Total Hip Arthroplasty in Young Patients: A Large Contemporary Case Series

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INTRODUCTION:
Total hip arthroplasty (THA) is highly effective at decreasing pain and improving function in patients with end-stage hip disease. Historically, this procedure was reserved for older patients due to concerns over polyethylene wear, osteolysis, component loosening, and diminished improvement in clinical outcomes in younger, higher demand patients. This patient population also presents additional surgical complexity given the wide variety of diagnoses contributing to degenerative disease, including avascular necrosis, inflammatory arthritis, post-traumatic arthritis, developmental dysplasia, or other childhood hip problems. New advances in surgical technique and improved implant designs have led to a growing demand for THA in these young patients. Currently, the literature on young THA predominantly involves smaller case series, registry studies, and outdated data utilizing older generation implants. Contemporary outcomes of young THA do appear promising compared to historical studies, but it is important to further investigate data from recent years to better understand the changing practices, demographics and outcomes of modern THA performed in young patients. Our aim is to report the results of a large single-center case series of primary total hip arthroplasty performed in young patients $\leq$ 50 years old.
METHODS:
After receiving ethics board approval, our institutional database containing prospectively collected data was retrospectively reviewed from the years Jan 2005 to May 2019. Of 7922 primary THA reviewed, 848 procedures were performed in patients aged 50 years or younger. All procedures were performed by a high-volume arthroplasty surgeon. Patient demographics, indications for surgery, approach, implants, complications, revisions, and follow-up data were collected from the database and/or by manual review of patient charts. Patient reported outcome measures were collected from the database. Implant survival was estimated using Kaplan-Meier survival curve.
RESULTS:
A total of 848 THA were included in analysis. Mean age at time of surgery 42.2 (range, 15-50) years. The most common diagnoses were degenerative osteoarthritis (69.7%), avascular necrosis (15.1%), and developmental dysplasia of the hip (8.4%). Most common bearing surfaces used include metal-on-highly crosslinked polyethylene (48.4%), Oxinium-on-highly crosslinked polyethylene (17.1%), and ceramic-on-ceramic (12.5%). All bearing surfaces utilizing polyethylene were of the highly-crosslinked variety. All acetabular components were cementless and 99.3% of femoral components were cementless.
Implant survivorship was 96.5 $\pm$ 0.7% at 5 years, 93.5 $\pm$ 1.0% at 10 years, and 91.2 $\pm$ 1.5% at 15 years. Subgroup analyses by age, diagnoses, and bearing surfaces showed similar results. There were 47 total revisions. The most common indications for revision were aseptic loosening (27.7%), infection (23.4%), and metal-on-metal reaction (19.1%).
DISCUSSION AND CONCLUSION: To our knowledge, the results of the current study represent the largest institutional case series of contemporary THA performed in patients $\leq$50 years-old to date in the literature. Our results indicate that outcomes have improved considerably compared to previous older studies and excellent long-term results are achievable with appropriate modern implants.