

## KEY PROCEDURES

## IRRIGATION AND DEBRIDEMENT, MODULAR EXCHANGE, AND IMPLANT RETENTION FOR ACUTE PERIPROSTHETIC INFECTION AFTER TOTAL KNEE ARTHROPLASTY

Kevin J. Choo, MD, Matthew Austin, MD, Javad Parvizi, MD, FRCS

Published outcomes of this procedure can be found at: J Arthroplasty. 2019 Feb;34(2S): S399-S419.

*Investigation performed at the Rothman Orthopaedic Institute, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania*

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## Abstract

The role of irrigation and debridement, modular exchange, and implant retention for the treatment of periprosthetic joint infection (PJI) after total knee arthroplasty (TKA) remains controversial. The proposed benefits of debridement, antibiotics, and implant retention, often referred to as DAIR, include reduced economic cost and morbidity of 2-stage reimplantation<sup>1</sup>. The primary disadvantage of this approach is a higher rate of failure and infection recurrence<sup>2,3</sup>. Furthermore, several authors have demonstrated inferior outcomes of 2-stage exchange revision arthroplasty after a failed attempt at limited debridement with implant retention<sup>4-6</sup>.

Because of study heterogeneity, the outcomes of acute PJI treatment with irrigation and debridement and implant retention have been variable in the literature, with reported success rates ranging from 16% to 100%; overall, the success rate is around 50%<sup>3,7,8</sup>. Recently, studies evaluating outcomes of DAIR have indicated that host factors, organism type, the timing of intervention, and the duration of symptoms can influence the likelihood of success with this approach<sup>7,9-12</sup>.

DAIR may be considered for all patients with early postoperative PJI or an acute hematogenous infection in the context of well-fixed implants and a healthy soft-tissue envelope. Chronic PJI should be considered an absolute contraindication to DAIR<sup>13</sup>. The patient's health status, comorbidities, and immune status also should be considered. Caution should be exercised when considering DAIR for a patient in whom preoperative cultures demonstrate a drug-resistant or highly virulent organism, because of a higher risk of failure<sup>1,9,14,15</sup>. With careful patient selection and meticulous surgical technique, it is possible to achieve success with this treatment strategy.

The surgical procedure begins with a medial parapatellar approach and arthrotomy. A complete synovectomy is then performed, and remaining

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synovial tissue is aggressively debrided. Multiple culture samples should be obtained, and aseptic technique should be utilized to decrease contamination. The implant is interrogated to ensure stable fixation. Following adequate debridement, high-volume irrigation is performed; in cases involving irrigation and debridement with implant retention, we recommend incorporation of an antiseptic solution such as povidone-iodine. We recommend switching to a clean setup to facilitate sterile, uncontaminated closure of the wound, which is performed in a standard fashion. Meticulous attention should be paid to layered closure, and, if there is concern about delayed skin-healing, incisional negative-pressure wound therapy may be utilized.

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Kevin J. Choo, MD<sup>1</sup>

Matthew Austin, MD<sup>1</sup>

Javad Parvizi, MD, FRCS<sup>1</sup>

<sup>1</sup>Rothman Orthopaedic Institute, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania

Email address for J. Parvizi: javad.parvizi@rothmanortho.com

ORCID iD for K.J. Choo: [0000-0002-9028-5622](https://orcid.org/0000-0002-9028-5622)

ORCID iD for M. Austin: [0000-0002-4379-3392](https://orcid.org/0000-0002-4379-3392)

ORCID iD for J. Parvizi: [0000-0002-6985-5870](https://orcid.org/0000-0002-6985-5870)

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