5.11. TREATMENT: ANTIMICROBIAL SUPPRESSION

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QUESTION 1: Is there a role for administration of prolonged oral antibiotics following primary total joint arthroplasty (TJA)?

RECOMMENDATION: No. The administration of prolonged oral antibiotics in the context of perioperative prophylaxis after primary TJA is not recommended. Continuing antibiotic prophylaxis longer than 24 hours after wound closure has not proven to be beneficial; indeed, it may contribute to the development of antimicrobial resistance, carries risks and adds to healthcare costs.

LEVEL OF EVIDENCE: Moderate

DELEGATE VOTE: Agree: 95%, Disagree: 4%, Abstain: 1% (Unanimous, Strongest Consensus)

RATIONALE

The use of preoperative systemic intravenous antibiotic prophylaxis reduces the risks of postoperative infections in TJAs. Numerous guidelines, including those developed jointly by the American Society of Health-System Pharmacists (ASHP), the Infectious Diseases Society of America (IDSA), the Surgical Infection Society (SIS) and the Society for Healthcare Epidemiology of America (SHEA) [1], all recommend preoperative antibiotic use.

The recent guidelines for the prevention of surgical site infections (SSIs) developed by the Centers for Disease Control and Prevention (CDC) state that in clean and clean-contaminated procedures, no additional antibiotics after wound closure in the operating room are necessary, even in the presence of a drain (Category IA–strong recommendation; high-quality evidence) [2]. The latter recommendation, however, is based on non-orthopaedic procedures. The American Association of Hip and Knee Surgeons (AAHKS) has funded a large randomized prospective study to examine the difference, if any, between a single dose and 24-hour dose of prophylactic antibiotics in patients undergoing TJA. While the results of the latter study are awaited, most surgeons continue to administer multiple doses of prophylactic antibiotics for patients undergoing TJA.

There are, however, numerous studies demonstrating that the use of a short course of antibiotics does not place patients at higher risks of SSIs/periprosthetic joint infections (PJIs) than longer courses of antibiotics [3–5]. A systematic review by Thornley et al. evaluated the evidence for postoperative antibiotic prophylaxis administration and its role for reduction of SSIs among patients undergoing primary total hip or knee arthroplasties [6]. The pooled estimate demonstrated that prolonged postoperative antibiotic prophylaxis did not significantly reduce the rates of SSIs (odds ratio (OR) 0.01, 95% confidence interval (CI), 0.00-0.02). However, the overall quality of the evidence was very low, owing to risk of bias, inconsistency and imprecision in the studies evaluated [6].

There has been minimal work performed that evaluates whether patients undergoing TJA should receive prolonged courses of oral antibiotics. A recent study presented at the annual meeting of AAHKS demonstrated significant reductions in the rates of SSIs/PJIs when prolonged (seven days) or oral antibiotic was administered to patients undergoing TJA. The study was retrospective in nature, consisted of a relatively small cohort, had a short follow-up and did not disclose the exact definition of PJIs or SSIs. Otherwise, there is no other study demonstrating that administration of prolonged oral antibiotics after TJA offers additional benefits to patients. The available evidence does not support continuation of postoperative antibiotic prophylaxis intravenously or orally for the prevention of SSIs in patients undergoing TJA.

There are numerous risks associated with the administration of antibiotics, most important of which is the realistic and sobering issue related to emergence of antimicrobial resistance (AMR). Moreover, the unnecessary use of antibiotics can lead to the development of opportunistic infections, such as *Clostridium difficile* associated diseases, that can result in extended hospital stays, increased costs for episode of care as well as higher morbidity and mortality [7].

In the absence of concrete evidence and due to the dire need for the medical community to observe antibiotic stewardship, we recommend against the prolonged use of oral or intravenous antibiotics in patients undergoing routine primary total hip or knee arthroplasty.

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