

Title: Impact of Malignancy on Postoperative Outcomes in Total Hip Arthroplasty: A National Database Study (2016-2022)

Introduction: Malignancy is a prevalent comorbidity among patients undergoing total hip arthroplasty (THA), yet its impact on postoperative outcomes remains incompletely characterized. Given the importance of accurate prognostication in this patient population, we sought to compare complication rates in THA patients with and without malignancy.

Methods: We queried the Premier Healthcare Database (PHD), a 2016-2022 deidentified inpatient dataset containing 25% of US inpatient admissions, to identify primary total hip arthroplasties (THAs) using CPT codes. Patients were stratified by presence of malignancy, defined by ICD-10 codes within 365 days prior to surgery. Outcomes included 90-day complications (e.g. PJI, DVT, PE, etc.), readmissions, and reoperations. Adjusted odds ratios (aORs) were calculated using multivariable logistic regression, controlling for age, sex, race, ethnicity, insurance status, and comorbidity burden (Elixhauser Comorbidity Index). A subgroup analysis compared solid-organ and non-solid-organ malignancies with exclusion of patients with both malignancy types.

Results: This study included 747,732 THA patients from 2016 to 2022, 15,565 of whom had malignancy. Even after adjusting for covariates, patients with malignancy were significantly more likely to develop complications such as PJI (aOR=1.15 [1.04-1.27], p=0.008), DVT (aOR=2.31 [2.02-2.63], p<0.001), PE (aOR=2.74 [2.29-3.27], p<0.001), and stroke (aOR=1.92 [1.43-2.57], p<0.001) in addition to being more likely to be readmitted (aOR=1.40 [1.33-1.48], p<0.001) (**Table 1**). However, reoperation rates were not significantly different (aOR=0.96 [0.90-1.02], p=0.186). The sub-analysis included 11,973 patients with solid-organ malignancy and 2,683 with non-solid-organ malignancy, and these patients did not have significantly different rates of readmission (aOR=1.13 [0.98-1.31], p=0.088), reoperation (aOR=1.03 [0.88-1.21], p=0.698), or PJI (aOR=1.18 [0.90-1.55], p=0.223) (**Table 2**).

Discussion: Patients with malignancy undergoing THA represent a high-risk population with elevated risk of thromboembolic and infectious complications. These findings suggest that malignancy is an independent risk factor for postoperative complications following THA and should be considered in perioperative risk stratification and postoperative surveillance.

Table 1. Adjusted Postoperative Outcomes Following THA in Patients with and without Malignancy

Outcome	Malignancy (N = 15,565)	No malignancy (N = 732,167)	Adjusted OR (95% CI)	Adjusted p-value
Readmission (90 d)	1,532 (9.8%)	42,021 (5.7%)	1.40 (1.33–1.48)	<0.001
Reoperation (2 yr)	1,084 (7.0%)	55,721 (7.6%)	0.96 (0.90–1.02)	0.186
PJI (90 d)	392 (2.5%)	13,870 (1.9%)	1.15 (1.04–1.27)	0.008
DVT (90 d)	263 (1.7%)	4,218 (0.6%)	2.31 (2.02–2.63)	<0.001
PE (90 d)	143 (0.9%)	1,902 (0.3%)	2.74 (2.29–3.27)	<0.001
Stroke (90 d)	54 (0.3%)	792 (0.1%)	1.92 (1.43–2.57)	<0.001
Delirium (90 d)	23 (0.1%)	419 (0.1%)	1.39 (0.90–2.16)	0.142
Myocardial infarction (90 d)	55 (0.4%)	1,126 (0.2%)	1.30 (0.98–1.73)	0.066
Acute kidney injury (90 d)	366 (2.4%)	6,320 (0.9%)	1.51 (1.35–1.69)	<0.001
Urinary tract infection (90 d)	458 (2.9%)	7,864 (1.1%)	1.81 (1.64–2.00)	<0.001
Pneumonia (90 d)	247 (1.6%)	3,047 (0.4%)	2.14 (1.86–2.47)	<0.001
Anemia (90 d)	1,304 (8.4%)	24,111 (3.3%)	1.99 (1.87–2.11)	<0.001
Hypotension (90 d)	244 (1.6%)	4,504 (0.6%)	1.61 (1.41–1.85)	<0.001

Table 2. Adjusted Postoperative Outcomes Following THA in Patients with Malignancy Based on Malignancy Type

Outcome	Solid-Organ (N=11,973)	Non-Solid-Organ (N=2,683)	Adjusted OR (95% CI)	Adjusted p-value
Readmission (90 d)	1,206 (10.07%)	262 (9.77%)	1.13 (0.98–1.31)	0.088
Reoperation (2 yr)	833 (6.96%)	198 (7.38%)	1.03 (0.88–1.21)	0.698
PJI (90 d)	313 (2.61%)	62 (2.31%)	1.18 (0.90–1.55)	0.223
DVT (90 d)	203 (1.70%)	50 (1.86%)	0.92 (0.67–1.26)	0.608
PE (90 d)	121 (1.01%)	17 (0.63%)	1.84 (1.12–3.00)	0.015
Stroke (90 d)	49 (0.41%)	2 (0.07%)	2.56 (1.32–4.97)	0.005
Delirium (90 d)	19 (0.16%)	4 (0.15%)	0.87 (0.33–2.25)	0.769
Myocardial infarction (90 d)	44 (0.37%)	6 (0.22%)	1.32 (0.64–2.71)	0.457
Acute kidney injury (90 d)	283 (2.36%)	66 (2.46%)	1.02 (0.78–1.35)	0.868
Urinary tract infection (90 d)	376 (3.14%)	59 (2.20%)	1.46 (1.12–1.92)	0.006
Pneumonia (90 d)	181 (1.51%)	53 (1.98%)	0.82 (0.60–1.12)	0.215
Anemia (90 d)	999 (8.34%)	247 (9.21%)	0.95 (0.82–1.10)	0.476
Hypotension (90 d)	193 (1.61%)	41 (1.53%)	1.11 (0.79–1.56)	0.555