

Comparison of Early Outcomes Between Direct Anterior and Posterior Total Hip Arthroplasty in a Rural Community Hospital

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INTRODUCTION: Around the world, more than 1 million people undergo total hip arthroplasties (THA) annually. With such a high case volume and projected increase in future demand, optimizing cost and care around THAs is advantageous. This study will investigate two approaches to THA, the direct anterior (DA) and posterior approach. Neither approach has an advantage regarding long-term outcomes; however, whether one yields improved early outcomes is still being determined. Some studies have favored the DA approach, citing better early outcomes, while others have described no difference between the two approaches. This study compares early outcomes in rural patients undergoing DA and posterior THA. The rural population is one which, to our knowledge, has yet to be studied as previous studies examined patients seeking care at large academic centers or hospitals within large cities.

METHODS: We retrospectively compared 66 DA and 48 posterior THA cases performed by a single surgeon at a healthcare system that serves four rural counties with total populations of less than 50,000. Electronic medical record data between 2017-2021 was used to gather information, including demographics, perioperative information, clinical follow-up notes, and billing information. Demographic data, including age, body mass index (BMI), sex, and American Society of Anesthesiology (ASA) classification, was used to determine whether confounding variables existed between groups. The early outcomes consisted of length of stay (LOS), procedure time, dislocations, intraoperative fractures, discharge disposition, length of pain (number of postoperative days until patient no longer had pain with flexion, internal/external rotation of the hip joint), and length of physical therapy. Lastly, we performed a cost comparison between the two approaches. Statistical tests include the Wilcoxon T-test for numerical data and the Cochran-Mantel-Haenszel test for categorical data. An IRB approved the study prior to data collection.

RESULTS: There were no significant differences in the demographics data, procedure time, number of dislocations, number of intraoperative fractures, and length of physical therapy. The median LOS (1.0 vs. 2.0 days, $p < .0001$) and median length of pain (13 vs. 43 days, $p < .0001$) was shorter in the DA group. Fifty-seven (86%) patients and thirty (62%) patients were discharged home in the DA and posterior groups respectively ($p = 0.0001$). The median cost (\$78,639 vs. \$70,191, $p < .0001$) was higher in the DA group.

DISCUSSION: Overall, patients who received the DA approach had a shorter LOS, shorter length of pain, and a higher rate of discharge to home than patients who received the posterior approach. There was no significant increase in procedure time, intraoperative fractures, or dislocations between groups. This suggests an advantage to the DA approach for THA that results in superior early outcomes with no increased risk for adverse events. However, the cost associated with the DA approach was higher with a difference in medians being \$8,448. Limitations to the study include it being retrospective, limited data points at clinical follow-up, and assumptions in cost as these are the gross bill prior to insurance payments. This study is unique because it examines a rural community-based hospital patient population that has yet to be evaluated in the literature, comparing approaches to THA.

SIGNIFICANCE/CLINICAL RELEVANCE: This study shows that rural patient population has some improved early outcomes when undergoing THA using a direct anterior approach compared to posterior.

IMAGES AND TABLES:

	Anterior	Posterior
Age (years)	71	69.5
Sex (% female)	53.03	52.08
BMI	30.4	31.4
ASA	2	2
LOS (days)	1	2
Procedure time (minutes)	103	100.5
Dislocations*	2	3
Intra-op fracture*	1	1
Length of pain (days)	13	43
Length of PT (days)	24	25
Cost (US dollars)	78,639	70,191

	Discharge Disposition				
	HHC	HSC	ICF	IRF	SNF
Anterior	5	57	1	0	3
Posterior	0	30	0	1	17

HHC= home health care
HSC= home self-care
ICF= intermediate care facility
IRF= inpatient rehab facility
SNF= skilled nursing facility

-Median values reported unless marked with * which represents actual value number
-Bolded variables have statistically significant differences