Impact of Age on Patient Reported Outcome Measures in Total Knee Arthroplasty

VINOD DASA, RYAN ROUBION, LUKE TOWNSEND, CLAUDIA LEONARDI, DEVIN BOURGEOIS, GRANT POLLOCK, RABUN FOX
LSU HEALTH SCIENCES CENTER, NEW ORLEANS, LA
DISCLOSURES

Myoscience, Bioventus, Vector Medical, DOD, Cropper Medical.
Question:

- What effect does age have on TKA outcomes?
Background

• In recent years, literature has greatly improved the understanding of which patient demographic factors also affect their post-operative course(1).

• Factors ranging from BMI to depression, have each been elucidated as having correlations with post-TKA outcomes(2,3).

• Understanding the multitude of these factors is essential to surgical planning and decision making.

• It is also important to educate patients pre-operatively and aid in creation of realistic post-operative expectations, a process which has been demonstrated to improve post-TKA outcomes(4,5).
Methods

- IRB approved retrospective chart review
- 356 TKA patients analyzed
- WOMAC and Oxford scores as primary outcome measures
- Oxford further broken down into pain and function scores
- Patients were age categorized as <50, 50-59, 60-69, 70-79, and >79
- Scores were collected at pre-operative and post-operative (10, 30, 90, and 180 days)
Results

• Patients were 66.9% female, averaged 64.7 years, BMI of 33.8 kg/m² and had a length of stay of 1.7 days

• Number of patients in each age group:
  – <50 n = 32
  – 50-59 n = 68
  – 60-69 n = 138
  – 70-79 n = 94
  – >79 n = 24
Results cont.

![Graph showing Oxford Scores over post-operative days](image)

- Pre-operative
- 10 days
- 30 days
- 90 days
- 180 days

- Post-operative Days:
  - <50
  - 50-59
  - 60-69
  - 70-79
  - >79

---

Department of Orthopaedics

LSU Health New Orleans

School of Medicine
## PRE-SURGERY

<table>
<thead>
<tr>
<th>Age categories</th>
<th>WOMAC</th>
<th>OXFORD</th>
<th>Fixed effect&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>31.9</td>
<td>13.4&lt;sup&gt;B&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>50 - 59</td>
<td>36.6</td>
<td>14.9&lt;sup&gt;B&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>60 - 69</td>
<td>40.8</td>
<td>17.4&lt;sup&gt;AB&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>70 - 79</td>
<td>42.2</td>
<td>19.3&lt;sup&gt;A&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>&gt; 79</td>
<td>43.5</td>
<td>17.6&lt;sup&gt;AB&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>SEM</td>
<td>4.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Age cat.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pre-surgery**

- **WOMAC**: Values from 31.9 to 43.5, with an SEM of 4.0 and a fixed effect of 0.068.

**OXFORD**

- **Overall**: Values from 13.4<sup>B</sup> to 17.6<sup>AB</sup>, with an SEM of 2.0 and a fixed effect of 0.015.
- **Pain**: Values from 5.1<sup>AB</sup> to 6.6<sup>AB</sup>, with an SEM of 0.8 and a fixed effect of 0.009.
- **Functional**: Values from 8.4<sup>B</sup> to 12.1<sup>A</sup>, with an SEM of 1.3 and a fixed effect of 0.018.
### POST-SURGERY

<table>
<thead>
<tr>
<th>Age Categories</th>
<th>Fixed Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50</td>
<td>50-59</td>
</tr>
<tr>
<td>Post-surgery</td>
<td></td>
</tr>
</tbody>
</table>

| WOMAC | 50.0<sup>B</sup> | 49.9<sup>B</sup> | 62.9<sup>A</sup> | 64.0<sup>A</sup> | 65.3<sup>A</sup> | 3.6 | <.0001 | <.0001 | 0.437 |

<table>
<thead>
<tr>
<th>OXFORD</th>
</tr>
</thead>
</table>

| Overall | 23.0<sup>BC</sup> | 21.2<sup>C</sup> | 27.8<sup>AB</sup> | 28.3<sup>A</sup> | 29.1<sup>AB</sup> | 1.8 | <.0001 | <.0001 | 0.448 |
| Pain | 8.8<sup>AB</sup> | 8.1<sup>B</sup> | 10.4<sup>A</sup> | 11.1<sup>A</sup> | 11.3<sup>A</sup> | 0.8 | <.0001 | <.0001 | 0.517 |
| Function | 14.3<sup>BC</sup> | 13.0<sup>C</sup> | 17.3<sup>A</sup> | 17.2<sup>AB</sup> | 17.2<sup>AB</sup> | 1.1 | <.0001 | <.0001 | 0.515 |
Discussion

• Prior to TKA, patients aged <50 and 50-59 years old reported worst overall, pain, and functional outcomes scores compared to patients in the 60-69, 70-79, and >79 age categories.

• Furthermore, after adjusting for the pre-operative score, patients in the <60 years age categories reported the worst overall, pain, and functional outcome scores in the post-operative measures.

• From the present results, older patients reported higher pre-and post-operative overall, pain, and function scores compared to younger patients.
Significance

- A better understanding of factors that influence patient reported outcomes can help providers to better counsel patients.

- Risk adjustment for age may thus be important in future pay for performance formulas.
References


Questions?