

Outcomes after Total Hip Arthroplasty: Comparison Between Posterior and Anterior Approaches

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INTRODUCTION:

The effects of surgical approach in total hip arthroplasty (THA) are often debated. Here we compare patients who underwent THA through a posterior versus anterior approach and compared clinical outcomes and patient reported outcome measures (PROMs).

METHODS:

All primary THAs between January 2016 and December 2022 were obtained retrospectively from a prospective institutional database utilized for contribution to a state-wide joint arthroplasty database. Prospective data was abstracted including baseline demographics, select medical comorbidities, intraoperative variables, postoperative course/complications and patient reported outcomes. Two cohorts were developed based on approach: anterior (aTHA) and posterior (pTHA) THA. Cohort groups were compared utilizing Student's unpaired t-test for continuous variables and χ^2 test for categorical variables. $p < .05$ was deemed statistically significant.

RESULTS:

Of 10,881 THAs, there were 3,781 (34.7%) aTHAs and 7,100 (65.3%) pTHAs. aTHA weighed less (80.15 ± 17.16 vs 89.44 ± 22.60 kg; $p < 0.01$), had lower BMIs (27.81 ± 4.75 vs 30.89 ± 6.55 ; $p < 0.01$), less likely to be a type 2 diabetic (9.71 % vs 15.62%; $p < 0.01$), less likely to be current smokers (10.61% vs 12.11%; $p < 0.01$), and more likely to be ASA ≤ 2 (63.9 % vs 49.42%; $p < 0.01$).

Perioperatively, aTHAs had a significantly longer surgical times (90.28 ± 25.91 vs 65.31 ± 24.97 minutes; $p < 0.01$), shorter length of stay (1.22 ± 1.24 vs 1.73 ± 1.46 days; $p < 0.01$), and more likely to be discharged home (94.31% vs 89.61%; $p < 0.01$).

aTHAs had a significantly lower rate of intraoperative fractures (0.19% vs 0.62%; $p < 0.01$). All-cause 90-day events were also lower (10.08% vs 13.82%; $p < 0.01$). 90-day events included dislocations (0.32% vs 0.85%; $p < 0.01$), emergency department visits (5.71% vs 7.92%; $p < 0.01$), readmissions (3.15% vs 5.15%; $p < 0.01$), reoperations (1.43% vs 2.79%; $p < 0.01$), hematomas (0.48% vs 1.39%; $p < 0.01$), and prosthetic joint infections (0.13% vs 0.87%; $p < 0.01$). There was no difference in 90-day postoperative fractures, DVT/pulmonary embolism, or 90-day death.

aTHA had significantly higher HOOS preoperative scores (50.58 ± 13.96 vs 47.31 ± 14.72 ; $p < 0.01$), HOOS postoperative scores (80.73 ± 14.65 vs 78.89 ± 15.40 ; $p < 0.01$) and last reported HOOS scores (80.49 ± 19.74 vs 78.51 ± 20.68 ; $p < 0.01$).

DISCUSSION AND CONCLUSION:

aTHAs were noted to have shorter LOS, less opioids at discharge, higher discharge rate home and lower 90-day postoperative events. This is in opposition to the current body of literature. This may be secondary to patient selection, surgeon experience, and/or institutional experience. Further research is warranted.

Table 3: Demographics	Anterior n=3,781	Posterior n=7,100	p
Age at Case	66.4 (±15.7)	66.0 (±16.3)	0.06
Gender			
Female	2,028 (53.4%)	4,029 (56.8%)	0.07
Male	1,573 (41.6%)	3,081 (43.3%)	
Race			0.40
American Indian or Alaskan Native	6 (0.16%)	28 (0.39%)	
Asian	18 (0.48%)	44 (0.62%)	
Black or African American	322 (8.52%)	595 (8.38%)	
Native Hawaiian or Pacific Islander	2 (0.05%)	3 (0.04%)	
White or Caucasian	3,442 (91.34%)	6,079 (85.62%)	
Other	137 (3.62%)	298 (4.19%)	
Unknown	14 (0.37%)	93 (1.31%)	
Ethnicity			0.49
Hispanic or Latino	21 (0.56%)	33 (0.46%)	
Not Hispanic or Latino	3,455 (91.38%)	6,932 (97.82%)	
Unknown	305 (8.07%)	535 (7.54%)	
Preoperative Weight (cm)	169.3 (±10.5)	168.7 (±10.6)	0.07
Preoperative Weight (kg)	80.1 (±17.2)	89.4 (±22.6)	<.01*
Preoperative BMI	27.8 (±4.7)	30.9 (±6.5)	<.01*
Side			0.84
Left	1,724 (45.6%)	3,253 (45.8%)	
Right	2,057 (54.4%)	3,847 (54.1%)	
Smoking Status			<0.01*
Current	461 (12.18%)	860 (12.11%)	
Never	2,955 (77.82%)	5,958 (83.89%)	
Previous	1,365 (35.85%)	2,273 (32.00%)	
Diabetes			<0.01*
No	3,407 (90.11%)	5,976 (84.17%)	
Type 1	5 (0.13%)	10 (0.14%)	
Type 2	807 (21.22%)	1,308 (18.64%)	
Bleeding Disorder			0.04*
No	3,758 (99.39%)	7,029 (98.99%)	
Yes	23 (0.61%)	71 (1.00%)	
History of DVT/Pulmonary Embolism			<0.01*
No	3,555 (94.02%)	6,472 (91.15%)	
Yes	226 (5.98%)	628 (8.85%)	
Preoperative Ambulatory Assistive Device			<0.01*
No	2678 (70.85%)	4542 (64.07%)	
Yes	1103 (29.15%)	2558 (35.93%)	
Preoperative ASA			<0.01*
I	48 (1.27%)	60 (0.85%)	
II	2,568 (67.65%)	3,468 (48.85%)	
III	1,320 (34.91%)	2,468 (34.75%)	
IV	45 (1.19%)	123 (1.73%)	
Marital Status			<0.01*
Divorced/Separated	427 (11.29%)	836 (11.79%)	
Married/Life Partner	2,470 (65.31%)	4,897 (68.94%)	
Single	518 (13.70%)	1,098 (15.46%)	
Unknown	11 (0.29%)	7 (0.10%)	
Widowed	355 (9.39%)	782 (11.01%)	

Table 3: Special Considerations	Anterior n=3,781	Posterior n=7,100	p
Surgical Time (Minutes)	90.28 (±25.91)	65.31 (±24.97)	<0.01*
Length of Stay (Days)	1.22 (±1.24)	1.73 (±1.46)	<0.01*
Post Discharge Orders (Total milligram equivalents)	30.4 (±21.1)	34.8 (±24.2)	<0.01*
Blood Transfusion Units Given	1.8 (±1.2)	1.7 (±1.0)	0.55
Discharge Facility			<0.01*
Home with Home Health	2,008 (53.08%)	3,362 (47.35%)	
Home Self-Care	1,773 (46.92%)	3,698 (51.93%)	
Hospice/Expired (home health and self-care)	0 (0%)	1 (0.01%)	
Inpatient Rehabilitation	28 (0.74%)	42 (0.59%)	
Long Term Care	1 (0.03%)	1 (0.01%)	
Skilled Nursing Facility	186 (4.92%)	651 (9.17%)	

Table 3: Clinical Outcomes	Anterior n=3,781	Posterior n=7,100	p
Intra Op Fracture	7 (0.19%)	44 (0.62%)	<0.01*
All-cause 90-day event	381 (10.08%)	981 (13.82%)	<0.01*
Dislocation	12 (0.32%)	60 (0.85%)	<0.01*
Readmission	119 (3.15%)	366 (5.15%)	<0.01*
Reoperation	54 (1.43%)	193 (2.72%)	<0.01*
Fracture	44 (1.16%)	76 (1.07%)	0.73
DVT/PE	37 (0.98%)	62 (0.87%)	0.69
Death	3 (0.08%)	11 (0.15%)	0.44
Hematoma	58 (1.53%)	99 (1.39%)	<0.01*
Emergency Department Visit	216 (5.72%)	562 (7.92%)	<0.01*
Prosthetic Joint Infection	5 (0.13%)	62 (0.87%)	<0.01*

Table 4: Patient Reported Outcome Measures (PROMs)	Anterior n=3,781	Posterior n=7,100	p
HOOS Score			
Preoperative	50.58 (±13.96)	47.31 (±14.72)	<0.01*
14-112 Days	80.73 (±14.65)	78.89 (±15.40)	<0.01*
Latent	80.49 (±19.74)	78.51 (±20.68)	<0.01*