over 57,000 patients found that PVD alone was a strong risk factor for the development of complications after ankle fracture fixation, with the rate of infection increased from 1.44% to 6.87% in the presence of PVD [2].

Diabetes and PVD are associated with increased complications in other forms of foot and ankle surgery, as well [5]. PVD is a proven risk factor for infection after arthrodesis procedures of the foot and ankle and is an independent risk factor for periprosthetic joint infection (PJI) following total ankle arthroplasty [6,7].

Clinical guidelines for the management of diabetic foot disorders suggest a thorough assessment for vascular risk factors prior to surgery [8]. PVD and poor oxygen delivery to tissues are associated with poor wound healing in these patients and should thus be identified [9,10]. Angiography should also be performed when appropriate to assess the potential for revascularization [8], as this intervention has shown to improve the level of amputation and tissue loss in this group of patients [11–13]. Furthermore, Faglia et al. demonstrated revascularization in diabetic patients with critical limb ischemia to lead to a low rate of early amputation [14].

Aust et al. reported that combining revascularization with surgical intervention results in improved wound perfusion and healing of chronic wounds [15]. Revascularization prior to surgery can even allow for successful primary closure of some chronic wounds, according to Barshes et al. [16]. Furthermore, two groups have reported that if primary closure is not viable, then revascularization can be completed in the setting of free tissue for chronic wounds [17,18].

Transmetatarsal amputation can be an effective method of limb salvage in the ischemic or infected diabetic foot, and the rates of wound healing and limb salvage have demonstrated to be improved in conjunction with revascularization [19,20]. Additionally, it is important to understand that the timing of revascularization prior to surgery has not been shown to influence outcomes [21,22]. This would suggest that revascularization prior to diabetic foot surgery is not essential but beneficial when performing revascularization close to foot and ankle surgery in the diabetic patients.

There is little literature related to the effect of revascularization in preventing SSI in foot and ankle surgery. While the presence of PVD is known to increase the risk of SSI/PJI in patients undergoing foot and ankle procedures, no specific study demonstrates revascularization of the foot and ankle obviates this increased risk.

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QUESTION 4: Are prophylactic perioperative antibiotics required for isolated forefoot procedures, such as hammertoes?

RECOMMENDATION: Though limited clinical data exists, the administration of perioperative antibiotics is not required for isolated forefoot procedures in the absence of any risk factors, such as immunodeficiency or diabetes mellitus.

LEVEL OF EVIDENCE: Moderate

DELEGATE VOTE: Agree: 67%, Disagree: 25%, Abstain: 8% (Super Majority, Weak Consensus)

RATIONALE

One high-quality and one moderate-quality prospective randomized control study have demonstrated that there is no significantly different rate of infection in patients who received perioperative antibiotics compared to those who did not receive antibiotics [1,2]. There are also multiple other low-quality studies to support this finding.

A prospective randomized controlled trial of 100 adults undergoing toe fusion with Kirschner wires (K-wires) revealed no significant difference in the infection rate between the group that received prophylactic antibiotics (6.2%) versus the group that did not receive antibiotics (1.9%) [1]. Additionally, a recent multicenter, double-blinded, randomized clinical trial of 500 patients undergoing removal of orthopaedic implants from the lower extremity in the Netherlands showed no significant difference between the group that received a single preoperative dose of intravenous cefazolin (13.2%) when compared to the group that received saline (14.9%) [2].

In their retrospective analysis of 555 patients who underwent elective foot and ankle surgeries, Zgonis et al. reported a 1.9% rate of infection in those who received preoperative antibiotics, compared to a 1.4% rate in patients who did not receive preoperative antibiotics [3]. The authors concluded that prophylactic intravenous antibiotic use in routine elective foot and ankle surgery is not warranted.

Based on a systematic review of the literature, the American College of Foot and Ankle Surgeons has made a recommendation that although there is little to no empiric evidence to support administrating prophylactic antibiotics in elective foot and ankle surgical procedures, antibiotics should be considered [4,5]. They concluded that there is a relative divide between empirical science and common practice. Despite the absence of evidence to support the use of prophylactic antibiotics, it is nevertheless widely used and is a requirement of most hospital systems in order to satisfy quality measures. They justified the practice as being an intervention without significant risk. However, the cost to the healthcare system or the potential for the emergence of resistant organisms was not considered in their 2015 and 2017 statements.

In a survey emailed to all active and candidate members of the American Orthopaedic Foot and Ankle Society, Ruta et al. reported that the majority (75%) of orthopaedic foot and ankle surgeons use prophylactic postoperative oral antibiotics [6]. Most surgeons (69%) prescribed antibiotics to fewer than 25% of patients, although 16% of surgeons prescribed for all elective cases. The finding of the survey was that there was no significant difference in surgical site infection rate among the patients of surgeons who prescribed antibiotics versus those who did not. Another national survey study showed that 25% of attending physicians at foot and ankle fellowships in the United States would administer perioperative antibiotics for foot and surgeries that require K-wire fixation [7].

There is no scientific evidence to support the administration of prophylactic intravenous antibiotics in elective forefoot surgeries. However, even with the lack of high-quality clinical studies, the administration of perioperative antibiotics as a quality measure for most hospital systems and being considered a common practice have led surgeons to administer perioperative antibiotics for forefoot surgeries.

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