

Mini Review

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Causes and Factors Leading to Readmission After Total Knee Arthroplasty: A Mini-Review

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ABSTRACT

Total knee arthroplasty (TKA) is a well-established procedure for managing advanced knee osteoarthritis, providing significant pain relief and functional improvement ^[1]. However, despite its success, postoperative complications and hospital readmissions remain a concern ^[2,3]. This mini review focuses on the causes and risk factors associated with readmission after TKA, highlighting findings from recent literature, including our retrospective study. The primary reasons for readmission include surgical site infections, wound complications, thromboembolic events, and medical comorbidities ^[4,5]. Understanding these factors is crucial for developing strategies to minimize readmission rates and improve patient outcomes.

INTRODUCTION

TKA is widely performed to alleviate pain and improve mobility in patients with end-stage knee osteoarthritis ^[6,7]. Despite advances in surgical techniques and perioperative care, a subset of patients experiences postoperative complications leading to hospital readmission ^[8]. Readmissions not only increase healthcare costs but also affect patient recovery and satisfaction ^[9,10]. This review aims to summarize key factors contributing to readmission after TKA and provide insights into preventive measures.

READMISSION RATES AND CAUSES

Readmission rates after TKA vary across studies, typically ranging between 3% and 8% within the first 30 to 90 days postoperatively ^[11,12]. Our study identified a 1.1% readmission rate at 30 days and 1.8% at

90 days, which is lower than previously reported figures. The primary causes of readmission can be categorized into surgical and medical complications:

SURGICAL CAUSES

Wound complications and infections: Surgical site infections (SSIs) remain a major concern, often requiring debridement or antibiotic therapy ^[13,14]. In our study, wound complications accounted for 36% of readmissions.

Periprosthetic joint infection (PJI): Although rare, PJI is a significant cause of morbidity, necessitating prolonged antibiotic treatment or revision surgery ^[15].

Implant-related issues: Component malalignment, instability, or mechanical failure may require reoperation ^[16].

Postoperative bleeding and hematoma: Excessive bleeding can lead to hematoma formation, increasing the risk of infection and requiring surgical intervention ^[17].

MEDICAL CAUSES

Thromboembolic events: Deep vein thrombosis (DVT) and pulmonary embolism (PE) are critical concerns following TKA, often leading to readmission ^[18,19].

Cardiovascular complications: Myocardial infarction, stroke, and arrhythmias can occur postoperatively, particularly in patients with pre-existing conditions ^[20,21].

Respiratory and renal issues: Postoperative pneumonia and acute kidney injury (AKI) contribute to unplanned hospital visits ^[22,23].

RISK FACTORS FOR READMISSION

Several patient- and surgery-related factors influence readmission risk:

PATIENT-RELATED FACTORS

Advanced age: Elderly patients are more prone to complications due to reduced physiological reserve ^[24].

Comorbidities: Hypertension, diabetes, and obesity are associated with higher readmission rates ^[25,26].

Smoking and poor nutrition: These factors impair wound healing and increase infection risk ^[27].

SURGERY-RELATED FACTORS

Length of hospital stay (LOS): Studies suggest that shorter LOS (<3 days) may lead to higher readmission rates due to inadequate postoperative optimization ^[14].

Bilateral vs. unilateral TKA: Some studies indicate a slightly increased risk of complications with bilateral procedures ^[26].

Postoperative care and rehabilitation: Inadequate pain control, improper wound care, and delayed rehabilitation can contribute to readmissions ^[15].

STRATEGIES TO REDUCE READMISSION

To mitigate readmission risks, healthcare providers should focus on the following interventions:

Enhanced perioperative care: Optimization of preoperative medical conditions, patient education, and nutritional support ^[9,23].

Strict infection control measures: Perioperative antibiotic prophylaxis and proper wound management ^[13].

Thromboprophylaxis: Use of anticoagulants and early mobilization to prevent DVT/PE ^[18].

Comprehensive discharge planning: Clear postoperative instructions, home healthcare support, and timely follow-up visits ^[10,11].

Enhanced recovery after surgery (ERAS) protocols: These multimodal strategies aim to accelerate recovery and reduce complications ^[8].

CONCLUSION

Readmission following TKA is influenced by a combination of surgical and medical factors. Identifying high-risk patients and implementing targeted preventive measures can significantly reduce readmission rates and improve patient outcomes. Future research should focus on developing predictive models for early identification of at-risk individuals and evaluating the impact of evolving surgical and rehabilitation protocols on readmission trends ^[12,22].

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