Nationwide Analysis of Femoral Neck Fractures in Elderly Patients: A Receding Tide

Derek G. Ju, Sean S. Rajaee, James Mirocha, Carol A Lin, Charles N. Moon

Cedars-Sinai Medical Center
Los Angeles, California

California Orthopaedic Association
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Disclosures

- My co-authors and I have nothing to disclose

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A Receding Tide

Derek G. Ju, MD*, Sean S. Rajaee, MD*, James Mirocha, MS, Carol A. Lin, MD, and Charles N. Moon, MD

Investigation performed at the Cedars-Sinai Medical Center, Los Angeles, California

Femoral neck fractures in the elderly

- Leading cause of disability and morbidity in elderly
- Optimal surgical treatment continues to be debated
- Displaced fractures have improved outcomes with arthroplasty
- Total hip arthroplasty may have improved outcomes in younger and more active patients

Goal: Evaluate changes in fracture incidence and trends in surgical management over the last decade in the United States

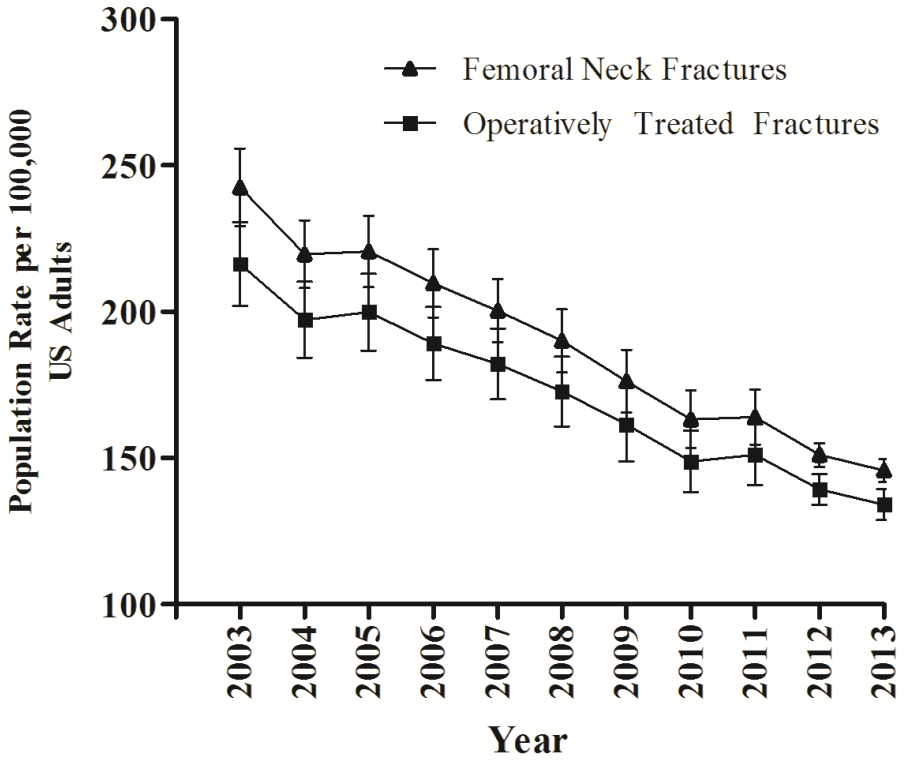
Hypothesis: Incidence of femoral neck fractures will increase, and relative utilization of THA will increase

Methods

- Patient data 2003–2013 obtained from the Nationwide Inpatient Sample database
- Femoral neck fractures grouped using ICD-9 codes of internal fixation, hemiarthroplasty (HA), or total hip arthroplasty (THA)
- Nationwide incidence of femoral neck fractures was calculated and presented as an age-adjusted population rate
- Bivariate methods were used for trend analysis and comparisons between groups
- Logistic regression modeling was used to identify complications

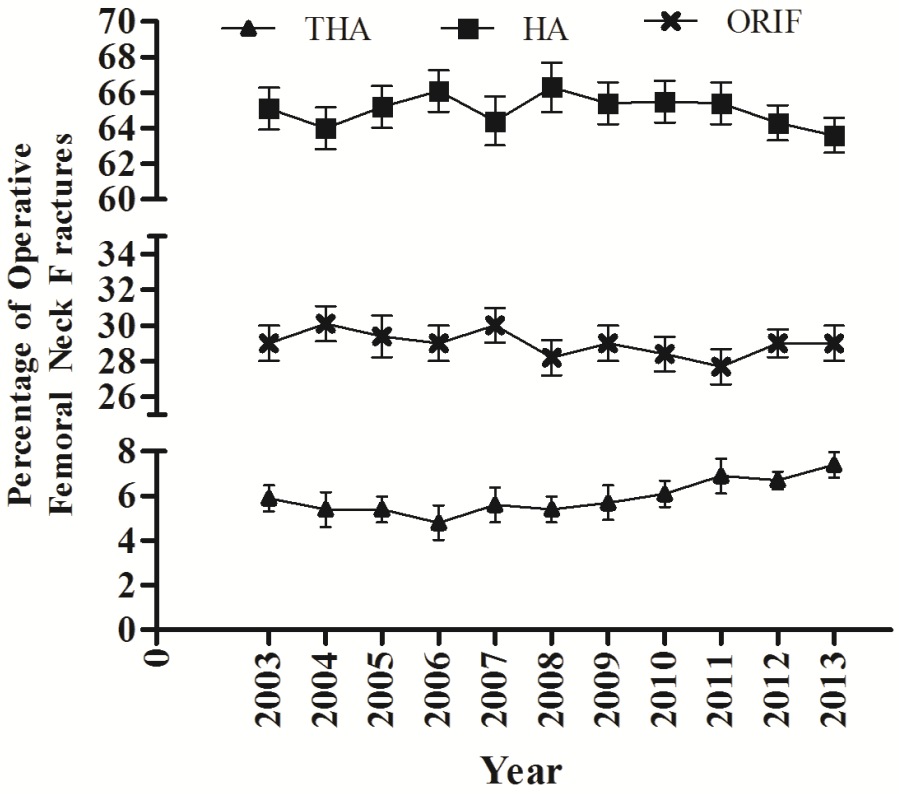
Nationwide trends 2003 - 2013

- Annual volume of geriatric femoral neck fractures declined, from 86,000 to 65,000
- Age-adjusted incidence decreased from 242 per 100,000 U.S. adults to 146
- Percentage of fractures treated operatively increased from 89.2% in 2003 to 92.1% in 2013 ($p<0.001$)



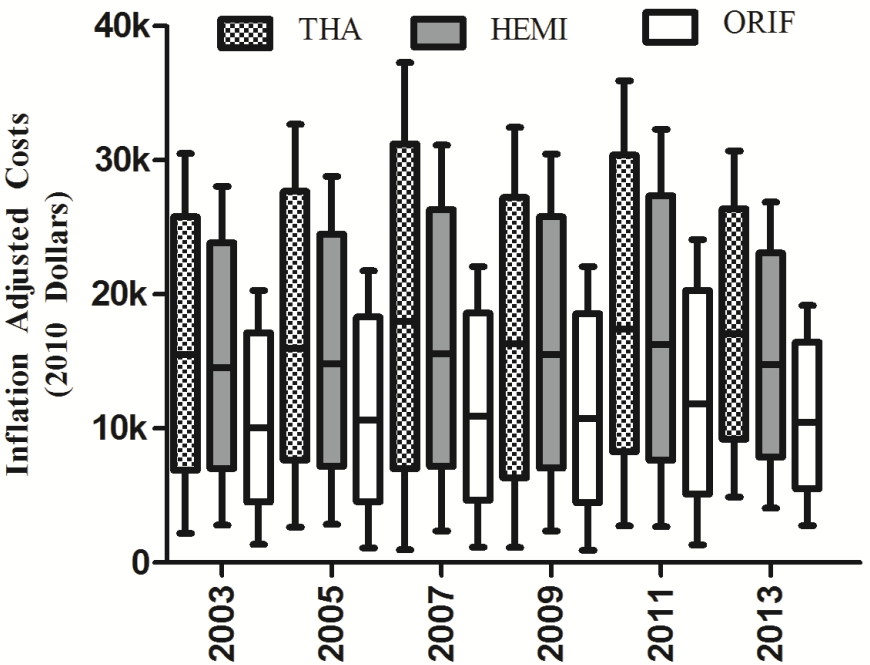
Nationwide trends 2003 - 2013

- THA rate increased from 5.9% of operative cases to 7.4% ($p<0.001$)
- Hemiarthroplasty rate decreased from 65.1% to 63.6% ($p<0.001$)



Nationwide trends 2003 - 2013

- **Inflation-adjusted costs increased minimally for all treatment groups**
  - Hemiarthroplasty $14,500 to $14,700
  - THA $15,500 to $17,000
- **Higher hospitalization costs for THA in 2013 ($17,100) than hemiarthroplasty ($14,700) (p<0.001)**
- **Median length of stay decreased**
  - Hemiarthroplasty 5.0 to 4.5 days
  - THA 5.2 to 4.2 days



Patient and hospital characteristics in 2013

- **Younger patients treated with THA vs. hemiarthroplasty (77.3 vs. 83.2 years) (p<0.001)**
  - Age group 65-80 years: 11.7% THA rate
  - Age group > 80 years: 5.0% THA rate

- **THA utilization rates higher in:**
  - Urban teaching hospitals (8.2% vs. 6.9%) (p<0.001)
  - Large hospitals (7.6% vs. 7.1%) (p<0.001)

Inpatient complications

- Rate of transfusion higher in THA group
- THA patients had higher discharges to home instead of nursing facilities
- THA patients had a lower rate of urinary tract infections

TABLE IV Multivariable Logistic Regression Analysis of Inpatient Complications in 2013

Complication	THA Versus Hemiarthroplasty	
	OR (95% CI)	P Value
Myocardial infarction	1.01 (0.70-1.46)	0.95
Cardiac arrest	0.71 (0.23-2.24)	0.56
Transfusion	1.38 (1.17-1.63)	<0.001
Pneumonia	0.87 (0.60-1.26)	0.45
Urinary tract infection	0.80 (0.66-0.97)	0.026
Pulmonary embolism	0.94 (0.30-2.95)	0.92
Deep venous thrombosis	1.21 (0.51-2.84)	0.67
Discharge to nursing facility	0.56 (0.45-0.67)	<0.001
Mortality	1.20 (0.69-2.10)	0.52

Take home points

- Steady decrease in overall incidence and population rate of femoral neck fractures in the elderly
- Modest but significantly increased utilization of THA in femoral neck fracture care
- THA utilization rates higher at large and urban teaching hospitals
- Patients treated with THA are younger
- THA has highest initial inpatient hospital costs; long-term functional and cost benefits may outweigh the initial disadvantages

Thank you!