



No Difference in Periprosthetic Infection Risk for Antibiotic Bone Cement Compared to Plain Cement in Shoulder Arthroplasty

In a study published in *Seminars in Arthroplasty: JSES*, Kaiser Permanente Orthopedic Surgeons and MDSA Researchers identified 6,409 and 779 patients who underwent primary elective anatomic total shoulder arthroplasty (TSA) for osteoarthritis and reverse TSA (RTSA) for rotator cuff arthropathy, respectively, with implanted cement information during 2009-2020. Cox proportional hazard regression weighted with the inverse propensity score and stratified by procedure type was used to evaluate risk for periprosthetic infection.

“This study supports the finding that routine antibiotic bone cement use does not reduce the risk of future periprosthetic infection after primary elective shoulder replacement surgery. While patient factors were controlled for in the study, surgeon procedural preferences (i.e., extraneous antibiotic powder use, topical prewashes, wound retractors, etc.) were not accounted for.

– Ryan C. Egbert MD, Department of Orthopaedic Surgery
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Study Results

No significant difference was found in the risk of developing deep infection, when comparing use of antibiotic bone cement (ABC) and plain cement in primary elective shoulder arthroplasty.

- In the TSA group, 20% received ABC. The cumulative infection probability at 5 years follow-up was 0.5% and 0.6% for the ABC and plain cement groups, respectively.
 - After covariate adjustment, no difference in infection risk (hazard ratio [HR]=0.72, 95% confidence interval [CI]=0.43-1.21, P=0.216).
 - *Cutibacterium acnes* (*C. acnes*) was found in all 5 (100.0%) ABC patients with an infection. Gram-positive cocci (36.4%) followed by *C. acnes* (27.3%) were the most common infecting organisms in plain cement patients with infection.
- In the RTSA group, 19% received ABC. The cumulative infection probability at 5 years follow-up was 2.7% and 0.9% for the ABC and plain cement groups, respectively.
 - After covariate adjustment, no difference in infection risk was found (HR=1.47, 95% CI=0.66-3.26, P=0.341).
 - Gram-positive cocci were most frequently found in ABC (50.0%) and plain (40.0%) cement patients with an infection.

Practice Considerations

- Compared to plain bone cement, ABC was not observed to reduce the risk of periprosthetic joint infection for shoulder arthroplasty patients with a standard risk of infection.
- Different at-risk pathogen profiles may develop with prolonged use of ABC.

[Link to Full Publication](#)

Egbert RC, Chan PH, Chan DP, Prentice HA, McElvany MD, Yian EH (2022). **Antibiotic-loaded bone cement vs. plain cement as an infection prophylaxis in primary elective shoulder arthroplasty.** *Seminars in Arthroplasty: JSES*, Volume 33, Issue 1: 123-131.