Is There an Association Between Preoperative Expectations and Patient-Reported Outcome After Hip Arthroscopy for Femoroacetabular Impingement Syndrome?

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Purpose: To determine the relationship between preoperative patient expectation and postoperative satisfaction and overall patient-reported outcome (PRO) of patients undergoing hip arthroscopy for femoroacetabular impingement syndrome. **Methods:** Patients who underwent hip arthroscopy for femoroacetabular impingement syndrome completed the validated Hip Preservation Surgery Expectations Survey (21 questions; 0-100 range), as well as multiple PROs before surgery. High expectation was defined as an expectation score greater than 1 standard deviation above the mean. Patients with osteoarthritis, dysplasia, and those having undergone previous hip surgery were excluded. At 1 year postoperatively, patient visual analog scale (VAS) satisfaction, VAS pain, and PROs were assessed. Univariable and multivariate analyses were performed. **Results:** One-hundred fifty-three subjects (mean age 34.4 ± 12.6 years, female: 114 [71.3%], body mass index: 25.9 ± 5.3 kg/m^2) participated. The mean expectation score was 84.5 ± 12.3. Significant correlations between high expectation scores (>96.7) and achieving the minimal clinical important difference (MCID) for modified Harris Hip Score (mHHS; r = 0.339; $P = .043$) and patient acceptable symptomatic state (PASS) for Hip Outcome Score-Activities of Daily Living Subscale (HOS-ADL; r = 0.207; $P = .032$) were observed. There were no significant correlations between high expectation scores and preoperative or postoperative PROs or patient satisfaction scores. χ^2 analysis demonstrated patients with greater expectations had increased rates of reaching MCID mHHS (92.3% vs 74.7%; $P = .08$), PASS mHHS (85.7% vs 69.7%; $P = .046$), and PASS HOS-ADL (93.8% vs 67.4%; $P = .031$). **Conclusions:** High preoperative expectation is associated with increased rates of MCID/PASS achievement on mHHS and increased rate of PASS achievement on HOS-ADL. Preoperative expectations did not have an impact on Hip Outcome Score-Sports Subscale; however, patients with high preoperative expectations also have a high baseline Hip Outcome Score-Sports Subscale. In addition, preoperative expectations are not associated with postoperative VAS satisfaction scores. **Level of Evidence:** III; non-randomized cohort, therapeutic.

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Patient expectations have become a focal point of value-based medicine, as they can have an effect on both the outcome of care (such as a patient-reported outcome [PRO] measure) and satisfaction with the process of care (health care experience).[1] Understanding patients' expectations has an impact on patients'

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decisions to choose a health service, to return to a particular hospital, or to follow up doctor's appointments or a recommended treatment option.[2] Relatively little is known about the role of patient expectations and their influence on the outcome of care. A comprehensive understanding of patient expectations is key not only to instruct patients effectively but also to optimize patient outcome.[3] Recent evidence suggests that there is a high discrepancy between patient and surgeon expectations, with patients being more optimistic than their surgeons in every domain.[4]

Several variables have been shown to be strong predictors of patient expectations for physical improvement after surgery, including age, sex, body mass index (BMI), physical activity level, and preoperative function. The relationship between expectations, functional outcomes, and PROs remains unclear, specifically in the setting of hip arthroscopy for the treatment of femoroacetabular impingement syndrome (FAIS). For the aforementioned reasons, the purpose of this study was to determine expectations of patients undergoing hip arthroscopy for FAIS and the relationship between preoperative patient expectation and postoperative PRO. In addition, we sought to compare patients with different degrees of expectations, and their relationship with the fulfilment of those expectations (satisfaction) and PRO measures. We hypothesized that patients with high expectations will have lower 1-year postoperative clinical outcomes, as well as lower satisfaction rates 1 year after undergoing hip arthroscopy for FAIS.

Methods

Patient Selection

After institutional review board approval, patients undergoing primary hip arthroscopy for FAIS by a single fellowship-trained surgeon (S.J.N.) between April 2017 and November 2017 received the Hip Preservation Surgery Expectations (HPSES) Survey to assess expectations for postoperative return to function.[5] The survey was administered to patients in the clinic when patients were scheduled for surgery. The survey was completed electronically via electronic tablet. In addition, patients completed preoperative and minimum 1-year postoperative hip-specific PRO instruments, including the Hip Outcome Score-Activities of Daily Living Subscale (HOS-ADL),[6] Hip Outcome Score-Sports Subscale (HOS-SS), and the modified Harris Hip Score (mHHS), as well as visual analog scale (VAS) pain and VAS satisfaction surveys.[7,8] Collection of pre- and postoperative follow-up hip-specific reported outcomes was conducted via online-based surveys through an encrypted data collection system (Oberd, Columbia, MO). Patient demographics were collected, including age, BMI, sex, and self-reported regular exercise.

Surgical Inclusion and Exclusion Criteria

Inclusion criteria consisted of patients with clinical and radiographic diagnosis of symptomatic FAIS,[9] failure of conservative management (physical therapy, activity modification, oral anti-inflammatories, and for some patients fluoroscopically guided intra-articular cortisone injection), and those undergoing hip arthroscopy to address the FAIS with a minimum of 1-year follow-up. Relative contraindications were patients with presence of osteoarthritis (Tonnis grades >1), or <2 mm of joint space on standing plain anteroposterior radiographs and acetabular dysplasia (lateral center-edge angle [LCEA] $<20°$). Exclusion criteria included history of previous ipsilateral or contralateral hip surgery, congenital hip pathologies (eg, developmental dysplasia of the hip and slipped capital femoral epiphysis), and undergoing concomitant periacetabular osteotomy, or other arthroscopic procedures. Patient exclusion criteria were assessed by an orthopedic surgery fellow (J.C.) and a trained medical student (E.C.B.).

Radiographic Analysis

All study patients had a series of preoperative radiographs and a series of 1-year follow-up radiographs.[10] Both series consisted of a standing anteroposterior pelvis radiograph and an anteroposterior hip radiograph. The alpha angle and LCEA of Wiberg were measured as previously described.[11,12] Alpha angle was also measured on the 90° Dunn lateral view of the hip.[13]

Surgical Technique

Patients underwent hip arthroscopy for the treatment of symptomatic FAIS as previously described and included acetabular rim trimming, labral repair, cam lesion femoroplasty, and capsular repair.[14-17] All surgeries were performed with the patient in the supine position on a standard traction table under general anesthesia. Anterolateral and modified mid-anterior portals were created to establish visualization into the central compartment, and a T-capsulotomy was performed for visualization of the peripheral compartment. Hip traction was released immediately after work was concluded in the central compartment, and a dynamic examination was then performed to confirm the presence and correction of impingement. Closure of the capsulotomy via repair of the interportal and T-capsulotomy incisions was performed in all cases.

Postoperative Rehabilitation

Rehabilitation started on postoperative day 1 for all patients regardless of athletic status.[16,18] Patients went through a 4-phase rehabilitation protocol that lasted an average of 16 to 18 weeks. Rehabilitation phase 1 prioritized joint protection and soft-tissue mobilization

Table 1. Questions Asked in the Hip Preservation Surgery Expectations Survey

	Back to Normal or Complete Improvement	Not Back to Normal, but…			I Do Not Have This Expectation, or This Expectation Does Not Apply to Me
		A Lot of Improvement	A Moderate Amount of Improvement	A Little Improvement	
Relieve persistent pin					
Relieve pain with walking					
Relieve pain with sitting					
Improve ability to sleep (for example, lie on affected side, not wake up due to pain)					
Improve ability to sit or stand without frequently shifting positions					
Improve hip flexibility or range of motion					
Improve ability to change position					
Improve performance in sports:					
Professional or collegiate					
Competitive (but not professional/collegiate)					
Recreational					
Improve ability to attain athletic potential					
Improve ability to perform daily routine and chores					
Improve ability to plan activities without making accommodations for my hip					
Maintain options for new or more demanding activities in the future					
Improve ability to fulfill work or school responsibilities					
Improve ability to exercise for general health					
Improve ability to participate in activities with family and friends					
Improve sexual activity					
Relieve stress and anxiety caused by my hip condition					
Remove my hip from the forefront of my thoughts					
Relieve the feeling that I am not normal or that something is wrong with me					
Relieve worry that hip damage is getting worse					
Resume the activity lifestyle I had before this problem started					

techniques. Phase 2 concentrated on normal gait maintenance, full range of motion restoration, improvement of neuromuscular control, and maintenance of pelvic and core stability. Phase 3 included single leg squats and strengthening, soft-tissue and joint mobilization, and cardiovascular fitness. Phase 4 emphasized return to preinjury level of sports participation. Patients were cleared to return to sports if they were able to participate in sports without pain, had full dynamic functional control, and passed all return to sports tests.

Functional Outcome Evaluation

To quantify the clinical significance of outcome achievement for athletes and non-athletes individually, we applied the principles of MCID and PASS as defined for functional PROMs. Previous work has proposed that MCID be considered a minimum target for outcome improvement, whereas PASS can be considered to represent a satisfactory outcome that is acceptable to the patient.[19] Clinically significant outcome was determined by reaching the minimal clinically important difference (MCID) or patient acceptable symptomatic state (PASS) for HOS-ADL, HOS-SS, or mHHS at 1-year follow-up.[20-22] The MCID was calculated to be 8.7, 13.4, and 8.2, respectively. PASS was calculated using an anchor-based method. To identify the reported outcome scores associated with PASS, patients were asked the following question: "Taking into account all the activities you have during your daily life, your level of pain, and also your functional impairment, do you consider that your current state is satisfactory?" The PASS score for all 3 PROs was assessed using an anchor question and a receiver operating characteristic curve analysis (Appendix Fig 1, available at www.arthroscopyjournal.org).[23,24] A sensitivity and specificity of 0.80 was used as cut off for determining the HOS-SS PASS.[20] The score necessary for achieving PASS for HOS-ADL, HOS-SS, and mHHS was calculated to be 86.6, 63.9, and 78.6, respectively. Evaluation of physical

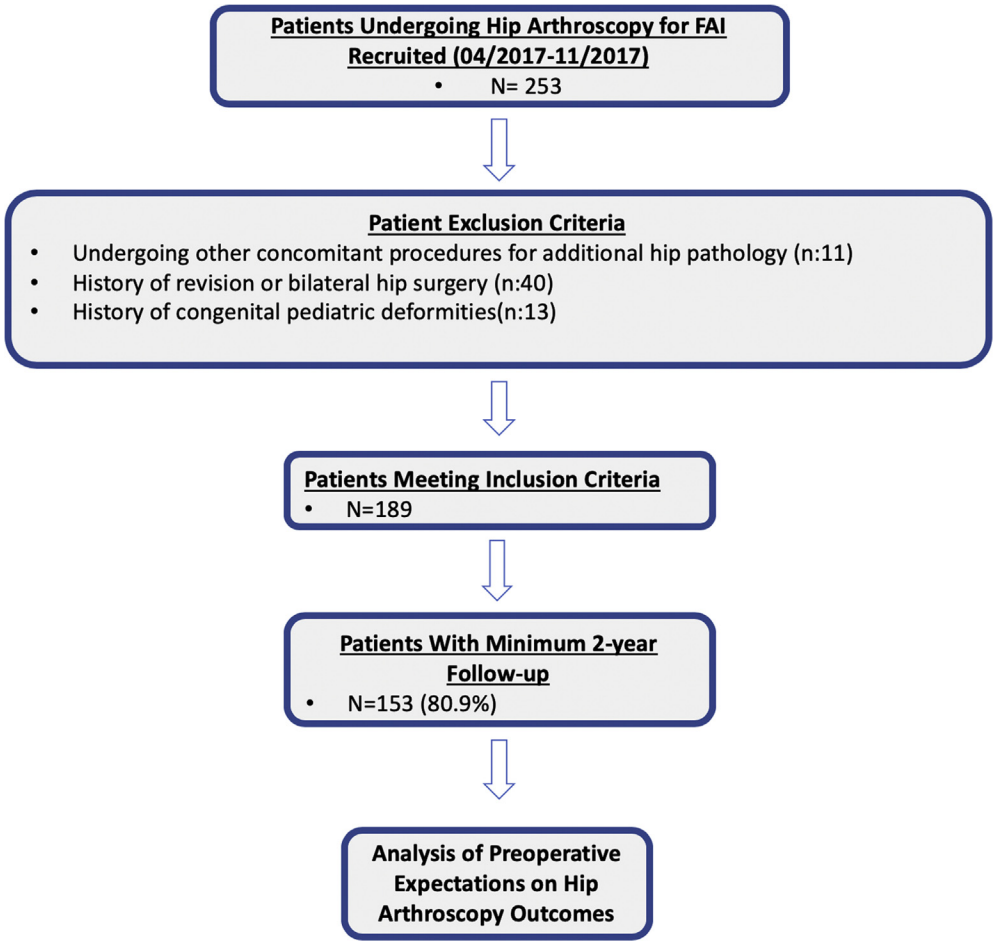

Fig 1. Study flow chart.

activity was determined using a self-reporting survey (Appendix Table 2, available at www.arthroscopyjournal.org). This survey was provided to all surgical candidates electronically via electronic tablet at the same time of preoperative functional outcomes surveys were filled out. A binary physical activity variable was created for the analysis, with "0" representing the score 0 in the survey (ie, no physical activity) and "1" representing scores 1 to 3 (ie, any physical activity).

Patient Expectation Evaluation

Patients were provided a previously validated HPSES after they were consulted and cleared for hip arthroscopy.[5] The HPSES is a 21-question survey that assesses expectations for return to physical level of daily function, athletic ability (if applicable), psychological improvement, and pain (Table 1). Each question is scored from 0 (I do not have this expectation) to 4 (back to normal or complete improvement), for a maximum total survey score of 84. Each score was divided by 84 and multiplied by 100 for a transformed percentage score (0%-100%), with a greater score indicating greater expectations. High-expectation score was defined as 1 standard deviation above the expectation score average. Thus, patients in the high-expectation group had scores $\geq$96.7.

Statistical Analysis

Independent samples *t*-test was used to compare the difference in PROs between patients with high versus normal expectations. A Spearman correlation analysis was used to determine whether there were any correlations between preoperative expectation scores and demographics, preproperate PROs, postoperative PROs, MCID, and PASS. χ^2 analyses were used to compare the frequency of patients achieving MCID and PASS among the normal- and high-expectation score groups. All statistical tests were 2-tailed, and the statistical difference was established at a 2-sided α level of 0.05 ($P < .05$).

A post-hoc analysis was used using the difference in the change in HOS-ADL among both groups as an effect size for identifying the sample size needed for adequate power. Using the anticipated effect size (Cohen's d) = 0.5, desired statistical level = 0.8, and probability level = 0.05, the total sample size to achieve appropriate power would be n = 128, with each sample size consisting of 64 study patients. Statistical analyses were conducted using SPSS statistical software (IBM SPSS

Table 2. Demographics

	Normal-Expectation Group	High-Expectation Group	*P* Value
Age average, y	32.8 ± 12.9	35.8 ± 11.2	.214
BMI	25.5 ± 4.9	26.6 ± 6.0	.379
Sex (female)	95 (71.9%)	19 (67.9%)	.652
Physical activity			
Physically inactive	12 (9.3%)	3 (12.5%)	.478
Some light physical activity	28 (21.7%)	4 (16.7%)	–
Regular physical activity and training	48 (37.2%)	6 (25%)	–
Regular hard physical training for competitive sports	41 (31.8%)	11 (45.8%)	–

BMI, body mass index.

Statistics for Windows, Version 24.0.0; IBM Corp, Armonk, NY).

Results

Demographic Variables and Baseline Outcome Measures

After we screened for exclusion criteria, a total of 153 (80.9%) patients had preoperative HSPES scores and were included in the final analysis (Fig 1). Of these patients, 71.3% were female, with a mean (± standard deviation) age of 34.4 ± 12.6 years, and BMI 25.9 ± 5.3 kg/m^2. The HSPES score average was 84.5 ± 12.3, with the "high-expectation" category being ≥96.7. A total of 28 (18.3%) patients had HSPES scores that were in the "high-expectation" category. Of note, there were no statistically significant differences in any of the demographics between the groups with high and normal expectations (Table 2).

Parametric Analysis

All patients in the cohort experienced significant improvements in the mHHS, HOS-ADL, and HOS-SS outcome scores relative to preoperative baseline levels (Table 3). Independent sample *t*-tests were performed to compare 1-year postoperative outcomes between expectation groups (normal- and high-expectations group) (Table 4). None of the preoperative PRO averages were different ($P > .05$) between the 2 groups. Both postoperative mHHS and HOS-ADL scores showed a statistical difference between the high- and normal-expectation groups (92.6.1 ± 8.8 vs 83.6 ± 15.9, and 94.4 ± 3.8 vs 88.4 ± 10.2, respectively). There was no statistically significant difference in 1-year HOS-SS ($P = .133$), VAS pain ($P = .784$), or VAS satisfaction ($P = .910$) between the groups. Furthermore, the magnitude of improvement in PROs (Δ), however, was not different ($P > .05$) between groups.

Radiographic Analysis

There was no difference ($P > .05$) observed in either alpha angle (anteroposterior) or LCEA when comparing both expectation groups (Table 5).

Correlation Analysis

The Spearman coefficient analysis demonstrated no statistically significant correlations between the high-expectation score group, demographics, and preoperative or postoperative PROs (Table 6). As with the expectation groups, there were no statistically significant correlations between expectation scores, demographics, and preoperative or postoperative PROs. There was, however, a moderate and statistically significant correlation between MCID mHHS and expectation scores (r value = 0.339; *P* value: .043), as well as weak and statistically significant correlation between PASS HOS-ADL and expectation scores (r value = 0.207; *P* value: .032).

Comparison of Patient Frequency Achieving MCID and PASS in High- Versus Normal-Expectation Groups

χ^2 analysis comparing the frequency of achieving MCID and PASS in the high- versus normal-expectation score groups is summarized in Table 7. To summarize, patients with greater expectations had increased rates of reaching MCID mHHS (92.3% vs 74.7%; $P = .08$), PASS mHHS (85.7% vs 69.7%; $P = .046$), and PASS HOS-ADL (93.8% vs 67.4%; $P = .031$). Analysis demonstrated no other statistically significant differences in the frequencies reaching threshold scores for MCID and PASS.

Discussion

The main findings of this study were that patients with high preoperative expectation scores undergoing hip arthroscopy for FAIS had demonstrated greater rates of

Table 3. Pre- and Postoperative Hip Outcome Scores for all Patients

	Preoperative	Postoperative	*P* Value
mHHS	62.0 ± 13.5	85.0 ± 15.5	<.001
HOS-ADL	66.9 ± 16.6	89.3 ± 13.8	<.001
HOS-SS	42.9 ± 21.7	76.3 ± 21.22	<.001
VAS Pain	51.2 ± 23.3	17.5 ± 21.6	<.001

HOS-ADL, Hip Outcome Score-Activities of Daily Living Subscale; HOS-SS, Hip Outcome Score-Sports Subscale; mHHS, modified Harris Hip Score; VAS, visual analog scale.

Table 4. Patient-Reported Outcomes Versus Preoperative Expectation Scores

	Normal Expectations	High Expectations	*P* Value
Preoperative			
mHHS	61.5 ± 14.3	61.5 ± 17.2	.722
HOS-ADL	65.2 ± 17.4	67.6 ± 20.6	.542
HOS-SS	40.9 ± 25.6	51.2 ± 25.1	.057
VAS-Pain	51.6 ± 22.2	52.9 ± 25.5	.808
Postoperative			
mHHS	83.6 ± 15.9	92.6 ± 8.8	**.009**
HOS-ADL	88.4 ± 10.2	94.4 ± 3.8	**.003**
HOS-SS	75.7 ± 22.4	83.2 ± 13.1	.133
VAS-Pain	17.9 ± 20.5	16.1 ± 24.3	.784
VAS-Satisfaction	78.1 ± 26.1	79.2 ± 27.7	.910
(Δ) PROS			
mHHS	22.1 ± 16.8	28.4 ± 14.5	.244
HOS-ADL	21.8 ± 17.2	25.7 ± 19.7	.455
HOS-SS	20.3 ± 28.7	35.5 ± 25.6	.131

NOTE. Boldface indicates statistical significance.

HOS-ADL, Hip Outcome Score-Activities of Daily Living Subscale; HOS-SS, Hip Outcome Score-Sports Subscale; mHHS, modified Harris Hip Score; VAS, visual analog scale.

clinically significant outcome improvement on the HOS-ADL and mHHS scores 1 year after surgery. Specifically, patients with greater preoperative expectations were more likely to achieve MCID on the mHHS as well as PASS on the mHHS and HOS-ADL. In addition, preoperative expectation was not correlated with postoperative VAS satisfaction scores. Our a priori hypothesis was that high preoperative expectation would be associated with lower postoperative VAS satisfaction scores and worse outcome—this hypothesis was not confirmed in the present study. In fact, our data support the counterfactual in that high preoperative expectation has a positive predictive value. However, preoperative expectation did not have an impact on all reported outcome measures and may not be completely deterministic of postoperative outcome.

Surgical outcome encompasses a complex interrelationship of doctor's perception of results, patients functional and objective outcomes, patient satisfaction, and patient expectations, which despite being of utmost importance is yet poorly understood. Gonzalez-Saenz de Tejada et al.[25] evaluated the effect of preoperative expectations, particularly related to postoperative pain and functional level, on postoperative Western Ontario and McMaster Universities Osteoarthritis Index, Short Form 12, and satisfaction scores 12 months after patients underwent total joint replacement. An analysis of 892 participants demonstrated that patients with greater baseline expectations for pain relief or improved functional status had improved health-related quality of life and satisfaction. As an elective procedure, hip-preservation surgery success is determined by patients' perspectives and expectations of outcome and therefore their expectations should be part of preoperative assessments as its results can impact outcomes. In this study, although both cohorts of patients (normal and high expectations) achieved improved outcomes after surgery, patients with greater expectations had a statistically significant greater mHHS and HOS-ADL score averages. Of note, the group with greater expectations also had a greater improvement in outcome scores over the 1-year period; however, the difference between the 2 groups was not statistically significant. One possibility for this discrepancy is the inherent limitation associated with not being able to calculate a score if a patient answers "not applicable" for 3 or more questions.[26] This may have led to a number of patients not having preoperative scores and resulting in the discrepancy between observing a statistical difference between the 1-year outcomes and no statistical difference seen in the change of outcomes between the 2 groups.

Previous studies have examined the association between athletic status and outcomes after undergoing hip arthroscopy for FAIS. Frank et al.[27] compared outcomes in a group of female athletes versus non-athletic counterparts matched by age and BMI. The study demonstrated athletes both reported greater 2-year functional outcome score averages, as well as had greater rates of achieving MCID and PASS, when compared with non-athletes. Another study looking at male athletes demonstrated similar findings. Przybyl et al.[28] analyzed the outcomes of 129 separated by athletic status and demonstrated that male athletes reported better non-arthritic hip scores over non-athletes. Although the current study did not find an association between physical activity status and expectations, the group with greater expectations had reported greater preoperative HOS-SS score averages. Although the difference was not statistically significant, there was a close trend toward significance. It is plausible that patients with greater preoperative expectations are more active at baseline and therefore have a more chances of obtaining greater postoperative scores.

With advancements and increased practice of hip arthroscopy, tools such as the MCID and PASS have been used to provide objective definitions of success over structured postoperative time periods.[19] Furthermore, some patient identifiers have been used to predict MCID, including PRO measures (HOS, mHHS, and International Hip Outcome Tool-33

Table 5. Assessment of Differences in Radiographic Parameters by Expectation Group

	Normal Expectations	High Expectations	*P* Value
Alpha angle	62.7 ± 6.1	61.6 ± 13.2	.74
LCEA	32.4 ± 7.8	31.9 ± 6.9	.805

LCEA, lateral center-edge angle.

Table 6. Correlation Between High Preoperative Score Versus Demographics and PROs

	High vs Normal Expectations (R value)	*P* Value	Expectation Scores (0-100) (R value)	*P* Value
Age	−0.021	.803	0.01	.91
Sex	−0.057	.509	−0.019	.825
BMI	0.173	.11	0.168	.121
Any physical Activity	0.049	.572	0.112	.198
Alpha angle	0.026	.811	0.094	.391
LCEA	0.062	.575	−0.014	.9
Preoperative PROs				
HOS-ADL	−151	.096	−0.068	.455
HOS-SS	−0.087	.37	−0.016	.872
mHHS	−0.037	.684	0.02	.826
Postoperative PROs				
HOS-ADL	−0.118	.372	−0.79	.553
HOS-SS	−0.141	.319	−0.102	−.417
mHHS	−0.069	.607	0.012	.904
VAS-Pain	−0.024	.836	−0.93	.413
VAS-Satisfaction	0.102	.312	0.056	.577
(Δ) PROs				
HOS-ADL	0.265	.06	0.196	.168
HOS-SS	0.049	.769	0.029	.861
mHHS	0.235	.11	0.123	.393
MCID				
HOS-ADL	0.382	**.008**	0.168	.401
HOS-SS	0.189	.308	0.095	.683
mHHS	0.127	.461	0.308	.175
PASS				
HOS-ADL	0.207	.032	0.067	.49
HOS-SS	0.028	.782	-0.035	.729
mHHS	0.123	.222	0.032	.754

NOTE. Boldface indicates statistical significance.

BMI, body mass index; HOS-ADL, Hip Outcome Score-Activities of Daily Living Subscale; HOS-SS, Hip Outcome Score-Sports Subscale; LCEA, lateral center-edge angle; MCID, minimal clinically important difference; mHHS, modified Harris Hip Score; PASS, patient acceptable symptomatic state; PROs, patient-reported outcomes; VAS, visual analog scale.

Question), sagittal center edge angle, and arthritis.[19,20,29] The current study determined that greater preoperative expectation scores are predictive of achieving PASS on 2 threshold scores versus achieving MCID on only 1. Previous studies have identified preoperative expectation scores linked to greater postoperative functional status determined by an anchor question as similarly done to determine PASS threshold scores.[25] Our incomplete connection between patient expectations and MCID may be as a result of MCID calculation using the distribution-based method (as opposed to an anchor). It is also possible that patient expectations are more linked to PASS achievement than MCID. PASS scores are commonly rooted in a satisfaction anchor question and thus the fulfillment of preoperative expectation may be better reflected in PASS achievement than a VAS satisfaction score.

Limitations

This study is not without limitations. First, the current study analyzed patients operated on by a single, fellowship-trained surgeon from 1 institution, which limits the generalizability of the results. Next, the expectation questionnaire was previously validated by 1group; external validity has not been assessed. In addition, patient expectations may be formed early in the appointment (or even before the appointment) before the surgeon even meets the patient, which may

Table 7. Comparison of Patients Achieving MCID and PASS Between Normal- Versus High-Expectations Groups

	Normal Expectations	High Expectations	*P* Value
MCID			
mHHS	62 (74.7%)	12 (92.3%)	**.08**
HOS-ADL	70 (76.9%)	11 (73.3%)	.493
HOS-SS	50 (73.5%)	6 (60%)	.375
PASS			
mHHS	60 (69.7%)	12 (85.7%)	**.046**
HOS-ADL	62 (67.4%)	15 (93.8%)	**.031**
HOS-SS	63 (73.2%)	10 (76.9%)	.779

NOTE. Boldface indicates statistical significance.

HOS-ADL, Hip Outcome Score-Activities of Daily Living Subscale; HOS-SS, Hip Outcome Score-Sports Subscale; MCID, minimal clinically important difference; mHHS, modified Harris Hip Score; PASS, patient acceptable symptomatic state.

greatly confound the shared decision-making process and the patient's true expectations for postoperative outcome.[30] Lastly, although the overall study was sufficiently powered and follow-up for postoperative score was relatively strong (80.5%), there was a lower frequency of patients who completed the preoperative clinical functional status surveys (71.3%), resulting in a decreased number of patients with MCID scores and discrepancy in the reporting of changes in PRO (Δ), which may have led to an underpowered analysis of these variables.

Conclusions

High preoperative expectation is associated with increased rates of MCID/PASS achievement on mHHS and increased rate of PASS achievement on HOS-ADL. Preoperative expectations did not have an impact on HOS-SS; however, patients with high preoperative expectations also have a high baseline HOS-SS. In addition, preoperative expectations are not associated with postoperative VAS satisfaction scores.

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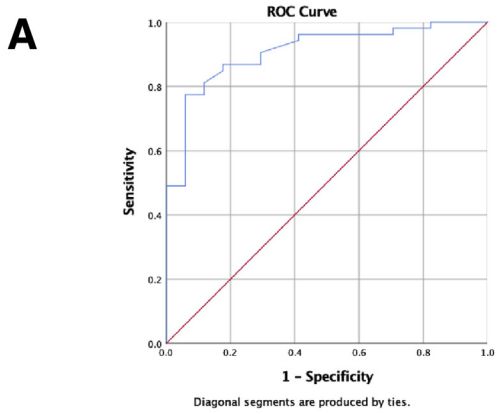
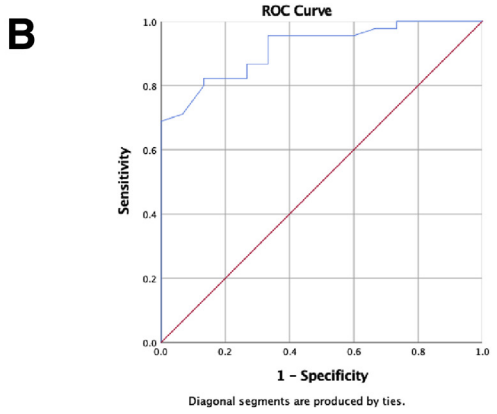
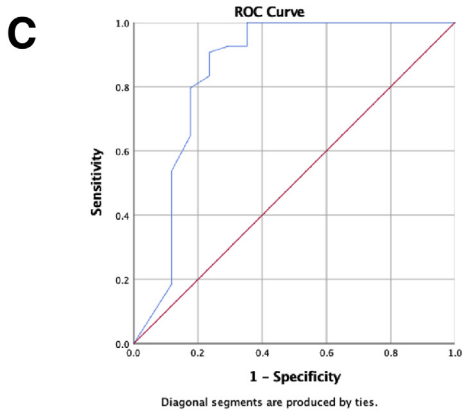


Area	Std. Error	*P* Value	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
0.909	0.038	< .001	0.834	0.984



Area	Std. Error	*P* Value	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
0.916	0.036	< .001	0.845	0.986



Area	Std. Error	*P* Value	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
0.849	0.073	< .001	0.707	0.991

Appendix Fig 1. Receiver Operating Characteristic (ROC) Curves for High Expectation Score Cutoff. (A) ROC curve analysis for patient acceptable symptomatic state (PASS) Hip Outcome Score-Activities of Daily Living Subscale. (B) ROC curve analysis for Hip Outcome Score-Sports Subscale. (C) ROC curve analysis for modified Harris Hip Score.

Appendix Table 2. Evaluation of Self-Reported Physical Activity

How would you describe your current weekly physical activity?	Score
Almost completely inactive (reading, watching television, watching movies, using, computers or doing other sedentary activities, during leisure time)	0
Some light physical activity (physically active for at least 4 hours/week, such as riding a bicycle or walking to work, walking with the family, gardening, fishing, table tennis, bowling, etc)	1
Regular physical activity and training (spending time doing heavy gardening, running, swimming, playing tennis, badminton, calisthenics, and similar activities, for at least 2-3 hours/week)	2
Regular hard physical training for competitive sports (spending time running, orienteering, skiing, swimming, playing football, handball etc. several times per week)	3