Health-Related Quality of Life: Comparison following Fusion for Lumbar Degenerative Spondylolisthesis with Hip & Knee Joint Replacement Surgery & with Population norms

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NASS
Toronto, October 15th 2008
Acknowledgements:

– Dr Robert Bourne, London Health Sciences, University of Western Ontario
– Mr Jeff Guerin, Orthotech

Disclosures:

– Author - W.S.
  » Royalties: Medtronic (Major)
  » Consulting fees: Medtronic (Major)
  » Speaking arrangements: Medtronic (Minor)
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– Author – O.W.
  Nil

– Author – G.W.
  » Employee: Medtronic (Major)
“Never let anyone touch your back”
• Certain surgical procedures are well regarded:
  – in the community
  – by health regulators

• Comparisons to other surgeries:
  – Rampersuad YR et al. *NASS 2007 Best Paper*
  – Polly DW et al. *Spine 2007*
Objectives

1. Measure the Quality of Life of patients (HRQL):
   - common & specific spinal disorder,
   - specific decompression and fusion technique,
   - generic measurement instrument

2. Compare these HRQL measurements with:
   - hip or knee surgery
     - total joint arthroplasty,
   - population norms
     - published, age-matched.
Methods

• Study design:
  – Prospective
    • Consecutive case series
    • 2 independent surgeons
  – Comparison with published literature (Hips, Knees, Norms)

• Inclusion Criteria:
  – Clinical:
    • neurogenic claudication
    • no previous surgery
    • failed conservative management
  – Radiological:
    • single level, lumbar spinal stenosis
    • ‘unstable’ degenerative spondylolisthesis
Female 56 yrs
Surgical Technique
Methods

• Data Collection:
  – Baseline demographics
  – SF-12
    – Physical Component Summary score (PCS-12)
    – Mental Component Summary score (MCS-12)
  – Follow-up:
    • 3, 6, 12, 24 months & last known (minimum - 12 months)
SF12

- Generic HRQoL measure
  - Physical (PCS-12) & Mental (MCS-12) components
  - Allows comparison of health status of different conditions
- A 5 point or greater score change is clinically important*

  Copay AG et al. Spine J, In press
Methods

• **Data Collection:**
  – SF-12
    • Physical Component Summary score (PCS-12)
    • Mental Component Summary score (MCS-12)
  – Follow-up:
    • 3, 6, 12, 24 months & last known (minimum - 12 months)

• **Systematic literature review:**
  – 1950 to March 2008
  – MeSH terms:
    • “Arthroplasty, Replacement, Hip” or “Arthroplasty, Replacement, Knee”
  – Keyword: “SF-12”.
  – Means and 95% CI’s

• **Population Norms:**
  – Age-matched (IQR)
Methods

Data analysis:
- Descriptive statistics: means and 95%CI’s
  - Participant demographics
  - Pre-, post-operative & change PCS-12 and MCS-12 scores.
- Wilcoxon signed-rank test:
  - Comparison of pre- and post-operative scores.
- Group comparisons
  - Overlapping 95% CIs
  - T test (unequal numbers, unequal variance assumed)
- XLSTAT version 7.5.3 software
## Results

### Baseline demographics

<table>
<thead>
<tr>
<th></th>
<th>Spine</th>
<th>Hip</th>
<th>Knee</th>
<th>Population norms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Studies Number</strong></td>
<td>98</td>
<td>276</td>
<td>791</td>
<td>455</td>
</tr>
<tr>
<td><strong>Females (%)</strong></td>
<td>73*</td>
<td>44</td>
<td>59</td>
<td>51</td>
</tr>
<tr>
<td><strong>Age (mean, range)</strong></td>
<td>67 (46-90)</td>
<td>62 (22-89)</td>
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<td>55-74</td>
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<td>44 (42-45)</td>
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* p<0.001 compared with all other groups
## Results

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Results

PCS-12 (means ± detectable difference)

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<th>Last F/U</th>
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* p<0.0001

Spines: n=98
Knees: n=801
Hips: n=276
Norms: n=455
Results

MCS – 12 (means, 95% CI)

- Spines
- Knees
- Hips
- Norms

* p<0.0001
Discussion

- PCS-12 change scores:
  - No difference between spine surgeons: +12 vs. +11
  - Similar between spinal fusions and large joint arthroplasties
    - Spines: +11 (95%CI: 9-14)
    - Hips: +11 (95%CI: 9-13)
    - Knees: +8 (95%CI: 7-9)
Conclusion

• $\uparrow$Quality of Life \textit{Spine} = $\uparrow$Quality of Life \textit{Knee & Hips}

• $\uparrow$Quality of Life \textit{Spine} \approx$ Quality of Life \textit{Norms}
References:

- Spine surgery:
  - Polly DW et al. SF-36 PCS Benefit-Cost Ratio of Lumbar Fusion Comparison to Other Surgical Interventions A Thought Experiment Spine 2007
  - Rampersud YR et al. Assessment of Health-Related Quality of Life following surgical treatment of focal symptomatic spinal stenosis compared to osteoarthritis of the hip or knee. Spine J, 2008

- THR:
  - Ostendorf et al. JBJS (Br) 2004

- TKR:
  - Hartley et al. JBJS 2002
  - Muller et al. JBJS (Br) 2006

- Population norms:
  - Avery et al. Quality of Life in South Australia measured by SF-12. Population Research & Outcome Studies Unit, Dept Human Services, South Australia, 2004