SH16: What is the role of topical intrawound antiseptics (dilute betadine lavage, acetic acid, chlorhexidine, hydrogen peroxide.or antibiotics added to the irrigation solution) during primary or revision shoulder arthroplasty?

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Response: There is no data in the shoulder literature for or against any topical intrawound antiseptic during primary or revision shoulder replacement. Based on hip/knee replacement and spine surgery, dilute betadine lavage may reduce the risk of PJI.

Strength of Recommendation: Limited.

Delegate Vote: 49 (100%) agree; 0 disagree; 0 abstain

Rationale: A comprehensive literature review was performed to identify all studies on use of intrawound antiseptics in shoulder arthroplasty. Searches for the terms "intrawound antiseptics shoulder" (0, 0), "betadine shoulder" (23, 0), "irrigation solution shoulder arthroplasty" (6,0), and "shoulder arthroplasty irrigation infection" (56, 0) were performed using the search engines PubMed and Scopus which were searched through January 2025. Inclusion criteria for our systematic review were all English studies (Level I-IV evidence) that reported on use of intrawound antiseptics or antibiotic powder in primary or revision shoulder surgery. Exclusion criteria were non-English language articles, nonhuman studies, retracted papers, case reports, review papers, studies with less than <10 patients in the sample size, studies without clinical follow-up/infection rates, and technique papers without patient data. PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) criteria were followed. We identified zero articles from PubMed and zero articles from Scopus that met all criteria. Given the limited number of articles identified with the search terms used, searches were separately performed to identify studies on intrawound antiseptic and antibiotics powder outside of the shoulder literature

There are no studies in the shoulder literature specific to the use of intrawound antiseptic agents or irrigation solutions. Because of this, expert recommendations will have to be inferred from data from lower extremity arthroplasty and in vitro studies.[1,9] Irrigants such as hydrogen peroxide and betadine have bactericidal effect on low level inoculum. In addition, acetic acid and betadine also have anti-biofilm properties[9].

In one randomized study in revision arthroplasty, dilute betadine lavage decreased acute periprosthetic joint infection.[2] Dilute betadine savage is safe for wound healing as a high as 0.54% concentration.[3] Higher concentrations are cytotoxic for fibroblasts and osteoblasts.[4] When combining dilute betadine lavage with vancomycin powder, there is a decrease in PJI compared to historical controls without an increase in 'superbug' or highly resistant bacterial infections.[5,6]

Sequential intrawound hydrogen peroxide irrigation followed by dilute betadine decreased knee arthroplasty infection rate compared to normal saline alone in a randomized study.[7] There is no clinical data supporting a change in PJI rate with chlorhexidine, acetic acid or

antibiotics within irrigation solution after lower extremity arthroplasty. Chlorhexidine intrawound lavage is at least safe for wound healing.[8]

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