



University of California
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Arthroplasty for Femoral Neck Fracture:
Improving Care through a Protocol-Based Interdisciplinary Intervention
California Orthopaedic Association OREF Resident Award

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Purpose

To evaluate the outcomes of an interdisciplinary standardized protocol for geriatric patients undergoing hemiarthroplasty or total hip arthroplasty for acute femoral neck fracture compared to historical controls



Hip Fracture Protocol

- *A standardized, integrated, multi-disciplinary protocol from emergency presentation to outpatient follow-up with comprehensive geriatric co-management and rapid operative intervention*
- ED – rapid communication, fascia iliaca block, non-opiate based pain regimen
- Geriatrics – Consult and optimization the same day or the next morning, co-manages patient throughout hospitalization
- OR – Target within 24 hours, standardized anesthesia protocol, OR equipment, pre-identified surgeon available
- Postop – Rapid mobilization, standardized anticoagulation and follow-up

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UCSF Hip Fracture Protocol

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Welcome to UCSF Hip Fracture Protocol

www.hipfracture.ucsf.edu



Developed by the Hip Fracture LEAN Committee and Approved by the Departments/Divisions of Geriatrics, Hospital Medicine, Cardiology, Anesthesia, Emergency, and Orthopedic Surgery.

Methods

2012

2017

2020

Before protocol

After protocol

Between before and after protocol, compared:

- Patient demographics: age, gender, CCI
- Treatment details: time to surgery, pre-operative echocardiogram, spinal anesthesia, type of surgery, length of stay, discharge disposition
- Complications
- Readmission
- One-year mortality

Subgroup analysis comparing HA to THA

Results

Inpatient Characteristics

- 271 patients included
- No significant difference in age, gender, or CCI
- Increased admissions to ortho with comanagement
- Reduction in time to surgery, particularly outliers
- Increase in spinal anesthesia

Inpatient characteristics before compared to after protocol			
	Pre-Protocol (n=157)	Post-Protocol (n=114)	p value
Age: mean ± SD	79.6 ± 11.5	78.6 ± 10.9	0.49
Female: n (%)	100 (63.7)	65 (57.0)	0.31
CCI: median (IQR)	6 (4-7)	5 (4-8)	0.27
Admission to orthopedics: n (%)	66 (42.0)	75 (65.8)	<0.001*
Geriatrics comanagement: n (%)	2 (1.3)	94 (82.5)	<0.001*
Cardiology pre-operative consultation: n (%)	2 (1.3)	1 (0.9)	1.0
Pre-operative echocardiogram: n (%)	50 (31.9)	47 (41.2)	0.12
Time from admission to surgery, hours: mean± SD	46.5 ± 165.0	24.1 ± 10.7	0.15
Time from admission to surgery, hours: median (IQR)	24.8 (18.4-43.3)	22.8 (18.8-27.7)	0.042*
Spinal anesthesia: n (%)	25 (17.7)	37 (34.3)	0.011*
Procedure: n (%)			0.071
<i>Total hip arthroplasty</i>	35 (22.3)	37 (32.5)	
<i>Hip hemiarthroplasty</i>	122 (77.7)	77 (67.5)	

SD: standard deviation. IQR: interquartile range.

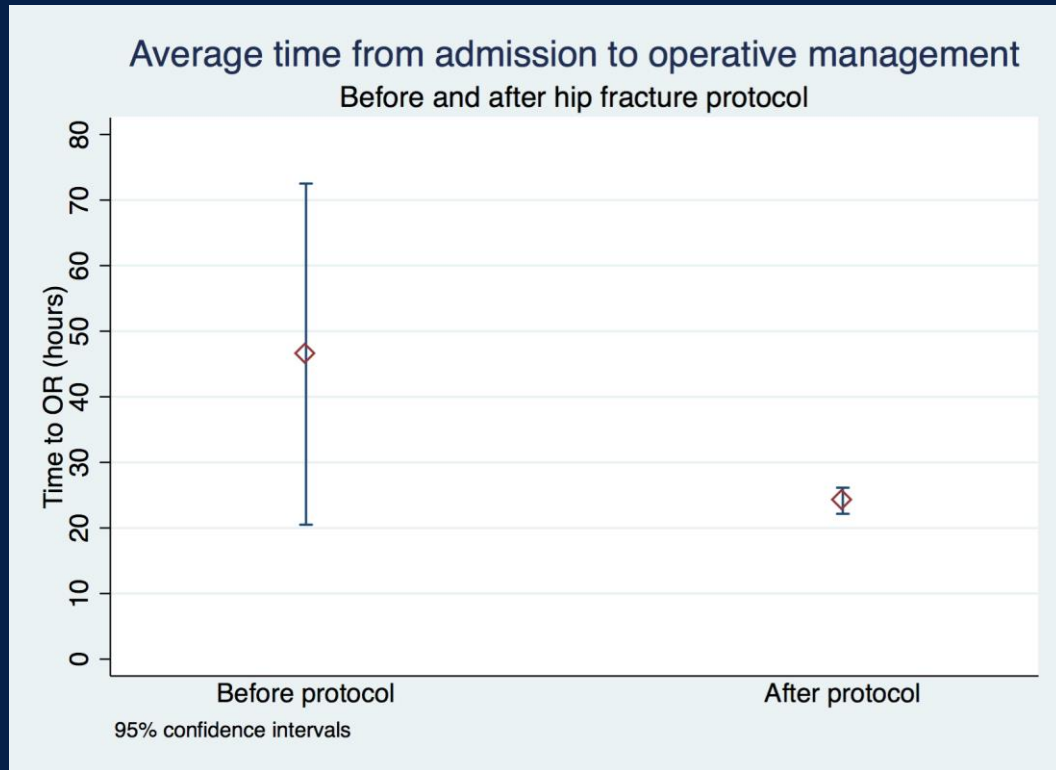
Results

Discharge Characteristics and Outcomes

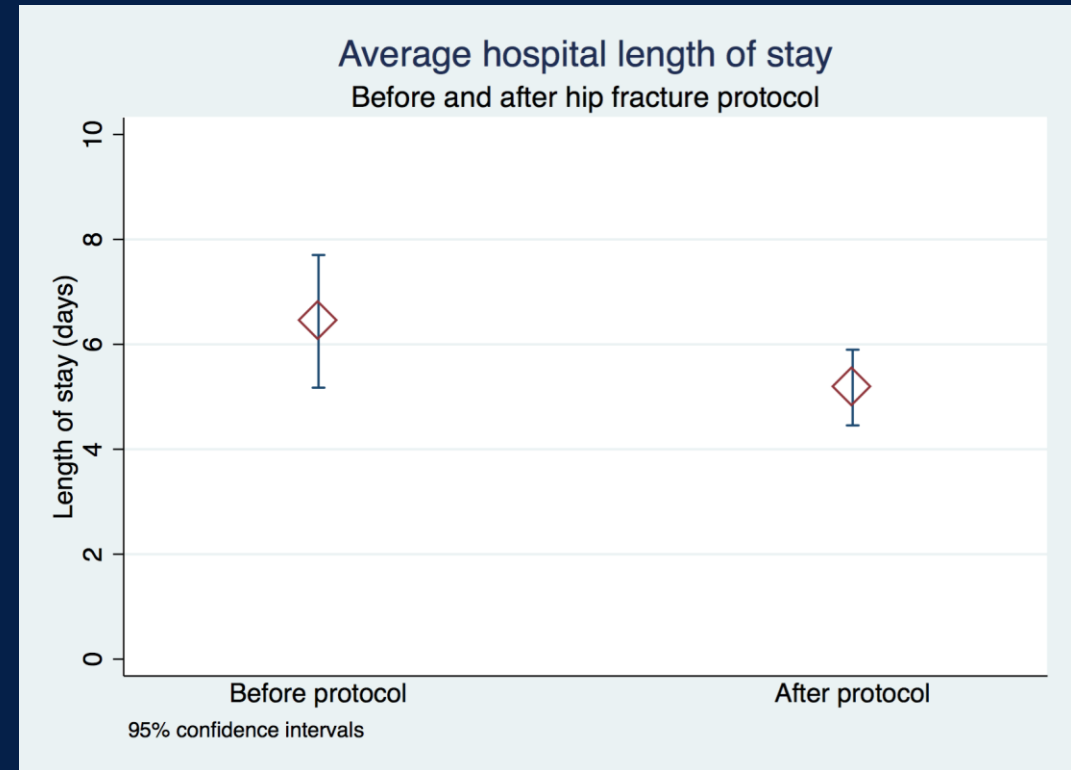
- Significant reduction in LOS, particularly outliers
- Significant increase in discharge home
- Significant reduction in complications and one-year mortality

Outcomes before compared to after protocol			
	Pre-Protocol (n=157)	Post-Protocol (n=114)	p value
Length of stay, days: mean ± SD	6.4 ± 8.2	5.2 ± 3.9	0.12
Length of stay, days: median (IQR)	4.8 (3.8-6.8)	4.0 (3.0-6.2)	0.008*
Hospital discharge disposition			0.03*
Home	23 (14.7)	30 (26.3)	
Non-home discharge	129 (82.2)	83 (72.8)	
In-hospital mortality	5 (3.2)	1 (0.9)	
Diagnosis of delirium: n (%)	8 (5.1)	9 (7.9)	0.45
Major complication: n (%)	27 (17.2)	5 (4.4)	0.001*
90-day readmission: n (%)	33 (21.0)	18 (15.8)	0.53
One-year mortality: n (%)	41 (26.1)	12 (10.5)	0.049*
SD: standard deviation. IQR: interquartile range.			

Time to OR



LOS



Conclusions

1. An interdisciplinary standardized protocol for FNF is effective for reducing time to surgery, hospital length of stay, complications, and mortality
2. A decreased length of stay was not accompanied by increased discharge to facility, readmissions, or complications
3. Successful protocol implementation requires buy-in from multiple parties and is not limited to the in-hospital setting

Thank you.

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Subgroup analysis – THA vs. hemi

- Independent of protocol - patients treated with hemiarthroplasty were older, more medically complex, and less likely to discharge home
- After the protocol - patients who underwent hemiarthroplasty were more likely to have a longer length of stay and trended toward increased one-year mortality.
- The protocol was particularly effective in reduction time to OR for THA patients.