SH17: What is the role of tranexamic acid (TXA) during primary or revision shoulder arthroplasty in decreasing the risk of PJI?

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Response: Unknown. The literature demonstrates that TXA decreases blood loss, need for transfusion, and risk of hematoma. Despite decreasing these potential risk factors for periprosthetic shoulder infection, data does not demonstrate a decreased PJI risk.

Strength of Recommendation: Limited

Delegate Vote: 48 (98%) agree; 0 disagree; 1 (2%) abstain

Rationale: A comprehensive literature review was performed to identify all studies on use of tranexamic acid (TXA) and decreasing risk of PJI in shoulder arthroplasty. Searches for the terms "TXA shoulder infection" (5,2), "txa shoulder arthroplasty" (48,2) and "txa arthroplasty infection" (103,2), in 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 TXA to prevent PJI 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 one article from PubMed and one article 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 TXA outside of the shoulder PJI: TXA otherwise in shoulder arthroplasty and TXA with lower extremity arthroplasty PJI reduction.

TXA decreases blood loss, need for transfusion, hematoma and pain after total shoulder arthroplasty.[1] In an in vitro study, TXA showed not only an antifibrinolytic effect but also a bactericidal effect for Cutibacterium acnes and Staphylococcus species in their planktonic form. TXA was less effecting for these bacteria when mature in biofilm form.[7]

In a retrospective cohort database study of 9,276 patient, the five year risk of revision for deep infection was 0.8% in those receive TXA versus 0.7% in those who did not receive TXA.[2] There was no difference in PJI accounting for confounders and comorbidities such as diabetes.

TXA is relatively cheap and would be cost effective for preventing shoulder prosthetic joint infection if there was some treatment effect. A break-even analysis assumed the cost of TXA is around $5, infection treatment cost over $55K, and baseline infection at 0.70%.[3] TXA would be cost effective if it decreased infection one out of every 10,583 shoulder arthroplasties or a 0.009% reduction.

In primary hip and knee arthroplasty, there is an association between TXA use and lower infection rates. In systematic review summarizing six studies and over 2 million patients, TXA was associated with a 0.4% decrease in PJI and 1% decrease when accounting for patients followed over 90 days.[4] Several database studies in lower extremity arthroplasty studies support a reduced rate of PJI for both primaries[5] and revisions.[6]

References

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