Bilateral Hip Arthroscopy Under the Same Anesthetic for Patients With Symptomatic Bilateral Femoroacetabular Impingement: 1-Year Outcomes

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Purpose: The purpose of this study was to investigate whether, in patients with bilateral symptomatic femoroacetabular impingement, bilateral surgery under 1 anesthetic is safe and efficacious and allows a rapid return of function compared with staged procedures. **Methods:** Three groups were evaluated: in group 1 both hips were treated simultaneously, in group 2 both hips were treated in a staged fashion, and in group 3 a single hip was addressed. The outcome measures were anesthesia and surgical times; time in the hospital; visual analog scale score for pain on postoperative days 1, 3, 7, and 30; analgesic use; and time until the patient could bike, drive, perform office work, perform gym activities, run, and return to play. Midterm evaluation was performed with the Non-Arthritic Hip Score and Western Ontario and McMaster Universities Osteoarthritis Index score at 6 and 12 months postoperatively. **Results:** We enrolled 76 patients (122 hips) in this study. There were 42 male and 34 female patients. The mean age was 33 years (range, 14 to 50 years), and the mean body mass index was 24 (range, 18 to 35). Group 1 comprised 26 patients (52 hips, 16 male and 10 female patients). Group 2 comprised 20 patients (40 hips, 13 male and 7 female patients), with a mean time between surgeries of 14.56 weeks. Group 3 comprised 33 patients (30 hips, 13 male and 17 female patients). No preoperative differences were found between the groups. The surgical and anesthesia times in group 1 were significantly longer than those in groups 2 and 3. We found no significant differences in postoperative visual analog scale scores, analgesic use, or length of hospital stay. Group 1 required more time before patients were able to ride a stationary bicycle (14.7 days in group 1, 7.8 days in group 2, and 8.5 days in group 3; $P < .05$). We found no differences between the groups regarding when patients returned to driving, performing office work, or reporting a normal gait. Each group had significant improvements in the Western Ontario and McMaster Universities Osteoarthritis Index and Non-Arthritic Hip Score at 6 and 12 months compared with preoperatively ($P < .05$). No significant differences in outcome scores were found in the 3 groups before surgery and at 6 or 12 months after surgery. **Conclusions:** Simultaneous femoroacetabular impingement surgery does not lead to higher rates of complications, postoperative pain, analgesic use, or side effects. The return to daily activities is similar to a single-hip procedure with the advantage of a single rehabilitation. **Level of Evidence:** Level III, retrospective comparative study.

Hip arthroscopy is an evolving surgical technique used to address intra-articular cartilage and labral pathologies and the respective underlining pathomorphology. In recent years a great deal has been learned about the pathophysiology of hip impingement. Ganz et al.[1] reported the concept of femoroacetabular impingement (FAI) as a potential cause for osteoarthritis and described the subsets of cam, pincer, and combined types. Arthroscopic treatment of hip disease in the young active individual is advancing rapidly, with a better understanding of the clinical and radiographic signs of the disease and improved techniques with which to treat it.

The prevalence of radiographic signs of hip impingement in asymptomatic volunteers is relatively high—up to 29% in men.[2,3] Furthermore, it is not uncommon for patients with symptomatic unilateral FAI to present with bilateral radiographic findings.[4,5] In 1 study of patients with impingement-related hip pain, 78% presented with bilateral radiographic signs and 26% had bilateral symptoms.[4]

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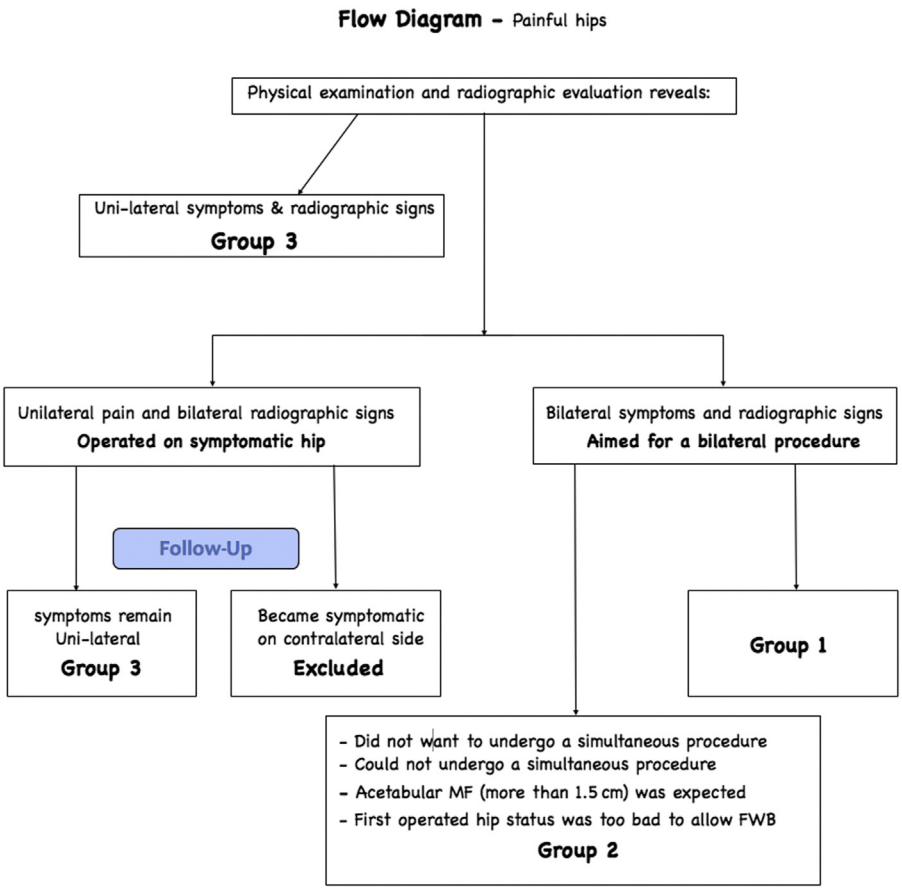

Fig 1. Flow diagram depicting parameters for allocation of each patient into study groups. (FWB, full weight bearing; MF, microfracture; NWB, non–weight bearing; post op, postoperative.)

Excellent outcomes have been reported after surgery to correct FAI with high patient satisfaction and a high rate of return to activities.[6-9] Patients with bilateral disease treated with osteochondroplasty sequentially have also reported excellent outcomes postoperatively.[10]

Patients with bilateral symptomatic FAI may benefit from simultaneous bilateral surgery in a number of ways, including a faster return to pain-free activity and a shorter painful postoperative period. The purpose of this study was to investigate whether, in patients with bilateral symptomatic FAI, bilateral surgery under 1 anesthetic is safe and efficacious and allows a rapid return of function compared with staged procedures.

Methods

Patients

Between January 2011 and January 2012, all patients seen in the senior author's clinic with operative indications for hip surgery due to FAI were approached and prospectively enrolled in the senior author's registry. Approval was obtained from the local institutional review board.

All patients underwent clinical and radiographic examinations. The indications for arthroscopy included hip pain accompanied by mechanical symptoms unresponsive to nonoperative management for at least 3 months, clinical examination findings suggestive of impingement signs and/or decreased range of motion, and positive radiographic findings on radiography, computed tomography with 3-dimensional reconstruction, and magnetic resonance imaging. A minimum of 3 mm of joint space was required on all views of both radiographs and computed tomography scans for the patient to be considered for surgery and inclusion in the study.

A retrospective review of the senior author's (M.J.B.) prospectively collected data registry was performed. Three patient groups were selected and evaluated from the registry. Group 1 consisted of patients in whom both hips were treated under the same general anesthetic. Group 2 consisted of patients who underwent arthroscopic treatment of bilateral FAI in a staged fashion, 6 to 16 weeks apart. This group represents the typical standard of care for patients with symptomatic bilateral FAI in most centers. Group 3 were those patients who presented with signs and symptoms of unilateral FAI and in whom a single side was evaluated and treated. This group was used as a reference point for the expected improvement in outcome scores, per the operative limb.

Allocation Into Study Groups

If clinical and radiographic examination findings of patients seen in consultation in the senior author's practice were consistent with FAI and its consequences, they were enrolled into 1 of the study groups. Inclusion in any of the 3 groups was solely the patient's decision. There was no randomization performed in this prospective cohort. If patients presented with bilateral signs and symptoms of FAI and radiographic evidence supporting the diagnosis, they were offered bilateral same-day hip arthroscopy and were included in group 1 if they chose the bilateral procedure. Patients with bilateral disease were included in group 2 instead if they wished to avoid simultaneous surgery, if significant acetabular microfracture was anticipated at surgery, or if—at the time of the surgery—the first hip was found to require significant microfracture precluding full weight-bearing status postoperatively. Arthroscopic surgery for borderline dysplastic patients, in our practice, would dictate 5 to 6 weeks of non–weight-bearing status; therefore these patients could not be included in the simultaneous surgery group. Group 3 consisted of patients with unilateral hip symptoms requiring a single procedure. If a patient in group 3 became symptomatic on the contralateral side during follow-up, he or she was excluded from the study because outcome scores of the first hip could not be considered anymore. Figure 1 outlines the allocation flow. Other exclusion criteria included previous surgical procedure on either hip, refusal to participate in the study, and significant joint degeneration.

Surgical Technique

All patients underwent hip arthroscopy in the lateral position under general anesthesia. A well-padded perineal post was placed between the legs, and traction was placed on the leg through a well-padded boot (McCarthy distractor; Innomed, Savannah, GA). Under fluoroscopic guidance, 10 to 15 mm of distraction was achieved and the instruments were placed through standard posterolateral and anterior portals. Diagnostic arthroscopy of the central compartment was undertaken and treatment of intra-articular damage completed. Chondral damage was assessed; partial-thickness lesions were treated with radiofrequency ablation of ragged edges, debridement of unstable flaps was completed with a curette, and if grade 3 and 4 cartilage lesions were present (>100 mm^2), microfracture was performed. Labral tears were repaired if unstable. Pincer and cam lesions were treated with osteoplasty until radiographic and dynamic assessment indicated no ongoing impingement. For most patients, the capsule was closed with nonabsorbable sutures after joint irrigation.

Postoperatively, patients were typically admitted overnight, and each patient was questioned regarding perineal, deep soft-tissue, and neurologic side effects. An evaluation was performed at the completion of surgery and then after the patient awoke and was able to cooperate and report on his or her physical status. The patients stayed overnight and were discharged the next day after an additional examination. They were asked specifically about perineal and inner-thigh pain.

All patients were followed up 10 to 14 days postoperatively. The history and physical examination focused on potential side effects, including traction side effects. Patients were then followed up at 3, 6, and 12 months postoperatively.

Patients were permitted partial weight bearing with crutches (walking with support from both crutches) for 7 to 10 days until walking safely without a limp. Riding a stationary bicycle was encouraged 2 to 3 days after surgery provided that patients felt comfortable with this activity, and jogging was permitted at 10 to 12 weeks postoperatively. If microfracture was performed in an area exceeding 150 mm^2, the affected lower extremity was restricted from weight bearing for 4 to 6 weeks, and strenuous impact-loading activities or cutting-/pivoting-type sports were to be avoided until 5 to 6 months after surgery. Patients attended sessions with a physiotherapist for range-of-motion and proprioception exercises, as well as hip and core strengthening.

Outcome Measures

All patients enrolled in the study filled out preoperative hip score questionnaires and detailed demographic data sheets. Data collected included age, sex, height, weight, body mass index (BMI), length of preoperative symptoms, and presence of adductor or abdominal symptoms, as well as preoperative outcome scores.

The following characteristics of each patient and treatment were prospectively recorded: general anesthesia and surgical (skin-to-skin) times; nights required in the hospital (1 night in the hospital was typical and expected); visual analog scale (VAS) score for pain on postoperative days (PODs) 1, 3, 7, and 30; amount, type, and length of time requiring analgesics; and time (POD) when the patient started biking, driving, performing office work, performing gym activities, running, and returning to play. The primary outcome measure was the VAS score at 30 days postoperatively. Secondary outcomes included longitudinal evaluation with the Non-Arthritic Hip Score (NAHS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) at 6 and 12 months after the procedure, as compared with baseline values.

Statistics

All documented demographic characteristics and preoperative, intraoperative, and postoperative parameters were analyzed to seek significant differences between the 3 groups using analysis of variance with repeated measures and the Pearson χ^2 test. To compare preoperative and postoperative clinical characteristics, a paired

t test was used. To evaluate the statistical significance of differences between study groups, the *F* test and Tukey test were applied.

Correlations between preoperative, intraoperative, and postoperative parameters were investigated by use of *t* tests. To analyze baseline and postoperative scores for patients who underwent bilateral hip surgery, the right and left hips were separated during the statistical analysis and data gathering. Therefore, throughout the study, right hip data were compared with right hip data and left hip data were compared with left hip data.

All statistical tests with *P* values were 2 sided, and the selected level of significance for all variables was $\alpha = .05$. SPSS statistical software (version 12.0; SPSS, Chicago, IL) was used for data analysis.

Results

Between January 2011 and January 2012, 76 patients (122 hips) met the inclusion criteria and were enrolled in the 3 study groups. There were 42 male and 34 female patients with a mean age of 33 years (range, 14 to 50 years) and mean BMI of 24 (range, 18 to 35). Group 1 consisted of 26 patients (52 hips, 16 male and 10 female patients). One patient was excluded from group 1 because this patient was diagnosed with rheumatoid arthritis soon after surgery. Group 2 consisted of 20 patients (40 hips, 13 male and 7 female patients), with a mean time between surgeries of 14.56 weeks (SD, 13.7 weeks). All patients who were treated in a staged fashion were included in the cohort. Four patients were included in group 2 because a large area of microfracture was anticipated: 2 patients had borderline dysplasia (center-edge angle <25°) and 2 were patients enrolled in group 1 but had to undergo staged procedures because a large area of microfracture was required on the first hip during attempted bilateral surgery. Group 3 consisted of 30 consecutive patients who met the inclusion criteria (30 hips, 13 male and 17 female patients). All patients were followed up for at least 1 year postoperatively. No statistical differences were seen between the groups with regard to patient demographic characteristics (sex, age, BMI) and preoperative outcome measures, duration of symptoms, or preinjury activity level. As with most FAI surgeries, most patients presented with mixed impingement such that both acetabular treatment (rim resection, labral repair) and cam resection were required. The mean general anesthesia time was 211 minutes in group 1, 115 minutes for each procedure in group 2, and 107 minutes in group 3. The mean surgical time was 179 minutes in group 1 (for both sides), 87 minutes for each hip in group 2, and 78 minutes in group 3 (Table 1). As expected, the general anesthesia and surgical times in group 1 were significantly higher than those in groups 2 and 3 (with no difference between groups 2 and 3) because both hips were addressed during a single session. All patients remained in the hospital a single night and were discharged the next day.

Table 1. General Anesthesia and Surgery Working Times

	Mean	SD	Minimum	Maximum
Total general anesthesia time (min)				
Group 1	211.3	41.5	117.0	289.0
Group 2	115.2	18.5	90.0	145.0
Group 3	107.2	23.3	60.0	174.0
Surgery working time (min)				
Group 1	179.7	33.4	115.0	243.0
Group 2	87.9	19.8	60.0	119.0
Group 3	78.6	22.5	35.0	152.0

NOTE. The general anesthesia time and surgery working time (skin to skin) were significantly higher in group 1 ($P < .05$) than in groups 2 and 3 (with no difference between groups 2 and 3) when both hips were addressed during a single session.

Postoperative VAS scores were not significantly different between the groups at all follow-up intervals ($P > .05$) (Table 2). Post hoc power analysis was performed on the data for our primary outcome, VAS score on POD 30. The power obtained in this study was 76.2%; to attain 90% power with an α error of less than 5%, a total of 524 patients would need to have been enrolled in the study. There were no infections, blood clots, nerve complications, or traction injuries to the foot or ankle. No significant differences were seen between the groups in the amount, type, or number of days of postoperative analgesia used ($P = .095$). Nevertheless, 15% of patients in group 1 required more than the average amount of analgesia, whereas all patients in group 3 required the average amount of analgesia or less. A power analysis calculation indicated that this trend may have reached statistical significance ($P < .05$) if the analysis had included more than 80 cases per group.

No significant difference was seen between the groups with regard to the number of days crutches were

Table 2. Postoperative VAS Scores

	Mean	SD	Minimum	Maximum
VAS score on POD 1				
Group 1	5.0	2.3	2.0	10.0
Group 2	5.4	2.6	1.0	8.0
Group 3	5.3	2.7	1.0	10.0
VAS score on POD 3				
Group 1	3.8	1.7	2.0	8.0
Group 2	4.1	2.1	1.0	7.0
Group 3	4.5	2.5	1.0	9.0
VAS score on POD 7				
Group 1	2.7	1.7	1.0	7.0
Group 2	3.4	1.2	2.0	6.0
Group 3	3.5	2.0	1.0	8.0
VAS score on POD 30				
Group 1	1.8	1.3	0.0	5.0
Group 2	2.0	1.3	1.0	5.0
Group 3	2.2	1.6	0.0	7.0

NOTE. Postoperative VAS scores were not significantly different between groups at all follow-up intervals ($P > .05$).

used (22 days, 24 days, and 16 days in groups 1, 2, and 3, respectively). There was a statistically significant difference in the number of days before patients were able to use a stationary bicycle after surgery, with group 1 averaging almost double the time in groups 2 and 3 (14.7 days, 7.8 days, and 8.5 days in groups 1, 2, and 3, respectively; $P \leq .05$). No significant difference was seen between the groups regarding the time after surgery when patients started driving (8 days, 9 days, and 11 days, respectively), resumed office work (15 days, 10 days, and 9 days, respectively), or reported a normal gait (38 days, 32 days, and 33 days, respectively). The POD on which patients resumed driving was also directly correlated with the preoperative NAHS and WOMAC score (the worse the score, the longer it took to start driving) ($P \leq .05$).

Outcome Scores

Statistically significant differences were observed for the 3 groups in preoperative scores versus postoperative follow-up scores for the WOMAC score and NAHS ($P \leq .02$ and $P \leq .05$, respectively), with each study group showing significant improvement at 6 and 12 months' follow-up (Fig 2). However, no significant differences were seen between left and right hips in any of the 3 groups before surgery, at 6 months' follow-up, and at 12 months' follow-up. Both the left and right sides improved at each interval during the first year after surgery (Table 3).

The patients' preoperative NAHS and WOMAC scores were found to significantly influence postoperative VAS scores (Table 4).

Discussion

The purpose of this study was to investigate whether, in patients with bilateral symptomatic FAI, bilateral surgery under 1 anesthetic is safe and efficacious and allows a rapid return of function compared with staged procedures. The results of this study support the safety and efficacy of addressing both hips under 1 anesthetic for appropriately selected patients. Patients who underwent bilateral hip arthroscopy on the same day reported no increase in pain postoperatively compared with patients who underwent staged hip arthroscopies or a procedure on a single hip. Furthermore, they reported no difference in the type of analgesia required or the length of time that they required analgesic medication. Significantly, clinical outcome scores, including the NAHS and WOMAC scores, were statistically similar between all groups at baseline and at 6 and 12 months postoperatively. Patients had no increased complications and no deleterious effects on their early postoperative outcome data, regardless of whether they had a single symptomatic hip operated on or bilateral symptomatic hips operated on in 1 day or in a staged fashion. We showed little difference in the outcomes of patients, despite receiving different protocols for treatment of their symptomatic hips.

FAI and the resultant intra-articular injuries of the hip are common causes of groin pain and disability in the young athletic population.[7,8,11] In addition, there is evidence that many asymptomatic adults have radiographic signs of impingement,[2,12] and the prevalence of these findings is markedly higher in elite athletes.[13,14] Our study contributes important data to the literature, given the fact that bilateral symptomatic FAI has been

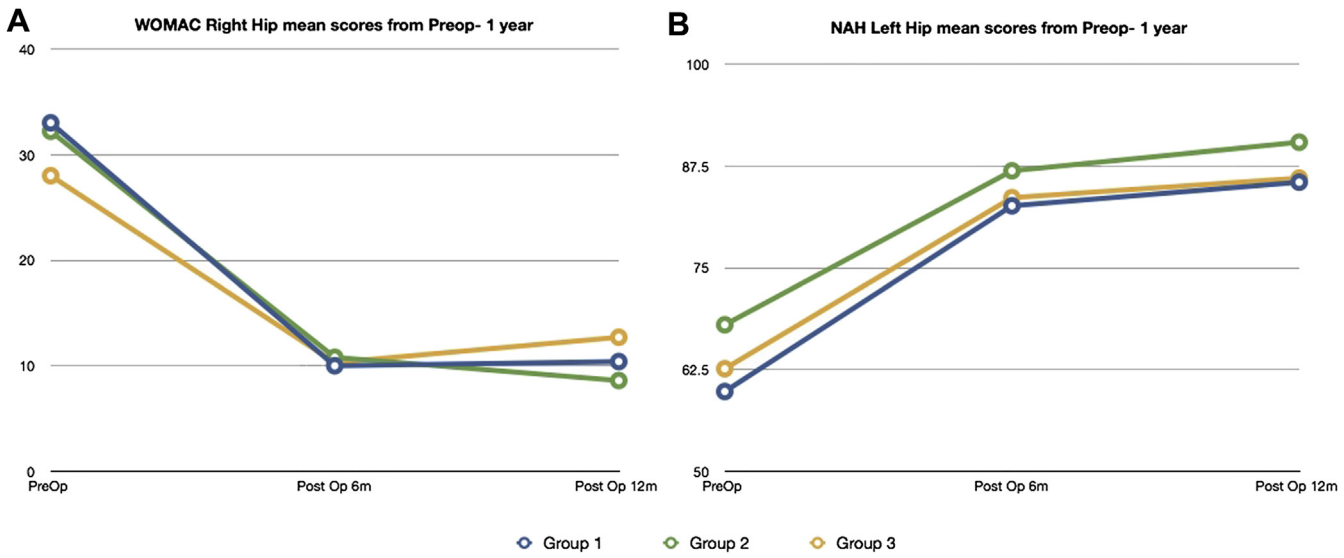

Fig 2. (A) Right hip WOMAC scores for each group preoperatively (Preop) and at 6 months and 12 months postoperatively (Post Op). (B) Left hip NAHS preoperatively (Preop) and at 6 months and 12 months postoperatively (Post Op). Significant differences were found in preoperative versus postoperative scores for the WOMAC score and NAHS for the 3 groups ($P \leq .02$ and $P \leq .05$, respectively). No significant differences were found between any of the 3 groups at each of the time points.

Table 3. Preoperative and Postoperative Outcome Scores

	Preoperatively		Postoperatively at 6 mo		Postoperatively at 12 mo	
	Mean (SD)		Mean (SD)		Mean (SD)	
	Left	Right	Left	Right	Left	Right
WOMAC score						
Group 1	30.6 (16.4)	33.0 (15.6)	10.9 (9.8)	10.0 (8.0)	11.6 (12.1)	10.4 (12.4)
Group 2	24.7 (15.0)	32.2 (19.7)	9.1 (8.3)	10.8 (9.9)	6.4 (6.3)	8.6 (9.9)
Group 3	28.0 (19.3)	28.0 (17.8)	6.7 (6.5)	10.3 (14.6)	10.6 (12.9)	12.7 (14.0)
P value	.542	.455	.438	.969	.419	.969
NAHS						
Group 1	59.8 (17.7)	57.2 (16.4)	82.6 (12.8)	84.4 (9.3)	85.5 (13.1)	87.3 (13.6)
Group 2	68.0 (14.3)	60.3 (19.6)	86.9 (10.6)	79.9 (15.4)	90.4 (6.0)	86.6 (10.2)
Group 3	62.6 (17.1)	66.5 (15.2)	83.6 (11.4)	82.0 (16.7)	86.0 (13.2)	81.5 (17.0)
P value	.314	.286	.634	.629	.497	.479

NOTE. Statistically significant differences in preoperative scores versus scores at postoperative follow-up were seen ($P \leq .02$ and $P \leq .05$ for WOMAC score and NAHS, respectively). There were no significant differences between study groups before surgery, between study groups at 6 months' follow-up, between study groups at 12 months' follow-up, or between left and right hips at 12 months' follow-up. Each study group showed a significant increase (improvement) at 6 months' and 12 months' follow-up.

found to be rather common. Allen et al.,[4] in patients presenting with symptomatic FAI, found that 77.8% of patients had radiographic signs of bilateral FAI and 26.1% of those patients were symptomatic on both sides. They also found that the probability of symptoms increased with an increased alpha angle and 42% of those hips with a cam deformity also had a pincer lesion. The prevalence of combined impingement (cam and pincer) is high, with recent studies reporting combined pathology in between 60% and 75% of cases.[15,16] In this study over one-quarter of the patients presenting with cam lesions had pain in both hips and would potentially benefit from a single episode of surgery and rehabilitation, allowing a rapid return to their professional and recreational activities.

One concern when considering bilateral procedures under the same anesthetic is the postoperative pain level and the effect this may have on quality of life and the ability to rehabilitate. In this study, patients who underwent bilateral procedures under the same anesthetic reported no significant increase in overall pain compared with patients undergoing unilateral procedures. Furthermore, they reported no increase in analgesic requirements. In fact, many of the patients reported pain focused on only 1 side. This may be because of the "gate control theory of pain,"[17] which states that pain signals are modified in the spinal cord and therefore painful stimulus in both hips may not be perceived that way. Similar findings were reported in a study on bilateral anterior cruciate ligament (ACL) reconstructions. Jari and Shelbourne[18] reported equivalent use of analgesia between unilateral and bilateral anterior cruciate ligament reconstruction groups. With these data, postoperative pain should not be a concern for patients or surgeons considering simultaneous bilateral hip arthroscopy.

Table 4. Correlations

	WOMAC Score Preoperatively	NAHS Preoperatively
VAS score on POD 1		
Pearson correlation	0.209	−0.208
Significance (2 tailed)	$P = .164$	$P = .166$
VAS score on POD 3		
Pearson correlation	0.268	−0.323*
Significance (2 tailed)	$P = .072$	$P = .029$
VAS score on POD 7		
Pearson correlation	0.319*	−0.287
Significance (2 tailed)	$P = .031$	$P = .053$
VAS score on POD 30		
Pearson correlation	0.333*	−0.345*
Significance (2 tailed)	$P = .027$	$P = .022$

*The patients' preoperative NAHS and WOMAC score were found to significantly influence postoperative VAS scores at 3 days, 7 days, and/or 30 days after surgery.

The results of this study showed that there was no difference in clinical outcomes at 6 and 12 months between those patients who had a single-limb procedure and those who had bilateral surgery. Careful selection of patients is important to allow a safe recovery and rehabilitation from bilateral hip arthroscopic surgery. It is important to avoid bilateral surgery if protected weight bearing is recommended or anticipated. In this study, patients were allocated to group 2, rather than group 1, if microfracture of more than 1.5 cm^2 was to be performed. In general, if the anticipated area needing microfracture was large, approaching 30% of the distance from the labrum to cotyloid notch, there was surrounding cartilage thinning, or there was any joint space narrowing on radiographs, then 6 weeks of non−weight bearing was prescribed and the patient could not be enrolled in group 1. Furthermore, if patients had consented to bilateral surgery but microfracture (>1.5 cm^2) was required on the first hip, the second surgery was abandoned and instead was completed in a staged fashion. The same guidelines were applied for patients in whom preoperative imaging suggested borderline dysplasia, which would

require, in our practice, 6 weeks of non—weight bearing, protecting their joint and enabling sufficient anterior capsular healing. We appreciate that these 2 scenarios necessitating staged rather than simultaneous procedures may create differences in the cohort. Although these differences have the potential to have a small effect on long-term outcome measures, they do not affect the validity of our claims supporting the safety and utility of bilateral surgery.

In patients with bilateral symptoms, the ability to successfully complete both surgical procedures under 1 anesthetic allows the patient to return to symptom-free life more quickly than if the procedures are staged. If the patient has bilateral symptoms and requires surgery on both sides, he or she will avoid 2 separate surgical dates, as well as early and late postoperative states, and therefore require less time off from professional and recreational life. In a young athletic population, this can mean a return to professional or high-level recreational activities during an off-season or in time for an important athletic event. Research supports the safety of bilateral procedures in other aspects of orthopaedics. There have been several reports of simultaneous bilateral ACL reconstructions in the literature, all reporting good results.[18-20] Jari and Shelbourne[18] reported a series of 28 patients who elected to undergo 1-stage bilateral ACL reconstructions. Compared with a matched control group of unilateral procedures, they reported no difference in pain or analgesic requirements and no significant difference in outcomes between the groups. The results of bilateral simultaneous elective surgical procedures have been a topic of debate in the arthroplasty literature. Good results after simultaneous bilateral total hip and knee arthroplasty have been shown.[21-26] Recently, a large review of 1,819 patients in a European registry found improved functional outcomes in those patients managed in a single-stage fashion compared with those managed in a 2-stage fashion.[21] The authors suggested that the improved function in the bilateral 1-stage group is a result of the ability to rehabilitate in the context of 2 pain-free hips, unlimited by the contralateral side as the 2-stage patients would be after the first stage. This could hold true in the case of bilateral FAI surgery because patients would be allowed to return to their chosen sport or recreational activity sooner without the need to wait and rehabilitate the second hip as in the case of a 2-stage procedure.

Patients returned to activities without difficulty after bilateral procedures. There was no deleterious effect in terms of return to work or driving. We did find a statistically significant difference in the number of days before patients were able to ride a stationary bicycle between the groups. The number of days before riding a stationary bicycle was approximately doubled for the simultaneous group (group 1); however, at a mean of 16.5 days postoperatively, we believe the clinical significance of this is likely low, as is the effect on the patients' daily lives. Furthermore, as with many other outcome measures, much of this measure relates to the patient and his or her motivation and future goals. The first author and the senior author, in their respective practices, have treated professional triathletes who started riding stationary bicycles on the evening after having bilateral procedures, and were able to ride for more than 2 hours at 2 weeks postoperatively.

There are many benefits of completing bilateral procedures in 1 surgical setting. In this study the total anesthesia time was slightly lower for the bilateral group (per side, when divided by 2), and surgical time, when divided by 2, was approximately the same as that for the unilateral procedures, despite having to reposition the patient between hip procedures. Time and cost savings for the health care system are certainly realized by markedly reducing turnover time between cases and saving on disposable devices (shavers, burrs, and radiofrequency devices can be used for both sides) and instrument sterilization. Patients are enthusiastic about a single postoperative recovery and rehabilitation. This saves the economy and the patient a great deal of money because of decreased physiotherapy costs and less time away from work. In his practice the first author performs bilateral hip arthroscopies with patients under the same anesthetic in the supine position.[27] The results are similar to the results reported in this study. Supine bilateral hip arthroscopy may allow for a faster changeover between sides given that minimal repositioning is required, but this has not been objectively studied.

Limitations

There are several limitations that we recognize in this research. As with all research on arthroscopic treatment of FAI using modern techniques such as cam osteoplasty, labral repair, and microfracture, we report relatively short-term results. The groups in this research were not randomized, and this introduces bias into the outcomes. Furthermore, there was some crossover in that the patients in the simultaneous group requiring significant microfracture and non—weight-bearing status postoperatively were treated in a staged manner. More motivated patients may have been more likely to elect to enter group 1, which could potentially bias the results in favor of simultaneous surgery. Furthermore, patients allocated to group 2 because of large areas of microfracture or borderline dysplasia would be expected to have lower long-term outcome scores, again favoring simultaneous surgery. The number of complications was very low in each group, so any comparison specifically focused on complications would require numbers far in excess of those in the current study to be powered appropriately given the scarcity of complications in hip arthroscopy in general. Many of the patients in this study were high-level professional or semiprofessional athletes, which may affect the data. The access to advanced rehabilitation measures and the preoperative

conditioning status of high-level athletes can lead to better outcomes postoperatively.

Conclusions

Simultaneous FAI surgery does not lead to higher rates of complications, postoperative pain, analgesic use, or side effects. The return to daily activities and clinical outcome scores are similar to a single-hip procedure with the advantage of a single rehabilitation.

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