Functional Outcomes Following Anterior versus Posterior Total Hip Arthroplasty

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Introduction

The number of hip arthroplasty procedures performed has increased from 138,700 in 2000 to an estimated 310,800 in 2010(2) in United States. Objective functional measures represent a novel technique to assess outcomes after THA with respect to surgical approach. As noted in previous studies regarding THA as well as total knee arthroplasty, patient reported outcomes and objective functional measures do not necessarily correlate(19). The primary aim of this study is to determine if the direct anterior approach to total hip arthroplasty differs in objective functional outcomes when compared to the posterior approach. The secondary aim is to compare patient reported outcomes, complications, and other operative criteria.

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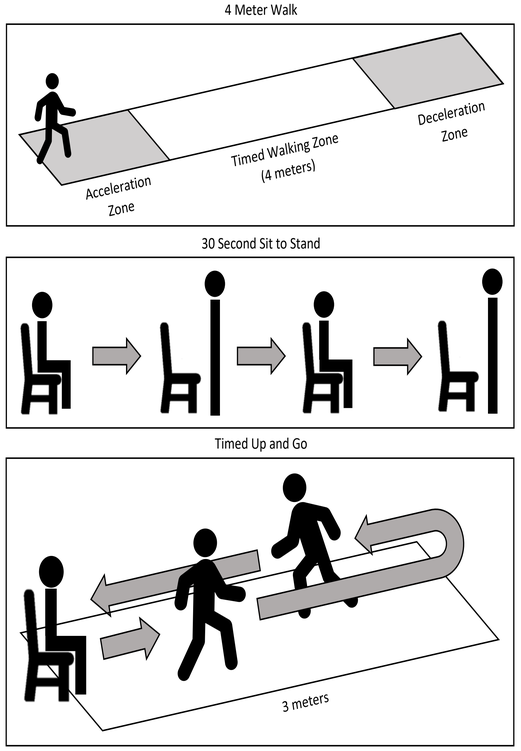
Disclosure

The authors have no financial disclosures of conflicts of interest

Methods

Patients (18 to 90 years) undergoing primary total hip arthroplasty between April 2015 and December 2018 were prospectively enrolled in the cohort. Two surgeons performed all surgeries at a single institution. Results from the pre-operative, the three-month post-operative and the twelve-month post-operative assessment were compared using a two tailed, two sample t-test. The change from pre-operative assessment to either three- or twelve-month post-operative assessment for HOOS JR, TUG test, 30STS, and 4MWT were tested for significance using two sample t-tests. The frequency of adverse outcomes was compared using a chi-squared test of risk ratios.

Figure 1. Functional Tests



Results

Table 1. Patient Demographics

	Anterior THA Average	Posterior THA Average	P value
Age	62.3	60.9	0.904
Gender (Male)	181	189	0.677
Gender (Female)	219	190	0.151
Diabetes Mellitus (%)	7.50	10.8	0.440
History of DVT (%)	6.75	7.39	0.865
Smoker (%)	11.3	9.76	0.745
BMI	27.1	29.3	0.769

Table 2. Perioperative Data

	Anterior THA Average	Posterior THA Average	P value (Chi^2 Test)
Operation time (min)	87.6	90.0	0.86
Estimated blood loss (ml)	299.7	272.1	0.25
Length of hospital stay (days)	1.9	2.7	0.70

Table 3. Outcome Measures

Changes at 3 months post-op

	Anterior THA Average	Posterior THA Average	P value
HOOS JR Score	8.59	7.65	0.045
Time up and go (sec)	2.66	2.33	0.519
30 Second sit to stand (# of reps)	2.49	2.71	0.638
4 Meter walk test (sec)	1.18	1.23	0.820

Changes at 12 months post-op

	Anterior THA Average	Posterior THA Average	P value
HOOS JR Score	8.52	8.51	0.99
Time up and go (sec)	3.15	2.86	0.71
30 Second sit to stand (# of reps)	3.83	3.99	0.85
4 Meter walk test (sec)	1.23	1.19	0.91

Table 4. Adverse Events

	Anterior THA Average	Posterior THA Average	P value
Trochanteric Fracture (%)	2.00	1.06	0.25
Post-Op Acetabular Fracture (%)	0.00	0.30	0.32
Post-Op Dislocation (%)	1.25	2.60	0.20
Post-Op Infection (%)	0.50	2.11	0.06
Post-Op wound complication (%)	0.75	1.10	0.71
Revision rate (%)	1.75	3.43	0.14

Conclusions

This study found no significant difference in objective functional outcomes at either three- or twelve- months post-operative. The data supports that anterior and posterior approaches are equally effective in restoring function among THA patients in both the early and late post-operative period. However, the anterior group did show a significant improvement in HOOS JR score compared to the posterior group at three-months post-operatively (p=0.045). This difference did not persist beyond this time point, and improvement in HOOS JR scores were nearly identical between the groups at the twelve-months post-operative visit (anterior 8.52, posterior 8.51; p=0.99). The similarity of outcomes following anterior and posterior THA under these circumstances suggest that surgeons' experience and preference are likely the most important factors in determining surgical approach to THA.

Limitation: potential recall bias, selection bias and confounding variables; low follow up rate; small study size.

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