Optimizing Perioperative Management of Total Joint Arthroplasty

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KEYWORDS

• Clinical pathways • Critical pathways • Perioperative care • Arthroplasty
• Replacement • Anesthesia • Conduction

KEY POINTS

- Total hip and knee arthroplasties are among the most common surgical procedures, using more Medicare procedural expenditures than any other surgery type.
- Optimizing patient status preoperatively and maximizing intraoperative management tactics to minimize postoperative complications may improve outcomes for total joint arthroplasty.
- Effective clinical pathways for total joint arthroplasty involve a multidisciplinary team that links evidence to practice and balances cost with local experience, outcomes, and access to resources, with the goal of efficient perioperative management.
- Clinical pathways for total joint arthroplasty require critical evaluation allowing for revision in light of outcomes and surgical and anesthesia practice changes.

INTRODUCTION

Total hip and knee arthroplasties are among the most common major surgical procedures performed within the United States.[1] Total joint arthroplasties are efficacious and cost-effective interventions linked to improving health-related quality of life and functional status of patients.[2–4] This comprehensive review of perioperative management of joint surgery explores:

- Trends in primary and revision joint arthroplasties
- Cost-effectiveness of clinical pathways
- Controversies in preoperative patient optimization for total joint arthroplasties
- Methods to maximize perioperative care for total joint arthroplasty

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This review focuses on total knee arthroplasty (TKA) and total hip arthroplasty (THA), as these surgeries are associated with more pain and mobility restrictions than non–weight-bearing total joint arthroplasties.

Trends in Primary and Revision Total Knee and Total Hip Arthroplasty

Unlike countries with national registries, the number of total joint arthroplasties performed in the United States is not easily attainable, leaving projections to rely on representative surveys of hospital discharge records and Medicare administrative data.[2,5] Primary and revision total joint arthroplasties are projected to dramatically increase in the next 2 decades.[2,6,7] Primary THA will increase by 174% (572,000 surgeries by 2030), whereas primary TKA will increase by a staggering 673% to 3.48 million procedures (**Fig. 1**).[7] It is possible that this rapid increase in primary TKA and THA will lead to doubling in revision surgeries for knee replacement and for hip replacement by 2015 and 2026, respectively.

TKA is cost effective with reproducible positive outcomes including pain relief and improved functional status in patients with end-stage osteoarthritis compared with nonoperative management.[4] Losina and colleagues[4] found that even in low-volume hospitals, having a TKA was more cost effective in the long run than no surgery; this was true even among the highest-risk populations. Primary TKA, at a cost of $9 billion per year, may significantly increase future health care spending. If predictions are true and costs escalate further, the economic impact on hospitals from primary and revision total joint arthroplasty will be tremendous, considering Medicare reimbursements based on cost average only 32% to 38% per procedure.[8] Currently, total joint replacement represents the single greatest Medicare procedural disbursement. Therefore, changes in perioperative management that are designed to decrease or contain costs will continue to have a significant impact on US health care economics.[9,10] Clinical

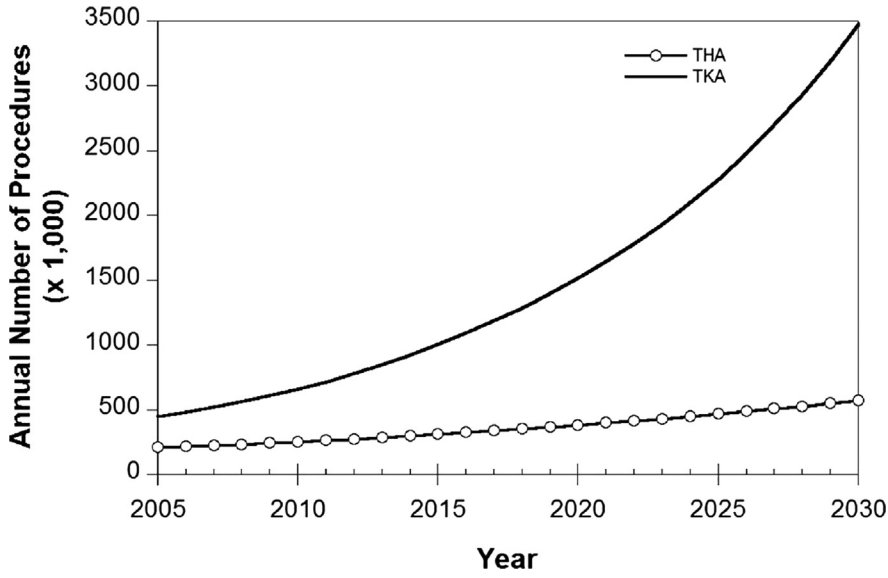

Fig. 1. The projected numbers of primary total joint arthroplasty in the United States from 2005 to 2030. (*From* Kurtz S, Ong K, Lau E, et al. Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030. J Bone Joint Surg Am 2007;89:783; with permission.)