Background: Pulmonary hypertension (pHTN) has been linked to increased perioperative risk following total knee arthroplasty (TKA), yet this link has not been studied in larger, more contemporary national databases. The purpose of this study was to evaluate the effect of pulmonary hypertension on index hospital costs, 90-day readmission, and overall complication rate following TKA using a large countrywide database.

Methods: This is a retrospective, cross-sectional analysis of patients with a diagnosis of primary knee arthritis undergoing TKA from a multipayer, nationwide database from April 2016 to July 2022. The patient cohort with pHTN was created using the code I27.0. Age, length of stay (LOS), Elixhauser Comorbidity Index (ECI), sex, race, and payer type variables were collected from the database. Multivariate logistic regression evaluated the association between pHTN and ninety-day readmissions, complications, and total stay index cost.

Results:

Patients with pHTN were older (72.19 vs 66.96 years, $p < 0.001$) and had greater ECI scores (4.89 vs 2.04, $p < 0.001$), LOS (1.94 vs 1.29 days, $p < 0.001$), and in-hospital complications (5% vs 1%, $p < 0.001$). After adjustment for other covariates, pHTN was independently associated with a $4,122 increase in index hospital cost (95% CI $3,517–$4,728; $p < 0.001$) and increased odds of overall in-hospital complications (OR 1.37, 95% CI 1.13–1.65; $p = 0.001$). pHTN was not independently associated with 90-day readmission (OR 0.93, p=0.463). Greater ECI was a strong independent predictor across all three outcomes.

Conclusion: In this cohort, pHTN is independently associated with increased index hospital costs and in-hospital complications. These findings highlight the implications for value-based care and bundled payment models, suggesting that pHTN diagnosis should be considered to avoid penalizing centers taking care of these medically complex patients.

Keywords: total knee arthroplasty, pulmonary hypertension, hospital costs, administrative database, readmission