## How does Surgical Approach Affect Characteristics of Dislocation after Total Hip Arthroplasty?

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Due to the differences in soft tissue structures in total hip arthroplasty (THA) performed via the posterior approach (PA), direct anterior approach (DAA), and direct lateral approach (DLA), concerns have been voiced regarding how surgical approach impacts the risk of dislocation after THA. Therefore, this study sought to examine how surgical approach impacts the incidence, direction, and timing of dislocations following THA. METHODS:

We conducted a retrospective review of 9,495 primary THAs performed at our hospital from 2011 to 2020 and identified 120 patients with clinical and radiographic documentation of prosthetic hip dislocation. Patients were stratified into cohorts based on the surgical approach used during their primary THA. Baseline demographics, as well as the number, direction, date of documented dislocations or subsequent revisions, and acetabular cup anteversion and inclination from index THA were collected.

RESULTS:

Among the overall cohort of 9,495 patients there was no difference in dislocation rate between the PA, DAA, and DLA cohorts (1.4% vs. 1.0% vs. 1.1%, p=0.362). When comparing the direction of dislocation between primary approach groups, there was no difference in rate of posterior direction (p=0.159) or multidirectional (p=0.508) dislocations. Rate of anterior direction hip dislocations among those who dislocated varied among groups (p=0.044) and was highest in the DLA cohort (50.0%), followed by the DAA cohort (38.2%), with the PA having the lowest rate of anterior direction dislocations (19.2%). Of patients who dislocated, the acetabular anteversion during primary THA was highest in the PA cohort compared to the DAA and DLA (21.5 vs. 19.2 vs. 11.7 degrees, p=0.049), though there was no difference in acetabular inclination. There were no statistically significant differences in dislocation timing or revision rate among cohorts.

## DISCUSSION AND CONCLUSION:

Our results suggest that with modern primary THA, there is no significant difference in rates of prosthetic hip dislocation, regardless of surgical approach. Surgical approach does not significantly impact dislocation incidence or timing, and patients undergoing all three approach groups have no difference in posterior direction dislocations or multidirectional instability. Overall, our data suggests that surgical approach impacts rate and characteristics of dislocations to a lesser degree than previous studies have suggested.

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Table 1 - Baseline Characteristics					Table 2 - Number & Direc	Table 2 - Number & Direction of Dislocations					Table 3 – Dislocation Timing by Approach					Table 4 - Recention Characteristics - Patients Revised for Instability					Table 5 – Acetabular Cup Placement in Primary THA Patients who Dislocate				
	Pasterior Approach (e-skt)	Anterior Appreach (s=34)	Direct lateral approach (n+6)	p-value		Postarior Appreach (n=80)	Anterior Appreach (n=34)	Ofrect lateral appreach (n=6)	p-value		Posterior Approach (a+82)	Anterior Approach (sea4)	Oirect lateral appreach (s=6)	p-wakue		Posterior Approach	Anterior Approach	Direct lateral approach (n=6)	p-value:		Postarior Approach	Anterior Approach	Direct la approach	teral p-valu (e=6)	
Diducation incidence	80/5753 [1.4%]	34/3208 (1.0%)	6/534 (1.2%)	0.862	<b>Dislocations per patient</b>	1,9521.67	1.68±1.07	1.33±0.82	0.454	THA to first	344.21666.1	817.3±492.5	45.2+55.0	0.507		(8+92)	(94.04)				(144)	(8×24)			
Age (years)	62.1111.7	64.0111.3	65.218.3	0.451	Rate of realtiple	38,/80 (47.5%)	15/34 (44.1%)	1/6 (16.7%)	0.842	delecation				I I	Revision for instability	28 (35.0%)	8 (23.5%)	1(16.7%)	0.356	Anterension (degrees, 50)	21.5 (10.6)	23.2 (7.5)	11.7.0	1.51 0.045	
Race				0.525	chiecations					(DagstSD)					Number et dislocations prior te	1.993.9	1.328.5	1.0e0.0	0.127	Inclination (degrees, SO)	41.8 (6.4)	29.2 (5.3)	42.3 (1	1.1) 0.155	
White	60 [75.9%]	31 (91.2N)	\$ (83.3N)		Rate of posterior	58 (74.4N)	23 (54.8N)	3 (50.0%)	0.159	Median days pTHA	40.5 (0, 7628)	84.0 [1,2106]	47.0[18,62]		rTHA for instability (mean,SD)										
Black or African-American	8 (10.3N)	2 (5.9%)	1 [16.7%]		didecations					to first dislocation				I I	Mediae days tick to ritick for	115	42.5	49.0							
Asian	3 (3.8%)	a (0.0%)	0 (8.2%)		Rate of anterior	15 (13.2%)	33 (88.2%)	8 (50.0%)	0.044	(range)					Moder for for delegation		10								
Other	8 (10.1N)	1 (2.9%)	0(0.0%)		chiecetiens					THA to second	407.21598.1	657.91764.6	41.860.0	0.360	ches fas instability										
Female	46 [\$7.5%]	19 (55.9%)	2 [33.3%]	0.535	Rate of multidirectional	6 (7.3%)	1 (2.5%)	0 (0.0%)	0.568	descature				I I	This to chief for instability	58 0485 0	44.0440.1	62.043.0	0.932						
Smoking Status				0.092	delocations			1		(DUALIZED)					(Description										
Never	31 (39.2%)	34 (43.2N)	2 (33.3%)							Median days pTHA	122.5 [9, 5185]	271.5 [2, 2393]	41.0[41,41]		Einst Dislocation to (Dià for	22 7+11 3	954113	8,010.0	0.492						
fermer	33 [41,8%]	20 (S8.8N)	3 [50.0%]							to second	(+=54)	\$9+34)	[9=3]	1 I	instabilita (DevistSO/*										
current	15 [19:096]	0 (0.0%)	1 [16.7%]							courses parget					Components revised				0.343						
ave. (x2/av)	25.435.5	17.214.6	27.02.4	0.635						1164 53 55/13	810.00064.2	1/04.511370.7	LOJY OLD D	0.731	All components	12 (42.9%)	3 (37.5%)	0 (0.0%)							
ASA* Calibracieson				0.084						Constanting of the second				1 1	Head/liner only	7 (25.0%)	4 (53.0%)	3 (100.0%)							
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1	40150.0%	23 (67.6%)	1 (16.7%)							Median days prink	433.0 (44, 2503)	1985.0 (6, 2502)	2053.0 (10035, 2053)		Femoral w/ head exchange	2 (7.2%)	1 (12.5%)	0 (0.2%)							
1 2	212102	200001	116.761							former 1	(10.11)	find	10-11	1 I	Acetabular w/ head exchange	<ul> <li>3 (10.7%)</li> </ul>	@-(0.0%)	0 (0.2%)							
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ood man and, mental		condition of the second se										in construction of	1000 0010		Canventional	6 (21.4%)	3 (32 Gel	0(0.2%)							
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