Does Gender Really Influence the Risk of Complications Following Total Joint Arthroplasty?

S. Blake Dowdle, MD; Nicholas A. Bedard, MD; David E. DeMik, MD; Yubo Gao, PhD; Steve S. Liu, MD; John J Callaghan, MD

1University of Iowa, Iowa City, IA

spencer-dowdle@uiowa.edu


Introduction:
Recent literature has begun to suggest that male sex is an independent risk factor for complications following total joint arthroplasty (TJA) procedures. However, these studies do not take into account the published association between male sex and longer TJA operative times, which has also been similarly associated with increased post-operative complications. Therefore, the purpose of this study was to use a large multicenter database to identify whether male gender remains a risk for post-operative complications following TJA while controlling for operative times.

Methods:
The American College of Surgeons National Surgical Quality Improvement Program database was queried from 2011-2013 to identify all patients who underwent primary total hip (THA) or total knee arthroplasty (TKA). Male and female patients were compared in terms of demographics, comorbidities, procedure type (THA or TKA) and operative time (<120 min vs ≥ 120 min) to determine the impact of these variables on thirty-day post-operative complications. A multivariate logistic regression analysis was performed to control for confounding variables and determine if gender remained an independent predictor of complications. Primary outcomes included mortality, reoperation and deep infection.

Results:
There were 99,311 patients identified who underwent TJA during 2011-2013. Of these, 40% were male and 60% females. The average age at time of surgery was 66.4 ± 10.7 years. The overall incidence of thirty-day complications after TJA was 5.1%. Males had significantly higher rate of diabetes (16.5% vs 14.2%), smoking (11.6% vs. 9.3%), coronary artery disease (0.4% vs. 0.3%) and preoperative dialysis (0.3% vs. 0.1%, <0.01 for all). Univariate analysis stratified by sex demonstrated that males were at an increased risk for deep infection (0.2% vs 0.1%, p=0.002), reoperation rate (1.6% vs. 1.3%, p < 0.001) and mortality (0.2% vs. 0.1%, p = 0.008) compared to females. Multivariate regression analysis controlling for operative time, patient demographics and comorbidities demonstrated no significant differences between men and women for odds of deep infection (odds ratio OR 1.0 [0.9-1.2]), or mortality (OR 1.0 [0.9-1.1]) after TJA.

Discussion:
Men have long been reported to be at increased risk complications following TJA. However, men have also been linked to increased operative times theorized to be due to the increase muscle size and larger soft tissue envelope as compared to their female counterparts. This study demonstrates that when controlling for operative time, men were at no greater risk for infection, or mortality following TJA when compared to females. The disparity and risk profile between men and women appears to be related more to the difference in operative time than to the underlying physiology differences between sexes.

Significance/Clinical Relevance:
Most joint replacement registries show higher rates of prosthetic joint infection in males. This data demonstrates that men are at no greater risk of infection and overall complications compared to females when controlling for operative time.

ORS 2018 Annual Meeting Paper No.0001