

Outcomes of Hybrid TDR/ACDF Versus Multi-level ACDF with 8 to 12 Year Follow-up

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Conflict of Interest

None

Background

- Cervical TDR is gaining popularity for single level conditions and have lower secondary surgery rate vs ACDF.
- When *multi-level* TDR not applicable, *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.
 - Example: one level is subacute hydrated HNP with only mild disc space narrowing adjacent to level with kyphosis and spondylitic central stenosis due to “hard” disc and narrow interbody height.
- 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) outcomes of “off-label” Hybrid constructs to multi-level ACDF.
- Multi-level ACDF group is historical consecutive patients with elimination of those with central stenosis, deformity or advance disc space narrowing (n = 83)
- Single level TDR and ACDF control groups.
- Secondary surgery rates for Hybrids vs Multi-level ACDF.
- Self-funded, no conflict of interest.

Methods

- TDR devices included mobile core, semi-constrained with fixed dome either central or posterior, and deformable types.
- 2/3 had Hybrid construct as index procedure, 1/3 had TDR added to prior ACDF.
- Prospective Outcomes (neck & arm VAS, Pain Drawing, NDI/ODI, pain meds).
- Validated by comparing single level results (n = 69) to IDE studies.



MOS 2025

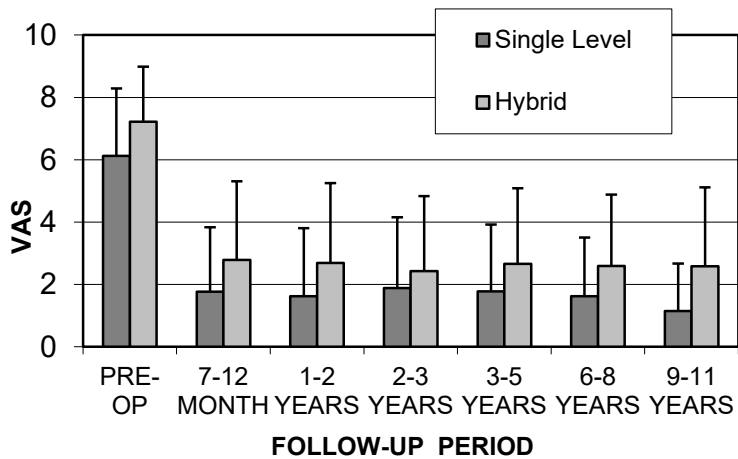


Results

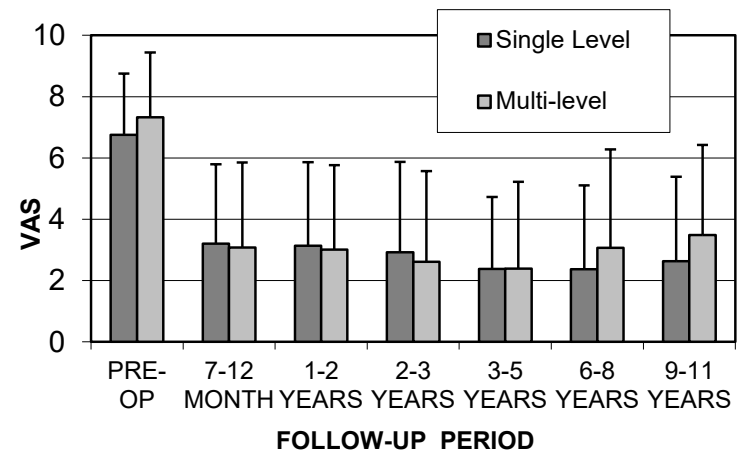
| <u>TABLE 1</u> | <u>Single Level TDR (n=29)</u> | <u>Single Level ACDF (n=69)</u> |
|------------------------------|--------------------------------|---------------------------------|
| Age (years, mean +/- SD) | 48.2 ± 9.3 | 44.0 ± 9.7 |
| Female (%) | 60 | 58 |
| Smokers (%) | 21 | 48 |
| Work Comp/Lit (%) | 23 | 33 |
| Duration of symptoms (years) | 4.5 ± 6.6 | 2.0 ± 3.5 |
| | | |
| | <u>Hybrid TDR (n=55)</u> | <u>Multi-Level ACDF (n=90)</u> |
| Age (years, mean +/- SD) | 53.1 ± 9.7 | 47.7 ± 8.6 |
| Female (%) | 62 | 70 |
| Smokers (%) | 28 | 42 |
| Work Comp/Lit (%) | 31 | 27 |
| Duration of symptoms (years) | 5.9 ± 6.1 | 3.6 ± 4.6 |

Outcomes, n=83 each cohort

TDR NECK PAIN

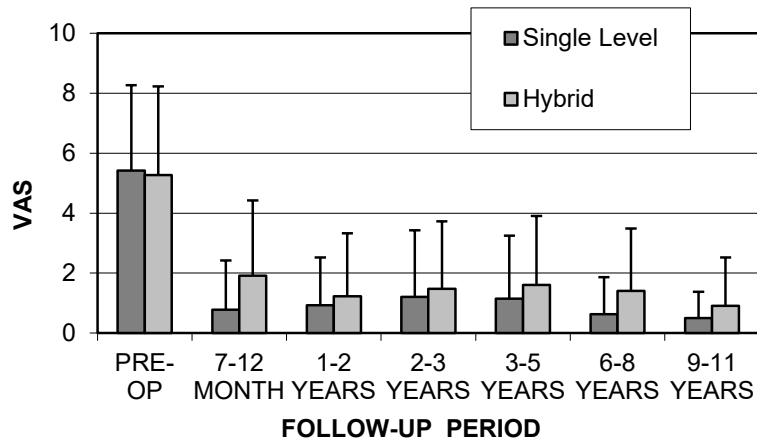


ACDF NECK PAIN

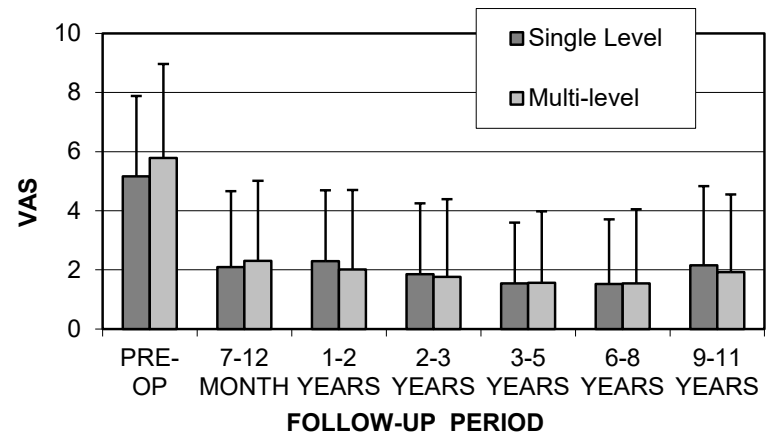


Outcomes, n=83 each cohort

TDR ARM PAIN

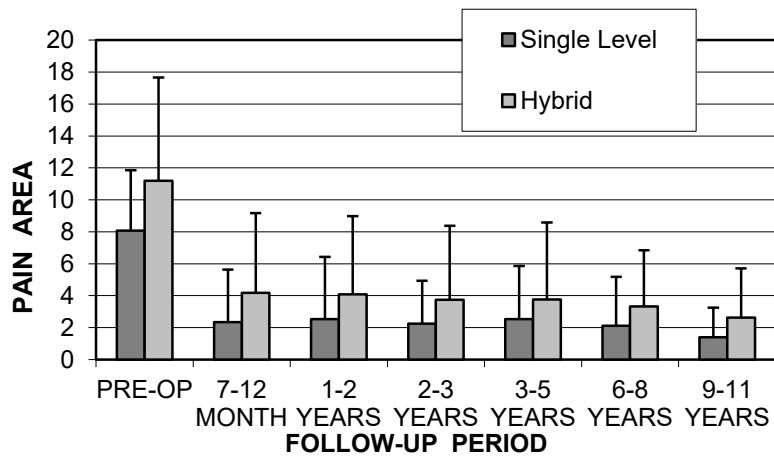


ACDF ARM PAIN

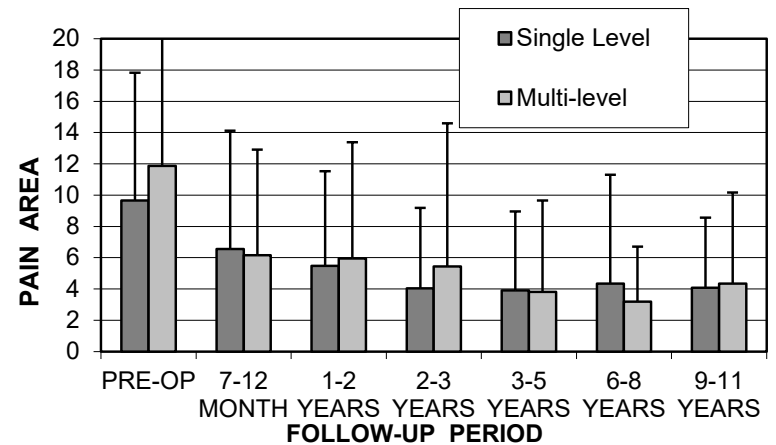


Outcomes, n=83 each cohort

TDR PAIN DRAWING

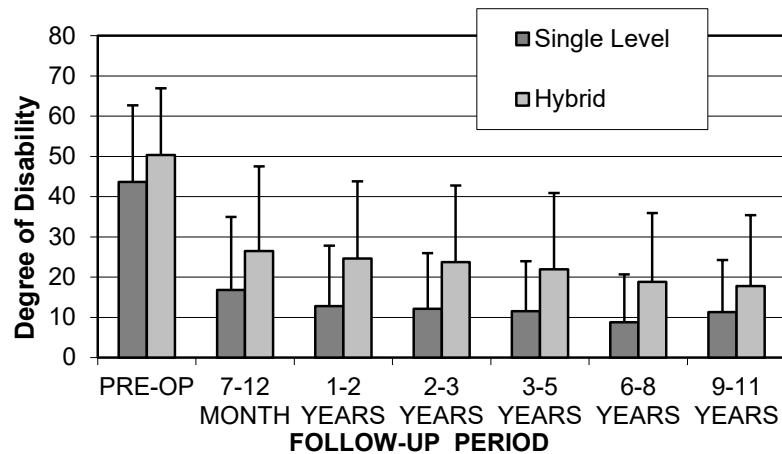


ACDF PAIN DRAWING

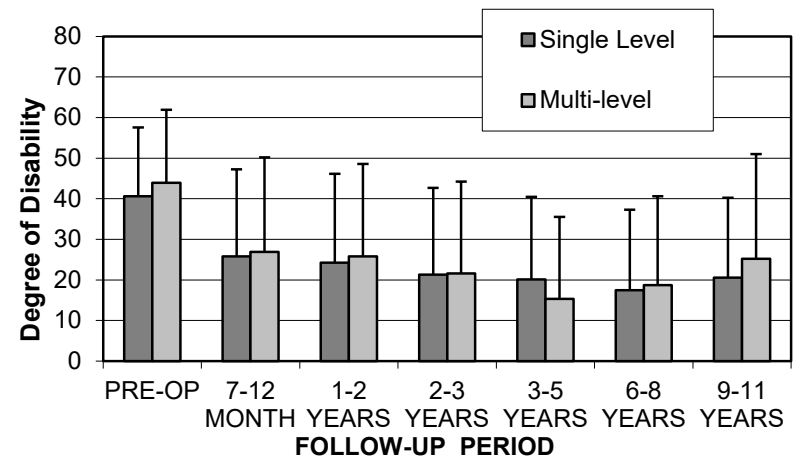


Outcomes, n=83 each cohort

TDR DISABILITY

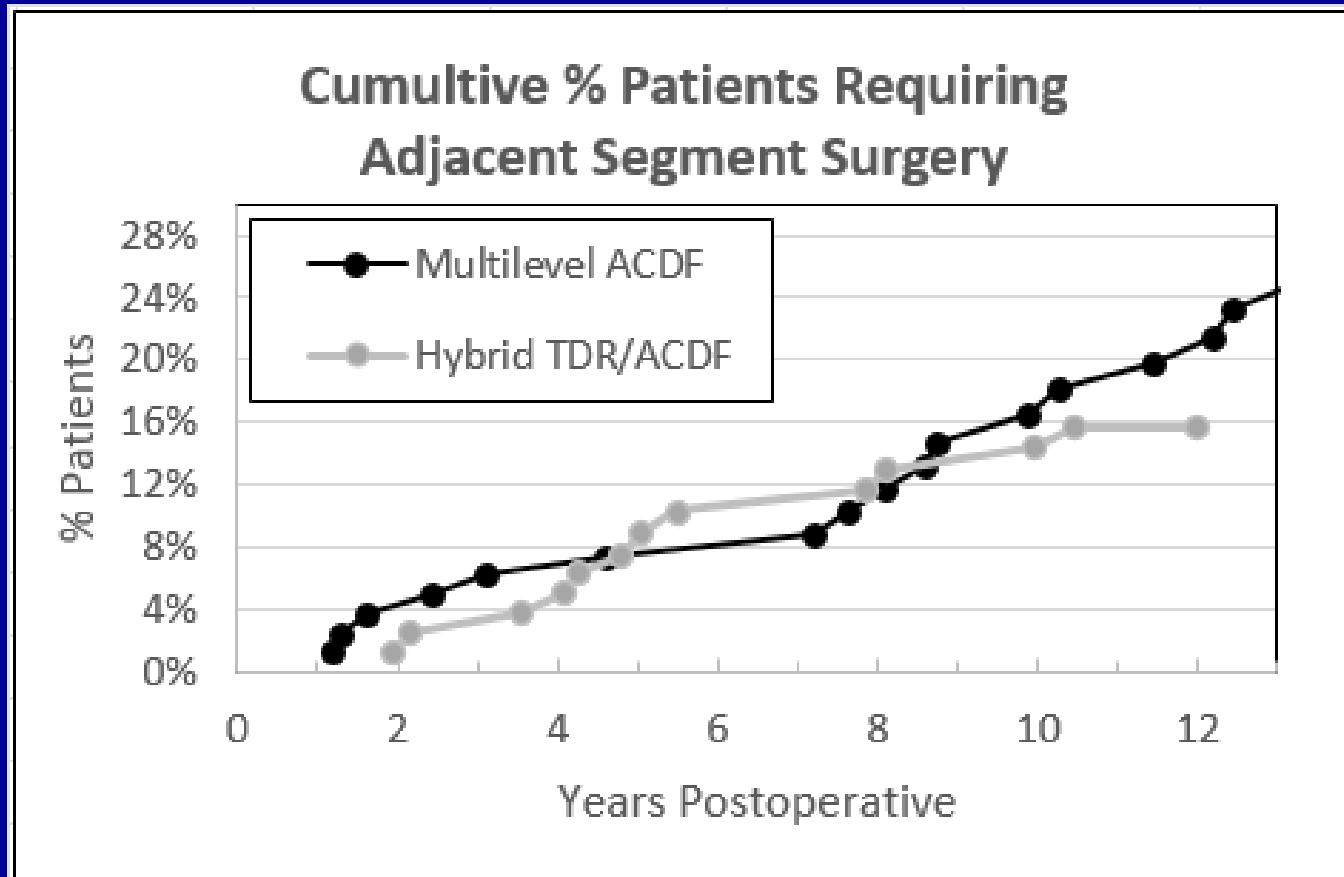


ACDF DISABILITY



Secondary Surgeries @ 10 yr FU

- Pseudos: both cohorts 7%
- Hybrid *TDR* revision = 2+ %
- Adjacent Segment:



Discussion/Conclusion

- Cervical Hybrid is successful surgery for proper indication.
- Outcomes are durable and slightly favor Hybrids over Multi-level ACDF.
- Results appear valid as the outcomes for single level conditions similar to prior IDE studies.
- Decreased secondary surgery rate for Hybrids at long-term FU.