

High Risk Geriatric Femoral Neck Fractures: Should Closed Reduction and Percutaneous Pinning Be Considered More Often Due to Improved Perioperative Outcomes and Decreased 1-Year Mortality?

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Purpose: The purpose of this study is to assess the perioperative course and long-term mortality of high-risk geriatric femoral neck fracture (FNF) patients who underwent closed reduction and percutaneous pinning (CRPP) for treatment of displaced or valgus-impacted / nondisplaced FNF compared to patients who underwent hemiarthroplasty. We hypothesize that patients treated with CRPP will have improved perioperative outcomes and decreased 1-year mortality.

Methods: Between 2014 and 2021, 664 patients >55 years old treated with CRPP or hemiarthroplasty for a displaced or valgus-impacted FNF (AO/OTA 31B1.1 / 31B1.3) were analyzed for demographics, injury and surgery details, hospital quality measures, 1-year functional outcomes, and inpatient and 1-year mortality. Patients were stratified using a validated geriatric inpatient mortality risk assessment tool, separated by treatment type, and the highest risk (top 15%) were compared using χ^2 , t tests, and Mann-Whitney as appropriate.

Results: There were no differences in demographics or medical characteristics between cohorts. Patients who underwent CRPP experienced a shorter length of surgery, less intraoperative blood loss, and lower rate of 1-year mortality as compared to patients treated with hemiarthroplasty. There were no differences in time to surgery, length of stay, need for blood transfusions, minor or major complications, 1-year functional outcomes, or inpatient mortality between cohorts (Table 1). Two of 11 patients (18%) with displaced FNF treated with CRPP (9% of all CRPP patients) required a conversion to hemiarthroplasty.

Conclusion: High-risk FNFs treated with CRPP had shorter surgeries, less intraoperative blood loss, a lower 1-year mortality rate, and similar functional outcomes compared to patients who underwent hemiarthroplasty. Displaced FNFs treated with CRPP may fail, but conversion can be performed when the patient is more medically optimized.

Figure 1: Comparison of High-Risk Femoral Neck Fracture Patients Treated with Hemiarthroplasty versus Closed Reduction and Percutaneous Pinning

Variables	Hemiarthroplasty	CRPP	P Value
Demographics			
All Comers	80	22	
Age (years; mean \pm std)	83.45 \pm 9.11	80.91 \pm 10.75	0.268
BMI (mean \pm std)	23.81 \pm 6.20	24.26 \pm 7.88	0.663
Gender			0.091
Male	34 (42.50%)	5 (22.73%)	
Female	46 (57.50%)	17 (77.27%)	
Ambulatory Status			0.504
Community Ambulator	27 (33.75%)	10 (45.45%)	
Household Ambulator	40 (50.00%)	8 (36.36%)	
Non-ambulatory	13 (16.25%)	4 (18.18%)	
Medical Characteristics			
GCS	14.75 \pm 1.32	14.18 \pm 2.20	0.129
CCI	4.50 \pm 2.01	4.91 \pm 2.76	0.440
AIS Head/Neck	0.18 \pm 0.73	0.18 \pm 0.66	0.968
AIS Chest	0.01 \pm 0.11	0.05 \pm 0.21	0.328
Surgical Details			
Anesthesia Type			0.100
General	59 (73.81%)	13 (60.00%)	
Spinal	19 (23.81%)	4 (20.00%)	
Other	2 (2.38%)	4 (20.00%)	
Time to Surgery (hours)	45.59 \pm 41.70	29.51 \pm 22.64	0.246
Length of Surgery (hours)	1.95 \pm 1.73	0.66 \pm 0.17	0.023
Intraoperative Blood Loss (ml)	225.24 \pm 120.96	31.00 \pm 14.68	<0.01
Need for Intraoperative Blood Products	13 (16.67%)	0 (0.00%)	0.165
Intraoperative Blood Product Amount	48.83 \pm 116.13	0.00 \pm 0.00	0.170
Blood Required Postoperatively	40 (50.00%)	7 (30.00%)	0.254
Need For Revision Surgery	0 (0.00%)	2 (9.10%)	-
Hospital Quality Measures			
Length of Stay (days)	7.51 \pm 3.38	8.73 \pm 6.43	0.977
Major Complications	24 (30.00%)	6 (27.27%)	0.804
Minor Complications	45 (56.25%)	8 (36.36%)	0.154
Functional Outcome (EQSD-3L)			
Index Score	0.42 \pm 0.19	0.50 \pm 0.17	0.805
Mortality			
Inpatient	6 (7.50%)	1 (4.55%)	0.627
1 Year	44 (54.76%)	4 (20.00%)	0.048

See the meeting website for complete listing of authors' disclosure information. Schedule and presenters subject to change.

POSTER ABSTRACTS