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Comparing Demographics and Short-Term Outcomes between Computer-Assisted Total Hip Arthroplasty (THA) and Traditional THA: A National Analysis between 2011 and 2016

Introduction: Total hip arthroplasty (THA) is one of the most common orthopaedic procedures performed in the United States. Although surgical advances have been made, traditional THA procedures occasionally still produce postoperative and long-term complications such as infection and implant failure. Computer-assisted THA (caTHA) has garnered increased interest in recent years, especially in adult reconstruction. However, few recent studies exist to compare patient demographics and complications between these two techniques. Therefore, the purpose of this study was to compare THA and caTHA in terms of: (1) patient demographics, (2) perioperative factors, (3) 30-day outcomes, including major and minor complications, reoperations, and readmission rates, and identify (4) factors predicative of 30-day complication, readmission, or reoperation.

Methods: The American College of Surgeons National Surgical Quality Improvement Program database was employed to identify all patients between 2011 and 2016 who underwent caTHA (including computer-navigated and robotic-assisted) and traditional THA. Exclusion criteria consisted of procedures not performed by orthopaedic surgeons, or those lasting <5 or >600 minutes. Univariate analysis was used to compare baseline demographics, preoperative laboratory values, perioperative factors, and rates of 30-day postoperative complications, reoperations, and readmissions. Regression models were developed to identify predictive factors for 30-day postoperative complications, reoperations, and readmissions.

Results: 124,280 patients: 122,401 traditional THA, 1,879 caTHA. More Whites/Blacks had caTHA. Similar age/sex distribution, differing smoking/BMI. caTHA had higher hypoalbuminemia rates. Traditional THA had shorter operative times, longer stays. Complication rates similar, more transfusions in traditional THA. Reoperation/readmission rates didn't vary. Baseline hypoalbuminemia predicted adverse outcomes, with gender/race roles.