Lower Costs, Complications and Length of Stay for Arthroscopic Versus Open Washout for Native Knee Septic Arthritis

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Purpose: We aim to analyze health-care utilization, index hospitalization complications, and revision-free survival for patients with native knee septic arthritis undergoing open versus arthroscopic irrigation and debridement (I&D).

Methods: The National Readmission Database (NRD) was queried from 2016 to 2019 to identify patients using ICD-10 diagnostic and procedure codes. Days to revision I&D, if any, were calculated for patients during the index admission or any subsequent readmission. Health-care utilization analysis was performed using multivariate regression. Survival analysis was performed using Kaplan-Meier analysis and Cox proportional hazard regression. Stratified analyses were performed for high-risk patients presenting with sepsis or elevated medical comorbidities.

Results: A total of 14,801 patients with septic arthritis undergoing I&D were identified. Of these, 8315 (57.2%) were arthroscopic and 6486 were open (42.8%). Mean follow-up was 142 days, (interquartile range [IQR] 50-258). A total of 2592 patients (17.5%) underwent revision I&D at a median of 9 days (IQR, 3-35 days). The proportion of I&D arthroscopically decreased from 58.8% to 53.6% over the study period (P<0.001). In a multivariate model, arthroscopic I&D patients were more likely to have private insurance (odds ratio [OR] 1.47, P<0.001) and less likely to receive care in an urban academic institution (OR 0.48, P<0.001). After adjusting for confounders, arthroscopic I&D was associated with a reduction in hospital costs of $5,569 and length of stay of 1.45 days (P<0.001 for both). Arthroscopic I&D was associated with lower overall complications (OR 0.70, P<0.001), blood transfusion (OR 0.66, P<0.001), and wound complications (OR 0.32, P<0.001). These differences were significant on stratified analysis of high-risk patients. Revision-free survival after I&D was 95.3% at 3 days, 90.6% at 10 days, 87.1% at 30 days, 83.7% at 90 days, and 81.8% at 180 days. There was no difference between surgical approach on univariate or multivariate Cox modeling. Independent risk factors for revision I&D included diabetes, fluid and electrolyte disorders, and depression.

Conclusion: Rate of revision I&D did not differ between arthroscopic and open I&D, even when high-risk patients were analyzed separately. Arthroscopic I&D was associated with decreased costs, length of stay, and complications. While surgeons must consider specific patient factors, our results suggest that arthroscopic I&D is superior to open I&D from the perspective health-care resource utilization.