The Growing Burden of Periprosthetic Fractures after Total Hip Arthroplasty: Identifying Overall Trends and At-Risk Groups

Amy Zhao, Anthony K Chiu, Amil Raj Agarwal, Andrew Harris, Alex Gu, Shyam Joshua Kurian, Gregory Golladay, Savyasachi C Thakkar

INTRODUCTION: Periprosthetic fractures (PPFs) are a serious complication of total hip arthroplasty (THA), associated with increased morbidity, mortality, and economic burden. As THA becomes more common among both aging and younger, active populations, PPF rates may be rising. This study examined trends in 2-year PPF incidence after primary THA and identified high-risk subpopulations.

METHODS:

Patients who underwent primary THA during the years 2010-2019 were identified in a national administrative claims database. Incidence rates of PPF and a compounded annual growth rate (CAGR) was calculated. A sub-analysis was conducted to stratify baseline characteristics including age, biological sex, and high-risk comorbidities. Logistic regression was performed to compare rates in subsequent years to the initial (2010) value and adjust for the effects of age, biological sex, and comorbidities.

RESULTS: Among 500,078 THA patients, 2-year PPF rates increased from 0.65% in 2010 to 1.2% in 2019, reflecting +7.05% annual growth. The most pronounced increases occurred in patients under 50 years (CAGR = +9.24%, $p=0.005$), those with osteoporosis (CAGR = +13.7%, $p=0.001$), vitamin D deficiency (CAGR = +12.2%, $p=0.002$), and Medicaid insurance (CAGR = +7.19%, $p<0.001$).

DISCUSSION AND CONCLUSION: Two-year rates of PPF after primary THA have nearly doubled since 2010. The groups with the greatest increase in rates are patients less than 50 years old, patients with Medicaid insurance, and most notably, patients with comorbid osteoporosis. These findings suggest that PPFs after primary THA are an increasingly important public health problem, and further work must be done to implement prevention strategies and mitigate the rise in PPF after THA in the United States.