

Direct Anterior Approach Total Hip Arthroplasty for Femoral Neck Fracture Leads to Reduced 1-Year Mortality and Surgical Complications

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Purpose: Little is known about the impact of surgical approach of total hip arthroplasty (THA) for femoral neck fracture (FNF). We aimed to compare 90-day and 1-year outcomes, including mortality, of FNF patients undergoing THA by direct anterior (DAA), posterior (PA), and lateral (LA) approaches.

Methods: This is a retrospective review of consecutive patients undergoing THA for displaced FNF at 9 institutions from 2010 to 2019. Patients were excluded for high-energy injury mechanisms, being nonambulatory prior to injury, having concomitant femoral head or acetabular fractures, or not reaching a minimum follow-up of 1 year. The study included 622 THAs, of which 348 (56%) were DAA, 197 (32%) PA, and 77 (12%) LA. Postoperative complications and mortality at 90 days and 1 year were compared between the groups. The mean follow-up duration was 31 months (standard deviation [SD], 26 months). Multivariable analysis was performed within each approach group for all variables with $P < 0.05$.

Results: While the groups differed in several patient/perioperative variables, the groups also differed in the outcomes including dislocation, mechanical revision, and mortality at both 90 days and 1 year ($P < 0.05$ for all), while there was no difference between them in periprosthetic joint infection rates. For 90-day outcomes, PA compared to DAA was the only risk factor for dislocation (odds ratio [OR] 4.02; 95% confidence interval [CI] 1.61-10.02; $P = 0.003$) and mechanical revision (OR 8.28; 95% CI 1.77-38.72; $P = 0.007$) at 90 days, while PA carried a higher 90-day mortality risk compared to DAA (OR 2.65; 95% CI 1.10-6.37; $P = 0.03$). Similarly, PA had higher dislocation risk compared to DA (OR 3.14; 95% CI 1.35-7.31; $P = 0.008$) and mechanical revision (OR 4.45; 95% CI 1.54-12.82; $P = 0.006$) at 1-year follow-up. The risk factors for 1-year mortality were PA compared to DAA (OR 2.35; 95% CI 1.17-4.72; $P = 0.02$), age (OR 1.04; 95% CI 1.01-1.07; $P = 0.01$), and assisted compared to independent preinjury ambulation capacity (OR 2.37; 95% CI 1.21-4.64; $P = 0.01$), while American Society of Anesthesiologists (ASA) class 1 was protective (OR 0.22; 95% CI 0.09-0.59; $P = 0.002$).

Conclusion: Given that the DAA to THA performed for FNF results in decreased risk of postoperative dislocation, mechanical revision, and mortality at both 90 days and 1 year when compared to the PA, the DAA should be the primary surgical approach utilized in THA for FNF. Future multicenter, prospective studies that capture post-discharge functional variables are needed to elucidate the reasons for this apparent superiority of the DAA.