Total Knee Replacement or Open Reduction and Internal Fixation for Geriatric Distal Femur Fractures

Aaron Singh, Travis Mark Kotzur¹, Blaire Christine Peterson, William Harrison Young, Ali Seifi, Chance C Moore ¹University of Texas Health San Antonio

INTRODUCTION: Distal femur fractures are severe injuries, particularly in the geriatric population. Conventional open reduction and internal fixation (ORIF) approaches are challenging in this older demographic, and may result in poor outcomes. Alternatively, total knee arthroplasty (TKA) may be used, potentially improving outcomes. The aim of this study is to compare ORIF and TKA in the setting of geriatric distal femur fractures.

METHODS: This retrospective cohort study utilized the National Readmissions Database, years 2016-2019. Patients over the age of 65 with distal femur fractures treated via ORIF or TKA were identified via ICD-10 codes. Multivariate regression was performed to assess outcomes while negative binomial regression was performed to assess 30-day readmission and reoperation. Quasi-Poisson regression was performed to assess length of stay (LOS) and total charges. Demographics and comorbidities, measured via Elixhauser comorbidity index, were controlled for in our analysis.

RESULTS: A total of 34,189 patients were identified. 32,289 (94.4%) underwent ORIF while 1,900 (5.6%) underwent TKA. The mean age was 78.6 years. Patients undergoing TKA had increased medical (Odds Ratio (OR) 1.056; p=0.031) and surgical complications (OR 1.404; p<0.001), including joint infections (OR 3.113; p<0.001). They also had increased odds of 30-day readmission (OR 1.423; p<0.001), reoperation (OR 2.547; p<0.001), longer LOS (OR 1.256; p<0.001), and greater total charges (OR 1.953; p<0.001).

DISCUSSION AND CONCLUSION: TKA is associated with worse outcomes compared to ORIF in the setting of geriatric distal femur fractures. Not only is it associated with increased complications, but also readmission, reoperation, and longer hospital stays. Importantly, despite the worse outcomes, total charges were significantly greater for these patients, indicating it is less cost effective than ORIF as well.

Adverse Event		OR	95% C.I Lower	95% CJ Upper	P
Medical Complication	H	1.056	1,005	1,109	0.031 "
Respiratory Failure		1.161	0.994	1.356	0.001
Palmonary Embolism		2.017	1,477	2.754	~0.001 *
Pneumonia		0.83	0.642	1.074	0.157
Cardiac Arrest		1.665	0.969	2.859	0.006
Heat Failure		1.017	0.915	1.129	0.759
Myocardial Infarction		1,209	0.812	1.799	0.351
Deep Vain Thrombosis		1.591	1.233	2.062	~0:001 °
Acate Kidney Disease		1,147	1,032	1,274	0.011 "
Unological Medice		0.977	0.871	1.095	0.093
Stroke		0.863	0.482	1.542	0.618
Plegia and paresis	-	0.68	0.528	1,467	0.025
Outcompolitais		0.961	0.43	2.236	0.964
Sepsis		1.127	0.921	1.378	0.247
Surigoal Complication	i-e-i	1.404	1.302	1.514	-0.001 °
Wound Disruption	-	3.609	2.481	5.245	-0:001 °
Postoperative Infection	-	2.057	1,436	2.95	<0.001 *
Joint Infection		3.113	2.206	4.389	49.001 °
Distocation		2.033	1.054	3.921	0.035*
Periprosthetic Fracture		1.306	0.86	1.984	0.211
Translation		1.344	1.231	1.467	<0.001 °
Postoperative Shock	· · · · · · · · · · · · · · · · · · ·	2.607	1.706	3.984	-0.001 "
Postoperative Vascular Complication	,	2.443	1,543	3.668	<0.001 **
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Hopsital			OR	95% CJ Lower	95% C.I Upper	P		
Thirty day readmission			1.423	1.195	1.693	+0.001°		
Thirty day reoperation		-	2.547	1702	3.011	<0.001*		
Mortality			1.448	1.114	1.002	0.006*		
Rouline Discharge	-		0.889	0.637	1.242	0.492		
Length of Stay		HH	1.256	1.105	1.301	-0.001*		
Leigh of stay 3 days			1.004	0.994	1.015	0.407		
Leigh of stay 5 days		l+l	1,299	1259	134	-0.001°		
Length of stay 17 days		11	1.56	1.473	1.090	-0.001°		
Length of stay 10 days			1.058	1.457	1.074	-0.001°		
Total Changes) mil	1.953	1.076	2.033	40.001°		
Readmission Total Charges		[w]	1,151	1.12	1,163	<0.001*		
Readmission Length of Stay	H		0.87	0.847	0.094	<0.001*		
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