



# Cost Comparison of Sliding Hip Screw (SHS) and Cephalomedullary Nails (CMN) for the Treatment of Stable Intertrochanteric Hip Fractures

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## Purpose

There are 250,000 hip fractures in the U.S. annually with an expected increase to 500,000 by 2040. Geriatric hip fractures are associated with high morbidity and mortality as well as high rate of disability among patients. Additionally, national costs of hip fractures are estimated to approach 16 billion by 2040. Currently, stable intertrochanteric hip fractures can be successfully treated with either an extramedullary implant (sliding hip screw, SHS) or an intramedullary implant (cephalomedullary nail, CMN) however CMN implants are significantly more expensive. In the setting of the projected increasing cost of hip fractures in the US, and the rising importance of value, the purpose of this study is to compare the cost of care between patients who undergo treatment with a CMN versus SHS after stable intertrochanteric hip fracture.

## Methods

All research was carried out in accordance with protocols approved by the Institutional Review Board of the University of Pennsylvania. A retrospective cohort was created using ICD-9-CM codes for all fractures of proximal femur (sub-capital, femoral neck, intertrochanteric or subtrochanteric) from 2010-2013 in patients over the age of 65. Exclusion criteria were polytrauma, prior hip fracture sustained within

one year, pathologic fracture or non-operative management. A chart review of 84 patients was performed which included basic demographic information (Table 1). Hospital financial data for this cohort was examined as reported for Medicare reimbursement. Statistical analysis was performed using t-test for parametric and chi-squared for non-parametric data.

## Results

There were no significant differences between the IMN and SHS groups with regard to age, sex, BMI, or ASA score. Length of stay, number of consults, rate of discharge to home, 30 day readmission, 90 day mortality were not significantly different between groups. There were no statistically significant differences between IMN patients and SHS patients with regard to direct cost, contribution margin, or profit. Total direct costs for both groups were over \$20,000 for the hospitalization.

## Conclusions

We found no difference in any variable between patients treated with SHS vs. IMN except a higher amount of transfusion in patients treated with CMN. Although a cephalomedullary device costs significantly more, this was not reflected in overall cost at our institution.

Table 1. Patient Demographics & Cost

	SHS	CMN	p-value
Age (years)	79	81	0.57
Sex (% female)	60%	69%	0.40
BMI	23.6	22.8	0.54
ASA	3.0	2.8	0.55
Time from admission to OR (% <48hrs)	73%	69%	0.71
Units RBCs	0.9	1.9	0.02
Length of stay (days)	8.3	8.0	0.76
Consults (number)	1.3	1.5	0.62
Discharge to home (%)	18.5%	20.8%	0.81
30-day readmission (%)	17.3%	22.7%	0.59
90-day mortality (%)	6.3%	14.3%	0.28
OR Time (min)	92.0	94.0	0.87
EBL (mL)	155	153	0.94
Direct cost (\$)	22,324	19,881	0.18
Indirect cost (\$)	8,443	8,433	0.99
Contribution margin (\$)	15,321	16,001	0.64
Profit (\$)	-1,313	-4,373	0.13