Trends in Arthroscopy versus Arthrotomy for Treatment of Septic Arthritis of the Native Shoulder

Sanjay Kubsad, BS[1,2]; Arman Kishan, MBBS[1]; Mark Haft, BS[1]; William ElNemer, BS[1]; Miriam Weisberg-Tannenbaum[1], Umasuthan Srikumaran, MD, MBA, MPH[1]*

[1]Department of Orthopaedic Surgery, The Johns Hopkins University, Baltimore, MD
[2]Department of Orthopaedic Surgery, University of Washington School of Medicine, Seattle, WA
Email of presenting author (Sanjay Kubsad): skubsad@uw.edu

Disclosures: Sanjay Kubsad (N), Arman Kishan (N), Mark Haft (N), William ElNemer (N), Miriam Weisberg-Tannebaum (N), Umasuthan Srikumaran (personal fees from Coventus Inc., FX Shoulder USA, Heron Therapeutics, Orthofix, Pacira Biosciences Inc., and Tigon Medical; other support from Tigon Medical; and grants from Arthrex, the American Shoulder and Elbow Surgeons, Depuy/Synthes, OMeGa Medical Grants Association, Smith & Nephew, and Wright Medical (outside the submitted work). In addition, Dr. Srikumaran has patents pending with Conventus and FX Shoulder USA, and a patent with Tigon Medical)

INTRODUCTION:
Shoulder septic arthritis (SA) is a joint-threatening emergency with severe implications for bone and cartilage destruction, osteonecrosis, osteomyelitis, secondary arthritis, and ankylosis. Prior studies have established both arthrotomy and arthroscopy as effective treatments for SA. This study aimed to compare comorbidities, complication rates, and trends in arthroscopy and open arthrotomy for treating septic shoulder arthritis using a national claims database.

METHODS:
This retrospective cohort study utilized a national deidentified electronic health record database, PearlDiver, to query patients undergoing arthroscopy and open procedures for the treatment of SA. Our search identified 2,183 patients undergoing scope and 2,300 patients undergoing open procedures for SA. Demographic data, medical comorbidities, and complication rates for both groups were generated and analyzed through univariate and multivariable analysis.

RESULTS SECTION:
Patients treated with arthroscopy exhibited statistically significant differences in medical comorbidities, including congestive heart failure, hypertension, chronic kidney disease, and liver disease. Logistic regression analysis identified that arthroscopy was associated with elevated risk of 90-day repeat SA washout (OR: 1.54, 95% CI: 1.27-1.88, p<001), superficial skin infection (OR: 1.13, 95% CI: 1.02-1.29, p=027), and Deep Vein Thrombosis (OR: 1.46, 95% CI: 1.06-2.01, p=021). Five-year trends indicated a combined annual growth rate of 6.6% for arthroscopy and 1.1% for arthrotomy procedures.

DISCUSSION:
Arthroscopy for shoulder septic arthritis demonstrated a higher likelihood of repeat washouts, superficial skin infection and deep vein thrombosis compared to arthrotomy. Incomplete washout within a narrow surgical window might contribute to elevated risk of repeat washout and surgical site infection. Additionally, patient specific comorbidities in either group might contribute to development of post-operative surgical complications. Our findings raise concerns whether decrease in operating room time for arthroscopy compared to open arthrotomy is truly more beneficial for both patient outcomes and healthcare costs.

SIGNIFICANCE/CLINICAL RELEVANCE:
Given both arthrotomy and arthroscopy procedures are utilized in the treatment of septic shoulder arthritis, our study findings suggest arthrotomy has a lower likelihood of requiring repeat washout and additional complications. Given the increased growth of arthroscopic procedures relative to arthrotomy, improvement in surgical technique and medical management might be required to improve treatment.