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QUESTION 5: What prophylactic antibiotic (type, dose and route of administration) should be administered perioperatively for patients undergoing total ankle arthroplasty (TAA)?

RECOMMENDATION: The administration of prophylactic antibiotics before TAA potentially reduces the incidence of surgical site infection (SSI) and/or periprosthetic joint infection (PJI). Weight-based (of at least 2 gm) Cefazolin administered intravenously within 60 minutes prior to the procedure can be an adequate choice for antibiotic prophylaxis.

If the patient has a beta-lactam anaphylaxis, we recommend an appropriate alternative antibiotic effective against *Staphylococcus*.

It is unclear whether prophylaxis should be given as a single dose or as multiple doses.

LEVEL OF EVIDENCE: Strong

DELEGATE VOTE: Agree: 100%, Disagree: 0%, Abstain: 0% (Unanimous, Strongest Consensus)

RATIONALE

Published studies report a rate of PJI after TAA that ranges from 2 to 8.6%, exceeding the risk of infection following knee and total hip replacements [1]. Likewise, the incidence of SSI following foot and ankle elective surgeries (2–4.5%) is higher than other orthopaedic procedures [2].

Most expert panels consider it appropriate for antimicrobial prophylaxis to be routinely utilized in surgeries involving prosthetic joints [3–8]. Unfortunately, no high level evidence is available to corroborate its indication specifically in TAA [9,10].

Gram-positive cocci are the most prevalent pathogens in SSI and PJI in foot and ankle surgeries [15,11]. Cefazolin is the more widely used antibiotic for standard prophylaxis in orthopaedic surgeries,

due to its effective and rapid bone and soft tissue penetration, excellent gram-positive coverage and its long half-life [12,13]. One to 2 grams of Cefazolin administered intravenously is the standard dosage recommended in most guidelines, although some experts suggest increasing the dose to 3 grams if the patient weighs more than 120 kilograms [3,4,7,12]. In patients with a history of severe beta-lactam allergy, who cannot receive cephalosporins, vancomycin or clindamycin are adequate alternatives [3,4,12].

Some studies show reduced SSI rates associated with methicillin-resistant *Staphylococcus aureus* (MRSA) screening and decolonization protocols in elective orthopaedic procedures, but there is no specific data in foot and ankle surgeries or TAA [14,15]. Most experts

recommend performing these procedures on a case-by-case basis, taking into account the history of colonization and the presence of risk factors for MRSA [10,15].

Most guidelines advocate for the administration of prophylactic antibiotics within 60 minutes prior to surgery [3,4,6,7,10]. Studies that assessed patterns of antibiotic bone penetration in prosthetic joint replacements report that effective serum levels of Cefazolin persisted for over eight hours after intravenous administration, achieving peak concentration in bone tissue 40 minutes after the dose [13]. Antibiotic administration 15 minutes prior to incision has not proven to be better than 15-60 minutes before the procedure [2]. Experts advise redosing if procedure time exceeds one to two times the half-life of the antibiotic (1.5-two hours in case of Cefazolin) [3,4,6]. There is conflicting evidence for the need to continue prophylaxis postoperatively, but it is clear that there is no benefit in extending the administration of antibiotics beyond 24 hours after the surgical procedure [4-7,10]. If a proximal tourniquet is used, the antimicrobial should be completely infused before inflation [10,13].

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QUESTION 6: What is the optimal management of patients with prior septic arthritis of the ankle who are undergoing total ankle arthroplasty (TAA)?

RECOMMENDATION: There is a paucity of data regarding TAA in patients with prior infection involving the ankle, whether it be septic arthritis, osteomyelitis or infection of the surrounding soft tissues.

We recommend that patients with prior infections in the affected ankle be worked up for infection, including a thorough history and physical examination, as well as ordering serological tests and possible aspiration of the joint. During ankle arthroplasty in patients with prior infection, antibiotics should be added to the cement (if used), and the joint should be thoroughly cleansed. Intraoperative cultures of bone and soft tissue should also be obtained.

LEVEL OF EVIDENCE: Consensus

DELEGATE VOTE: Agree: 100%, Disagree: 0%, Abstain: 0% (Unanimous, Strongest Consensus)

RATIONALE

TAA has been used with increasing frequency for the treatment of end-stage arthritis of the ankle. The rate of periprosthetic joint infection (PJI) of the ankle varies in the literature. When it occurs, it can have devastating consequences. There is a paucity of literature regarding the work-up, management and outcomes of PJI in TAA.

With regards to total ankle arthroplasty in patients with a history of infection involving the ankle, only one study in the literature was identified and was a level IV case series. A history of infection in or around the ankle was traditionally seen as a relative, if not absolute, contraindication to TAA [1,2]. However, until 2015, there were no studies on the matter in the foot and ankle literature.

Shi et al. retrospectively identified 22 patients over a 7-year period who underwent TAA who had a history of septic arthritis of the ankle or periarticular osteomyelitis [3]. The preoperative

workup for these patients differed based on clinical suspicion and the treating surgeon's preferences. At the very least, all patients had preoperative blood work in the form of a complete blood count (CBC), erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels. The decision to perform a preoperative joint aspiration or send intraoperative frozen sections or tissue samples for culture was surgeon-dependent.

At a mean follow-up of 29.3 (range, 11.4 to 83.8) months, there were no PJIs, evidence of radiographic loosening or need for revision of the components. The TAA was performed at an average of 8.8 (range, 0 to 44) years after the diagnosis of infection in or around the ankle. Three patients (14%) had delayed wound healing, and three others (14%) underwent subsequent procedures, which were not for the infection and did not involve revision of any of the ankle arthro-