Spinal Fusion in Worker’s Compensation: Can We Help Patients to Make Better Decisions?

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PLEASE STAND BY - WEBINAR WILL BEGIN AT 12:00pm (Pacific Time)
FOR AUDIO: Call: 866-740-1260 / Access Code: 764 4915#
Objectives

- Identify EBM re: lumbar spine fusion for Deg Disc Disease
- Understand evidence re: lumbar spine fusion vs. non-operative care DDD
- Recognize potential adverse fusion outcomes
- Improve patient information from OM when considering lumbar fusion
Disclosures

- No financial disclosures
- AHCPR unpaid reviewer
- ACOEM OMPG 1st edition unpaid reviewer
- ODG TWC Editorial Advisory Board unpaid reviewer
Lumbar Fusion Evidence

- **Supported option**
  - Symptomatic instability e.g. neural arch defect (spondylolysis) or degenerative spondylolisthesis
  - Significant scoliosis
  - Tumor
  - Infection

- **Unclear efficacy**
  - Chronic LBP DDD and “discogenic pain”
  - Need for improved patient informed decision making
ACOEM 2007 OMPG Low Back

- Support
  - Isthmic or degenerative spondylolisthesis
  - 3d decompression for disc herniation

- Not supported
  - Repeat decompression for radiculopathy due to disc herniation
  - Spinal stenosis without instability or structural deformity
Option instability, fracture, frank neuro compromise subject to criteria
Pain generators identified
Completed rehab
Maximum 2 level
Psych screen
Caution mechanical pain, WC, narcotics, active psych, failure to participate in rehab, long disability
Fusion Growth

- 1998-2008 fusion discharges rose from 174,223 to 413,171 Rajaee Spine 2012
- Lack of EBM support for surge
- 3.9x increase fusion cost (implants, instrumentation, expensive bone grafts. BMP)
Lumbar Degenerative Disc Disease

- Disc height loss, hypertrophic changes bone, ligament, facet
  - Assoc with genetics, age, smoking
- How to diagnose?
  - May not be symptomatic
  - Central LBP and often normal neuro exam
  - Diagnostic bias?
Diagnostic Difficulty

- MRI abnormalities are common
- Boden JBJS 1990 MRI in asymptomatic
  - 20-59yo: 21% disc herniation, 1% stenosis, 54% bulge, DDD 34-59%
  - 60-80yo: 36% disc herniation, 21% stenosis, 79% bulge, DDD almost all
- Many findings pre-date “injury” Carragee Spine 2006
Diagnostic Difficulty

- Provocative discography lacks evidence of ability to predict successful fusion outcomes. Chou Spine 2009

- Discography appears to accelerate risk of future DDD, serious LBP 3x, medical visits 5x, work loss 3x over 10 yrs. Carragee Spine 2009
Ivar Brox Spine 2003 and Pain 2006

- Spine 2003 > 1 year LBP, DDD L4-5 and/or L5-1
- Pain 2006 include subjects with prior discectomy
  - Exclude significant psych
- Interventions
  - PLIF w screws vs. cognitive intervention (pain not harmful, activity remain active) and exercises (1 wk-2wk HEP-2 wk intensive) ave 25 hr/wk
- Crossover
  - 11% 2003 & 21% 2006 decline fusion
  - 7% 2003 & 6% 2006 decline cognitive exercise
Ivar Brox Spine 2003 and Pain 2006

- Outcomes at 1-year follow-up (97%)
- No difference Oswestry, pain, analgesic use, distress, life sat
- Cognitive: Less fear-avoidance
- PLIF: Less lower limb pain
  - Surgical complication (wound infection, bleeding, dural tear, DVT) 18% 2003 & 9% 2006
  - 84% successful fusion on x-ray
- RTW
  - Fusion 22% 2003 & 7% 2006
  - Cognitive 33% 2003 & 26% 2006
> 1 year LBP, candidate for fusion
  - Include some prior discectomy, exclude psych
  - 52% working at baseline, 13% litigation

**Interventions**
- Surgeon choice fusion (cages, grafts, flexible) vs.
- Functional restoration 5d/wk x 3 wks ave 60-110 hrs (PT tailored exercise, clinical psych)

**Crossover**
- 21% decline fusion
- 28% rehab cross to surgery
Outcomes at 2-year follow-up (80%)
  - No difference Oswestry, shuttle walk
  - Fusion 11% complications, 6% reoperation
  - Similar outcomes despite diagnosis spondylolisthesis vs. post laminectomy vs DDD
Fritzell Spine 2001

- > 2 year LBP, DDD L4-5 and/or L5-S1
  - Include 19% prior discectomy
  - Exclude prior fusion, OOW > 1 yr, significant psych, stenosis

- Interventions
  - PLF autograft vs. PLF w pedicle screws vs. ALIF/PLIF at 19 centers #222
  - Control: commonly used treatment, unstructured #72

- Crossover 9% decline fusion, 11% opt surgery
Fritzell Spine 2001

- Outcomes at 2-year follow-up (98%)
- Fusion VAS 64-43 (gradual ↑), Oswestry 47-36
  - RTW increased 12-47%
  - Complications 17% early, 4% late (infection, pseudo, nerve injury)
  - No superiority of specific technique including instrumentation, ↑ cost assoc with surgery
- Non-operative VAS 63-58, Oswestry 48-46
  - RTW increased 20-33%
Comments RCTs Fusion vs. Non-operative

- Outcomes
  - Ivar Brox, Fairbank similar function, pain, med use, satisfaction 1-2 year regardless of prior surgery, presence or absence of prior discectomy, spinal diagnosis
  - Fritzell short term advantage for pain and function 6 mo-2 year vs. unstructured care

- RTW
  - Ivar Brox Cog-Ex 33/26% vs. Fusion 22/7%
  - Fritzell Fusion 47% vs. Usual care 33%
Comments RCTs Fusion vs. Non-operative

- Surgical complications
  - Ivar Brox 9-18%, Fairbank 11%, Fritzell 17%
- No advantage for any specific surgical procedure including instrumented fusions
- Increased costs with surgery
- Control group considerations
  - No control group Ivar Brox, Fairbank to evaluate interventions vs. natural history
  - Fritzell controls unstructured community care
RCTs excluded many subjects seen in WC settings
  - All excluded significant psych issues
  - Fritzell excluded OOW > 1 yr

Crossover issues
  - Decline fusion 9-21%
  - Cross to fusion 0-28%
  - Potential impact informed consent?
    - Written, physician, video
Fusion Complications

- Perioperative
  - 16% Posterior, 19% Anterior, 24% AP fusion
    Memtsoudis Spine 2011
  - Death 0.5-1%, DVT 1-2%, PE 1%, MI 1%

- Ng Spine 2012 Int Spine Surg Info Sheet
  - Pseudoarthrosis 17-18%
    - Increased with 2 level
  - Instability 11%
  - Reoperation 11%
Fusion Complications

Ng Spine 2012 Int Spine Surg Info Sheet

- Persistent pain 7-8%
- Dural tear 7%
- Implant related 6-7%
- Recurrent stenosis 5%
- Nerve injury 3%
- Infection 3% wound, discitis, osteomyelitis
- Retrograde ejaculation 1%
- Bladder paralysis 1%
Fusion Complications

- Graft site pain 10-15%
- Adjacent segment degeneration?
- BMP and increased cancer risk? Carragee The Spine J 2011
- Repeat surgery work comp 22% WA (Franklin 1994, Juratli 2006) and 27% OH (Nguyen 2011)
- Death WA 21% due to analgesics Juratli Spine 2009
Outcomes of Lumbar Fusion
Franklin Spine 1994, Juratli Spine 2006

- 64-68% work disabled @ 2 yrs
- 22-23% repeat surgery
- Instrumentation rise 4-58%, increased re-operation, no improved outcomes
- 68% worse pain, 56% same/worse quality of life

Worse outcomes
- Older, time from injury to fusion, duration work disability before fusion, #prior LB operations, multilevel fusions, litigation
Outcomes of Lumbar Fusion
Nguyen Spine 2011

- Ohio WC
- Compare fusion vs chronic LBP treated non-op
- RTW 2 year 26% fusion vs 67% non-op
- Repeat surgery 27%
- Surgical complications 36%
- Opioid mean dose increase 41% fusion
  - 76% fusion subjects remain on opioids
Outcomes of Lumbar Surgery

- Increased pain and decreased function post-fusion associated with worse presurgical mental health, WC, smoker, greater baseline pain, lower baseline function. Trief Spine 2006

- Inconsistent association of fusion status on x-ray / CT and outcomes
  - Some trending Oswestry. Djurasovic Spine 2011
Expectations / Predictions

- **Graz Spine 2005**
  - Lumbar decompression
  - Surgeon prediction 79% great post-op improvement
  - Subjects only 19% much better

- **Mannion Spine 2009**
  - Lumbar decompression
  - 40-50% subjects overly optimistic pre-op expectations for improved pain and function
Occupational Medicine Role

- Discussion prior to and after surgical consult to assist patient shared decision making
  - Discussion with family members, others?
  - Choose spinal surgeons carefully
- Literature on equivalent outcomes of lumbar spine fusion vs. CBT / exercise for DDD / spondylosis
- Surgical risks should be explained (ISSIS)
  - BMP?
Occupational Medicine Role

- Rehabilitation benefits and patient effort can improve outcomes
- Patient expectations vs. outcomes
- Address coping and other barriers
- Establish post-op return to work targets
- Discuss post-op opioid risks, plan
- Keep PCPs in the loop
Educational Recommendations

- Guidelines
- ODG TWC 2012 Low Back
- ACOEM 2004/2007 OMPG Low Back
- Others
Systematic Reviews

Fusion vs. Non-operative RCTs

- Brox JI et al. 2003. Randomized Clinical Trial of Lumbar Instrumented Fusion and Cognitive Intervention and Exercises in Patients with Chronic Low Back Pain and Disc Degeneration. SPINE Volume 28, Number 17, pp 1913–1921
- Fritzell P et al. 2001. Lumbar Fusion Versus Nonsurgical Treatment for Chronic Low Back Pain. SPINE Volume 26, Number 23, pp 2521–2534
Fusion Outcomes

Fusion Surgical Risks


Imaging Issues

- Carragee EJ et al. 2009. Does Discography Cause Accelerated Progression of Degeneration Changes in the Lumbar Disc. SPINE Volume 34, Number 21, pp 2338–2345
Physician and Patient Expectations


Trends and POV

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