Is there VALUE in reverse for fracture?

Background

- Surgical management of acute proximal humerus fractures (PHF) include:
  - Open
  - Hemiarthroplasty (HSA)
  - Reverse Total Shoulder Arthroplasty (RTSA)
- HSA traditionally used as preferred surgical management when salvage of humeral head is not possible or not advisable
- RTSA becoming increasingly utilized due to predictable functional outcomes, though there is concern due to the increased cost of this implant
- There is a need to determine both complication and cost profile in current healthcare economic climate.

Disclosures

- Consultant: DJO/Encore; Tornier/Wright
- Education/Fellowship funding: Arthrex; Breg; Smith & Nephew
- Research/Cadaver Funding: DePuy-Synthes; DePuy-Mitek; Stryker
The Times have Changed

- **Hemiarthroplasty Versus Reverse Total Shoulder Arthroplasty for Acute Proximal Humerus Fractures in Elderly Patients**
  - Garrigues GE; Johnston PS; Pepe MD; Tucker B; Ramsey ML; Austin LS
- **2010**: Lots of “haters”
  - “You’ll put your hospital out of business!”
  - “We can’t afford this!”
  - “If there is a benefit, these patients will not live long enough to experience it!”
- **2018**
  - Times have changed...

**Utilization and Cost of Reverse Total Shoulder Arthroplasty Versus Hemiarthroplasty for Proximal Humerus Fractures**

- Abiram Bala, BA
- Colin P. Penrose, BA BS
- Thorsten M. Seyler, MD PhD
- Michael P. Bolognesi, MD
- Grant E. Garrigues, MD

**Methods**

- Queried a 2007 – 2014 combined Humana/Medicare Database of over 16 million patients using PearlDiver Technologies
- Identified all patients who had RTSA and HSA performed for the indication of PHF from 2010 to 2013.
  - RTSA had unique ICD-9 procedure code starting in 2010
  - Guaranteed 1-year follow up per patient
- Calculated average total reimbursement at:
  - Index admission
  - 1-year postop
- Charlson Comorbidity Index calculated for both groups.
Trends in Total Utilization of RTSA versus HSA in 2010-2015

Average Cost of Index Admission of RTSA versus matched HSA in 2010-2015

Average Total Cost within one year of RTSA versus matched HSA in 2010-2015
### Results

<table>
<thead>
<tr>
<th>Year</th>
<th>RTSA</th>
<th>HSA</th>
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<th>RTSA</th>
<th>HSA</th>
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<td>2010</td>
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<td>$17,873.00</td>
<td>2010</td>
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<tr>
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<td>$21,298.00</td>
<td>2013</td>
<td>$40,202.00</td>
<td>$47,592.00</td>
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<tr>
<td><strong>Average</strong></td>
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<td><strong>$18,578.00</strong></td>
<td><strong>Average</strong></td>
<td><strong>$43,708.00</strong></td>
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### Average Total 1-Year Cost

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Discussion

• First study examining direct total cost of care over time between two surgical management options.
  – Far beyond implant costs

• RTSA and HSA appear to be roughly equivalent in admission cost, but RTSA is less expensive over 1 year by an average of $4,753 per patient.

• Cost drivers for difference:
  – Increased utilization of postop PT by hemi group
  – 51% of RTSA group had formal PT at cost of $1,381 per patient.
  – 77% of HSA group had formal PT at cost of $1,199 per patient.

• No significant difference in
  – Rate of discharge to SNF/rehab
  – Complication rate, short-term revision rate

Summary

• RTSA appears to have better functional outcomes than HSA for acute PHF.

• RTSA utilization appears to result in substantial cost savings per patient over 1-year when chosen instead of HSA.

• Further study is warranted to examine each aspect of care that drives this difference.

• Understanding these cost drivers and total cost of care is increasingly important in a value-based healthcare environment.
  – Reverse TSA is NOT more expensive!
References


Thank you!

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