SH80. What are the indications for debridement, antibiotics and implant retention (DAIR) in subacute and chronic shoulder PJI?

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Methodology:
A comprehensive literature search was performed in 2024 using databases: Medline, Embase, Web of Science, CINAHL, Scopus, Cochrane, Clinicaltrial.gov and PubMed to identify all studies on irrigation and debridement with implant retention (DAIR) when treating shoulder PJI. The search terms were Periprosthetic Joint Infection or Prosthesis-Related Infections, Shoulder or Shoulder Pain or Shoulder Joint or shoulder, Shoulder Joint or Arthroplasty, Replacement, Shoulder or Arthroplasty, Replacement or shoulder arthroplasty or Joint Prosthesis, Surgical Wound Infection or Shoulder Prosthesis or Anti-Bacterial Agents or intrawound shoulder or Vancomycin, Arthroplasty, Replacement, Shoulder/ or Prosthesis-Related Infections or Anti-Bacterial Agents or chronic shoulder periprosthetic joint infection or Shoulder Joint, debridement, antibiotics and implant retention, persistent positive culture or positive culture, Orthopaedic / orthopedic procedures or orthopaedic / orthopedic surgical protocols or Postoperative Complications. The systematic review software Rayyan was used to deduplicate the articles and for the literature screening process. *Inclusion criteria* for the search were English language articles, all papers include the shoulder arthroplasty, or Periprosthetic Joint Infection. *Exclusion criteria* were non-English language articles, animal studies, single case studies, case report studies, cancer, dentistry, knee, hip, ankle, spine, and elbow papers, however due to the low number of relevant publications found, relevant lower limb PJI publications were also reviewed.

Answer:
There is insufficient evidence to support debridement, antibiotics, and implant retention (DAIR) for the treatment of subacute and chronic shoulder PJI, however it may still have a role in those patients unable to undergo more extensive surgical intervention or those with well-functioning and well fixed components.

Strength of recommendation: Limited

Rationale: :
Although debridement, antibiotics and implant retention (DAIR) for a well-fixed shoulder implant may have a role in the management of prosthetic joint infection (PJI), there are no prospective or randomised studies to clarify its role in the treatment of subacute or chronic shoulder PJI. Furthermore, an accepted definition of what constitutes a subacute or chronic infection is also lacking, making comparisons of available studies difficult.

The timing of treatment is perceived as being crucial for the successful management of PJI, as treatment recommendations will vary based on whether there has been enough time for the formation of the biofilm, following which component retention is discouraged [1,2]. The Infectious Diseases Society of America (IDSA) has therefore suggested that DAIR should only be considered within 30 days of the index surgery, or within 21 days of symptoms related to the infection, with any PJI noted beyond this period not being considered for DAIR [1].

However, the orthopaedic literature has used a range of timings when managing shoulder PJI, which causes some confusion with respect to DAIR treatment algorithms and recommendations. Using IDSA recommendations for what constitutes a subacute or chronic infection (onset < 30 days or < 21 days of symptoms), there are two studies that reveal very conflicting results, with one recording 80% failure (4 of 5 cases), whereas another demonstrated 100% eradication of infection (2 cases), but with one of the cases requiring three DAIR procedures [1,3,4]. Where considering only subacute infection, which has been suggested as being between 3 and 12 months, 50% failure (3 of 6 cases) was noted in one study, and 100% failure (3 of 3 cases) in another [5,6,7]. In contrast, where chronic infection (> 12 months) was managed with DAIR, other studies have reported success rates as 50% (1 of 2 cases), 71% (12 of 17 cases) and 88% (7 of 8 cases) [5,8,9]. However, the variation in surgical technique for DAIR, including if there was any modular exchange, varied form study to study, such that direct comparison between the reports is problematic.

Therefore, the use of DAIR in the presence of a well-fixed implant with subacute or chronic PJI is unclear, however it may still have a role, particularly in a patient who cannot tolerate staged revision surgery.

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