During the reconstruction of the previously infected joint, all available strategies for prevention of infection should be implemented.

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QUESTION 9: Is the surgical management of a patient with infection following anterior cruciate ligament reconstruction (ACLR) an emergency, or can the patient be optimized prior to surgical intervention? If so, what needs to be optimized?

RECOMMENDATION: Infection following ACLR is not a surgical emergency in most cases. Sepsis associated with infected anterior cruciate ligament (ACL) requires an emergency treatment. Most surgeons agree that surgical intervention should take place without delay, on a prompt basis, preferably on the same day as the clinical presentation of an ACLR infection. The patient's condition needs to be optimized prior to surgery.

LEVEL OF EVIDENCE: Moderate

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

RATIONALE

Infection following ACLR is a rare event affecting up to 2.25% of patients, but it is a serious complication [1–15]. Surgical management of ACLR infections is frequently discussed in the literature, but the timing of surgical intervention is not clearly stated in the majority of these publications [3,4,6,10–12,16–18].

A few studies have addressed the issue of timing of surgery. A study by Schuster et al. stated that the surgery should be performed on the day of admission [19]. Another study by Mouzopoulos et al. also declared that the infection should be treated without delay [20]. In a review article, Wang et al. reported a summary of various studies by stating a recommendation for immediate operative treatment [21]. Torres-Claramunt et al. also reported that the generally-accepted treatment is "arthroscopic lavage, performed as soon as possible" [22]. It is known that articular cartilage degrades rapidly and loses nearly half of its glycosaminoglycan and collagen composition in the first week of a joint infection [23,24]. Therefore, a significant delay should not be experienced in the initiation of surgical treatment in patients presenting with an infection of ACL reconstruction.

The major drawback in the literature is that almost all of the studies published on infection following ACLR have been retrospective reviews. It is well-established in these studies that infection following ACLR can rarely be a life-threatening emergency. A timely and well-planned course of action based on clinical and laboratory data and microbiological findings is recommended. Graft retention has been shown as a goal along with articular cartilage protection, so lengthy delays should be avoided [1,3,6,11,13,17,18,25,26].

A protocol for patient optimization prior to surgery has not been clearly established. Clinical examination and aspiration of the knee joint is recognized as the first step in diagnosis at initial patient presentation with a suspected postoperative ACLR infection. It is also generally reported that broad-spectrum antibiotics, preferably cephalosporins, should be started as soon as possible after joint aspiration is performed [10,12,15,16,19,20,22,27]. The antibiotics should target coagulase-negative *Staphylococcus* (CNS) and *Staphylococcus aureus*, as these are the most common infecting organisms. Antibiotic therapy should be modified as soon as culture results identify the specific pathogen and the susceptibility.

Blood tests for infectious and inflammatory markers, such as white blood cell count, erythrocyte sedimentation rate and C-reactive protein, should also be conducted on the day of presentation.

This will add to the initial clinical data and offer serial information to monitor infection eradication [19–22]. Clinical records of the patient should be reviewed to identify the nature of the prior operative procedure, type of graft, method of fixation and additional meniscal or cartilage procedures, if performed [1,4,6,15,19].

As with all surgeries, comorbidities should be medically managed. This may include better control of hyperglycemia, correction of anticoagulation, correction of anemia and other conditions that may adversely influence the outcome of surgical procedure.

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