


### The Economics of Proximal Humerus Fractures What we Should Know



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Tampa Shoulder Meeting  
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### Disclosure



- I receive royalties from Exactech for design of a shoulder arthroplasty system
- I serve on the Boards/Advisory Boards of Hip Innovation Technology, J3 Personica-Residency Select, Gold Humanism Foundation, Apostherapy and the Musculoskeletal Transplant Foundation

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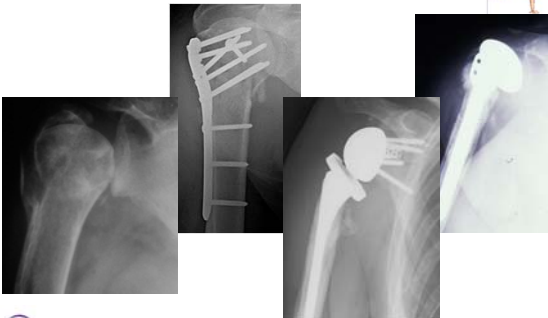
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### Proximal Humerus Fractures: Treatment Options



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### Things We Should Know - ideally

1. Incidence of proximal humeral fractures
2. Trends in treatment
3. Outcomes of treatment
4. Costs of treatment
5. Understand the health care burden

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### Is the incidence increasing?

- New York State Data: 1990 to 2010

1990 = 15.35 per 100,000  
2010 = 19.4 per 100,000

**26% increase**

The incidence of proximal humeral fractures in New York State from 1990 through 2010 with an emphasis on operative management in patients aged 65 years or older. Khatib O, Onyekwelu I, Zuckerman JD. J Shoulder Elbow Surg. 2014 Sep;23(9):1356-62.

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### Trends in treatment

- Treatment:

	1990	2001	2010
ORIF	58%	46%	59%*LP
HA	27%	41%	29%
TSA	6.4%	1.5%	7.5%*RTSA

**40% increase operative mgmt.**

The incidence of proximal humeral fractures in New York State from 1990 through 2010 with an emphasis on operative management in patients aged 65 years or older. Khatib O, Onyekwelu I, Zuckerman JD. J Shoulder Elbow Surg. 2014 Sep;23(9):1356-62.

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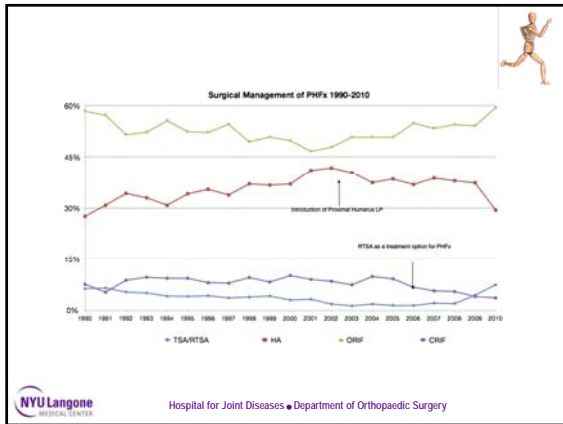
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### Trends in treatment

- Medicare database: 2009-2012
- 32,150 fxs treated operatively
- % treated operatively: 16.2% to 13.9%
- HA: 52% to 39%
- RTSA: 11% to 28%
- ORIF: no change

[Trends in surgical management of proximal humeral fractures in the Medicare population: a nationwide study of records from 2009 to 2012.](#)  
Rosas S, Law TY, Kurovicki J, Formaini N, Kalandak SP, Levy JC.  
J Shoulder Elbow Surg. 2015 Oct 13; pii: S1056-2746

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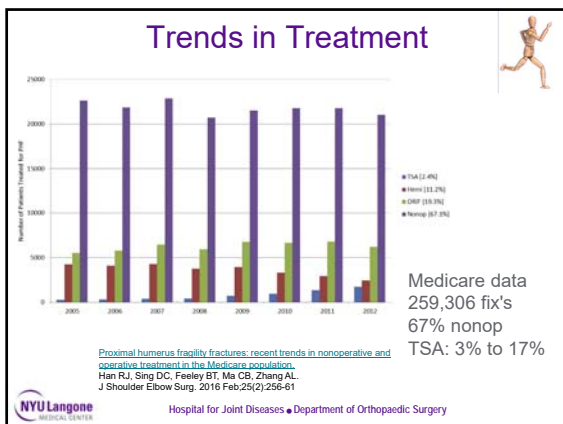
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### Outcomes of Treatment; Level 1 Studies

1. Nonop vs. ORIF for 3 part: ORIF
  2. Nonop vs. HA for 4 part: HA
  3. HA vs. RTSA for complex Fxs: RTSA
- However..... The PROPHER study....

J Shoulder Elbow Surg (2014) 23, 1419-1426



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### Surgical vs Nonsurgical Treatment of Adults With Displaced Fractures of the Proximal Humerus The PROFHER Randomized Clinical Trial

- 250 patients with SN fxs randomized to nonop, ORIF or HA

•CONCLUSIONS: Among patients with displaced proximal humeral fractures involving the surgical neck, **there was no significant difference between surgical treatment compared with nonsurgical treatment in patient-reported clinical outcomes** over 2 years following fracture occurrence. These results do not support the trend of increased surgery for patients with displaced fractures of the proximal humerus.



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### Cost: Complicated Issue

- Direct costs: Easy (sort of)
- Indirect costs: More difficult
  - time lost from work
  - loss of productivity
  - spouse/partner impact



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**Do the outcomes justify the (increased) costs?**

- Three procedures
  - ORIF
  - HA
  - RTSA
- Using CMS models



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**CMS DRG Payments to Hospitals: Factors**

- Payments can vary significantly based upon:
  1. Location (tied to wage data)
  2. Teaching vs. Non-teaching
  3. Urban vs. Rural
  4. Previous cost data

..... unfortunately the cost of the implants may vary in a reciprocal manner



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**CMS - ORIF - NYULMC**

- Amb. Surgery: \$4,726
- Inpatient w/o cc: \$14,918
- Cost of plate and screws: List - \$4800  
ASP - \$2700
- Bone augmentation: ??
- Reasonable economics if not done as amb. surg. procedure



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## Shoulder Arthroplasty: CMS

- DRG 484 w/o cc

- NY: \$18,047
- NV: \$15,102
- AL: \$11,574(lowest)
- MD: \$23,453(highest)
- FL: \$12,773





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## The Implants: HA\*

	<u>List Price</u>	<u>ASP</u>
Stryker	\$10,613	\$4970
Biomet	\$ 8,799	\$3799
Depuy Global Fx	\$ 8,667	\$4364
Exactech	\$10,870	\$4520
Zimmer TM	\$ 7,878	\$4577

NY: \$18,047 – OK  
 FL: \$12,773 – not so good



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\*Ortho Network News: 2/5/15

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## The Implants: RTSA\*

	<u>List Price</u>	<u>ASP</u>
Tornier	\$17,255	\$8140
Biomet	\$16,839	\$8436
Depuy	\$15,304	\$8444
Exactech	\$17,280	\$8028
Zimmer	\$16,556	\$9223
DJO	\$16,440	\$7277

NY: \$18,047  
 AL: \$11,574  
 FL: \$12,773

**Is this sustainable?**



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\*Ortho Network News: 2/5/15

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### Economics of PHFx: Health Care Burden

- Physician reimbursement: CPT codes
- Hospital reimbursement: DRGs, Amb. Surg rates

Should physicians care about hospital/facility reimbursement?

**Absolutely**

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### Why Orthopaedics: 2012 CDC Data

- Number of selected procedures performed:
  - Arteriography and angiocardiology using contrast material: 2.4 million
  - Cardiac catheterizations: 1.0 million
  - Endoscopy of small intestine with or without biopsy: 1.1 million
  - Endoscopy of large intestine with or without biopsy: 499,000
  - Diagnostic ultrasound: 1.1 million
  - Balloon angioplasty of coronary artery or coronary atherectomy: 500,000
  - Hysterectomy: 498,000
  - Cesarean section: 1.3 million
  - Reduction of fracture: 671,000
  - Insertion of coronary artery stent: 454,000
  - Coronary artery bypass graft: 395,000
- **Total knee replacement: 719,000**
- **Total hip replacement: 332,000**
- **Total Shoulder Replacement: 65,000**

**Will TSR Be Next?**

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CCJR 4/1/16

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### Why is all this important?

Because in all likelihood whatever CMS institutes with respect to hospital and physician reimbursement, the commercial payors will quickly follow and this has already begun

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### Quality Initiative

- A move from “volume-based” care to “value-based” care
- In reality the two are closely related and the goal should be **volume provided in a value-based environment**



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### What do we know?

- Incidence of proximal humerus fractures is increasing – probably
- Operative management is more common – probably
- Clearly defined indications – no
- ORIF more frequently utilized- yes
- HA less frequently utilized – yes
- RTSA becoming increasingly common - yes
- Evidence-based treatment protocols – no

... yet each one of us is reasonably certain and confident of the treatment we provide



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### In the near future.....

- large databases will be utilized to determine outcomes and to direct care - that database could be by the payors – MD specific
- CMS and other payors will recognize that shoulder arthroplasty - even for fracture - is also amenable to alternate methods of payment like THR and TKR – i.e. FN Fxs treated by THR are in the “bundle”



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## In the future.....



- ORIF/HARTSA will be an outpatient procedure which will change the economics of reimbursement
- “advances” in shoulder surgery will undergo economic assessment before being used in patients and this will be driven by the institutions where we work (including MD-owned amb surg centers)



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