Demographic and Perioperative Differences across Revision Total Hip Arthroplasty and Revision Total Knee Arthroplasty Patients

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INTRODUCTION: Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are highly successful surgeries for patients to regain function and alleviate pain in joint disease. Although most outcomes in these procedures are excellent, occasionally implants fail and require revision. Revision THA and TKA pose a challenge to surgeons and increased risk is brought upon the patients. Many studies have analyzed revision THAs and TKAs, including the most common reasons for revision, materials selections, and surgical factors leading to increased risk. The aim of this study is to specifically analyze the differences in patient demographics when comparing revision THA and TKA procedures.

METHODS: Patients who underwent a revision THA or TKA procedure between August 2020 and August 2023 were retrospectively recruited from an urban tertiary academic medical center. The data collected from charts were patient age, sex, BMI, procedure performed (revision THA vs. revision TKA), reason for revision, length of hospital stay, and comorbidities (diabetes mellitus, coronary artery disease, congestive heart failure). The data was analyzed across two groups: patients who underwent revision THA compared to patients who underwent revision TKA. These two groups were analyzed for differences using Wilcoxon rank sum test, Pearson's Chi-squared test, and Fisher's exact test.

RESULTS SECTION: 86 patients were included in the study. Patients undergoing revision TKA were more likely to be female ($p = 0.003$), have a higher BMI ($p = 0.004$), have a shorter admissions-to-discharge time ($p = 0.029$), and have a diagnosis of diabetes mellitus ($p = 0.032$) when compared to patients undergoing revision THA (**Table 1**). Differences in age, reason for revision, and diagnoses of coronary artery disease and congestive heart failure were not significant in this study.

DISCUSSION: Few studies have investigated the differences in patient demographics and outcomes across revision THA compared to revision TKA. In our study, we found the patients undergoing revision TKA were more likely to be female, have a higher BMI and have a diagnosis of diabetes mellitus. With these associations in mind, orthopaedic surgeons may benefit from having a higher clinical suspicion that their patient who fit these demographics might require a revision TKA if they present with any of the clinical signs of reasons for revision (**Table 1**). Earlier intervention may benefit patients from prolonged pain and further complications from their failed primary TKA. Additionally, we found that revision THAs were associated with longer hospital stays, although not by much (THA = 10 ± 7, TKA = 8 ± 9, $p = 0.029$) (**Table 1**). It is well studied that longer hospital stays lead to increased risk of adverse outcomes for patients (i.e., hospital-acquired infections), thus this association of longer stays for patients undergoing revision THA must be further investigated to determine specific causative factors. Limitations of this study include a smaller sample size (N = 86) and chart review of patients from only one healthcare center. Potential future studies include analyzing larger sample sizes to determine the strength of differences in patient demographics across those undergoing revision THA and revision TKA.

SIGNIFICANCE/CLINICAL RELEVANCE: When comparing patients undergoing revision THA and revision TKA, there may be demographic differences in sex, BMI, and diabetes mellitus diagnosis along with differences in patient outcomes, specifically when measuring hospital stay times. These differences can guide clinical decisions regarding prioritizations of indicated therapies for failed arthroplasties and provide insight in how to approach revision THAs and TKAs.

IMAGES AND TABLE:

Table 1. Patient Differences in Revision THA and Revision TKA

Procedure	Revision THA, N = 32[1]	Revision TKA, N = 54[1]	p-value[2]
Age	60.2 ± 14.5	64.7 ± 10.3	0.183
Sex			**0.003**
Female	10 (31%)	35 (65%)	
Male	22 (69%)	19 (35%)	
BMI	31.3 ± 9.7	35.8 ± 6.8	**0.004**
Reason for Revision			0.094
Dislocation	7 (22%)	2 (3.7%)	
Fracture	2 (6.3%)	2 (3.7%)	
Infection	6 (19%)	17 (31%)	
Instability	0 (0%)	2 (3.7%)	
Loosening	7 (22%)	10 (19%)	
Osteolysis	0 (0%)	3 (5.6%)	
Pain	5 (16%)	12 (22%)	
Stiffness	0 (0%)	2 (3.7%)	
Other	5 (16%)	4 (7.4%)	
Length of Hospital Stay	10 ± 7	8 ± 9	**0.029**
Diabetes Mellitus	4 (13%)	18 (33%)	**0.032**
Coronary Artery Disease	1 (3.1%)	5 (9.3%)	0.405
Congestive Heart Failure	4 (13%)	5 (9.3%)	0.721

[1] Mean ± SD; n (%)

[2] Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test