Decreased Mortality But Increased Readmissions after Total Hip Arthroplasty

Cram P, Lu X, Kaboli PJ, Vaughan-Sarrazin MS, et al. Clinical characteristics and outcomes of Medicare patients undergoing total hip arthroplasty, 1991–2008. JAMA 2011:305:1560–7.

Study Overview

Objective. To examine changes in demographics and outcomes of patients undergoing primary and revision total hip arthroplasty from 1991 to 2008.

Design. Observational cohort study.

Setting and participants. A total of 1,453,493 Medicare Part A fee-for-service beneficiaries who underwent primary total hip arthroplasty and 348,596 who underwent revision total hip arthroplasty. For primary total hip arthroplasty, to select a population whose procedures were performed electively, patients with acute fractures and those admitted through the emergency department were excluded. These types of patients were not excluded for revision total hip arthroplasty because revisions are often emergent or unscheduled. Patients were identified through ICD-9 procedure codes using Medicare Provider Analysis and Review (MedPAR) data files.

Main outcome measures. Hospital length of stay, mortality (in-hospital and within 30 and 90 days of admission), discharge disposition and all-cause readmission within 30 and 90 days of admission. All outcomes were obtained through administrative data. Other variables include age, race, and comorbid illnesses present on index admission.

Main results. For beneficiaries who underwent primary total hip arthroplasty, mean age increased from 74.1 to 75.1 years; obesity and diabetes prevalence both increased from 2.2% to 7.6% and 7.1% to 15.5%, respectively, from 1991 to 2008. Mean hospital length of stay for primary total hip arthroplasty decreased from 9.1 days to 3.7 days and in-hospital mortality decreased from 0.5% to 0.2% from 1991 to 2008. In addition 30-day mortality and 90-day mortality adjusted for patient characteristics both decreased, from 0.7% to 0.3% and from 1.3% to 0.7%. However, the proportion of patients discharged to home decreased from 68% to 48%, while patients were more likely to be discharged to skilled or intermediate care facilities, an increase from 18% to 34% from 1991 to 2008. Readmission rates at 30 and 90 days for patients who underwent primary total hip arthroplasty increased from 6% to 9% and from 10% to 14%, respectively. Trends of patient characteristics were similar among beneficiaries who underwent revision total hip arthroplasty—mean age increased from 75.8 to 77.3 years; obesity and diabetes prevalence increased from 1.4% to 4.7% and from 7.2% to 15.7%, respectively, over the study period. Hospital length of stay decreased from 12.3 days to 6.0 days and in-hospital mortality rate decreased from 1.8% to 1.2%. Although the unadjusted 30- and 90-day mortality both increased slightly from 2.0% to 2.4% and from 4.0% to 5.2%, after adjustment for patient characteristics, risk-adjusted mortality rates at 30 and 90 days

Outcomes Research in Review SECTION EDITORS

Ashish K. Jha, MD, MPH
Brigham and Women's Hospital
Boston, MA

Ula Hwang, MD, MPH
Mount Sinai School of Medicine
New York, NY

Jason P. Block, MD, MPH
Brigham and Women's Hospital
Boston, MA

Maya Vijayaraghavan, MD
University of California, San Francisco
San Francisco, CA

William Hung, MD, MPH
Mount Sinai School of Medicine
New York, NY

Asaf Bitton, MD, MPH
Brigham and Women's Hospital
Boston, MA

Melanie Jay, MD, MS
NYU School of Medicine
New York, NY

were both stable during the study period. The proportion of patients discharged to home also showed a decrease, while the proportion discharged to skilled or intermediate care facilities increased from 27% to 42%. The rates of readmission for 30 and 90 days were increased from 9% to 14% and from 15% to 23% from 1991 to 2008.

Conclusion. Patients who underwent total hip arthroplasty were older and had more comorbidities over time. Despite this, mortality after arthroplasty decreased among those who underwent primary arthroplasty but increased among those who underwent revision, although this increase was largely accounted for by the increasing patient complexity. Concomitant with a decrease in hospital length of stay, the proportion of patients discharge to skilled nursing facilities and readmission rates increased over time.

Commentary

In recent years, there has been an increase in the number of total hip arthroplasty procedures performed, which is an effective treatment for severe degenerative joint disease of the hip. With increasing volume and experience of surgeons and hospitals performing this procedure, the authors were able to demonstrate that mortality has largely decreased for patients undergoing elective primary hip arthroplasty. Variations in other outcomes such as hospital length of stay and readmissions rates over time were also seen. Although it is reassuring that mortality at 90 days was decreased or remained stable for primary and revision hip arthroplasty, a trend that is of potential concern is the increase in readmission rates over time.

The causes of increased readmission rates was not examined in this study. In a previous single center study, readmissions after hip arthroplasty were mostly due to complications related to the surgical procedure, including thromboembolic disease, atraumatic dislocation, wound complication, and swollen limb [1]. A more in-depth examination of readmission rates using data from the current study may reveal the underlying causes of increased readmissions over time, which could broaden our understanding of why increasing readmissions occur and whether they can be prevented. As an example, in another surgical problem of the hip—hip fracture—patients who were readmitted after surgical repair of hip fracture were more likely to require assistance for ambulation or to die at 6 months [2]. It would be informative to examine the clinical consequences of readmissions among primary and revision hip arthroplasty patients over a longer follow-up period and to explore their relation to other outcomes such as functional status.

Although mortality is the primary outcome of interest in a surgical procedure, other outcomes should also be considered. Particularly in a population of older adults whose likely goal for undergoing the surgery is to improve function, outcomes such as functional status, pain, long-term skilled nursing needs, and overall quality of life would be important to examine to demonstrate overall effectiveness of the procedure and its change over time. For patients and practitioners considering total hip arthroplasty as a treatment option, consideration of these outcomes would be important given the increasing trend of hospital readmissions and the unclear clinical consequences of these readmissions. For policy makers, the decreased length of stay may decrease the cost of the procedure, but the increased readmission rate may be concerning as it could drive up cost. Further understanding the factors driving increased readmissions, and identifying modifiable factors such that interventions could be developed to prevent readmissions, would be of significant interest. Identifying hospital-level factors that may affect outcomes, such as volume of procedures [3] or use of standardized infection control practices, would be useful.

Applications for Clinical Practice

Although this study did not identify modifiable factors that could improve the care of patients undergoing hip arthroplasty, it confirmed that total hip arthroplasty is largely a safe procedure with low and decreasing mortality rates. Patients with severe degenerative joint disease of the hip may well benefit from this treatment option as orthopedic surgeons have more experience performing this procedure, which may have led to better outcomes. However, patients should also know about what to expect after surgery, and that during the recovery period, readmissions may occur. Next steps to further understand these trends may be to identify and examine further patient-level and hospital-level factors which affected readmission rates after hip arthroplasty so that interventions could be developed to further improve outcomes after hip arthroplasty.

—Review by William Hung, MD, MPH

References

1. Cullen C, Johnson DS, Cook G. Re-admission rates within 28 days of total hip replacement. Ann R Coll Surg Engl 2006;88:475–8.
2. Boockvar KS, Halm EA, Litke A, et al. Hospital readmissions after hospital discharge for hip fracture: surgical and nonsurgical causes and effect on outcomes. J Am Geriatr Soc 2003;53:399–403.
3. Bozic KJ, Maselli J, Pekow PS, et al. The influence of procedure volumes and standardization of care on quality and efficiency in total joint replacement surgery. J Bone Joint Surg Am 2010;92:2643–52.

Copyright 2011 by Turner White Communications Inc., Wayne, PA. All rights reserved.