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QUESTION 6: Is there an association between urinary tract infection (UTI) and surgical site infection (SSI) following spinal surgery?

RECOMMENDATION: Evidence regarding an association between UTI and SSI following spine surgery is conflicting and no convincing relationship has been proven. In a like fashion, no convincing relationship has been established between asymptomatic bacteriuria and SSI following spine surgery.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 71%, Disagree: 21%, Abstain: 8% (Super Majority, Strong Consensus)

RATIONALE

The treatment of organisms isolated from urine culture in the setting of orthopaedic surgery with hardware implantation is controversial and has been often driven by anecdote. The risk of seeding of hip and knee arthroplasties from asymptomatic bacteriuria has been studied and found to be small, with no cases in two studies [1,2]. A systematic review of the topic concluded that there was no evidence to support a direct causal relationship between perioperative asymptomatic bacteriuria and arthroplasty infection [3].

Data from the American College of Surgeons National Surgical Quality Improvement Program suggests that UTIs occur in nearly 1 of 50 patients undergoing posterior lumbar fusion procedures [4]. However, there are few studies that directly address a relationship between UTI and SSI in instrumented spine surgery. Nunez-Pereira et al. studied 466 patients, of whom 89 had UTIs and 54 had SSIs, with 22 patients having both [5]. Of these 22, the same organism was isolated from the surgical site and urine in nine patients. UTI conferred an odds ratio (OR) of 3.1 for SSI, though the statistical analysis recognized all UTIs and not just infections with the same organism. Tominaga et al. studied a cohort of 825 patients with 14 patients who developed SSIs and 20 patients who developed UTIs, and found no association between SSI and UTI [6].

It seems germane as well to address the relationship of asymptomatic bacteriuria and postoperative spine infection. Lee et al. studied 355 women > 65 years of age undergoing spine surgery [7]. Of these, 42 developed asymptomatic bacteriuria, with no association with SSI. A statistically significant association was found between asymptomatic bacteriuria with a Foley catheter in place and infec-

tion in patients who had undergone instrumentation of multiple levels. However, of 15 patients with postoperative infections, only 2 had the same organism (*Staphylococcus epidermidis* in both cases) isolated from cultures of surgical site and urine.

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