

Distal Femur Fractures with an Ipsilateral Total Hip Arthroplasty are at Higher Risk of 1-Year Mortality

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INTRODUCTION:

Distal femur fractures frequently occur as low-energy injuries in elderly individuals, and often in the setting of a previous total hip arthroplasty (THA). An ipsilateral THA may dictate implant choice and affect postoperative weightbearing status. The purpose of this study was to examine how an ipsilateral THA affects fixation construct choices for a distal femur fracture and the functional and mortality outcomes of this patient cohort.

METHODS:

Retrospective chart and radiographic review were performed for all distal femur fractures with a minimum of 90-day follow up that underwent operative fixation from 2013-2022 at a single tertiary referral center. Patients less than 50 years old were excluded. Demographic, injury, surgical, postoperative functional outcomes, and 1-year mortality data were collected. Chi-Square, Fisher exact test, and one-way ANOVA were used to compare groups where appropriate. Cox regression was conducted to assess for independent predictors of 1-year mortality.

RESULTS:

In total, 240 distal femur fractures were identified with 44 (18.3%) having an ipsilateral THA. The THA group was significantly older, had a higher Charlson Comorbidity Index (CCI), and higher rate of osteoporosis when compared to the native hip group (Table 1). Fixation constructs were significantly different between the groups (Table1). While a single lateral plate was the most common construct, the THA group was significantly more likely to receive a dual implant construct (Table 1). The THA group was more likely to be discharged to a skilled nursing facility (92.7% vs. 64.9%; $P < 0.001$) but had similar rates of return to baseline ambulatory status at 90-days. The THA group had significantly higher mortality at 1-year (14.6% vs. 4.5%; $P = 0.027$). Cox regression identified an ipsilateral THA as an independent risk factor for 1-year mortality ($P = 0.05$) when controlling for age, CCI, BMI, preoperative functional status, and discharge destination.

DISCUSSION AND CONCLUSION:

Patients that suffer a distal femur fracture with an ipsilateral THA are more likely to be older, frail, and fixed with a dual implant construct. While these patients return to their baseline level of function at similar rates as patients with native hips, they exhibit significantly higher mortality rates at 1-year.

Table 1 – Demographic, injury, and surgical comparison of native hip and ipsilateral total hip cohorts.

	Native Hip (n = 196)	Total Hip Arthroplasty (n = 44)	P-value
Age	66.34 (11.1)	73.73 (10.7)	<0.001
Gender (Female %)	75.5%	79.5%	0.570
BMI	30.56 (9.89)	28.43 (8.38)	0.198
Charlson Comorbidity Index (CCI)	2.61 (2.88)	4.32 (3.70)	<0.001
Comorbidities			
Current Smoker	11.4%	11.9%	0.215
Current Alcohol use	25.3%	20.9%	0.355
Osteoporosis	43.3%	65.9%	0.021
Injury Severity Score	11.34 (6.20)	9.66 (2.28)	0.079
AO Fracture Type			0.071
Periprosthetic	31.1%	50.0%	
33-A	33.2%	27.3%	
33-B	6.1%	0.0%	
33-C	29.6%	22.7%	
Fixation Construct			<0.001
IMN	41.3%	9.8%	**
Lateral Plate	48.0%	68.2%	**
Medial Plate	1.5%	2.3%	
IMN + Plate	3.1%	9.1%	
Dual Plate	3.1%	11.4%	**
Isolated Screws	1.0%	0.0%	
DFR	1.5%	0.0%	
TKA	0.5%	0.0%	
Dual Implant	6.2%	20.5%	0.007

** Significantly different between groups according to Bonferroni Residual test with significance determined by $P < 0.05$.