Preoperative Patient-Reported Outcome Measure Thresholds Should Not be Used for Indicating Total Hip Arthroplasty

Colin Baker, Ryan Sutton, Taylor D'Amore, Chad A Krueger, Paul Maxwell Courtney INTRODUCTION:

While Medicare requires patient-reported outcome measures (PROM) for many quality programs, some commercial insurers have begun requiring preoperative PROMs when determining patient eligibility for total hip arthroplasty (THA). Concerns exist that this data may be used to deny THA to patients above a specific PROM score, but the optimal threshold is unknown. This study's purpose was to evaluate postoperative outcomes following THA based on theoretical PROM thresholds.

METHODS:

We retrospectively analyzed 18,006 consecutive primary THA patients from 29 facilities and 44 surgeons from 2016 to 2019. Hypothesized preoperative HOOS-Jr. cutoffs of 40, 50, 60, 70 points were used. Preoperative scores below each threshold were considered "approved" surgery, while preoperative scores above each threshold were considered "denied" surgery. In-hospital complications, 90-day readmissions, discharge disposition were evaluated. HOOS-Jr. scores were collected preoperatively and one year postoperatively. Minimum clinically important difference (MCID) achievement was calculated using previously validated anchor-based methods.

RESULTS:

In patients with preoperative HOOS-Jr. scores below thresholds of 40, 50, 60, 70 points, achievement of MCID at one year was 92%, 90%, 86%, 84%, respectively. In-hospital complication rates for approved patients were 3.3%, 3.0%, 2.8%, 2.7%, respectively. Ninety-day readmission rates for approved patients were 5.1%, 4.4%, 4.2%, 4.1%, respectively. Patients with preoperative scores below each threshold ("approved" surgery) had a higher rate of achieving MCID (p<0.001), but also higher rates of discharge to rehabilitation (p=0.01) and 90-day readmission (p=0.036) compared to patients with scores above each threshold ("denied" surgery).

DISCUSSION AND CONCLUSION:

The majority of patients achieved MCID at all theoretical PROMs thresholds for THA eligibility with low complication and readmission rates. Setting a preoperative PROM threshold to approve a THA surgery did not guarantee clinically successful outcomes. Such a future policy will create access to care barriers for patients who would otherwise benefit from

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	Total Data	Denied Group	Approved Group	P Value	PPV	Number of patients denied a positive result	
	N=14751	N=10389	N=4362				
MCID 1 Year:				<0.001	0.919	3.15	
No	1614 (19.8%)	1435 (24.1%)	179 (8.06%)				
Yes	6556 (80.2%)	4514 (75.9%)	2042 (91.9%)				
Any Complication:				0.001	0.033	40.89	
No	14357 (97.3%)	10141 (97.8%)	4218 (96.7%)				
Yes	394 (2.67%)	248 (2.39%)	146 (3.38%)				
Non-Home Discharge:				<0.001	0.085	18.11	
No	13676 (93.8%)	9744 (94.8%)	3932 (91.5%)				
Yes	904 (6.20%)	538 (5.23%)	366 (8.52%)				
90 Day Readmission:				<0.001	0.051	26.93	
No	14158 (96.0%)	10017 (98.4%)	4141 (94.9%)				
Yes	563	372	221				

Table 1. Outcome	s of Patients	with a Preopo	rative HDOS-JI	R. Score Bel	low 40 Po	ints. Denied	0
Group: Patients w							
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	Total Data	Denied Group	Approved Group	P Value	PPV	Number of patients denied a positive result
	N=14751	N+6372	N=8379			
MCID 1 Year:				+0.001	0.896	2.23
No	1814 (19.8%)	1150 (31.0%)	464 (10.4%)			
Yes	8556 (80.2%)	2559 (99.0%)	3997 (89.6%)			
Any Complication:				0.003	0.030	44.19
No	14357 (97.3%)	6231 (97.8%)	8126 (97.0%)			
Yes	394 (2.67%)	141 (2.21%)	253 (3.02%)			
Non-Home Discharge:				<0.001	0.072	19.48
No	13676 (93.8%)	5999 (95.1%)	7677 (92.8%)			
Yes	904 (8.20%)	308 (4.88%)	598 (7.20%)			
90 Day Readmission:				0.006	0.044	27.57
No	14158 (96.0%)	6149 (98.5%)	8009 (95.6%)			
Yes	593 (4.02%)	223 (3.50%)	370 (4.42%)			

Group: Patents who were above the theoretical threshold who would have been denied from having surgent, Approved Group: Patents who were below the theoretical tembeloid who would have been approved for surgent; PPV: positive predictive value; Number of pasitient when the patent patent is not be denied cohort, number of patients who either achieved MCID or improvement of PRUMs at one year OR avoided negative outcomes compared to the number of relations to the first the faithed from the compared to the number of relations to the first the faithed from the compared to the number of relations two disk for first the faithed from the compared to the number of relations that of the compared to the number of relations two disk of the first the faithed from the compared to the number of relations two disk of the first the faithed from the compared to the number of relations that of the compared to the number of patients who disk of the compared to the number of patients who disk of the patients where the patients who exist that the patients who disk of the patients who are the patients who either the patients who disk of the patients who disk of patients who disk of the patients who disk of patients who disk of the patients who disk of patients

	Total Data	Denied Group	Approved Group	P Value	PPV	Number of patients denied a positive result
	N=14751	N+2988	N=11763			
MCID 1 Year:				<0.001	0.861	1.45
No	1614 (19.8%)	724 (40.9%)	890 (13.9%)			
Yes	6556 (80.2%)	1048 (59.1%)	5508 (88.1%)			
Any Complication:				0.190	0.028	42.30
No	14357 (97.3%)	2919 (97.7%)	11438 (97.2%)			
Yes	394 (2.67%)	69 (2.31%)	325 (2.76%)			
Non-Home Discharge:				0.002	0.065	19.25
No	13676 (93.8%)	2811 (95.1%)	10865 (93.5%)			
Yes	904 (8.20%)	146 (4.94%)	758 (6.52%)			
90 Day Readmission:				0.018	0.042	29.80
No	14158 (96.0%)	2891 (96.8%)	11267 (95.8%)			
Yes	593 (4.02%)	97 (3.25%)	496 (4.22%)			- 1

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	Total Data	Denied Group	Approved Group	Value	PPV	Number of patients denied a positive result
	N=14751	N=1226	N=13525			
MCID 1 Year:				<0.001	0.840	0.73
No	1614 (19.8%)	423 (57.9%)	1191 (16.0%)			
Yes	6596 (80.2%)	307 (42.1%)	6249 (84.0%)			
Arry Complication:				0.548	0.027	41.28
No	14357 (97.3%)	1197 (97.6%)	13160 (97.3%)			
Yes	394 (2.67%)	29 (2:37%)	365 (2.70%)			
Non-Home Discharge:				0.010	0.064	21.43
No	13676 (93.8%)	1157 (95.5%)	12519 (93.6%)			
Yes	904 (6.20%)	54 (4.46%)	850 (6.36%)			
90 Day Readmission:				0.036	0.041	34.03
No	14158 (96.0%)	1191 (97.1%)	12967 (95.9%)			
Yes	593 (4.02%)	35 (2.85%)	558 (4.13%)			

Table 2. Unicomized or search with a Proteoperation With a Proteoperation of the Control of the