Short Versus Long Cephalomedullary Nails for Reverse Obliquity Intertrochanteric Hip Fractures

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Purpose: Cephalomedullary nail (CMN) fixation for reverse obliquity hip fractures is considered the standard in orthopaedic trauma surgery. However, little data and no consensus on nail length have been reported for treatment of this fracture pattern. The purpose of this study is to evaluate the safety and efficacy of short CMN implants compared to long CMN implants for the treatment of reverse obliquity fractures.

Methods: A hip trauma registry was queried for radiographically confirmed AO/OTA 31A3.1, 31A3.2, and 31A3.3 reverse obliquity intertrochanteric fractures. Patient demographics, surgical details, and hospital quality measures such as length of stay, complication rates, and mortality rates during admission, at 30 days, and 1 year were queried. Radiographic and clinical outcomes including healing time, and hardware complications were assessed. Statistical analysis was performed using independent t tests, Mann-Whitney U, and Fisher's exact tests using IBM SPSS software.

Results: 98 consecutive patients with a mean age 81.5 ± 10.1 years with reverse obliquity intertrochanteric fractures were identified. 57 patients were treated with a long CMN and 41 patients with a short CMN. No differences in age, sex, body mass index, Charlson Comorbidity Index, ambulation status, or OTA classification existed between the groups at baseline ($P>0.05$). No patients in either cohort underwent reoperation, experienced screw cutout, broken hardware, peri-implant fracture, or infection.

Conclusion: CMN length does not affect short or long-term outcomes in patients with a reverse obliquity hip fractures. Patients in both cohorts had similar rates of healing and postoperative complications.

Table 1. Outcomes of reverse obliquity hip fracture patients. Categorial variables reported as count (percent). Numerical values reported as mean (SD).

	Long IMN (N=57)	Short IMN (N=41)	Total (N=98)	p value
Inpatient mortality	1 (1.8%)	2 (4.9%)	3 (3.1%)	0.376
30 day mortality	3 (5.5%)	3 (7.5%)	6 (6.3%)	0.686
1 year mortality	7 (15.2%)	8 (23.5%)	15 (18.8%)	0.346
Length of stay	7.68 (4.77)	7.34 (4.59)	7.54 (4.67)	0.800
Need for ICU	9 (15.8%)	7 (17.1%)	16 (16.3%)	0.865
UTI	3 (5.3%)	2 (4.9%)	5 (5.1%)	0.932
AKI	2 (3.5%)	4 (9.8%)	6 (6.1%)	0.203
Anemia	28 (49.1%)	18 (43.9%)	46 (46.9%)	0.609
Major complications	4 (7.0%)	7 (17.1%)	11 (11.2%)	0.120
Sepsis or Septic Shock	1 (1.8%)	0 (0.0%)	1 (1.0%)	0.394
Pneumonia	1 (1.8%)	3 (7.3%)	4 (4.1%)	0.170
Acute Respiratory Failure	1 (1.8%)	0 (0.0%)	1 (1.0%)	0.394
Stroke	0 (0.0%)	0 (0.0%)	0 (0.0%)	
MI	1 (1.8%)	1 (2.4%)	2 (2.0%)	0.813
Cardiac Arrest	0 (0.0%)	2 (4.9%)	2 (2.0%)	0.092
DVT/PE	1 (1.8%)	1 (2.4%)	2 (2.0%)	0.813
Discharge location				0.134
ARF	11 (19.3%)	4 (9.8%)	15 (15.3%)	
Deceased	0 (0.0%)	2 (4.9%)	2 (2.0%)	
HHS	5 (8.8%)	3 (7.3%)	8 (8.2%)	
Home	4 (7.0%)	0 (0.0%)	4 (4.1%)	
Hospice	1 (1.8%)	0 (0.0%)	1 (1.0%)	
SNF	36 (63.2%)	31 (75.6%)	67 (68.4%)	
Transfer	0 (0.0%)	1 (2.4%)	1 (1.0%)	
30 day readmission	6 (10.7%)	5 (12.8%)	11 (11.6%)	0.752
90 day readmission	9 (16.1%)	6 (15.4%)	15 (15.8%)	0.928
Total cost of admission	$27,123.99 ($11,906.04)	$23,016.11 ($12,113.15)	$24,987.89 ($12,070.49)	0.236

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