Outpatient Total Knee Arthroplasty

Are We There Yet? (Part 1)

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KEYWORDS

• Outpatient total joint arthroplasty • Total knee arthroplasty • Length of stay
• Unicompartmental knee arthroplasty • Early discharge

KEY POINTS

- Patients who qualify for outpatient knee arthroplasty are generally younger than 65 year old, with a range of 45 to 80 years. Patients older than 75 years have been found to have a higher risk of postoperative falls, knee stiffness, pain, and urinary retention, and an increased readmission risk within 1 year of surgery.
- A key part of improving outcomes, reducing costs, and improving patients' overall health status is correlated with the level of patient activation.
- Risk factors for infection include malnutrition, anemia, obesity, diabetes, alcohol or intravenous (IV) drug use, corticosteroid use, chronic liver disease, post-traumatic arthritis, prior surgery, and greater severity of comorbidities.

INTRODUCTION

The rapidly growing rate of total knee arthroplasty (TKA) performed each year is related to its success in improving function, correcting deformities, and relieving pain for patients with severe osteoarthritis (OA) of the knee. As the population of the United States continues to increase and life expectancy becomes longer, more patients will seek surgical treatment of their knees. Approximately 700,000 knee replacement procedures are performed annually in the United States. This number is projected to increase to 3.48 million procedures per year by 2030.[1] Performing TKA as an outpatient surgery has continued to increase in popularity over the past decade among both patients and surgeons.[2]

Previously, most providers and patients thought a multiple-day hospital stay was needed postoperatively for total joint replacements because of the pain, limited mobility, and infection risks. There has been a trend of earlier and safer patient discharges following total joint arthroplasty (TJA) over the past 20 years. The average length of stay (LOS) after a TJA has decreased from 9 to 4 days.[3,4] Several studies have shown that shorter LOS and outpatient arthroplasty do not increase the risk of adverse events (AEs) or complications.[3,5–7]

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Shorter LOS after TKA is a result of accelerated clinical pathways, improved pain management protocols, minimally invasive surgery, aggressive rehabilitation, and increased information available for patients and their accompaniers. The most common reasons patients report being hesitant for an early discharge are fear of pain, a slower recovery, complications, and being dependent on someone else. Once these concerns are addressed, most patients would rather recover at home instead of prolonging their stay in the hospital.[8] Patient satisfaction surveys scores have also been shown to be higher at the time of discharge with same-day discharges.[6]

This article will discuss current data and recommendations for implementing a successful TKA and unicompartmental knee arthroplasty (UKA) outpatient protocols. It will provide information regarding patient selection criteria, preoperative medical optimization, perioperative analgesia, intraoperative techniques for TKA and UKA, accelerated care pathways, rehabilitation, and discharge protocols.

COST REDUCTION IN OUTPATIENT TOTAL KNEE ARTHROPLASTY

In 2014, more than 400,000 Medicare patients received a hip or knee replacement, costing the government more than $7 billion for the hospitalizations alone. The average Medicare cost per joint for the surgery, hospitalization, and recovery is between $16,500 and $33,000.[9] Medicare pays for approximately 55% of all TKAs in the United States.[3]

These high costs have caused both surgeons and patients to look for more affordable ways to perform TJA. Outpatient arthroplasty offers a significantly reduced cost for episode of care when compared with inpatient arthroplasty.

Two of the most effective ways to reduce the cost of TKA is to shorten the LOS and to minimize complications.[3] Repicci and Eberle evaluated the reduction in cost between a 3- to 4-day hospital stay to same-day discharge and estimated a $9000 difference ($16,000 vs $7000, respectively).[10] Lovald and colleagues[3] evaluated the cost of a TKA among a sample of Medicare patients from 1997 to 2009 who were discharged within 23 hours of their surgery, discharged within 1 to 2 days, or discharged within 3 to 4 days. At a 2-year follow up, the outpatient group and 1- to 2-day stay group had costs $8527 and $1967 lower than the 3- to 4-day stay group, respectively.

During the 1990s, cost reduction programs were developed to decrease the hospital cost of TKA. Implementation of a clinical pathway and a knee-implant standardization program at the Lahey Clinic was associated with a reduction in the average LOS in the hospital from 6.79 days in 1992, to 4.16 days in 1995. The cohort of patients in 1992 and 1995 both had high patient satisfaction, low pain scores and high clinical scores at 8 and 5 years postoperatively.[11] Hospital costs were reduced 19% with the implementation of the clinical pathway and the knee-implant standardization program after adjusting for inflation.[11]

Rates of readmission for all causes within 30 days of discharge is 1 of the safety and cost-effective measures the Affordable Care Act is using to award financial incentives or penalties. A shorter length of hospital stay is considered safe and cost-effective as long as the rate of 30-day readmissions is not increased.

Balancing the cost savings of outpatient with patient outcomes is particularly relevant with the passage of the Medicare Access and Children's Health Insurance Program (CHIP) Reauthorization Act (MACRA) in 2015. This legislation shifted US health care from a volume-based to value-based payment system. Starting April 1, 2016, the Care for Joint Replacement (CJR) model started assessing the effect of bundled payments for the care of procedures such as hip or knee replacements.[12]

This is in contrast to the previous Centers for Medicare & Medicaid Services (CMS) Bundled Payment for Care Improvement (BPCI) initiative. CJR calculates each hospital's target price per 90-day episode of care by evaluating the spending data at each institution, as well as the average spending price for other hospitals in the region. Depending on their performance, participating institutions either receive bonuses from Medicare or are required to repay Medicare for a portion of the episode of spending.[12]

Currently information regarding expansion of CJR to cover outpatient TJA for Medicare patients in the future is limited. Several private insurance companies have started bundling payments to give a single payment whether a TJA is done inpatient or outpatient. Reducing the length of stay after a TKA will decrease the cost hospitals have to pay for each patient. Because shorter LOS creates a larger net gain for hospitals, it is financially advantageous for hospitals to maximize the number of patients who can be safely discharged within 23 hours of their surgery.

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