



Effect of Socioeconomic Status on Outcomes After Hip Arthroscopy: Minimum 5-year Follow-Up

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Background

The socioeconomic status (SES) of a patient has previously been shown to affect access to quality healthcare, as well as patient-reported outcomes of certain medical treatments.^{1,2,3} Previous research has looked at the effect of socioeconomic status on minimum 2-year outcomes after hip arthroscopy and found that outcomes were not affected by the level of social deprivation.⁴

Objectives

The purpose of the present study was to evaluate the effect of SES on outcomes of hip arthroscopy at minimum 5-year follow-up.

Methods

- Demographic, intraoperative, and radiographic data were prospectively collected and retrospectively analyzed for patients who underwent hip arthroscopy for the treatment of labral tear and femoroacetabular impingement (FAI) between February 2008 and December 2017.
- Patients were included in the present analysis if they had minimum 5-year follow-up for the modified Harris Hip Score (mHHS), Nonarthritic Hip Score (NAHS), International Hip Outcome Tool – 12 (iHOT-12), and visual analog scale (VAS) for both pain and satisfaction.
- Included patients were then divided into 4 cohorts based on their respective social deprivation index (SDI). Rates of achieving the mean clinically important difference (MCID) and patient acceptable symptom state (PASS) were calculated for the mHHS, NAHS, and VAS, along with rates of revision surgery and conversion to total hip arthroplasty (THA), for comparison between the 4 cohorts.

Results

At minimum 5-year follow-up, all PROs had significantly improved in all 4 groups from the preoperative measure ($P < 0.001$). Similar iHOT-12 and Patient Satisfaction scores were observed across all 4 groups at most recent follow-up. Patients reported similar preoperative PROMS, PROMS at latest follow-up, and improvement in PROMS across all 4 groups.

There were significant differences ($P < 0.05$) among groups 1-4 in the number of patients in each group proceeding to a secondary ipsilateral hip arthroscopy or converting to arthroplasty.

Patients in groups 1-4 experienced high rates (>70%) of achieving MCID for mHHS, NAHS, and VAS for Pain. Similar rates of MCID for NAHS and VAS for Pain were reported among patients within groups 1-4, whereas a significant difference ($P < 0.005$) in rates of achieving MCID for mHHS was found among patients within groups 1 through 4. Patients in groups 1-4 experienced high rates (>70%) of achieving PASS for mHHS with similar rates reported within the groups. For NAHS, patients in groups 2, 3, and 4 experienced high rates (>70%) of achieving PASS for NAHS, with a significance difference in rates of PASS achieved for NAHS among patients within groups 1-4. Similar rates of achieving PASS for VAS for Pain was reported within groups 1-4, with none of these groups achieving high rates of PASS (<70%).

Table 1. Patient Demographics

	Group 1, SDI 0-11 (n = 135)	Group 2, SDI 12-27 (n = 130)	Group 3, SDI 28-54 (n = 96)	Group 4, SDI 55-100 (n = 91)	P Value
Hips included					0.346
Left	65 (48.1)	53 (40.8)	44 (45.8)	48 (52.7)	
Right	70 (51.9)	77 (59.2)	52 (54.2)	43 (47.3)	
Sex					0.819
Female	87 (64.4)	79 (60.8)	63 (65.6)	61 (67.0)	
Male	48 (35.6)	51 (39.2)	33 (34.4)	31 (34.0)	
Age at surgery, y	31.1 ± 12.4 (13.2-61.5)	32.9 ± 12.9 (13.8-69.2)	31.7 ± 12.4 (14.7-70.2)	33.0 ± 13.2 (14.1-70.1)	0.391
BMI	24.7 ± 5.0 (17.2-48.7)	25.5 ± 5.5 (17.9-42.9)	24.2 ± 4.6 (17.6-38.3)	26.3 ± 5.6 (18.3-45.5)	0.162
Race or ethnicity					0.839
American Indian or Alaska Native	0	0	0	0	
Asian	0	3	3	0	
Black or African American	2	3	1	4	
Native Hawaiian or Other Pacific Islander	0	2	0	0	
White	2	0	2	2	
Hispanic or Latino	27	30	21	19	
Not Hispanic or Latino					
Unspecified	84	77	57	58	
Multiracial	0	0	0	0	
Undetermined	20	15	12	8	
Insurance Status					0.661
Private	104	104	74	71	
Medicare	2	6	6	7	
Medicaid	1	0	0	1	
Self-Pay	4	3	1	1	
W/C Litigation	9	9	6	5	
Unknown	15	8	9	6	
LCEA, deg	30.3 ± 5.9 (19-49)	30.9 ± 5.5 (20.5-47)	30.2 ± 5.2 (21-44)	29.7 ± 6.1 (19-43)	0.387
Alpha angle, deg	59.3 ± 12.1 (37-104)	60.3 ± 12.7 (39.0-94.7)	59.4 ± 12.7 (41-87)	57.9 ± 10.7 (36-82)	0.504
Tonnis grade					0.938
0	106 (78.5)	110 (84.6)	79 (82.3)	73 (80.2)	
1	27 (20.0)	19 (14.6)	17 (17.7)	17 (18.7)	
2	2 (1.50)	1 (0.80)	0 (0.00)	1 (1.10)	

Table 2. Surgical Procedures

	Group 1 (n=135)	Group 2 (n=130)	Group 3 (n=96)	Group 4 (n=91)	P value
Labral Treatment					1.0
Repair	135 (100)	130 (100)	96 (100)	91 (100)	
Acetabular Microfracture	4 (3.0)	8 (6.2)	6 (6.3)	8 (8.8)	0.059
Femoral Head Microfracture	2 (1.5)	3 (2.3)	1 (1.0)	0 (0.0)	0.133
Iliopsoas Fractional Lengthening	62 (45.9)	57 (43.8)	43 (44.8)	46 (50.5)	0.303
LT Debridement	33 (24.4)	26 (20.0)	27 (28.1)	20 (22.0)	0.137
Capsular Treatment					0.387
Repair/Plication	94	96	70	66	
Capsulotomy without Repair	41	44	26	25	

Conclusions

Regardless of SES, patients achieved significant improvement in all PROs following hip arthroscopy for the treatment of labral tear and FAI. However, patients with a lower SDI experienced higher rates of revision ipsilateral hip arthroscopy and conversion to THA.

References

- Adler NE, Glymour MM, Fielding J. Addressing Social Determinants of Health and Health Inequalities. *JAMA*. 2016;316(16):1641-1642.
- Dickman SL, Himmelstein DU, Woolhandler S. Inequality and the health-care system in the USA. *Lancet*. 2017;389(10077):1431-1441.
- Fiscella K, Williams DR. Health disparities based on socioeconomic inequities: implications for urban health care. *Acad Med*. 2004;79(12):1139-1147.
- Saks BR, Ouyang VW, Domb ES, et al. Equality in Hip Arthroscopy Outcomes Can Be Achieved Regardless of Patient Socioeconomic Status. *Am J Sports Med*. 2021;49(14):3915-3924.

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Table 3. Patient-Reported Outcome Data at Minimum 5-Year Follow-Up by Group

	Group 1 (n = 135)	Group 2 (n = 130)	Group 3 (n = 96)	Group 4 (n = 91)	P Value
mHHS					
Preoperative	63.3 ± 13.9	62.6 ± 15.0	62.2 ± 15.3	63.6 ± 16.6	0.991
Latest	88.3 ± 14.1	91.0 ± 12.1	90.6 ± 11.8	89.0 ± 12.8	0.626
p-value	<0.001	<0.001	<0.001	<0.001	
Improvement	25.0 ± 18.9	28.5 ± 17.3	28.4 ± 17.4	25.4 ± 19.4	0.740
NAHS					
Preoperative	60.5 ± 15.3	60.9 ± 17.5	59.4 ± 18.8	62.9 ± 18.3	0.508
Latest	86.6 ± 14.6	90.8 ± 11.3	88.7 ± 14.0	89.2 ± 12.5	0.240
p-value	<0.001	<0.001	<0.001	<0.001	
Improvement	26.0 ± 20.1	29.8 ± 18.4	29.3 ± 21.4	26.3 ± 19.4	0.836
VAS for pain					
Preoperative	5.62 ± 2.13	5.8 ± 2.26	5.44 ± 2.14	5.15 ± 2.19	0.168
Latest	1.98 ± 1.93	1.68 ± 1.78	1.80 ± 1.83	1.88 ± 1.79	0.739
p-value	<0.001	<0.001	<0.001	<0.001	
Improvement	3.64 ± 2.77	3.61 ± 2.61	3.64 ± 2.62	3.27 ± 2.54	0.365
iHOT-12					
Latest	77.8 ± 22.0	82.7 ± 21.2	79.6 ± 21.3	78.6 ± 23.0	0.951
Satisfaction					
Latest	8.17 ± 2.10	8.64 ± 1.85	8.61 ± 1.48	8.30 ± 1.77	0.491
Secondary Surgeries					
Secondary Arthroscopy	20 (14.8)	17 (13.0)	14 (14.6)	21 (23.1)	0.033
Conversion to Arthroplasty	9 (6.7)	8 (6.2)	7 (7.3)	24 (26.4)	<0.001

Table 4. Comparison of mHHS, NAHS, and VAS Pain MCID and PASS Achievement Rates

	MCID Achieved	MCID P Value	PASS Achieved	PASS P Value
mHHS		0.071		0.273
Group 1 (n = 135)	109 (80.7)		99 (73.3)	
Group 2 (n = 130)	118 (90.8)		105 (80.8)	
Group 3 (n = 96)	86 (89.6)		80 (83.3)	
Group 4 (n = 91)	76 (83.5)		70 (76.9)	
NAHS		0.845		0.027
Group 1 (n = 135)	115 (85.2)		91 (67.4)	
Group 2 (n = 130)	115 (88.4)		107 (82.3)	
Group 3 (n = 96)	85 (88.5)		69 (71.9)	
Group 4 (n = 91)	79 (86.9)		72 (79.1)	
VAS Pain		0.892		0.128
Group 1 (n = 135)	106 (78.5)		40 (29.6)	
Group 2 (n = 130)	107 (82.3)		29 (22.3)	
Group 3 (n = 96)	77 (80.2)		29 (30.2)	
Group 4 (n = 91)	73 (80.2)		26 (28.6)	