## 3.3. TREATMENT: BONE GRAFT

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### QUESTION 1: Should bone graft or cement be removed during treatment of acute shoulder periprosthetic joint infection (PJI)?

**RECOMMENDATION:** Unknown. There are no reported investigations to guide the decision-making process regarding how to manage cement and/or autograft bone graft in the setting of shoulder PJI.

**LEVEL OF EVIDENCE:** No Evidence

**DELEGATE VOTE:** Agree: 90%, Disagree: 5%, Abstain: 5% (Super Majority, Strong Consensus)

#### RATIONALE

There is no current literature to guide evidence-based recommendations regarding how to manage autograft bone or cement in the setting of acute infection after primary shoulder arthroplasty. Additionally, it is unknown how or if complete removal of this material is necessary to eradicate shoulder PJI. The goal of surgical intervention in the setting of PJI is to debride any material that may result in persistent infection including surfaces with biofilm. Complete removal of autograft bone or cement at times can be extremely difficult and can result in significant bone loss especially if bone graft was used to reconstruct glenoid bone deficiency. A long stem, cemented, well-fixed humeral stem requires a humeral osteotomy or cortical window for complete cement removal which adds significant additional morbidity to the revision procedure. The significance of retaining these materials is unclear and, in order to avoid the complications that come with complete removal of these materials, investigation is needed to understand the risks associated with incomplete removal of cement or bone graft and the risks of recurrent PJI that are associated with this practice. Additionally, it is unknown whether retention of this material requires a change in the postoperative antibiotic management. Finally, it is also unknown how the species of bacterial pathogen and antibiotic sensitivity profile may influence the successful treatment of PJI. Future investigation is required to answer this question in an evidence-based fashion.

#### Methods

Systematic review of the literature was performed using MeSH terms: cement and infection and shoulder arthroplasty/ replacement, cement and retention and infection, bone graft and infection and shoulder arthroplasty/replacement using search engines PubMed, Web of Science, and CINAHL. Inclusion criteria for this systematic review were Level of Evidence I-IV, English language, shoulder arthroplasty studies which included patient who underwent treatment for PJI and evaluation of the impact of cement removal and/or autograft bone removal classified as either acute, subacute, or chronic infection. Exclusion criteria were non-English language articles, review papers, technique papers, non-human studies, biomechanics or basic science papers, and articles that discussed only hip and or knee arthroplasty PJI. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria were used manage the data of this review. The initial search produced 213 abstracts; all of these were excluded as they did not contain any details or evaluation of the question under investigation. Therefore, there are no current studies to reference the impact or effects of cement removal or autograft bone removal in the setting of shoulder arthroplasty PJI for acute, subacute or chronic infection.

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### QUESTION 2: Should bone graft or cement be removed in treatment for subacute or chronic shoulder periprosthetic joint infection (PJI)?

**RECOMMENDATION:** Unknown. There are no reported investigations to guide the decision-making process regarding how to manage cement and/or autograft bone graft in the setting of shoulder PJI. An attempt should be made to remove all loose, necrotic and foreign material.

**LEVEL OF EVIDENCE:** Consensus

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

#### RATIONALE

A systematic review of the literature was performed using "MeSH terms:" cement and infection and shoulder arthroplasty/ replacement, cement and retention and infection, bone graft and infection and shoulder arthroplasty/replacement using search engines PubMed, Web of Science, and CINAHL. Inclusion criteria for this systematic review were Level of Evidence I-IV, English Language, shoulder arthroplasty studies which included patient who underwent treatment for PJI and evaluated the impact of cement removal and or autograft bone removal classified as either acute, subacute, or chronic infection. Exclusion criteria were non-English language arti-