

tically significant ($p = 0.2$). In addition, there were no significant differences between the two groups regarding complications, ranges of motion and revisions. Twenty-five patients (15.6%) had a knee arthroscopy within one year of their TKA during which time there were no increased risks of infections, other complications, reoperations or revisions.

A national registry database study of 64,566 primary TKAs found that prior ligament reconstruction (odds ratio (OR) = 1.85) was an independent risk factor for PJI at 12 months in multivariate analysis, with no details of whether this was open or arthroscopic. Interestingly, meniscectomy was an independent protective factor (OR = 0.66) in the same study [15].

We conclude that a prior arthroscopy of the knee does not seem to increase the incidence of subsequent SSIs/PJIs following TKA. However, most studies on this subject are retrospective with small cohorts, making it difficult to accurately assess the risk of subsequent infection. Only one study showed an increased rate of infection within six months, and this has not been repeated in the literature. Further studies are required, and until then, surgeons may wish to consider delaying TKA for at least six months post-arthroscopy to minimize any risk that may exist, particularly in high-risk patients.

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QUESTION 6: Do patients undergoing outpatient total joint arthroplasty (TJA) have a higher incidence of surgical site infections/periprosthetic joint infections (SSIs/PJIs)?

RECOMMENDATION: No. Patients undergoing outpatient total joint arthroplasty do not have a higher incidence of SSIs/PJIs.

LEVEL OF EVIDENCE: Moderate

DELEGATE VOTE: Agree: 83%, Disagree: 8%, Abstain: 9% (Super Majority, Strong Consensus)

RATIONALE

PJIs are a serious condition with a high impact on patients and surgeons. The leading cause of 30-day readmission after total knee arthroplasty (TKA) is deep or superficial SSIs, which accounts for 12.1% of unplanned readmissions [1]. SSIs accounted for 23.5% of unplanned readmissions in total hip arthroplasty (THA) patients, just behind hip dislocations. Lovett-Carter et al. reported that the length of hospital stay (LOS) is implicated as a risk factor for SSIs or PJIs, among other factors such as comorbidities, gender and duration of procedure [2]. Outpatient TJA has not been seen to be a concern in the literature.

In a study that evaluated 58,000 standard-stay, primary THA patients, the deep SSI rate was seen to be 0.2% [3]. In a more recent study, Lovett-Carter et al. evaluated outpatient 742 THAs and 816 TKAs and observed 0 and 3 (0.36%) SSIs, respectively [2].

Nelson et al. revised the collected data from the 2005 to 2014 American College of Surgeons National Surgical Quality Improvement Database (ACS NSQIP) of patients who underwent THA as outpatient (LOS 0 days) or inpatient (LOS 1-5 days). A total of 63,844 THA patients were identified of which 420 (0.66%) were outpatients. They concluded that patients undergoing outpatient THA were not at an increased risk of 30-day adverse events or readmissions or infections compared to inpatient procedures. Deep SSIs in patients with LOS between 1 to 5 days was 0.23% and in outpatients was zero ($p = 0.319$). The rate of superficial SSI was 0.64 vs. 0.48% ($p = 0.821$), respectively [4].

Springer et al. compared 30-day hospital readmission rates for patients undergoing outpatient and inpatient TJAs. They evaluated if LOS impacted hospital readmission rates and unplanned care

TABLE 1. ACS NSQIP database comparison of complications within 30 days of surgery between the outpatient and inpatient TJA groups [7]

SSI	Outpatient: N = 1,220	Inpatient: N = 168,186
Superficial	6 (0.5%)	1,053 (0.6%)
Deep	4 (0.3%)	354 (0.2%)

episodes. The group found that there was only 1 case of hospital readmission out of 137 patients due to infection in the outpatient group (0.7%), and none of the 106 patients in the inpatient group had any unplanned care episodes [5]. They concluded that no statistical differences were seen in 30-day readmission or unplanned care episode. Kolisek et al. compared the results of two selected matched cohorts of 64 patients who underwent TJA during the same period, and found two cases of SSIs in the inpatient group vs. zero in the outpatient cohort [6]. Courtney et al. determined that the complications associated with outpatient vs. inpatient TJA seen in the ACS NSQIP database were not significant, specifically in superficial and deep SSIs [7].

When comparing costs, complications and mortality between outpatient TKA patients and those who had a 3 to 4 night hospital stay, Lovald et al. determined that the SSI rate was not different at 1.9 and 2.0% respectively [8]. Furthermore, Goyal et al. performed a multicenter, randomized control study, comparing patients undergoing THA as inpatients (108) and outpatients (112). They showed no differences in SSI rates, 0.92% and 0.89% respectively, at four weeks follow-up [9]. Klein et al. reported 5 infections (0.9%) in 549 THAs as outpatient with a follow-up of 90 days [10]. Berger et al., with the same follow-up, evaluated 25 unicompartmental knee arthroplasties and 86 TKAs as outpatient surgeries and found only one irrigation and debridement [11]. Bovonratwet et al. compare 956 inpatient TKAs with 642 outpatients in a follow-up of 30 days and found SSI rates of 0.85 and 0.78% respectively [12].

Only one retrospective, database study by Arshi et al. showed different findings than the studies mentioned above. They compared 4,391 outpatient TKAs vs. 128,951 inpatient TKAs and saw a significant difference in SSI incidences of 1.21% and 0.91% respectively [1]. They concluded that data from a private insurance database demonstrated higher risks of perioperative surgical and medical complications, including, component failure, SSI, knee stiffness and deep vein thrombosis. However, it should be noted that this study did have selection bias for their patients, and was extracted from a database that could potentially add bias.

Basques et al. reviewed the ACS NSQIP database for comparisons between same-day discharge and inpatient hospitalizations of elective hip and knee arthroplasty cases in terms of postoperative complications and 30-day readmission rates [13]. This study was comprised of 1,236 same-day surgery cases that were identified from their institution, and matched to the same number of cases from the database. Same-day cases were found to have higher readmission rates and returns to the operating room. In particular, infec-

tions were the most common cause for readmissions and returns to the operating room. On the other hand, the inpatient group had a higher incidence of thromboembolic events. These higher readmission rates were seen specifically for patients in the same-day surgery TKA group. The risk factors for 30-day readmissions following same-day procedures include BMI > 35 kg/m², diabetes and age > 85 years.

In conclusion, based on available data, performing TJA in an outpatient setting does not seem to predispose patients to a higher incidence of SSIs/PfIs.

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