Impact of Outpatient Total Joint Replacement on Postoperative Outcomes

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KEYWORDS

• Outpatient total joint arthroplasty • Total knee arthroplasty • Total hip arthroplasty
• Length of stay • Readmission • Outcomes • Cost • Patient-reported outcome measures

KEY POINTS

- The success of fast-track pathways in Europe and the United States is a strong indicator that outpatient joint replacement will soon be offered more widely and will be recognized by patients and surgeons as a safe option.
- Younger patients with a lower body mass index and fewer comorbidities are appropriate candidates for outpatient hip and knee arthroplasty.
- Outpatient arthroplasty in the proper patients has comparable, if not superior, outcomes compared with standard inpatient arthroplasty.

INTRODUCTION

Annual demand for total joint arthroplasty (TJA) has been steadily increasing over the past 30 years and is projected to continue to increase substantially over the coming years as life expectancy and obesity increase and surgical technique and perioperative management are optimized.[1] With continuous growth, surgeons and hospitals have sought to improve quality of joint replacement while simultaneously aiming at lowering cost and resource utilization. This effort has centered on the development of clinical care pathways and perioperative standardized protocols aimed at optimizing postoperative outcomes, including hospital length of stay, complications, and readmissions, among others. Over the past several years, there has been a growing trend in the literature toward early patient discharge.

The leading cause of 30-day readmission after total knee arthroplasty (TKA) is deep or superficial surgical site infection (SSI), which accounts for 12.1% of unplanned readmissions.[2,3] SSIs accounted for 23.5% of unplanned readmissions in total hip arthroplasty (THA) patients, just behind hip dislocation, according to one report. Ong and colleagues[4] report length of hospital stay is implicated as a risk factor for SSI or prosthetic joint infection, among others such as comorbidities, sex and duration of procedure. Furthermore, SSIs have been shown to double length of hospital stay by a median of 2 weeks, which further drives up associated costs.[5]

Hospital stay for TKA has decreased from 9 days to 4 days on average[6] and for THA, from

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4.6 days to 2.9 days at 1 center.[7] These protocols have aimed at standardizing procedure, pain control, education, and early rehabilitation and implement preventative measures for complications. This trend toward decreasing length of hospital stay has led to the development of pathways that allow medically and socially optimized patients to undergo TJA in an outpatient setting. Although some studies have shown promise in using this method, the results may not be generally applied.

The aim of this review is to determine if outpatient TJA leads to similar outcomes as standard-stay inpatients. Postoperative outcomes may be assessed by pain, same-day discharge, complications, readmissions, reoperation, patient satisfaction, patient-reported outcomes (PROs), and cost.

METHODS

The authors performed searches in electronic databases (Embase, PubMed, Web of Science, and Cochrane) to identify eligible studies published before April 2017. Exact search term used were "total hip replacement" OR "total hip arthroplasty" OR "THA" OR "THR", "total knee replacement" OR "total knee arthroplasty" OR "TKA" OR "TKR", "total joint replacement" OR "total joint arthroplasty" OR "TJR" OR "TJA", "outpatient", and "outcomes" OR "postoperative outcomes." Duplicates were removed.

To be considered for inclusion in this review, studies must have included a cohort of patients who underwent outpatient TKA or THA. Unfortunately, the definition of *outpatient* varied among investigators. The vast majority agreed outpatient meant patients were discharged to home on the same day as the surgery; however, 1 article considered discharge at 23 hours postoperatively or less acceptable. Studies were excluded if patients stayed more than 24 hours or if they comprised only patients undergoing partial or single-component joint replacement. A total of 14 studies was identified from the literature as meeting criteria and were included in the review.

RESULTS AND DISCUSSION

Nine studies examined outcomes in outpatient THA and 6 in outpatient TKA (with 1 study covering both). Of the studies that compared groups prospectively, sample size tended to be low and thus more difficult to generalize. Because outpatient total joint replacement is a relatively new concept, researchers are reaching the end of a process of carrying out small-scale studies and case series to determine procedure safety and moving toward larger-scale randomized trials to refine protocol details. Based on the evidence compiled in this review, only 1 randomized controlled trial (RCT) was carried out. Larger-scale, multicenter randomized trials are needed to determine exactly which candidates will benefit from this intervention as well as how best to implement outpatient joint protocols. Outcomes for TJA included same-day discharge, postoperative pain, complications, readmissions, reoperations, PROs, and cost.

TOTAL HIP ARTHROPLASTY OUTCOMES

Nine studies ranged from level I evidence to level IV (Table 1). Goyal and colleagues[8] are the only investigators who carried out an RCT (level I). Aynardi and colleagues[9] compared 119 patients who underwent outpatient THA with 78 inpatients undergoing the same procedure by the same surgeon but these groups were not randomly assigned. Similarly, Springer and colleagues[10] retrospectively compared THA inpatients with outpatients nonrandomly. Bertin[11] examined patient outcomes from a financial aspect, which falls under economic and decision analysis (level IV). The remaining 5 studies were case series in nature (Dorr and colleagues,[12] Berger and colleagues,[13] Berger and colleagues,[14] Berger,[15] and Den Hartog and colleagues[16]) and looked at outcomes from a cohort of patients without comparing them to a similar group.

Same-Day Discharge

All investigators who carried out prospective studies used length of stay or same-day discharge as an outcome. For the THA patients, Goyal and colleagues[8] achieved a 76% rate of same-day discharge, and all but 1 of the remaining patients left the following day. Interestingly, 18 of the 108 patients randomized to the inpatient group met the same-day discharge criteria and chose to leave after their surgery. This was not the only report of difficulty with randomization, which may be an issue in smaller, single-center studies. Berger and colleagues[13] reported that their team had attempted to randomize the patients but ultimately had to abandon the idea after many patients requested overnight hospitalization and many more requested to be part of the study despite not being selected. For this reason, their rate of same-day discharge was 100%. The same investigators had similar success with older studies, achieving a rate of 85% discharge in both 2004