Results of Bipolar Hemiarthroplasty for Femoral Neck Fracture in Patients with Rheumatoid Arthritis: a Multicenter, Matched Cohort Study

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INTRODUCTION:

Bipolar hemiarthroplasty (HA) is widely used to treat displaced femoral neck fracture (FNF) in patients with old age and underlying comorbidities. However, in patients with rheumatoid arthritis (RA), concerns about long-term durability in relation to future degeneration of the acetabular cartilage due to poor bone quality make surgeons difficult to perform HA. We performed a retrospective multicenter matched cohort study analyzing patient data from eight institutions using a big data platform (Catholic Medical Center clinical data warehouse). Primary outcomes were long-term survival rates for all-cause revisions and all-cause reoperations. Secondary outcomes included postoperative surgical and medical complications, a 90-day readmission rate due to any reasons, and mortality rates after surgery.

METHODS: All patients who underwent cementless HA for FNF from January 1997 to October 2021 were identified from our institutional joint registry (8 institutions). A total of 50 hips (RA group) with minimum 2 years follow-up data available were matched 1:1, on the basis of age, sex, BMI, ASA scores and year of surgery to the FNF patients without RA (non-RA group). Medical record review was performed for revisions, reoperations, mortality, 90-day readmission rate and any kind of postoperative medical and surgical complications. Surgical complications included intraoperative fracture, periprosthetic fracture, dislocation, wound complication and periprosthetic joint infection (PJI). Radiographic analysis included cup migration (vertical and horizontal), acetabular erosion, and presence of stem loosening at the latest follow-up. Kaplan-Meier Survivorship analysis was performed to compare the 8 year survival rate for all cause revisions and any kind of reoperations. Logistic regression analysis was performed to compare the clinical and radiological results.

RESULTS:

The average follow-up period was 8.0 years (2.0 to 16.1 years). There were two cases of total hip arthroplasty (THA) conversion cases due to acetabular erosion in RA group, and no cases of THA conversion or revision cases in the non-RA group. The estimated 8-year survivorship free from revision for any reason was 95.2% and 100% for RA and non-RA group respectively (p-value = 0.210). There were no significant differences for all postoperative surgical complications between two groups. However, the RA group showed significantly higher risk of postoperative medical complications (34.0% vs. 16.0%; OR, 2.95; 95% CI, 1.14-7.65; p = 0.026). There were no statistical differences in 90-days admission rates between the two groups (12.0% vs. 2.0%; OR, 6.68; 95% CI, 0.77-57.70; p = 0.084). There were no significant differences in the estimated 8-year survival rate for mortality after surgery (84.1% and 81.1% for RA and non-RA group respectively, p=0.798)

DISCUSSION AND CONCLUSION:

RA patients who were treated with bipolar hemiarthroplasty for femoral neck fracture showed comparable 8-year survival rates for revision, reoperation, and mortality. However, RA patients showed higher risk of postoperative medical complications and 90-days readmission.