Two Level Disease – Hybrid ACDF and Disc replacement

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Disclosures

- Dr. O’Brien is a consultant for Globus Medical, RTI Surgical, DePuy Synthes, and 4WEB Medical; has stocks with RTI Surgical, Alphatec Spine, 4WEB Medical; receives royalties from Globus Medical, Nuvasive Inc., and RTI Surgical; and receives research support from the National Science Foundation, Nuvasive Inc., and RTI Surgical

- No Conflicts regarding Cervical Disc Replacement
Clinical Success Rates

- 90% for single level arthroplasty at 2 years
- 95% for bi-level arthroplasty at 5, 7 and 10 years
- 93% for multi-level arthroplasties at 4 years
- Comparable to ACDF: 93%, 96%, 94%, 93%  
Adjacent Level Degeneration

- Biomechanical data on intra-discal pressure adjacent to ACDF\(^1\):
  - 48% increase in proximal level
  - 125% increase in distal level

- Reoperation Rates
  - 9% CDR v. 32% (\(p=0.055\))

- Radiographic Degeneration 5 years
  - 33.1% PCM, 50.9% ACDF (\(p=0.006\))

Adjacent Level Surgery

- 541 patients in prospective, randomized multicenter trial
  - 1.1% (3 operations) in CDA
    - 2 above, 1 below
  - 3.4% (11 operations) in ACDF
    - 3 above, 7 below, 1 above/below
  - Returned to work average 16 days sooner in CDA group

IF CDR is so great, why fuse?

- Follow myelomalacia to see if syrinx development
- Severe facet disease
- Disc collapse
Indications

• C3-7 disease
• Less than 50% collapse
• No bridging osteophytes
• Facet disease
• Spondylolisthesis

• Avoid replacing collapsed segments
  Severe facet disease, or unstable Segments.
MRI— Follow Syrinx

Bryan and Prestige LP allowed visualization of the canal


Normalize motion

Biomechanical data on intra-discal pressure adjacent to ACDF\(^1\):
- 48% increase in proximal level
- 125% increase in distal level

Arthroplasty in a 3 Level construct
- Restored motion to normal in adjacent segments.
- Even one arthroplasty in a 3 level construct has a role.

Hybrid CDR / ACDF

- Prevents hypermobility in adjacent segments
- Preserves motions
- Allows treatment of severely collapses or levels with arthritic facets
- Allows better MRI imaging to follow myelomalacia
End