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QUESTION 2: What is the role of oral suppression antibiotics after reimplantation in patients with negative cultures after 14 days of incubation?

RECOMMENDATION: There may be a role for the administration of oral antibiotics to decrease reinfection rates following reimplantation in patients with negative cultures, but further study is necessary.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 73%, Disagree: 21%, Abstain: 6% (Super Majority, Strong Consensus)

RATIONALE

The role of oral antibiotics after two-stage revision was evaluated in one randomized controlled trial [1] as well as three retrospective studies [2–4]. Three of these studies found reduced rates of reinfection in patients who received oral antibiotics following reimplantation. One retrospective study evaluating oral antibiotics in patients with periprosthetic joint infection (PJI) included a subgroup of patients with two-stage revisions and found no differences in implant survival between the suppression and non-suppression cohorts [4]. Follow-up varied in all of the studies, with one study reporting preliminary findings, but still underway. Further more the sample size in all of these studies was relatively small and the longitudinal follow-up duration was limited.

Different antibiotics were utilized in these studies at the discretion of the treating physician, all of which have different bioavailability and antimicrobial spectrum of activity. Some of the antimicrobial therapies chosen to be administered after reimplantation are known to have bioavailability nearing 100% (e.g., fluoroquinolones, linezolid), which is more in the ‘active therapy’ realm vs. suppressive therapy. The original offending microorganisms also varied substantially, which could affect the results. In one study [3], 50% of the initial cultures at the time of component removal did not identify a microorganism, so these patients were treated empirically, making

the choice of agent difficult. Adverse events with oral antibiotics were reported, including patients who discontinued therapy prematurely, and this should always be considered when determining whether antimicrobial therapy is appropriate for a patient.

In essence, these studies may represent a signal that the provision of oral antibiotics after reimplantation may be of benefit; however, there is a definite need to confirm these findings with further study.

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QUESTION 3: Which patients should be considered for administration of long-term suppressive oral antibiotic instead of surgical treatment in patients with chronic periprosthetic joint infections (PJIs)?

RECOMMENDATION: Long-term suppressive oral antibiotics instead of surgical treatment may be considered for patients who are not candidates for surgery, when surgery is not expected to improve the functional outcome for a patient, and for patients who refuse surgery.

LEVEL OF EVIDENCE: Consensus

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

RATIONALE

An extensive literature search was conducted to examine the role of suppressive antibiotics instead of surgical intervention for patients with chronic PJIs. No such study could be identified. To our knowledge, no study has examined specifically the profile of patients who

may be considered for long-term suppressive antibiotic treatment instead of surgery for chronic PJIs.

Patients with PJIs are best treated by surgical intervention that includes the removal of infected implants or debridement of the

infected site and exchange of the modular components. The aim of the surgical intervention is to reduce the bacterial load (bioburden) and the biofilm formed on the components that cannot be penetrated by antibiotics or the immune system of the host. In some cases, however, removal of all or part of the infected implants during surgery is not in the best interests of the patient and chronic antibiotic suppression represents, in these circumstances, an unique anti-infective therapy that can be applied to these patients. The administration of antibiotics in this circumstance is meant to minimize the risk of systemic toxicities that the patient may experience as a result of proliferation of the organisms from the infective site. Another reason for administration of antibiotics in this situation is to try to keep the infection at bay by reducing drainage from the wound or the sinus tract [1–6].

The indications for the use of long-term suppressive antibiotics is not well known or well studied in the literature. In the absence of evidence, we believe that suppressive antibiotics instead of surgical intervention may be an option (1) for patients in whom surgery is contraindicated because of the patient's general condition, (2) when surgery is not expected to improve the functional outcome for patient, such as those with multiple prior failures and (3) for patients who refuse surgery.

Given the very low probability of obtaining remission of infection, or even control of infection, and the potential adverse effects associated with long-term antibiotics to the patient and the society, this treatment option would be best considered collegially by a multidisciplinary team working together to determine the treatment for the patient.

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