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Abstract Title: Prevalence of contralateral osteoarthritis in unilateral arthroplasty patients and the influence of ethnicity

Objective

Previous literature has cited that approximately one-third of patient have contralateral osteoarthritis (OA) at first clinical presentation for unilateral joint pain and dysfunction. However, this is primarily evaluated in a Caucasian population and may not be generalizable to other ethnicities. Therefore, the purpose of the current study was to evaluate the prevalence of radiographic evidence for OA in the contralateral joint of patients undergoing unilateral total knee (TKA), unicompartmental knee (UKA) or total hip (THA) arthroplasty and determine the influence of patient characteristics and ethnicity on the presence of contralateral OA.

Methods

This retrospective chart review included 2312 subjects having undergone unilateral arthroplasties (332 UKAs, 933 TKAs and 1047 THAs). Patient demographics were collected, including age, body mass index, gender and ethnicity. Ethnicity was reported as Asian, White, Native Hawaiian/Pacific Islander (NH/PI) or Other (not reported). The presence of contralateral OA was determined from the radiographic report corresponding to the clinic visit in which the determination was made for primary arthroplasty. Criteria for the presence of OA included joint space narrowing, osteophyte formation and mild to severe joint degeneration. Contralateral surgery within the study period was also collected. Parametric statistical analyses were performed to determine differences between groups. For significant variables, multivariate analyses were completed for each arthroplasty group to determine the influence on the presence of contralateral OA, presented as odds ratios (OR) and 95% confidence intervals (CI).

Results

Overall, contralateral OA was present in 86.7% of UKA patients, 90.4% of TKA patients, and 70.4% of THA patients. Additionally, hip OA was present in 41.6% of UKA patients and 59.5% of TKA patients. No significant main effect for ethnicity was determined for the prevalence of contralateral OA in UKA patients (Asian: 85.4%, White: 90.5%, NH/PI: 86.4%; p-value: 0.709) or TKA patients (Asian: 90.9%, White: 87.2%, NH/PI: 94.2%; p-value: 0.091) but a significant main effect was present among THA patients (Asian: 66.5%, White: 74.6%, NH/PI: 74.1%; p-value: 0.037). In the multivariate analysis for each arthroplasty, contralateral OA in UKA patients had no significant contributors, TKA contributors were age (OR:1.066, CI: 1.039-1.093; p<0.001) and body mass index (OR: 1.146, CI: 1.093-1.201; p<0.001) and THA contributors were age (OR: 1.043, CI: 1.029-1.056; p<0.001), male gender (OR: 1.894, CI: 1.424-2.519; p<0.001) and Caucasian ethnicity (reference Asian) (OR: 1.537, CI: 1.140-2.071; p=0.005). The influence of race could be in part due to the lower percentage of Asian males (39.9%) undergoing THA compared to White males (53.8%). Finally, while no difference was noted in TKA and THA patients, Caucasians had a significantly greater percentage of patients undergo contralateral UKA surgery (13.1%) compared to Asian (3.8%), NH/PI (4.5%) and Other (0.0%) (p=0.016). While

the influence of race was not highly significant in the presence of contralateral OA, the prevalence is much higher than previously reported in literature and should be evaluated prior to undergoing unilateral arthroplasty.