Comparison of Pain, Functional Recovery, and Opioid Consumption between Direct Anterior and Posterior Approach in Total Hip Arthroplasty

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INTRODUCTION:

Use of the direct anterior approach in total hip arthroplasty (THA) is increasing, and proponents cite faster recovery and reduced pain and complications as benefits of this approach. Yet, a consensus in the literature has not been reached. The purpose of this study was to compare pain levels, functional recovery, and opioid consumption between the direct anterior and modern posterior approach in the immediate postoperative period following THA at our institution.

METHODS:

We retrospectively reviewed 4,044 patients who underwent primary THA with either the direct anterior or posterior approach by one of our arthroplasty surgeons from January 2019 to July 2023. Two cohorts were created based on the approach used. Patient demographics, Visual Analogue Scale (VAS) pain scores, Activity Measure for Post-Acute Care (AM-PAC) scores, and opioid consumption measured in morphine milligram equivalents (MME) were collected for the duration of each patient's postoperative hospital stay. This data was compared using independent sample t-tests.

RESULTS:

In total, 1504 patients underwent THA with the direct anterior approach and 2540 with the posterior approach. Mean VAS pain scores were statistically significantly higher in the posterior approach cohort at 6 hours following surgery, although they were not clinically significant (4.8 posterior vs. 3.9 direct anterior, p<0.001), with no statistically or clinically significant difference between approaches at 24 hours post-surgery (4.8 posterior vs. 4.6 anterior, p=0.403). Mean AM-PAC scores were statistically significantly higher in the direct anterior cohort at 6 hours post-surgery, although again were not clinically significant (20.8 direct anterior vs. 19.7 posterior, p=0.023), with no significant difference between cohorts at 24 hours after surgery (18.6 direct anterior vs. 17.0 posterior, p=0.279). No significant differences were seen in opioid consumption between approaches at any length of stay interval.

DISCUSSION AND CONCLUSION:

The results of the present study fail to demonstrate a clinical difference in pain, functional recovery, or opioid consumption between the direct anterior and posterior approach following THA.

Figure 1: VAS Scores by Approach over the First 24 Hours following Surgery

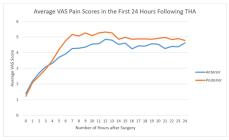

Figure 2: AM-PAC Scores by Approach over the First 24 Hours Following Surgery

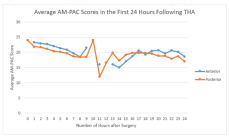

Table 1: VAS Scores by Approach

	Direct Anterior Approach (n=643)	Posterior Approach (n=1469)	P-Value
Mean VAS score [standard deviation] at Hour 6 Post-Surgery	3.9 [2.5]	4.8 [2.7]	**<0.001**
	Direct Anterior Approach (n=210)	Posterior Approach (n=808)	P-Value
Mean VAS score [standard deviation] at Hour 24 Post-Surgery	4.6 [2.6]	4.8 [2.4]	0.403

Table 2: AM-PAC Scores by Approach

	Direct Anterior Approach (n=72)	Posterior Approach (n=185)	P-Value
Mean AM-PAC score [standard deviation] at Hour 6 Post-Surgery	20.8 [3.7]	19.7 [3.2]	**0.023**
	Direct Anterior Approach (n=9)	Posterior Approach (n=54)	P-Value
Mean AM-PAC score [standard deviation] at Hour 24 Post-Surgery	18.6 [4.8]	17.0 [3.3]	0.279

Table 3: MME by Approach

	Direct Anterior Approach (n=1491)	Posterior Approach (n=2512)	P-Value
Mean MME [standard deviation]	54.2 [99.3]	95.5 [284.3]	**<0.001**
	Direct Anterior Approach (n=1743)	Posterior Approach (n=720)	P-Value
0-4 Hr LOS	10.0 [5.4]	10.2 [6.1]	0.374
	Direct Anterior Approach (n=1210)	Posterior Approach (n=799)	P-Value
5-8 Hr LOS	9.7 [5.4]	9.8 [7.9]	0.312
	Direct Anterior Approach (n=64)	Posterior Approach (n=91)	P-Value
9-12 Hr LOS	10.1 [6.8]	11.4 [8.4]	0.327
	Direct Anterior Approach (n=35)	Posterior Approach (n=70)	P-Value
13-16 Hr LOS	6.1 [4.4]	9.3 [6.6]	0.216
	Direct Anterior Approach (n=358)	Posterior Approach (n=1025)	P-Value
17-20 Hr LOS	8.9 [5.4]	8.7 [17.2]	0.323
	Direct Anterior Approach (n=1166)	Posterior Approach (n=3665)	P-Value
21-24 Hr LOS	8.9 [11.8]	9.2 [14.9]	0.577