PREDICTORS OF 90-DAY READMISSION IN SHOULDER ARTHROPLASTY PATIENTS


Wake Forest School of Medicine, Winston-Salem, NC, USA

12th Biennial ISAKOS Congress
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Disclosures

T. David Luo M.D.
- I have no financial conflicts to disclose.

Luke P. Hedrick B.S.
- I have no financial conflicts to disclose.

Samuel Rosas M.D.
- I have no financial conflicts to disclose.

Anastasios Papadonikolakis M.D. Ph.D.
- I have no financial conflicts to disclose.

Ethan R. Wiesler M.D.
- I have no financial conflicts to disclose.

Michael T. Freehill M.D.
- I am a consultant for Integra, Smith & Nephew, and receive research support from Regeneration Technologies, Inc.

Christopher J. Tuohy M.D.
- I have no financial conflicts to disclose.

Benjamin R. Graves M.D.
- I am a consultant for DePuy, Exactech, Inc. and Mitek
MACRA, CMS, and the CJR

The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA)

Centers for Medicare and Medicaid Services (CMS)

The Comprehensive Care for Joint Replacement (CJR) reimbursement model
How does the CJR work?

Eramo Medical Economics. 2017
Healthcare expenditures continue to grow—17.8% of GDP in 2015, projected to be 20.1% of GDP by 2025

Increasing demand—21.6 cases per 100,000 people in 2011 to 184.8 cases per 100,000 in 2030 (95% CI, 94.5–363.3)

Centers for Medicare & Medicaid Services. NHE Projections. 2014
Padegimas+ Clinical orthopaedics and related research. 2015
Purpose

To analyze predictors of 90-day readmission in patients undergoing primary shoulder arthroplasty

Hypothesis

That the level of comorbidity of patients that were readmitted and those that were not would significantly differ at the time of the initial, procedural admission
Methods

Single-center retrospective study

Inclusion criteria

• > 18 years of age
• surgery between 1/1/2011 and 2/1/2017

Exclusion criteria

• revisions
• infections or tumors

Data of interest: demographics, preop American Society of Anaesthesiologists (ASA) score, Charlson Comorbidity Index (CCI), unplanned readmissions
Demographics

465 patients met inclusion criteria

36 (7.8%) were readmitted within 90 days of hospital discharge

<table>
<thead>
<tr>
<th></th>
<th>Readmission (N=36)</th>
<th>No Readmission (N=429)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>64.8 ± 13.0</td>
<td>67.2 ± 11.0</td>
<td>0.207</td>
</tr>
<tr>
<td>Sex (N, % female)</td>
<td>22 (61.1%)</td>
<td>228 (53.1%)</td>
<td>0.389</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>30.9 ± 8.9</td>
<td>31.2 ± 6.7</td>
<td>0.880</td>
</tr>
<tr>
<td>ASA score</td>
<td>2.9 ± 0.5</td>
<td>2.7 ± 0.6</td>
<td>0.020</td>
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</tbody>
</table>
## Diagnosis and surgery

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Readmission (N=36)</th>
<th>No Readmission (N=429)</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Osteoarthritis/cuff arthropathy</td>
<td>28 (77.8%)</td>
<td>346 (80.7%)</td>
<td>0.291</td>
</tr>
<tr>
<td>AVN</td>
<td>3 (8.3%)</td>
<td>14 (3.3%)</td>
<td></td>
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<tr>
<td>Trauma</td>
<td>5 (13.9%)</td>
<td>69 (16.1%)</td>
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</table>

<table>
<thead>
<tr>
<th>Type of surgery</th>
<th>Readmission (N=36)</th>
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</thead>
<tbody>
<tr>
<td>Total shoulder arthroplasty</td>
<td>14 (38.9%)</td>
<td>191 (44.5%)</td>
<td>0.800</td>
</tr>
<tr>
<td>Hemiarthroplasty</td>
<td>7 (19.4%)</td>
<td>79 (18.4%)</td>
<td></td>
</tr>
<tr>
<td>Reverse shoulder arthroplasty</td>
<td>15 (41.7%)</td>
<td>159 (37.1%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Readmission (N=36)</td>
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<tr>
<td>Length of stay (days)</td>
<td>3.3 ± 4.7</td>
<td>2.1 ± 1.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Medicine/hospitalist co-management</td>
<td>9 (25.0%)</td>
<td>70 (16.3%)</td>
<td>0.245</td>
</tr>
<tr>
<td>Patients with hospital complications</td>
<td>9 (25.0%)</td>
<td>62 (14.5%)</td>
<td>0.096</td>
</tr>
</tbody>
</table>
Significantly higher Charlson Comorbidity index (CCI) at initial procedural admission in readmitted patients

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</thead>
<tbody>
<tr>
<td>Charlson comorbidity index</td>
<td>2.1 ± 1.8</td>
<td>1.2 ± 1.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>History of MI</td>
<td>7 (19.4%)</td>
<td>31 (7.2%)</td>
<td>0.020</td>
</tr>
<tr>
<td>History of CHF</td>
<td>7 (19.4%)</td>
<td>15 (3.5%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Moderate or severe renal disease</td>
<td>3 (8.3%)</td>
<td>9 (2.1%)</td>
<td>0.058</td>
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</tbody>
</table>
Conclusions

No significant effect of age, sex, or BMI

CCI was a significant predictor of readmission

- Only history of myocardial infarction and congestive heart failure were significantly more prevalent in readmitted patients
- Highlight importance of managing patients’ underlying comorbidities to optimize both clinical and financial outcomes in the face of expanding bundled-payment models
References

Eramo *Medical Economics*. 2017


Padegimas+ *Clinical Orthopaedics and Related Research*. 2015

Thank you!
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