Hands, Shoulders, Knees and Toes

An Orthopedic Update for Primary Care
CME conference, August 24th, 2019, 7:30 a.m. - 12:00 p.m.
Lumbar Spine: Conservative and Operative Management (Not Treatment!)

William Tally MD
Assistant Professor Orthopedic Surgery
GA Regents Univ/Athens Ext
Spine, Neck, Scoliosis, Deformity
Athens Ga
The Prevalence of LBP in the United States

Annual prevalence 56%
Lifetime prevalence 70%
Annual prevalence frequent LBP 18%
Annual prevalence LBP > 30 days 15%

National Arthritis Data Workgroup 1998
Degenerative Lumbar Spine

Syndromes of Pathology

- Lumbar Degenerative Disc Disease
- Lumbar Disc Herniation
- Lumbar Spondylosis
- Lumbar Stenosis
- Lumbar Degenerative Spondylolisthesis
- Lumbar Degenerative Scoliosis
Conservative Treatment Options

- Bed Rest
- NSAIDs
- Anti-depressants
- Physical Therapy
- Orthotics
- Chiropractic
- Muscle Relaxants
- Prolo-therapy
- IDET
- Steroids
- TENs
- RF Rhizotomy
Medication

AHCPGR Guidelines

- NSAIDS
- Short course of oral narcotics
  - Bigos Spine 1994

- Muscle relaxants not very efficacious
  - Bernstein Spine 2004
Bedrest

There is no evidence that more than two days of bed rest is efficacious in the treatment of acute LBP

Coomes 1961
Pal et al. 1986
Postacchiani et al. 1988
Vroomen et al. 1999
Lumbar Bracing

- No evidence of efficacy in preventing future episodes of LBP
- Utility as treatment modality for degenerative lumbar pain has not been demonstrated

Alexander Spine 1995
Van Poppel Spine 1998
Chiropractic

- Most common ‘alternative’ therapy
- Mechanism of pain relief not clear
- No evidence to support LONG TERM manipulation or treatment of chronic pain

Hurwitz, *Spine* 2002
Skargren, *Spine* 1998
Physical Therapy

Good for Long Term; Not Acute Pain

Cherkin, DC, et al., NEJM 339(15);1998

Roland Disability Score

- Booklet
- Chiropractic
- Physical therapy

Weeks of Follow-up

P = 0.74
P = 0.28
P = 0.28
P = 0.06
P = 0.11

AHCPRE 1994
No studies have shown long-term efficacy
Saal Spine 2002
Wait Let's Talk Algorithm

No studies have shown long-term efficacy
Saal Spine 2002
Treatment for Lumbar Pathology

Goals: Pain Relief

• **Decompress** static neural compression
• **Stabilize**, if pain due to instability or causing dynamic neural compression
• Improve **alignment** if deformity present
• More Recently- **Decrease Inflammation**!
Surgical Options- AKA the Cool Stuff!!

- Laminectomy
- Noninstrumented PSF
- Instrumented PSF
- ALIF/PSF
- Laminectomy with Interbody
- ALIF alone Laminectomy with PSF
- Laminectomy with Interbody
- PLIF
- TLIF
- ALIF alone
But Wait

There are so many Surgical Options:
Lumbar Decompression

Disk Herniation

Surgical Treatment > Non-surgical Rx
Postacchini Spine 21(11):1383 - 1387
Malter et. al., Spine 21(9):1048 – 1054

Spinal Stenosis

Surgical Treatment > Non-surgical Rx
Amundsen, et. al., Spine 25:1424-1436
Iguchi, et. al., Spine 25:1754-1759
Fusion

Instability

- Early Degenerative (Kirkaldy-Willis)
- Iatrogenically Induced
  - Post Laminectomy/Facetectomy
- Advanced Deformity
  - Spondylolisthesis
    - Isthmic
    - Degenerative
  - Scoliosis
Degenerative Spondylolisthesis

Results of literature review of surgical cases with degenerative spondylolisthesis

<table>
<thead>
<tr>
<th>Type of Surgery (References)</th>
<th>Patients</th>
<th>Satisfactory</th>
<th>↓ Slip</th>
<th>Fusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decompression without fusion&lt;sup&gt;1,2,7-9,12,14,17,18,20,21,26&lt;/sup&gt;</td>
<td>216</td>
<td>60%</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Decompression with fusion&lt;sup&gt;7,9,12,17,18,20,32&lt;/sup&gt;</td>
<td>84</td>
<td>70%</td>
<td>16%</td>
<td>73%</td>
</tr>
<tr>
<td>Decompression with fusion with segmental fixation&lt;sup&gt;17,26-28,31&lt;/sup&gt;</td>
<td>101</td>
<td>74%</td>
<td></td>
<td>91%</td>
</tr>
</tbody>
</table>
Improved lumbar fusion rates associated with instrumentation was controversial in the beginning.

**Fischgrund Spine 1993**

Degen spondylolisthesis Rxed with laminectomy and fusion with or without instrum:
- No difference in clinical outcomes
BUT

Degenerative lumbar spondylolisthesis with spinal stenosis: A prospective study comparing decompression with decompression and posterolateral fusion

Herkowitz and Kurz. JBJS 1991

- 25 patients in each group
- 3 year follow up significantly better in fusion group despite 36% pseudarthrosis rate
- Patients with instrumentation had a higher fusion rate but similar clinical outcome
Mid to long term follow up

Herkowitz, 2005

- Fusion patients clinically superior to pseudarthrosis patients
- Instrumentation = Higher Fusion Rate
- Therefore Instrumentation + Better outcomes
Fusion with Instrumentation

Roy-Camille CORR 1987:
“almost 100% fusion success” with pedicle screws

Zdeblick Spine 1993:
Improved fusion rate and clinical outcomes
Surgery Versus Conservative Management in Adult Isthmic Spondylolisthesis
A Prospective Randomized Study: Part 1

Hans Möller, MD, and Rune Hedlund, MD, PhD

Results. The 2-year follow-up rate was 93%. The functional outcome, as assessed by the Disability Rating Index and the pain reduction, was better in the surgically treated group than in the exercise group at both the 1- and 2-year follow-up assessments ($P < 0.01$). In the longitudinal analysis, the mean Disability Rating Index and pain improved in the surgical group ($P < 0.0001$). In the exercise group, the Disability Rating Index did not change at all, whereas the pain decreased slightly ($P < 0.02$).

Table 2. Mean Values of Disability Rating Index and Pain Index Before Treatment and at 1- and 2-Year Follow-Up Assessments for the Surgical Group and the Exercise Group

<table>
<thead>
<tr>
<th></th>
<th>Surgery Before (n = 106)</th>
<th>1 Yr (n = 98)</th>
<th>2 Yr (n = 106)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRI</td>
<td>48 (43.9–52.3)</td>
<td>29 (23.0–34.6)</td>
<td>29 (23.5–34.9)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Pain index</td>
<td>63 (58.5–67.7)</td>
<td>35 (28.7–42.2)</td>
<td>37 (29.6–43.8)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Exercise DRI</td>
<td>44 (38.2–50.3)</td>
<td>45 (36.4–53.7)</td>
<td>44 (36.5–50.9)</td>
<td>0.53</td>
</tr>
<tr>
<td>Pain index</td>
<td>65 (57.3–71.9)</td>
<td>54 (44.7–63.7)</td>
<td>56 (48.7–63.8)</td>
<td>0.024</td>
</tr>
</tbody>
</table>

Table 3. Overall Outcome in the Surgical and Exercise Groups at Minimum 2-Year Follow-Up Assessment Classified by the Patients and Observers

<table>
<thead>
<tr>
<th></th>
<th>Surgery Patients (%)</th>
<th>Surgery Observers (%)</th>
<th>Exercise Patients (%)</th>
<th>Exercise Observers (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much better</td>
<td>55</td>
<td>56</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Better</td>
<td>19</td>
<td>17</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Unchanged</td>
<td>11</td>
<td>24</td>
<td>35</td>
<td>64</td>
</tr>
<tr>
<td>Worse</td>
<td>15</td>
<td>4</td>
<td>22</td>
<td>14</td>
</tr>
</tbody>
</table>
Conclusion: Lumbar fusion in a well-informed and selected group of patients with severe LBP can diminish pain and decrease disability more efficiently than commonly used nonsurgical treatment.
Why So Many?

- What are we actually Treating?
  - Deformity
  - Instability
  - Nerve Compression
  - Neural Membrane Stability
  - Inflammatory Response
Why So Many?

• What are we actually Treating?
  − Deformity
  − Instability
  − Nerve Compression
  − Neural Membrane Stability
  − Inflammatory response

Each Of These Problems require different but complementary Management
But Wait There’s More

All Of these interact with and influence each other!

Hence the Confusion Diagnosing and Managing Spinal Pathology
PAIN?

- Mechanical:
  Deformity/fracture

- Neural:
  - Compression
  - Potentiation
  - Compartment Syndrome
Hence the Stepwise Approach: (and the past confusion)

- Non-interventional
- Physical Therapy-Strengthen/recruit
  - Injections
  - Surgery

Get Off the Bus whenever you feel better!
Thank You