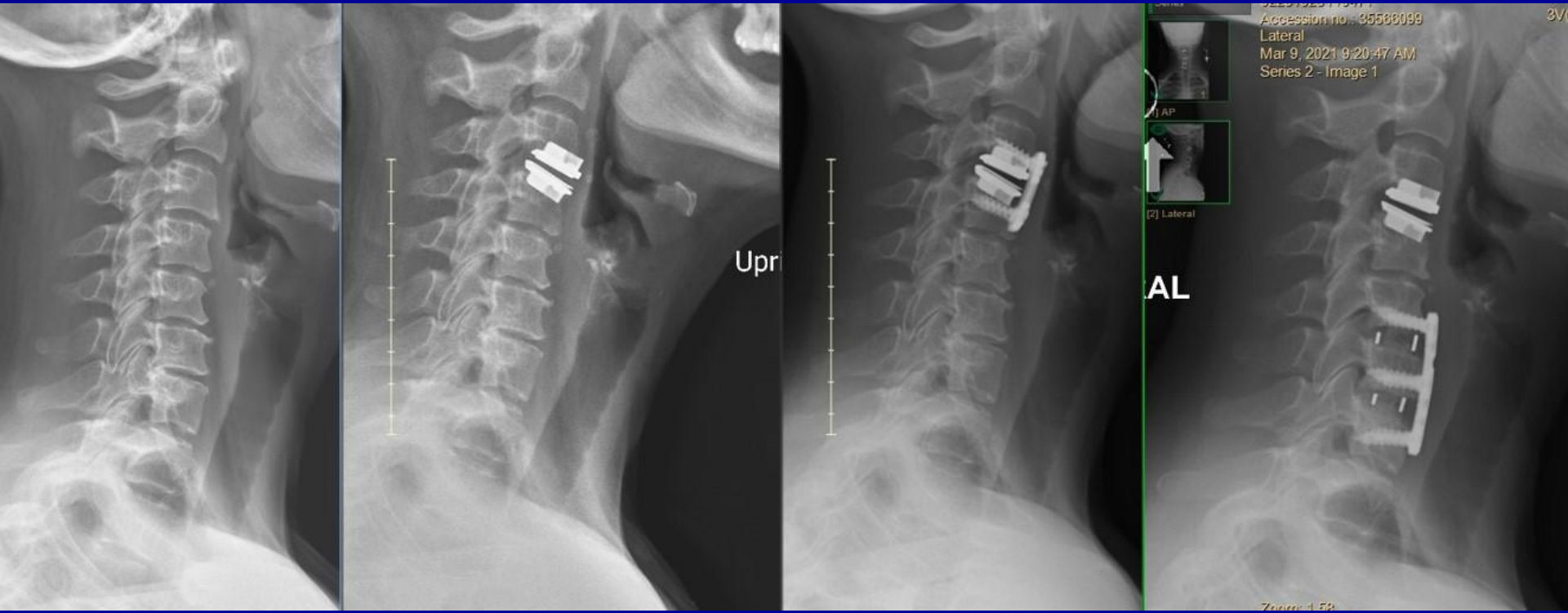
OEM notch 2+ mm
(translation \pm 1mm)



Hybrid Pseudarthrosis



TDR Migration

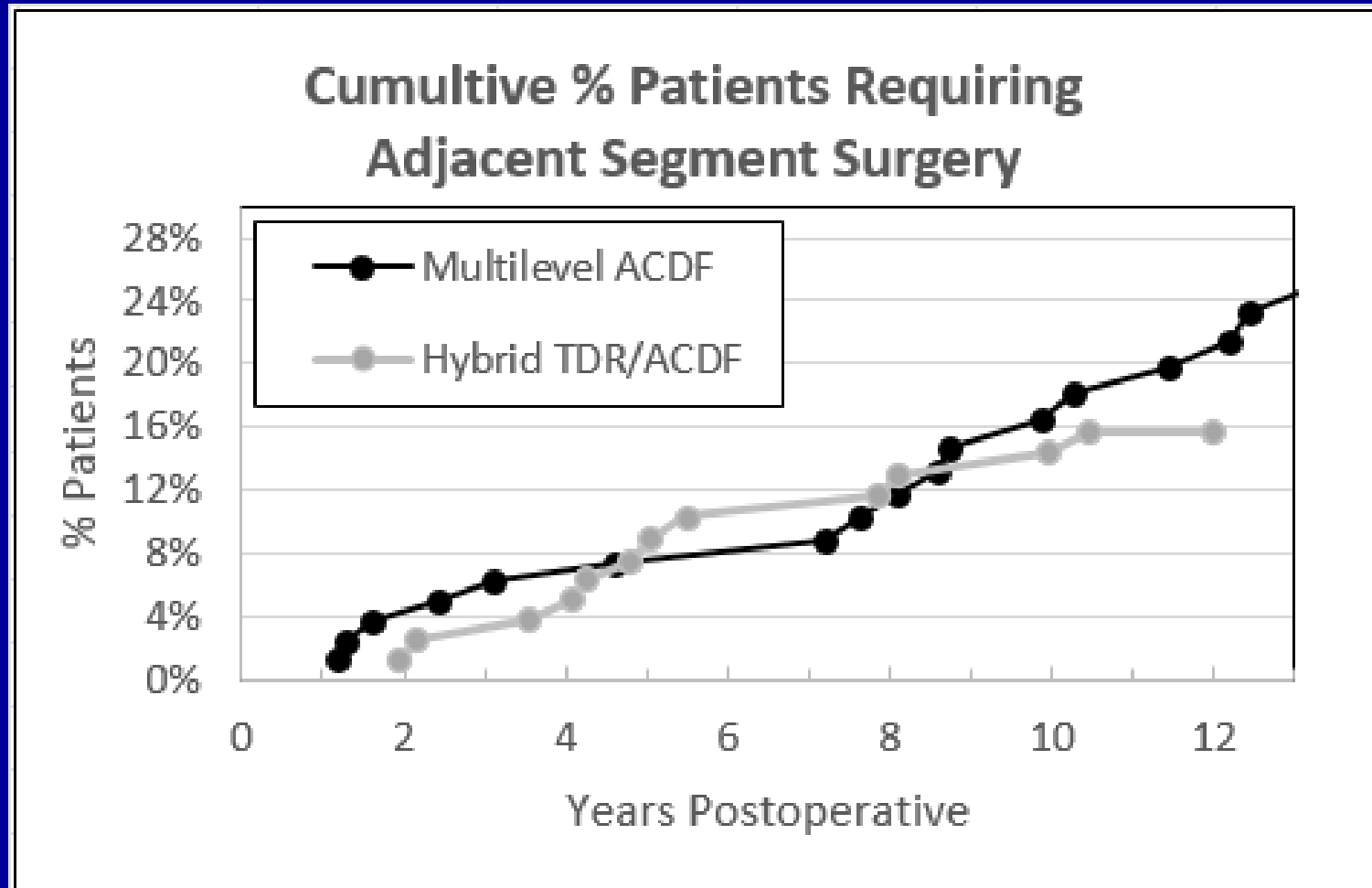


TDR Subsidence (& Migration)



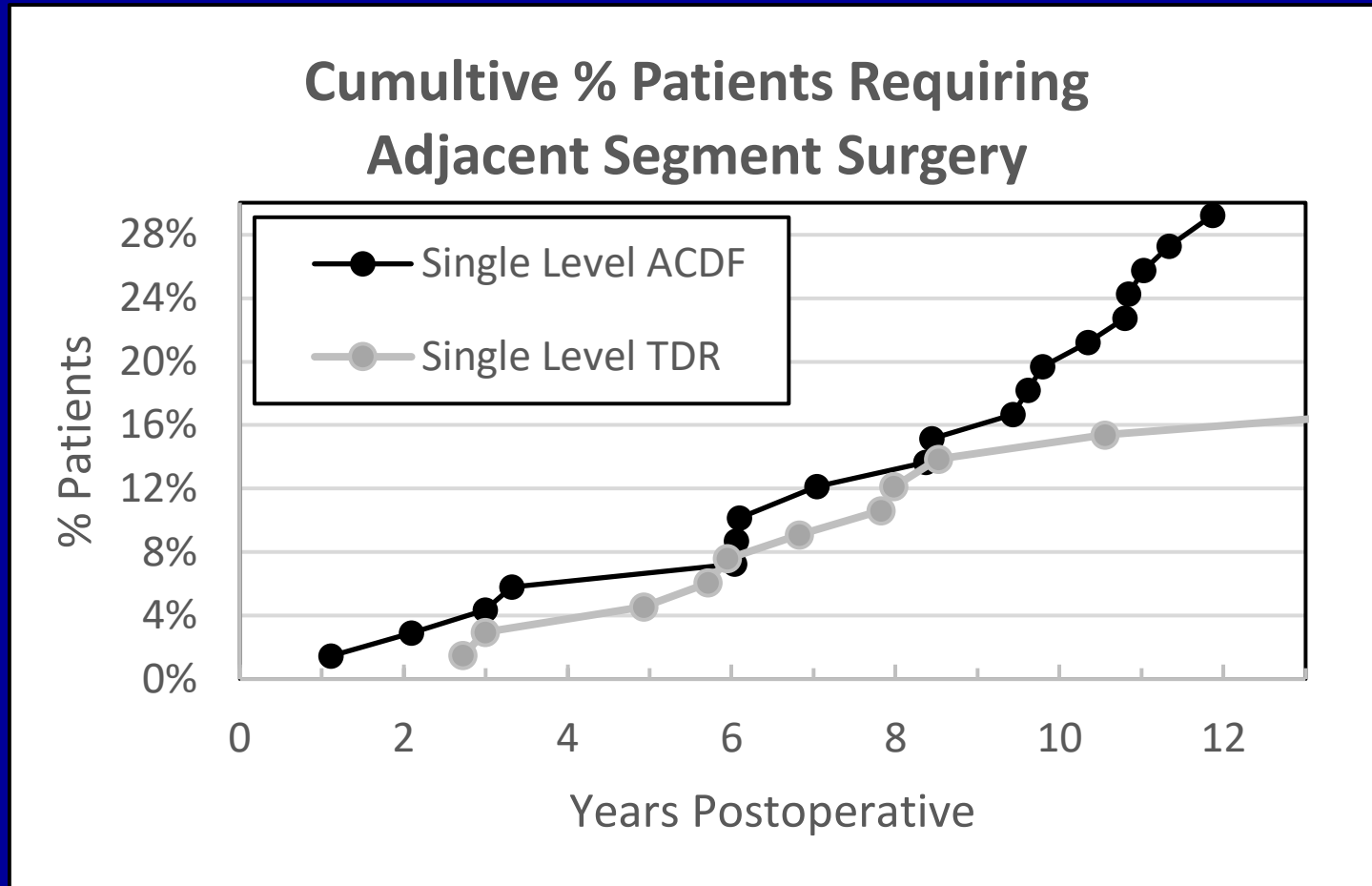
Secondary Surgeries @ 10+ yr FU

- Adjacent Segment:



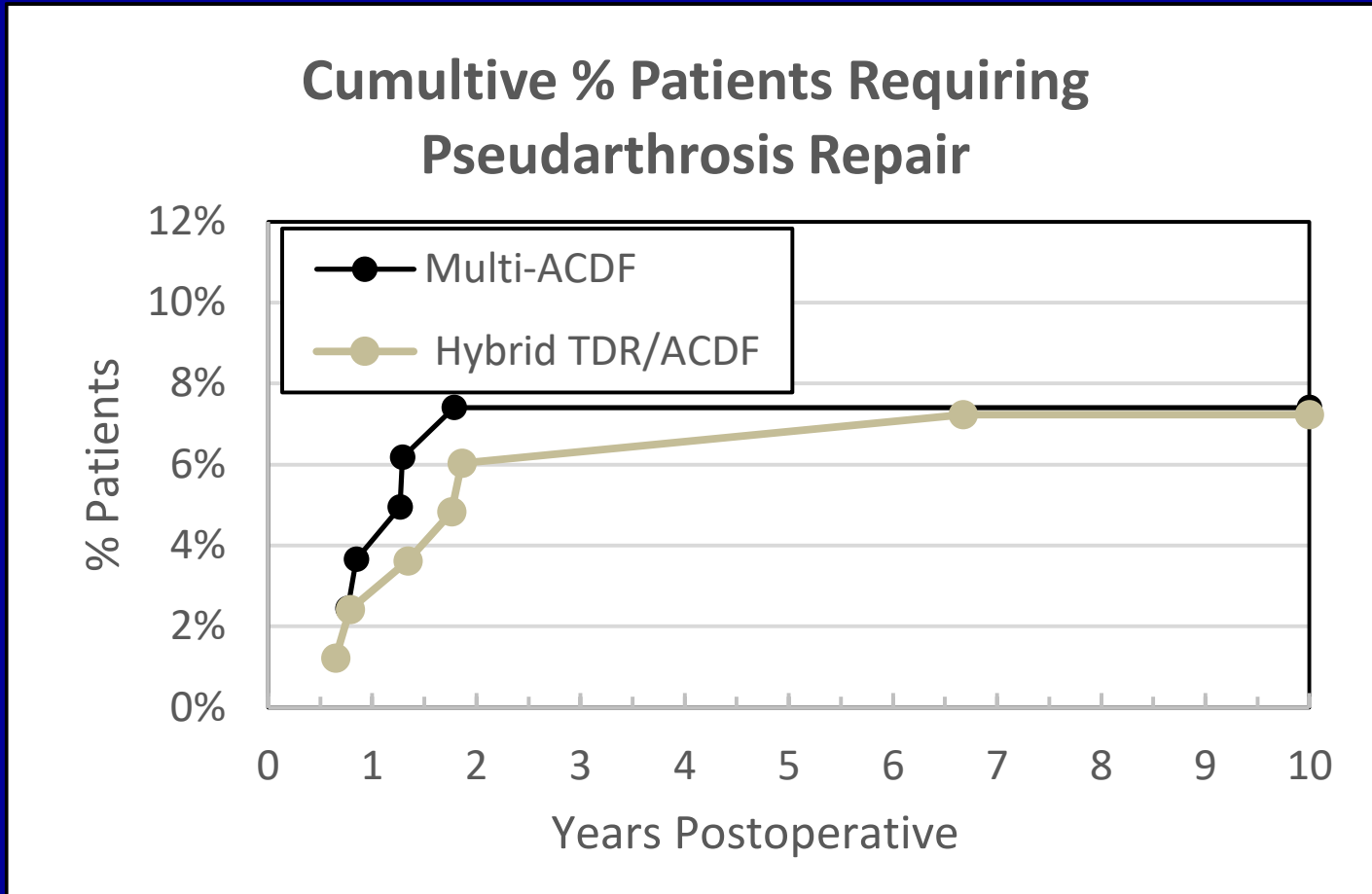
Secondary Surgeries @ 10+ yr FU

- Adjacent Segment:



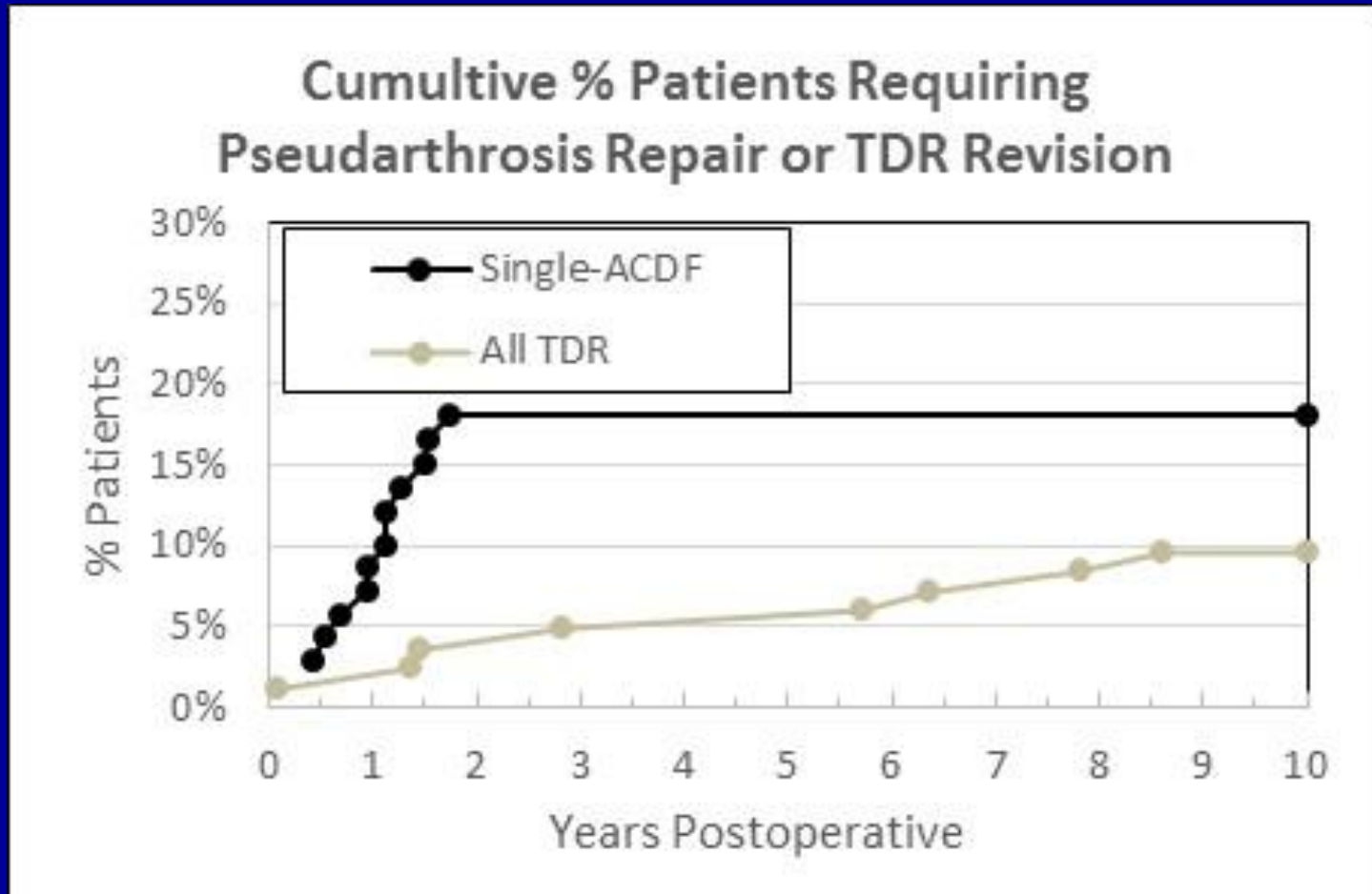
Secondary Surgeries @ 10+ yr FU

- Pseudos: both cohorts 7%



Secondary Surgeries @ 10+ yr FU

- Hybrid *TDR* revision \approx 4%
- Single level \approx 6%



Secondary Surgeries *All* TDR Revisions, 3%

Single level TDR (n= 132) failure rates:

2/28 (7%) mobile core from excessive translation & kyphosis instability.

2/97 (2%) fixed central dome device due to kyphosis instability or migration.

0/2 fixed posterior dome devices.

0/5 deformable.

Additionally, primary failed single level TDR (n= 5) elsewhere:

4 mobile core

1 fixed posterior dome.

Hybrids (n=148) failure rates:

2/29 (7%) mobile core from excessive translation & kyphosis.

2/114 (2%) fixed central dome due to kyphosis/subsidence.

0/1 fixed posterior dome.

0/2 deformable.

Additionally, failed hybrid surgery (n= 3) elsewhere:

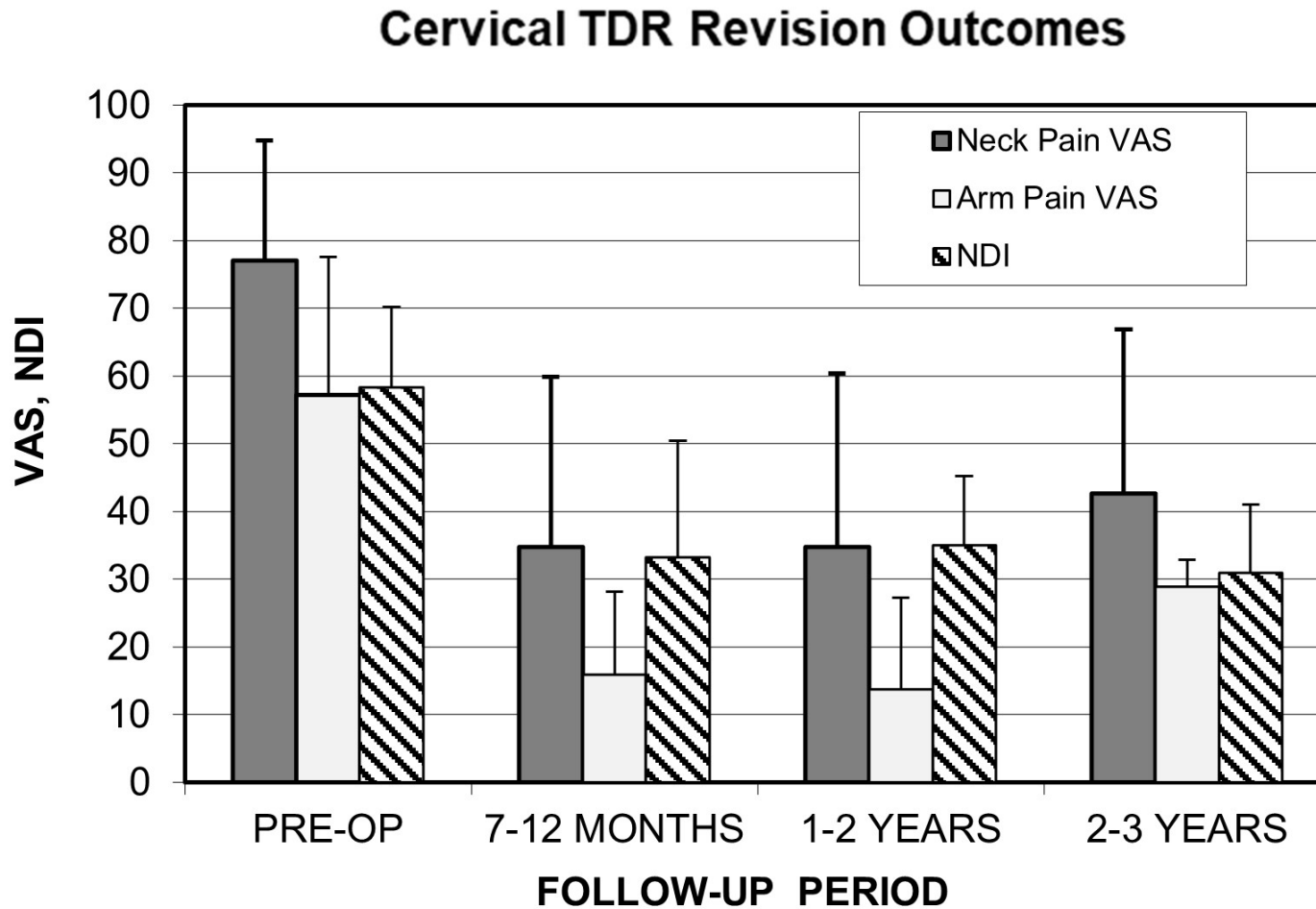
2 mobile core from excessive translation and kyphosis instability.

1 fixed posterior dome had subsidence failure.

2-level mobile core implant TDR (n= 10):

1/10 (10%) had failure due to translation/kyphosis instability.

Secondary Surgeries *All* TDR Revisions



Discussion/Conclusion

- Cervical Hybrid outcomes are durable and slightly favor Hybrids over Multi-level ACDF.
- Low rate of adjacent segment surgery and similar to Multi-level ACDF up to 10 years. Less > 10 yrs?
- Low pseudo rate and repairs.
- Long-term revisions < 10% for both single level TDR and Hybrids.