

QUESTION 1: Does prolonged hospitalization prior to elective total joint arthroplasty (TJA) increase the risk of subsequent surgical site infection/periprosthetic joint infection (SSI/PJI)?

RECOMMENDATION: Yes. Prolonged preoperative hospitalization is associated with an increase in the risk of SSI/PJI.

LEVEL OF EVIDENCE: Strong

DELEGATE VOTE: Agree: 96%, Disagree: 3%, Abstain: 1% (Unanimous, Strongest Consensus)

RATIONALE

Previous studies from various surgical disciplines have demonstrated an increased risk of SSI secondary to prolonged preoperative hospitalization [1–7]. These findings may be confounded by medical comorbidities known to increase the risk of SSI that require optimization in an inpatient setting prior to surgical intervention [5]. Considering this, it must also be acknowledged that there is a risk of exposure to and colonization of pathogenic microorganisms in healthcare settings [6,8].

Quantitatively, there is no consensus on the definition of prolonged hospitalization prior to elective TJA. Studies have reported this as same-day and on-same-day surgery [9–11], days prior to surgery (more than two days, three days, more than three days or more than four days), median preoperative waiting time, or with no exact time period [1,12–17]. Despite this, all of them agree there is a positive correlation between length of preoperative stay and the increased risk of SSI or PJI.

A case-control study by Lee et al. reviewing the risk factors for SSI amongst elderly orthopaedic patients found that admission on the day of surgery was associated with a decreased risk for SSI (odds ratio (OR): 0.42, 95% confidence interval (CI) 0.24 to 0.74, $p = 0.002$) in a bivariate analysis [9]. A multivariate analysis conducted of the same study group found that the only independent predictor of SSI was admission from a healthcare facility (a nursing home, rehabilitation facility or another hospital) (OR: 4.35, 95% CI 1.64 to 11.11, $p = 0.003$) [9]. Furthermore, in a series study of 3,672 primary hip arthroplasty cases, Maoz et al. reported non-same-day surgery as a significant risk factor for PJI (OR: 4.16, 95% CI 1.44 to 12.02, $p = 0.008$) [10] following multivariate analysis. Utilizing studies looking at infection in spinal surgery as a comparison, the infected cases had a longer length of stay preoperatively compared to non-infected cases (mean 2.4 vs.0.9 days, $p = 0.002$) [12]. The risk of SSI/PJI increases for total hip and knee arthroplasty patients with a preoperative stay greater than three days (OR: 1.81, 95% CI 1.15 to 2.84, $p = 0.03$) [4,13,15].

It is recommended that preoperative hospitalization be kept as short as possible in an effort to reduce the risk of SSI/PJI [7,18,19]. It is suggested that patient admission for an elective procedure such as total hip arthroplasty be avoided prior to the day of surgery [11] given that a longer delay to operation is an independently significant risk factor for SSI [20].

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