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Outcomes of Hip Arthroscopy in Patients with Systemic Inflammatory Diseases: A Matched Cohort 5-Year Follow-Up Study

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Abstract: The purpose of this study was to determine if there is a difference in hip survivorship rates and patient-reported outcomes (PROs) at a 5-year follow-up after arthroscopic treatment of femoroacetabular impingement syndrome (FAIS) between patients with versus without systemic inflammatory diseases (SIDs). A retrospective single-surgeon matched cohort study of FAIS patients who underwent hip arthroscopy and had a minimum of a 5-year follow-up was conducted. Subjects with SIDs were matched at a ratio of 2:3 of age and body mass index (BMI) with respect to controls without SIDs. Subjects completed the modified Harris Hip Score (mHHS) and Non-Arthritic Hip Score (NAHS) prior to surgery and at a 2-year and 5-year follow-up. Survival distributions for time to reoperation and to total hip arthroplasty (THA) were compared between groups using the log-rank test. Fifteen subjects with SIDs (mean age 41.5 years) were matched with twenty-five controls (41.8 years). There were no significant differences in reoperation rates (SIDs 27% vs. controls 20%, $p = 0.71$) or THA conversion rates (SIDs 7% vs. controls 12%, $p = 1.00$) at the 5-year follow-up, nor were there differences in survival distributions for reoperations ($p = 0.72$) or THAs ($p = 0.55$). There were no significant differences in postoperative mHHS (SIDs 79.3 vs. controls 88.5, $p = 0.09$) or NAHS (SIDs 82.7 vs. controls 89.3, $p = 0.77$) by the 5-year follow-up. At the 5-year follow-up, FAIS patients with comorbid SIDs experienced a significant clinical improvement from hip arthroscopy that is comparable to that of FAIS patients without SIDs.

Keywords: systemic inflammatory disease; rheumatoid arthritis; hip arthroscopy; femoroacetabular impingement syndrome; labral tears; patient-reported outcomes; hip survivorship; mHHS; NAHS

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1. Introduction

Systemic inflammatory diseases (SIDs) are a diverse group of multi-organ disorders that include rheumatoid arthritis (RA), psoriatic arthritis, systemic lupus erythematous (SLE), ankylosing spondylitis (AS), and vasculitides. SIDs are a major indication for orthopedic surgery as autoimmune dysfunction often results in joint destruction, pain, and disability. Complicating matters, immunosuppressive medications used to treat SIDs can impede wound healing and increase the risk of joint infection following surgical interventions. The total joint arthroplasty literature has consistently demonstrated a higher rate of complications among patients with inflammatory arthritis compared to those with osteoarthritis [1–9]. These concerns have been extrapolated to the field of hip arthroscopy as well, despite a paucity of data on outcomes of hip arthroscopy in patients with SIDs.

Arthroscopic treatment of femoroacetabular impingement syndrome (FAIS) and labral pathology has achieved satisfactory results in young and middle-aged adult populations, but the selection criteria for these studies typically exclude patients with SIDs due to the potential higher risk for joint infection and postoperative complications [10–14]. Indications for hip arthroscopy in the SID population have previously been limited to debridement and synovectomies of synovial proliferation secondary to inflammatory arthropathy [15]. Few studies have assessed outcomes of arthroscopy for other indications such as FAIS in patients with SIDs. The existing two investigations by Ashberg et al. [16] and Kouk et al. [17] found no differences in THA conversion rates but reported mixed results with regard to improvement in patient-reported outcomes (PROs) at the 2-year follow-up. At present, a major gap in the literature is the lack of longer follow-up studies in the SID population.

The purpose of our study was to compare hip survivorship outcomes and PROs at a 5-year follow-up after arthroscopic treatment of FAIS between patients with versus without SIDs. We hypothesized that patients with and without SIDs would have no significant difference in hip survivorship rates and PROs at the 5-year follow-up.

2. Materials and Methods

2.1. Study Design

This was a single-center single-surgeon retrospective matched cohort study and a 5-year follow-up analysis of a cohort previously studied by Kouk et al. [17], who reported hip survivorship rates and PROs at a 2-year follow-up.

2.2. Eligibility Criteria

Subjects were drawn from a prospectively collected single-surgeon database of patients who underwent hip arthroscopy for treatment of FAIS with or without labral repair at a single urban academic medical center from June 2010 to February 2015. Main arthroscopic procedures performed included labral repair with femoroplasty and/or acetabuloplasty. All procedures were performed by a single sports medicine fellowship-trained surgeon.

Inclusion criteria were (1) age $\geq$ 18 years old at the time of surgery, (2) diagnosis of FAIS with or without associated labral tearing, (3) underwent primary hip arthroscopy, and (4) had a minimum of a 5-year follow-up.

Exclusion criteria were (1) open index procedure, (2) hip osteoarthritis of Tönnis grade $\geq$ 2 or with hip joint space < 2 mm, (3) acetabular dysplasia as indicated by lateral center edge angle (LCEA) < 20°, (4) history of slipped capital femoral epiphysis (SCFE), or (5) indication for hip arthroscopy besides FAIS (e.g., gluteus medius tear).

2.3. Demographic Information and Cohort Matching

Demographic information was abstracted from preoperative visit notes and operative reports and included age at time of surgery, sex, body mass index (BMI) at time of surgery, and prior history of SID. SIDs included RA, vasculitides, SLE, and other chronic disorders with a known autoimmune etiology [18]. For subjects with SIDs, preoperative use of immunosuppressive medications such as steroids and disease-modifying antirheumatic drugs (DMARDs) and preoperative use of NSAIDs were also recorded. Subjects with 1 or more active SIDs at the time of surgery were matched with a ratio of 2:3 based on age within 5 years and body mass index (BMI) within 2 kg/m^2 in relation to controls without SIDs.

2.4. Diagnostic Criteria and Surgical Indications

All subjects were examined in office by the senior author. FAIS was diagnosed by the presence of clinical symptoms and examination findings, such as a positive flexion adduction internal rotation (FADIR) test or positive flexion abduction external rotation (FABER) test. FAIS was confirmed by standing in an anteroposterior (AP) axis, 45° Dunn, and 90° Dunn view hip radiographs in addition to magnetic resonance imaging (MRI) or magnetic resonance arthrography (MRA) to identify bony and chondrolabral pathology. Radiographic evidence of FAI morphology included one or more of the following: alpha angle $\geq$ 60° (indicative of cam morphology), LCEA $\geq$ 40° (indicative of pincer morphology due to acetabular overcoverage), and/or a positive crossover sign (indicative of pincer morphology due to acetabular retroversion) on plain hip radiographs, with or without chondrolabral lesions identified on an MRI or MRA.

All subjects underwent non-operative management prior to undergoing surgery. This included a trial of non-steroidal anti-inflammatory drugs (NSAIDs) as well as physical therapy for at least six weeks. In addition, patients with atypical hip pain underwent a diagnostic injection to the symptomatic hip joint to localize the etiology of hip symptoms and provide symptomatic relief. Patients were offered surgery if these non-operative measures failed to provide lasting relief.

2.5. Surgical Technique and Postoperative Protocol

All procedures were performed by the senior author. All patients were placed into a supine position on a hip distraction system. Anterolateral and mid-anterior portals were created and an interportal capsulotomy was performed to access the intra-articular space. Any damaged chondral or synovial surfaces were debrided. Labral tears were identified at the chondrolabral junction and intraoperatively determined to be amenable to repair versus debridement. SutureTape® flat-braided sutures (Arthrex, Inc., Naples, FL, USA) were passed through the torn labrum in a base-fixation configuration with a vertical mattress technique. A NanoPass® suture manager (Stryker, Kalamazoo, MI, USA) was used to pass the suture at the chondrolabral junction. A 2.9 mm PushLock® knotless suture anchor (Arthrex, Inc.) was used to secure the sutures and accompanying labrum to the acetabular rim. Irreparable labral tears were debrided. Dynamic examination of the hip joint under fluoroscopy was performed and cam-type impingement and pincer-type impingement were identified. A 5.5 mm burr was used to perform acetabuloplasty for correction of pincer-type impingement and osteochondroplasty for correction of cam-type impingement. Dynamic examination was also performed to assess for extra-articular impingement; the anterior inferior iliac spine (AIIS) was resected if subspine impingement was present. A final examination under fluoroscopy was performed to ensure sufficient resection of all impinging structures. At the conclusion of this case, a capsular plication was performed in order to tighten the preserved capsule tissue during closure and prevent capsular laxity.

Following surgery, all patients were given a hip brace to restrict hip extension and external rotation for two weeks, while restricting activity to flatfoot weightbearing on the operative side with assistive crutches for four weeks. After 4 weeks, patients were allowed gradual return to weightbearing as tolerated. All patients were discharged with 3 days of cephalexin (500 mg, to be taken 4 times daily) for infection prophylaxis, celecoxib (200 mg per day) for 14 days for heterotopic ossification prevention, and aspirin (81 mg per day) for 7 days for deep venous thrombosis (DVT) prophylaxis.

2.6. Radiographic Analysis

Preoperative hip radiographs were obtained for all subjects and alpha angle, Tönnis angle, LCEA, and presence of crossover sign for the index hip were measured on AP view. All measurements were verified by the senior author.

2.7. Hip Survivorship Outcomes

We defined hip survivorship in terms of the rate of arthroscopic reoperation and/or rate of conversion to THA following the index procedure. Arthroscopic reoperations and THA procedures that occurred by the latest follow-up were abstracted from electronic medical records. Time from surgery to first reoperation and/or THA was calculated.

2.8. Patient-Reported Outcomes and Clinical Milestones

The mHHS and NAHS were administered prior to surgery and at 2 years and 5 years after surgery. Surveys were administered in person with a paper copy, over the phone, or via email using the REDCap electronic data capture system [19,20]. The following three clinical milestones were assessed based on the mHHS and NAHS: the minimum clinically important difference (MCID), which is defined as the smallest change in an outcome score that the patient would consider clinically meaningful; the substantial clinical benefit (SCB), which is defined as the smallest change in an outcome score that the patient would consider to be significant improvement; and the patient acceptable symptom state (PASS), which is defined as the outcome score beyond which a patient would consider themselves to be well [21,22]. Published mHHS and NAHS cutoff values for the MCID, SCB, and PASS were previously obtained via distribution- or anchor-based methods from large cohort studies conducted in the FAIS population. For the mHHS, we used values published by Nwachukwu et al. [21] and Chahal et al. [22] to define the MCID as a pre-to-postoperative increase in mHHS by at least 8.2 points, the SCB as a pre-to-postoperative increase in mHHS by at least 19.8 points, and the PASS as an absolute postoperative mHHS of 74 points or greater. For the NAHS, we used values published by Rosinsky et al. [23] to define the MCID as a pre-to-postoperative increase in NAHS by at least 8.7 points, the SCB as a pre-to-postoperative increase in NAHS by at least 29.3 points, and the PASS as an absolute postoperative NAHS of 81.9 points or greater.

2.9. Statistical Analysis

Descriptive statistics were calculated for all demographic variables. Continuous variables were assessed for normality using the Shapiro–Wilk test and were found to be non-normally distributed. Continuous variables were compared between the SID and control groups using the Mann–Whitney U test. Categorical variables were compared using Fisher's exact test. Intra-group improvement in mHHS and NAHS scores was evaluated using the Wilcoxon signed-rank test. Time to first reoperation and time to THA were compared between the SID and control groups using Kaplan–Meier survival analysis and the log-rank test. All p-values < 0.05 were considered significant.

3. Results

3.1. Cohort Demographics

Of the 40 patients that were included in the analysis, 15 had SIDs and 25 were matched controls (Table 1). Compared to the original Kouk et al. cohort [17], a loss to follow-up resulted in 6 of 21 SID patients (28.6%) and 17 of 42 controls (40.5%).

Table 1. Demographics and preoperative information.

Variable [a]	SID (n = 15)	Control (n = 25)	p-Value
Age	41.5 ± 12.6	41.8 ± 13.4	0.97
Sex			1.00
Male	4 (26.7%)	8 (32.0%)	
Female	11 (73.3%)	17 (68.0%)	
BMI (kg/m^2)	25.9 ± 4.2	25.4 ± 6.0	0.72
On immunosuppression	11 (73.3%)	n/a	n/a
Procedure laterality	Left: 7 (46.7%) Right: 8 (53.3%)	Left: 9 (36.0%) Right: 16 (64.0%)	0.53
Alpha angle (°)	59.3 ± 16.2	59.7 ± 19.1	0.94
Tönnis angle (°)	4.0 ± 2.5	5.4 ± 4.2	0.46
LCEA (°)	31.9 ± 4.4	31.2 ± 5.0	0.90
Crossover sign	6 (42.9%)	10 (47.6%)	1.00
Follow-up time (months)	112.9 ± 11.4	107.0 ± 16.4	0.11

[a] Continuous variables reported as mean ± standard deviation; categorical variables reported as count (%). Abbreviations: SID—systemic inflammatory disease, BMI—body mass index, LCEA—lateral center edge angle, n/a—not applicable.

Of the patients with SIDs, 3 (20%) had RA, 3 (20%) had Crohn's disease, 3 (20%) had ulcerative colitis (UC), 2 (13.3%) had psoriatic arthritis, 2 (13.3%) had SLE, 2 (13.3%) had sarcoidosis, and 2 (13.3%) had mixed connective tissue disease. Only 1 patient was diagnosed with 2 clinically distinct SIDs, which were RA and Crohn's disease. Most SID patients (73.3%) were on 1 or more immunosuppressive medications at the time of surgery which included methotrexate, hydroxychloroquine, mesalamine, etanercept, and/or infliximab. In addition, about half (53.3%) were on at least one NSAID for their SID at the time of surgery.

There were no significant differences in mean age (SID 41.5 years vs. control 41.8 years, $p = 0.97$) or mean BMI (SID 25.9 vs. control 25.4, $p = 0.72$) and thus matching was deemed successful. Both groups were mostly female (SID 73.3% vs. control 68.0%, $p = 1.00$). Follow-up time was not significantly different between groups ($p = 0.11$).

Preoperative hip radiographs were available for 36 patients: 14 in the SID group and 22 in the control group. Radiographic characteristics were similar between the 2 groups. There were no significant differences in mean alpha angle ($p = 0.94$); mean Tönnis angle ($p = 0.46$); mean LCEA ($p = 0.90$); or incidence of crossover sign ($p = 1.00$).

3.2. Complications and Hip Survivorship

No patient experienced complications within 90 days of their index procedure. There was no significant difference in the rate of non-THA reoperations between both groups (SID 26.7% vs. control 20.0%, $p = 0.71$). Survival curves for time to first reoperation are presented in Figure 1. There was no significant inter-group difference in survival times ($p = 0.72$).

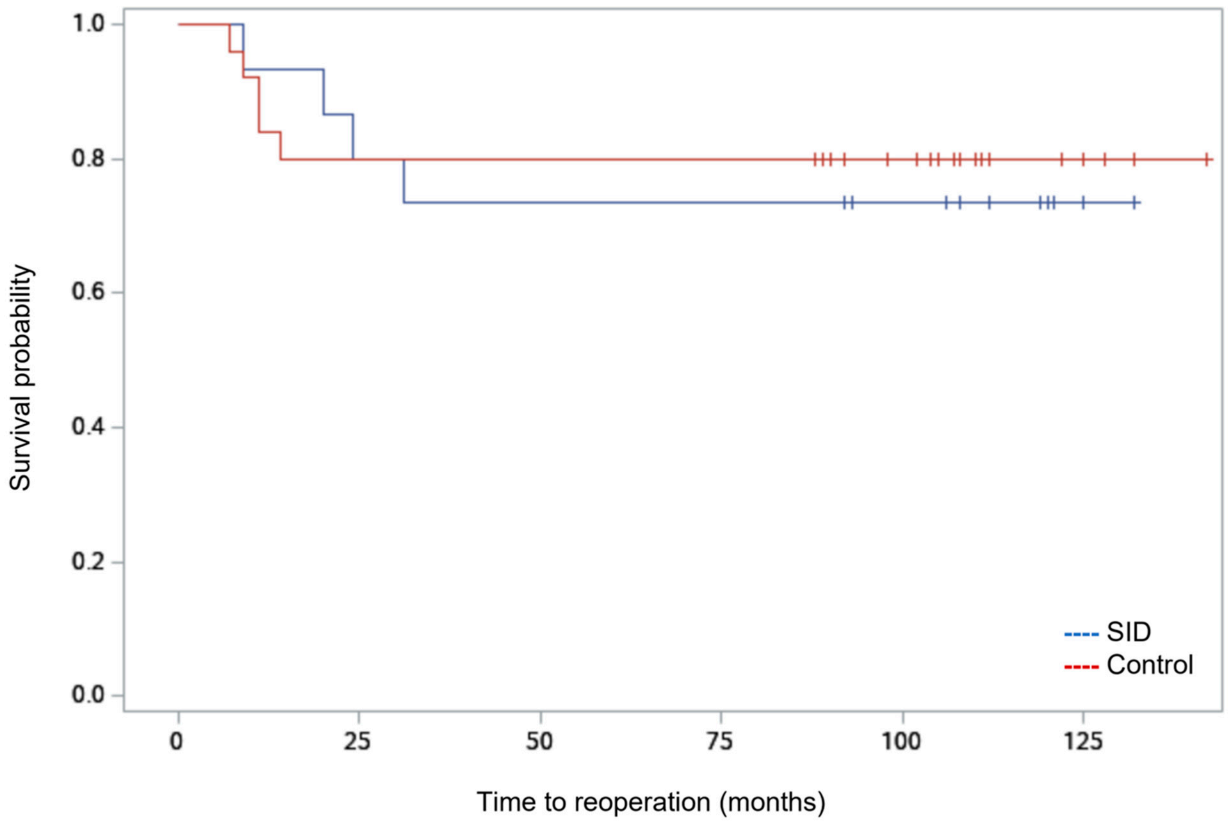

Figure 1. Survival curves for time to reoperation for the SID (blue) and control (red) groups. Crosses indicate right-censored observations.

There was also no significant difference in the rate of conversion to THA between the two cohorts (SID 6.7% vs. control 12.0%, $p = 1.00$). Survival curves for time to THA are presented in Figure 2. There was no significant inter-group difference in survival times ($p = 0.55$).

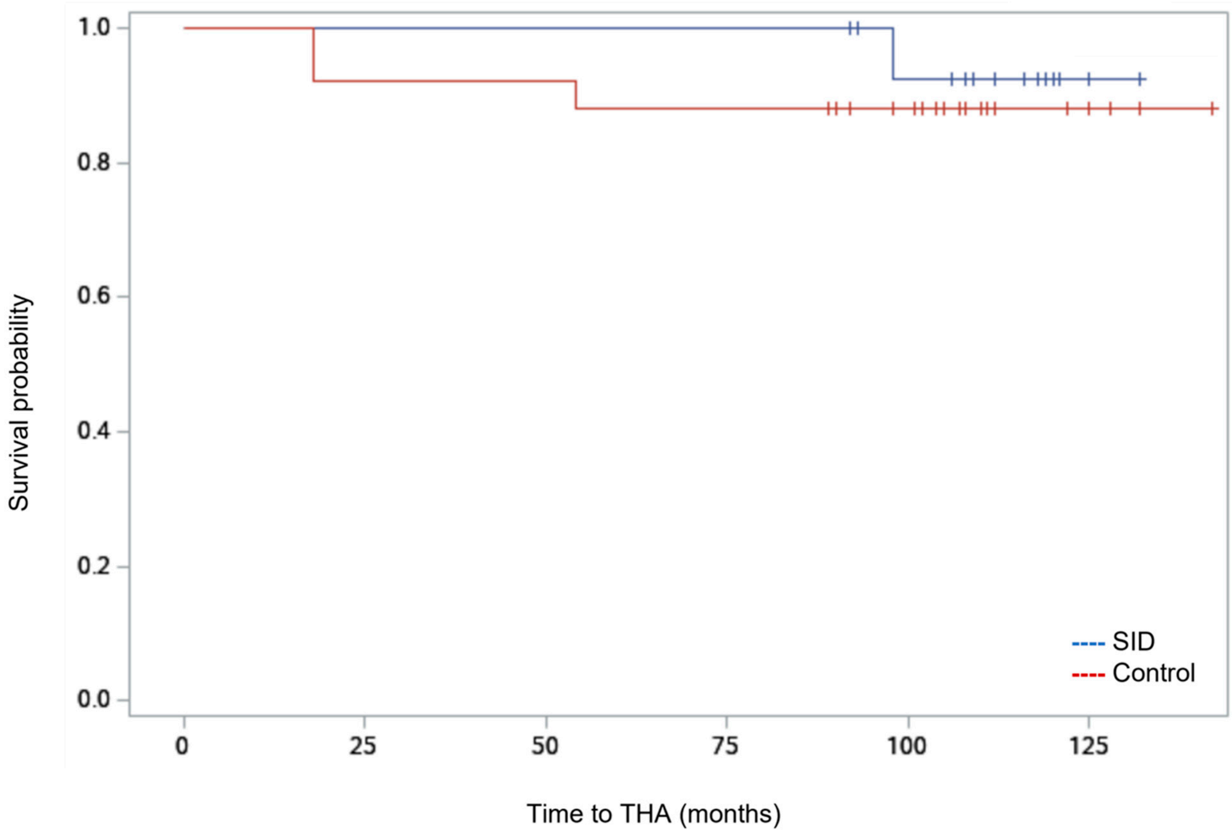

Figure 2. Survival curves for time to total hip arthroplasty for the SID (blue) and control (red) groups. Crosses indicate right-censored observations.

3.3. Patient-Reported Outcomes after Hip Arthroscopy

PROs at baseline, a 2-year follow-up, and a 5-year follow-up are presented in Table 2. Baseline mHHS and NAHS were slightly higher in the control group (mHHS 46.0, NAHS 48.8) compared to the SID group (mHHS 41.7, NAHS 44.6), but these inter-group differences did not reach statistical significance (mHHS $p = 0.22$, NAHS $p = 0.21$). Both groups experienced significant pre-to-postoperative improvement in mean mHHS by the 2-year follow-up ($p < 0.001$) and by the 5-year follow-up ($p < 0.001$). mHHS improvement at the 2-year follow-up was significantly higher in the SID group compared to the control group ($p = 0.0497$), but this difference was not significant at the 5-year follow-up ($p = 0.50$).

Similar findings were observed for the NAHS. Both groups experienced significant pre-to-postoperative improvement in mean NAHS by the 2-year follow-up ($p < 0.001$) and by the 5-year follow-up ($p < 0.001$). NAHS improvement at the 2-year follow-up was higher in the SID group compared to the control group, but this difference fell short of statistical significance ($p = 0.06$). No significant difference in NAHS improvement between the groups was observed at the 5-year follow-up ($p = 0.77$).

3.4. MCID, SCB, and PASS Achievement

MCID, SCB, and PASS achievement rates are presented in Table 2. At the 2-year follow-up, achievement rates for the MCID, SCB, and PASS on the mHHS were higher in the SID group compared to controls, though none of these differences reached statistical significance (MCID $p = 0.07$, SCB $p = 0.16$, PASS $p = 0.33$). By the 5-year follow-up, achievement rates for the MCID, SCB, and PASS on the mHHS were higher in the control group compared to the SID group, but none of these differences reached statistical significance (MCID $p = 1.00$, SCB $p = 0.65$, PASS $p = 0.13$).

Table 2. Patient-reported outcomes and clinical milestones achieved.

Variable [a]	SID (n = 15)	Control (n = 25)	*p*-Value
Modified Harris Hip Score (mHHS)			
Baseline	41.7 ± 13.7	46.0 ± 10.8	0.22
Two-year follow-up	78.7 ± 10.5	71.9 ± 19.0	0.33
MCID achievement	15 (100.0%)	19 (76.0%)	0.07
SCB achievement	13 (86.7%)	16 (64.0%)	0.16
PASS achievement	11 (73.3%)	14 (56.0%)	0.33
Five-year follow-up	79.3 ± 19.9	88.5 ± 14.3	0.09
MCID achievement	14 (93.3%)	24 (96.0%)	1.00
SCB achievement	12 (80.0%)	22 (88.0%)	0.65
PASS achievement	10 (66.7%)	22 (88.0%)	0.13
Non-Arthritic Hip Score (NAHS)			
Baseline	44.6 ± 16.9	48.8 ± 14.7	0.20
Two-year follow-up	87.9 ± 12.3	78.8 ± 21.7	0.29
MCID achievement	14 (93.3%)	21 (84.0%)	0.63
SCB achievement	14 (93.3%)	13 (52.0%)	0.01 *
PASS achievement	10 (66.7%)	13 (52.0%)	0.51
Five-year follow-up	82.7 ± 17.2	89.3 ± 13.4	0.23
MCID achievement	14 (93.3%)	21 (84.0%)	0.63
SCB achievement	11 (73.3%)	17 (68.0%)	1.00
PASS achievement	9 (60.0%)	19 (76.0%)	0.31

[a] Continuous variables reported as mean ± standard deviation; categorical variables reported as count (%). * p-value < 0.05. Abbreviations: SID—systemic inflammatory disease, MCID—minimum clinically important difference, SCB—substantial clinical benefit, PASS—patient acceptable symptom state.

At the 2-year follow-up, achievement rates for the MCID, SCB, and PASS on the NAHS were higher in the SID group compared to controls, but only the difference in SCB achievement rates reached statistical significance (MCID $p = 0.62$, SCB $p = 0.01$, PASS $p = 0.51$). By the 5-year follow-up, there were no significant inter-group differences in achievement rates for the MCID, SCB, and PASS on the NAHS (MCID $p = 0.63$, SCB $p = 1.00$, PASS $p = 0.31$).

3.5. Immunosuppression Subgroup Analysis

Within the SID group, none of the 4 non-immunosuppressed patients (0%) underwent reoperation by the 5-year follow-up compared to 4 of 11 immunosuppressed patients (36.4%); this difference in rates was not found to be statistically significant ($p = 0.52$). In addition, none of the non-immunosuppressed patients (0%) underwent THA by the 5-year follow-up while 1 of 11 immunosuppressed patients (9.1%) converted to THA; this difference was also not significant ($p = 1.00$). There were no significant differences in mHHS improvement at the 2-year follow-up ($p = 0.60$) and the 5-year follow-up ($p = 0.79$), or NAHS improvement at the 2-year follow-up ($p = 0.47$) and the 5-year follow-up ($p = 0.79$).

4. Discussion

Our analysis found that FAIS patients both with and without comorbid SIDs experienced significant pre-to-postoperative improvement in PROs following arthroscopic treatment, with no occurrence of 90-day complications. Furthermore, we found no significant differences in reoperation rates, THA conversion rates, PRO improvement, or MCID/SCB/PASS achievement rates between the two groups by the 5-year follow-up.

While the SID groups were found to have a significantly higher rate of SCB achievement for the NAHS at the 2-year follow-up, this difference was not significant at the 5-year follow-up. Our findings suggest that SIDs are not a negative prognostic factor in outcomes after hip arthroscopy for FAIS, and patients with SID can achieve significant clinical improvement from these procedures.

Hip pain in patients with FAIS and comorbid SIDs is multifactorial, with additional pain sources from the latter stemming from synovitis and accelerated cartilage degeneration. However, with early diagnosis and improved pharmacologic stifling of inflammatory pathways, the osseous pathoanatomy of FAIS may be the main pain generator and cause of cartilaginous lesions at the site of impingement, opposed to the more global destruction seen with inflammatory arthropathies [24,25]. Thus, the window of intervention remains sufficient for joint salvage in this patient population if acted upon expeditiously.

Our findings are consistent with the previous study conducted by Kouk et al. [17], which reported no difference in reoperation rates, THA conversion rates, or PROs when compared to age- and sex-matched controls at a 2-year follow-up. Interestingly, the authors reported that preoperative immunosuppressant use was an independent predictor of failure (due to the need for revision arthroscopy, hip resurfacing, or conversion arthroplasty). It is unclear whether this may be a predictor of a more severe disease process, multifactorial cartilaginous lesions, or an adverse effect of the immunosuppressive medications. In a study by Ashberg et al. [16], which only included patients with RA, PROs were decreased postoperatively compared to matched controls. There was no significant difference in the PRO subgroup analysis of patients on disease modifying antirheumatic agents (DMARDs) compared to those without them. Our subgroup analysis of the SID group found a higher rate of revision arthroscopy among immunosuppressed patients, but did not find the difference in rates to be significant, likely due to a lack of statistical strength. Nonetheless, this finding warrants further investigation with a larger cohort. In contrast to the total joint arthroplasty literature, we did not find any infectious or wound-related complications among the SID patients in our study, even among those on immunosuppressants [8].

At the 2-year follow-up in the aforementioned studies by both Kouk et al. [17] as well as that by Ashberg et al. [16], there was no difference in rates of conversion to THA between patients with SIDs as controls. This contrasts the large database analysis of 11,323 hip arthroscopies performed by Yao et al. [26], in which the authors found that joint inflammation due to pigmented villonodular synovitis (PVNS) or RA was associated with a higher risk of THA conversion. However, a major limitation of their analysis was that both PVNS and RA patients were combined into a single group, whereas PVNS typically presents itself as monoarthritis and is not considered an SID.

There is a paucity of long-term studies investigating hip arthroscopy for the treatment of FAIS in patients with SIDs. As mentioned previously, the two published case–control studies by Kouk et al. and Ashberg et al. are 2-year follow-up studies [16,17]. Other publications are small case series or case reports, as arthroscopic interventions at the hip joint in patients with SID, until recently, were mainly limited to synovectomies rather than used for labral repairs and osseous work. In a study by Zhou et al. [27] of 40 hips with inflammatory arthritis (17 AS, 11 RA, and 8 psoriatic arthritis) treated with arthroscopic debridement and synovectomy, all patients had improved PROs and ROM at a minimum of 46 months after operation. In a similar study by Li et al. [28], 22 patients with ankylosing spondylitis treated with arthroscopic debridement and synovectomy had improved ROM and PROs (VAS, mHHS and NAHS) at a mean follow-up of 2.5 years [28]. A case report by Watanabe et al. [29] reported improved HHS at a 2.5-year follow-up after combined synovectomy and labral repair in a 39-year-old female with rheumatoid arthritis on immunomodulatory drugs. While the utility of these studies is limited by their lack of a control group, they support arthroscopic synovectomy as an effective procedure for patients with recalcitrant SID-induced synovitis. Our study adds that arthroscopy can also successfully be used for osseous work and labral repair in patients with concomitant FAIS.

5. Limitations

While this study is the first to report on long-term outcomes of hip arthroscopy in patients with SIDs, there are several important limitations. The main limitation of this study is its small sample size. As a result, our study may have lacked sufficient statistical strength to detect significant inter-group differences at a 5-year follow-up. Second, there was a considerable loss of follow-ups in the control group from the prior Kouk et al. study, which may have resulted in some degree of attrition bias. However, there were still sufficient controls to match with SID patients to create balanced comparison groups. Third, there was heterogeneity in the types of SIDs included in this study which limits the conclusions that can be drawn for any particular inflammatory arthropathy. Fourth, patients included in this study were predominantly above the age of 30, which limits the generalizability of the results to the adolescent and young adult demographics. The higher reoperation rate observed in this study compared to other studies on FAIS may be reflective of the older demographic included [30–32].

6. Conclusions

At a 5-year follow-up, FAIS patients with comorbid SIDs experience significant clinical improvement from hip arthroscopy that is comparable to that of FAIS patients without SIDs. Orthopedic surgeons may be able to arthroscopically treat FAIS in patients with SIDs without an increased risk of conversion to THA or poor functional outcomes.

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Informed Consent Statement: Patient consent was waived due to this study being deemed "minimal risk" by the Institutional Review Board.

Data Availability Statement: The data for this study are not publicly available.

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