

Are pre-operative falls associated with post-operative complications in patients undergoing aseptic revision hip or knee arthroplasty?

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INTRODUCTION:

Pre-operative falls are common in patients undergoing primary hip or knee arthroplasty and pre-dispose patients to poor outcomes. However, this relationship in those undergoing revision hip and knee arthroplasty (rTHA, rTKA) is unclear. This study sought to study the relationship between a pre-operative fall history and post-operative patient complications in patients undergoing rTKA or rTHA.

METHODS:

The National Surgical Quality Improvement Project (NSQIP) database was used to identify all patients undergoing aseptic rTKA or rTHA. The variable for a fall history was available in 2021. Fall history was defined as a patient with a fall in the 6-months prior to surgery. Patients undergoing revision for fracture were excluded. Demographic, comorbid, and operative variables were collected. Post-operative complications were identified and included 30-day readmission, an extended length of stay (LOS), and discharge to a skilled nursing facility (SNF). Chi-square analysis and multivariate logistic regression was used to compare post-operative complications.

RESULTS:

621 patients undergoing rTKA and 627 undergoing rTHA were identified meeting inclusion and exclusion criteria. 13.5% of patients undergoing rTKA had a fall history and 12.3 19.6% of patients undergoing rTHA had a fall history. Differences in pre-operative patient variables for rTKA and rTHA are displayed in Table 1 and Table 2, respectively. On univariate analysis, patients with a fall history had higher rates of readmissions, extended LOS, and a discharge to a skilled nursing facility (Table 3). On multivariate analysis, patients undergoing rTKA with a fall history had a 2.74 (1.63-4.56) times increased odds of an extended LOS and a 3.10 (1.82-5.27) times increased odds of discharge to a SNF (Table 4). Patients undergoing rTHA with a fall history had a 2.86 (1.84-4.24) times increased odds of an extended LOS and a 3.21 (2.04-5.03) times increased odds of discharge to a SNF. There was no difference in 30-day readmissions on multivariate analysis in the rTKA or rTHA cohorts (Table 4).

DISCUSSION AND CONCLUSION:

A pre-operative fall is common in patients undergoing revision joint arthroplasty. These patients are at a significantly increased odds of an extended LOS and discharge to a SNF. Patients with a fall history may not be adequately prepared for the early post-operative rehabilitation process after revision joint arthroplasty.

Table 1. Univariate analysis of demographic and comorbid variables associated with a pre-operative fall history within 6 months of aseptic revision knee arthroplasty				
Characteristic	No Fall History	Fall History	P-value	
Total	537 (86.3%)	84 (13.7%)		
Sex			0.618	
Male	220 (41.0%)	32 (38.1%)		
Female	317 (59.0%)	52 (61.9%)		
Age			0.200	
<25	80 (14.9%)	15 (17.9%)		
25-29	169 (31.3%)	25 (29.8%)		
30-39	245 (45.6%)	32 (38.1%)		
≥40	43 (8.0%)	12 (14.3%)		
Age (Mean, Standard Deviation)	79.5(1.8)	79.8(4.3)	0.479	
Modified Frailty Index			0.174	
0	116 (21.4%)	12 (14.3%)		
1	272 (50.7%)	42 (50.0%)		
≥2	149 (27.9%)	30 (35.7%)		
Smoking Status			0.748	
Past or non-smoker	527 (98.1%)	82 (97.6%)		
Current Smoker	10 (1.9%)	2 (2.4%)		
Components Revised			0.325	
One component	127 (23.7%)	29 (34.5%)		
Two components	410 (76.3%)	55 (65.5%)		

*Chi-square analysis for categorical variables, independent samples t-test for continuous variables

Table 2. Univariate analysis of demographic and comorbid variables associated with a pre-operative fall history within 6 months of aseptic revision hip arthroplasty				
Characteristic	No Fall History	Fall History	P-value	
Total	504 (80.4%)	123 (19.6%)		
Sex			0.373	
Male	219 (43.3%)	48 (39.0%)		
Female	285 (56.7%)	75 (61.0%)		
Age			0.042	
<25	155 (30.8%)	30 (24.4%)		
25-29	186 (36.9%)	41 (33.3%)		
30-39	151 (30.0%)	28 (22.7%)		
≥40	12 (2.4%)	4 (4.9%)		
Age (Mean, Standard Deviation)	80.7(4.4)	82.7(4.9)	<0.001	
Modified Frailty Index			<0.001	
0	143 (28.4%)	23 (18.7%)		
1	263 (52.2%)	51 (41.5%)		
≥2	98 (19.4%)	47 (37.8%)		
Smoking Status			0.376	
Past or non-smoker	492 (97.6%)	118 (95.0%)		
Current Smoker	12 (2.4%)	5 (4.1%)		
Components Revised			<0.001	
Both components	364 (72.2%)	75 (61.0%)		
Isolated acetabulum	86 (17.1%)	18 (14.6%)		
Isolated femur	54 (10.7%)	23 (18.4%)		

*Chi-square analysis for categorical variables, independent samples t-test for continuous variables

Table 3. Univariate analysis of post-operative outcomes associated with a pre-operative fall history within 6 months of aseptic revision hip arthroplasty				
Characteristic	No Fall History	Fall History	P-value	
30-day readmission	20 (3.7%)	7 (8.3%)	0.054	
rTKA				
Length of Stay ≥3 days	91 (18.9%)	33 (26.3%)	<0.001	
Discharge to skilled nursing facility	62 (12.5%)	21 (16.7%)	<0.001	
30-day readmission	36 (7.1%)	17 (13.8%)	0.017	
rTHA				
Length of Stay ≥3 days	178 (35.3%)	80 (65.5%)	<0.001	
Discharge to skilled nursing facility	157 (31.3%)	81 (65.9%)	<0.001	

*Chi-square analysis for categorical variables

Table 4. Multivariate analysis of post-operative outcomes associated with a pre-operative fall history within 6 months of aseptic revision arthroplasty				
Characteristic	Characteristic	Odds Ratio*	P-value	
30-day readmission		2.26 (0.93-5.63)	0.078	
rTKA				
Length of Stay ≥2 days		2.74 (1.63-4.56)	<0.001	
Discharge to skilled nursing facility		3.10 (1.82-5.27)	<0.001	
30-day readmission		1.60 (0.82-3.18)	0.165	
rTHA				
Length of Stay ≥2 days		2.86 (1.84-4.24)	<0.001	
Discharge to skilled nursing facility		3.21 (2.04-5.03)	<0.001	

*Comparing those with a pre-operative fall to those without