Distal Femur Replacement versus Revision Total Knee Arthroplasty following Periprosthetic Fracture

Aaron Singh, Travis Mark Kotzur¹, Augustine Joseph Deering², Travis Shane Bullock, Ali Seifi, Chance C Moore ¹University of Texas Health San Antonio, ²University of Texas Health Science Center San Anto

INTRODUCTION: Periprosthetic fractures following total knee arthroplasty (TKA) are associated with significant morbidity and present a challenge to orthopaedic surgeons. Best practice is still debated, but two options are distal femur replacement (DFR) and revision TKA (rTKA). This study aims to compare these options in the setting of periprosthetic fractures following TKA.

METHODS: This retrospective cohort study drew data from the National Readmissions Database, years 2016-2019. Patients with periprosthetic fractures undergoing either rTKA or DFR were identified via ICD-10 codes. Multivariate regression was performed to assess outcomes. Negative binomial regression was performed to assess 30-day readmission, reoperation, and discharge disposition. 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 23,162 patients, 17,795 undergoing rTKA and 5,368 undergoing DFR, were included. The mean age was 75.2 years. There was no difference in medical complications, but patients undergoing DFR had increased surgical complications (Odds Ratio (OR) 1.215; p<0.001), including joint infections (OR 2.62; p<0.001) and dislocations (OR 7.013; p<0.001). DFR was also associated with increased 30-day readmission (OR 1.183; p=0.005) and reoperation (OR 1.736; p<0.001). They also had greater odds of routine discharge (OR 1.566; p<0.001), longer LOS (OR 1.062; p=0.009), and greater total charges (OR 1.565; p<0.001).

DISCUSSION AND CONCLUSION: In the setting of periprosthetic fractures, rTKA is preferable to DFR when appropriate. DFR is associated with greater complications, including joint infections and dislocations. Furthermore, these patients may experience a worse hospital course, with greater risk of requiring a readmission or reoperation within 30-days, longer LOS, and significantly greater cost associated with their care.

Adverse Event		OR	95% C.I Lower	95% C.I Upper	
Medical Complication	-	1 022	0.96	1.065	0.50
Respiratory Failure		1.149	0.939	1.407	0.17
Pulmonary Embolism		132	0.881	1.979	0.5
Presmonia		1.307	0.949	1.8	0.10
Cardiac Arrest		2.327	1,277	4.241	0.00
Hoat Failure		1.01	0.908	1.123	0.88
Myocardial Infarction		1.635	1.01	2.545	0.04
Deep Vein Thrombosis		0.964	0.7	1382	0.90
Acate Kidney Disease		1.083	0.952	1.232	0.23
Utological Mection		0.931	0.807	1.075	0.33
Stoke		1,014	0.542	1.894	0.9
Plegia and paresis		1383	0.671	2.853	0.3
Osteomyelisis		0.339	0.119	1967	0.04
Segnis		1.557	0.919	1.534	0.11
Surigcal Complication		0.953	0.862	1.055	0.35
Wound Disruption		0.585	0.253	1.351	0.3
Postoperative Mection		0.363	0.162	0.813	0.01
Joint Infection		0.671	0.351	1202	0.22
Dislocation		0.603	0.247	1.475	0.26
Perignosthetic Fracture		0.705	0.479	1.007	0.00
Transfusion	p-m-s	1.02	0.898	1.158	0.75
Postoperative Shock		1,530	0.86	2.744	0.14
Ostoposative Neurological Complication	,	1,654	0.429	6.274	0.46
Postoperative Vascular Complication		1.562	0.927	2.634	0.0

Hopsital		OR	95% C.I Lower	95% C.I Upper	p
Thirty day readmission		1071	0.025	1309	0.000
Thirty day reoperation		0.014	0.424	1.563	0.537
Morality	-	0.973	0.092	1,366	0.072
Routine Discharge		1.177	0.923	1.502	0.19
Longth of Stay	11	1012	0.969	1.050	0.582
Length of stay 3 days	(e)	0 900	0.971	1.005	0.177
Length of stay 5 days		1000	0.948	1.072	0.795
Length of stay 7 days		1017	0.913	1.134	0.756
Length of stay 10 days		1.07	0.896	1277	0.457
Total Charges		1.01	0.965	1.057	0.662
	District with an internal internal control of the c				