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Arthroscopic Acetabuloplasty and Labral Refixation Without Labral Detachment

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Background: Arthroscopic acetabuloplasty was initially described with detachment of the labrum to access the acetabular rim for resection, followed by labral refixation. Recent technical improvements have made it possible to perform acetabuloplasty and labral refixation without labral detachment when the chondrolabral junction is intact.

Purpose: To compare outcomes for patients undergoing arthroscopic acetabuloplasty and labral refixation without labral detachment (study group), as well as compare this with a group of patients who underwent acetabuloplasty with labral refixation and labral detachment (control group) with a minimum 2-year follow-up.

Study Design: Cohort study; Level of evidence, 3.

Methods: During the study period, data were prospectively collected on all patients treated with hip arthroscopy. Inclusion criteria for the study group were acetabuloplasty and labral refixation without detachment, performed in cases with an intact chondrolabral junction. Patients were then compared with a control group of patients who had acetabuloplasty with labral detachment and refixation. All patients were assessed pre- and postoperatively using 4 patient-reported outcome (PRO) measures and a visual analog scale (VAS) for pain, as well as monitored for revision surgery.

Results: In the study group, the preoperative to postoperative score changed from 64.2 to 86.6 for modified Harris Hip Score (mHHS), 60.5 to 83.8 for Nonarthritic Hip Score (NAHS), 65.3 to 87.3 for Hip Outcome Score–Activity of Daily Living (HOS-ADL), 45 to 75.1 for Hip Outcome Score–Sport-Specific Subscale (HOS-SSS), and 5.7 to 2.6 for VAS. In the control group, the preoperative to postoperative score changed from 61.2 to 84.4 for mHHS, 59 to 84 for NAHS, 62.7 to 86.2 for HOS-ADL, 40.1 to 74.1 for HOS-SSS, and 6.3 to 2.8 for VAS. There was no difference between preoperative and postoperative PRO scores. The preoperative VAS score was lower in the study group than in the control group ($P = .04$). The control group demonstrated larger mean preoperative anterior center edge angles (ACEA) (33.8° vs 29.5°) and mean alpha angles (60.5° vs 53.5°) than the study group ($P < .05$). There was no statistically significant difference in the change in PRO or VAS scores between groups. Both groups demonstrated significant improvement from preoperative to 2-year follow-up for all 4 PRO scores ($P < .05$) and decrease in VAS ($P < .05$). One patient in the study group converted to total hip arthroplasty. Seven patients underwent revision hip arthroscopy in the study group, and 8 patients in the control group underwent revision hip arthroscopy. There was no difference in revision rates between groups.

Conclusion: Treatment of pincer- and combined-type impingement with arthroscopic acetabuloplasty and labral refixation without detachment, when possible, resulted in similar patient outcomes compared with acetabuloplasty with labral detachment. We may conclude that in cases where the chondrolabral junction remains intact, acetabuloplasty and labral refixation without detachment is a viable option.

Keywords: femoroacetabular impingement; labral repair; labral refixation; acetabuloplasty; hip labrum; pincer impingement; hip arthroscopy; labral takedown; labral detachment

Femoroacetabular impingement (FAI) is now widely recognized as a source of hip disorders and a precursor to osteoarthritis.[14,20,21,28] Beck et al[1] and Ganz et al[14] described 2 distinct forms of FAI: pincer-type impingement and cam-type impingement. Both forms of FAI result in abnormal repetitive contact between the femoral head and neck junction with the acetabular rim, which ultimately may lead to accelerated degenerative changes in the hip joint.[1]

The labrum appears to have several important functions in the hip joint; these include joint stability, load bearing, synovial fluid regulation, and maintenance of the suction seal.[9-12] Ferguson et al[9] demonstrated the labrum maintains a synovial fluid seal, which maintains hydrostatic pressure in the hip joint. When the labrum is resected, the pressure gradient is disturbed due to leakage of fluid outside the hip joint and may lead to abnormal contact pressure.[11] Therefore, it stands to reason, when

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treating FAI with acetabuloplasty, the labrum would preferably be preserved rather than debrided.

Several arthroscopic techniques exist for managing pincer-type impingement during hip arthroscopy. In all cases, a portion of the bony acetabular rim is resected. Traditional descriptions of performing acetabuloplasty involved detaching the labrum to expose the acetabular rim.[6,26] While there is no gold standard for performing acetabuloplasty, this has been the initial approach to performing acetabuloplasty. More recently, technical refinements have allowed for acetabuloplasty without detaching the labrum when the chondrolabral junction is intact. This technique preserves the transitional zone between the chondral surface and labrum. In some cases, the labrum is of poor quality and necessitates debridement or partial resection. When acetabuloplasty can adequately be performed without detaching the labrum, this may be preferable to disturbing the transitional zone between the chondral surface and labrum.

To our knowledge, only 1 study has been published reporting the results of acetabuloplasty and labral refixation without labral detachment.[17] The purpose of this study is to compare outcomes for patients undergoing arthroscopic acetabuloplasty and labral refixation without labral detachment (study group) with a group of patients who underwent acetabuloplasty with labral detachment and refixation (control group) with a minimum 2-year follow-up.

MATERIALS AND METHODS

Patient Inclusion and Data Collection

During the study period, between February 2008 and February 2011, data were prospectively collected on all patients treated with hip arthroscopy. Inclusion criteria for the study group were acetabuloplasty and labral refixation without detachment, performed in cases with an intact chondrolabral junction. Patients were then compared with a control group of patients who had acetabuloplasty with labral detachment and refixation. Exclusion criteria were patients not undergoing acetabuloplasty or revisions and patients with previous hip conditions such as Legg-Calves-Perthes, avascular necrosis, and dysplasia. All patients were assessed pre- and postoperatively using 4 patient-reported outcome (PRO) measures: the modified Harris Hip Score (mHHS), Nonarthritic Hip Score (NAHS), Hip Outcome Score–Activity of Daily Living (HOS-ADL), and Hip Outcome Score–Sport-Specific Subscale (HOS-SSS). All 4 questionnaires were used, since it has been reported that there is no conclusive evidence for the use of a single PRO questionnaire for patients undergoing hip arthroscopy.[29] Pain was estimated on the visual analog scale (VAS), measured on a scale from 0 to 10 (10 being the worst), and satisfaction was measured with patients being asked, "How satisfied are you with your surgery results? (1 = not at all, 10 = the best it could be)." Objective data such as sex, height, weight, and body mass index (BMI) were also collected. Follow-up data also included conversion to total hip arthroplasty (THA) or revision hip arthroscopy. Our institutional review board approved this study.

Imaging

At our institution, radiographic data on all patients undergoing hip arthroscopy are recorded after a 2-year follow-up by hip preservation fellows. The measurements have been taken by multiple readers, but previous interobserver reliability has been shown from our group.[5] Using the anteroposterior (AP) pelvis radiograph, the lateral center edge angle (LCEA) and acetabular crossover sign were evaluated.[4] When a crossover sign was present, we estimated the percentage of crossover by dividing distance from the superior acetabulum to the point of intersection of the anterior and posterior wall by the entire length of the posterior wall. This was done to gauge the amount of acetabular retroversion. A 45° Dunn view was used to measure the alpha angle.[4] A false profile view was used to measure the anterior center edge angle (ACEA).[4] Preoperative radiographic data and 2-week postoperative radiographic data were compiled.

Indications for Acetabuloplasty and Labral Treatment

All patients undergoing treatment had clinical symptoms of FAI that did not respond to greater than 3 months of nonoperative treatment, including at least 6 weeks of physical therapy.[23] Nonoperative treatment included activity modification, oral anti-inflammatory medication, and therapeutic modalities. Magnetic resonance imaging (MRI) evidence of labral lesion was a mandatory finding before surgery.

Surgical Technique

All surgeries were performed by the senior author (B.G.D.) with the patient in the modified supine position using a minimum of 2 portals.[2,16] After establishment of portals and capsulotomy, a diagnostic arthroscopy of the hip joint was performed to evaluate for loose bodies, chondral defects, labral tears, ligamentum teres tears, and other intra-articular lesions, and when appropriate, concomitant injury was addressed in conjunction with acetabuloplasty and labral treatment.

The acetabular rim and labrum were evaluated preoperatively and intraoperatively, and a planned width of rim

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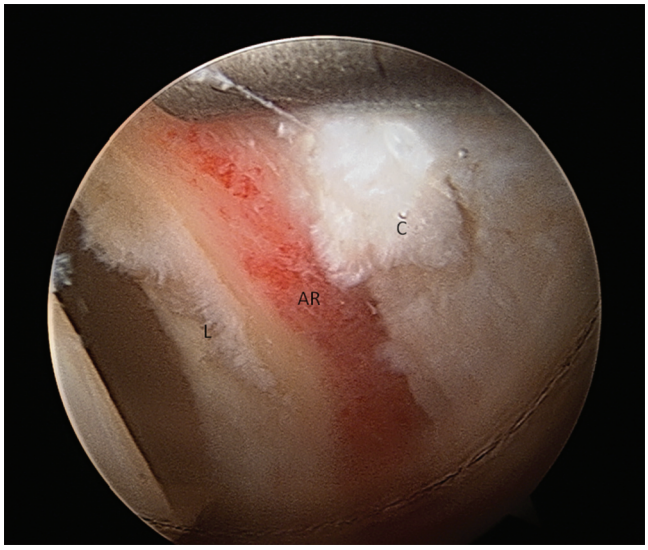

Figure 1. Arthroscopic image of a right hip through the anterolateral portal. The labrum (L) has been left attached. The capsule (C) has been elevated off the acetabular rim (AR), and the pincer lesion has been removed using a bur.

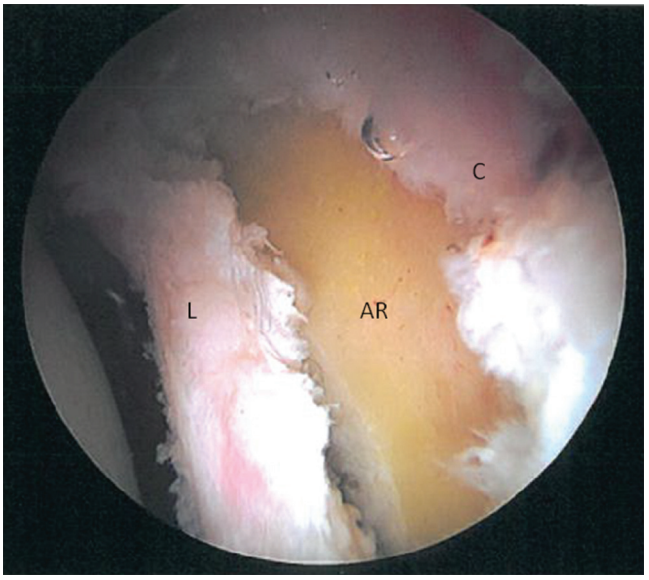

Figure 2. Arthroscopic image of a right hip through the anterolateral portal. The labrum (L) has been detached. The capsule (C) has been elevated off the acetabular rim (AR), and the pincer lesion has been removed with a bur.

resection was determined. If the chondrolabral junction was in satisfactory condition, and the acetabular rim resection could be performed without labral detachment, the labrum was left attached (study group). The capsule was elevated off the acetabular rim in the region of pincer impingement using electrocautery. A high-speed 5.5-mm bur was then used to trim the acetabular rim while leaving the chondrolabral junction intact (Figure 1). The labrum was then refixated using 2.9-mm PEEK suture anchors (Arthrex).[13] If the acetabular rim resection required disruption of the chondrolabral junction (Figure 2), the labrum was detached (control group); detaching the labrum was originally performed for all patients undergoing acetabuloplasty before the technique of preserving the chondrolabral junction. The transition to preserving the chondrolabral junction during acetabuloplasty took place during the study period. Additional reasons for labral detachment included a disrupted chondrolabral junction, rim resection that required labral detachment, and chondral damage not accessible without detachment. After acetabuloplasty, the labrum was then refixed using 2.9-mm suture anchors (Arthrex). After addressing central compartment pathologic changes, attention was turned to the peripheral compartment. Femoral osteoplasty was performed for cases with cam-type impingement. The interportal capsulotomy was then repaired when deemed necessary.

Rehabilitation

The postoperative rehabilitation was patient specific depending on concomitant procedures. In general, patients were advised to maintain heel touch, 20 lbs., weightbearing for 2 weeks. Patients were protected in a hip abduction brace for 2 weeks postoperatively. Hip range of motion was limited to 90° of flexion, neutral internal rotation, 30° of external rotation, and 30° of abduction for 3 to 6 weeks. Patients undergoing microfracture underwent protected weightbearing for 6 weeks. When the patient achieved full weightbearing, therapy was advanced to achieve full strength and activity by 3 to 4 months.

Statistical Analysis

Descriptive statistics are reported as mean ± standard deviation or number (percentage) as appropriate. A paired t test was used to compare preoperative versus postoperative scores, and an independent t test was used to compare groups. A chi-squared analysis was used to compare sex differences between groups and frequency of complications. The level of significance was established at a P value of less than .05.

Power Analysis

A power analysis was performed using a previous study with a mean difference in mHHS score of 9 points with a standard deviation of 16.[8] With these values, and assuming a power of 0.8 with $P < .05$ considered significant, it was determined that the minimum sample size would need to be 172 patients to achieve significance.

RESULTS

Demographics

During the study period, 670 patients had arthroscopic surgery with labral treatment, of whom 539 (80%) were

TABLE 1
Patient Demographics[a]

Variable	Study Group	Control Group	*P*
Hips, n	85	105	
Age, y	32.7	33.0	.853
BMI	23.9	24.9	.141
Females, n	60	60	
Males, n	25	45	.056
Outcome score			
Preoperative mHHS	64.2	61.2	.169
Preoperative NAHS	60.6	59.1	.572
Preoperative HOS-ADL	65.3	62.7	.389
Preoperative HOS-SSS	45.0	40.1	.177
Preoperative VAS	5.7	6.3	.04

[a]Study group = acetabuloplasty without labral detachment. Control group = acetabuloplasty with labral detachment. BMI, body mass index; mHHS, modified Harris Hip Score; NAHS, Non-arthritic Hip Score; HOS-ADL, Hip Outcome Score–Activity of Daily Living; HOS-SSS, Hip Outcome Score–Sport-Specific Subscale; VAS, visual analog scale.

available for 2-year follow-up. From this set of patients, 190 hips in 174 patients underwent acetabuloplasty. Patients were primarily excluded because of lack of acetabuloplasty in the setting of cam impingement. The study group included 85 hips that underwent acetabuloplasty without labral detachment and refixation, and the control group included 105 hips that underwent acetabuloplasty with labral detachment and refixation. The mean age was 32.7 ± 13.3 years in the study group and 33.0 ± 12.2 years in the control group, with no difference between groups (P = .853). Baseline patient demographics are reported in Table 1. There was no difference between groups for BMI (P = .14). In the study group, there were 60 (71%) female hips and 25 (29%) male hips; in the control group, there were 60 (57%) female hips and 45 (43%) male hips. Chi-squared analysis was performed, and the ratio of male hips to female hips was not significantly different between groups (P = .056). Concomitant procedures are listed in Table 2. Despite our use of microfracture in cases of significant chondral injury, we did not observe a difference in concomitant microfracture between groups. The control group had more patients with femoroplasty than the study group (P < .05), while capsular management was the same between groups. Pre- and postoperative radiographic data are displayed in Table 3. The control group demonstrated a higher preoperative ACEA and alpha angle than did the study group (P < .05).

Hip Scores

For the study group, the score improvement from preoperative to 2-year follow-up was 64.2 to 86.6 for mHHS, 60.5 to 83.8 for NAHS, 65.3 to 87.3 for HOS-ADL, and 45.0 to 75.1 for HOS-SSS. For the control group, the score improvement from preoperative to 2-year follow-up was 61.2 to 84.4 for mHHS, 59.0 to 84.0 for NAHS, 62.7 to 86.2 for HOS-ADL, and 40.1 to 74.1 for HOS-SSS. There was no

TABLE 2
Concomitant Procedures Performed During Acetabuloplasty and Labral Refixation

Procedure, n	Study Group	Control Group	*P*
Femoral osteoplasty	42	74	<.05
Microfracture	4	10	.21
Capsular release	39	58	.20
Capsular repair	43	43	.18
Capsular plication	3	4	.92

TABLE 3
Comparison of Mean Preoperative and Postoperative Radiographic Data Between the Study (No Labral Detachment) and Control Groups (Labral Detachment)[a]

	Study Group	Control Group	*P*
Preoperative			
LCEA, deg	29.6	30.6	.232
ACEA, deg	29.5	33.8	.005
Crossover %	17.2	19.6	.317
Alpha angle, deg	53.5	60.5	<.001
Postoperative			
LCEA, deg	27.2	28.3	.150
ACEA, deg	28.2	29.6	.325
Crossover %	8.8	11.3	.285
Alpha angle, deg	47.1	45.5	.196

[a]ACEA, anterior center edge angle; LCEA, lateral center edge angle.

statistically significant difference in preoperative or postoperative PRO scores between groups (Table 4). We were also unable to detect a significant difference between groups for the change in all 4 PRO scores (Figures 3 and 4). We also compared the change in hip scores between males and females in both groups and found no significant difference (Table 5).

Pain

Mean VAS pain scores were available for 85 of 85 patients (100%) in the study group and improved from 5.7 preoperatively to 2.6 postoperatively (P < .05). Mean VAS scores were available for 98 of 105 patients (93%) in the control group and improved from 6.3 preoperatively to 2.8 postoperatively (P < .05). There was no difference between groups for change in VAS score, –3.1 versus –3.5 (P = .375) (Figure 5). The preoperative VAS score was lower in the study group compared with the control group and was statistically significant (P = .04). There was no difference in postoperative VAS scores between groups (Table 4). We found no difference in VAS score improvement when comparing males with females in either group (Table 5).

Revision

During the study period, 16 patients underwent revision procedures. One patient in the study group converted to

TABLE 4
Comparison of Preoperative, Postoperative, and Change in Patient-Reported Outcome Scores Between the Study (No Labral Detachment) and Control Groups (Labral Detachment)[a]

	Study Group	Control Group	*P*
mHHS			
Preoperative	64.2 ± 15.0	61.2 ± 14.9	.17
Postoperative	86.6 ± 15.4	84.4 ± 15.9	.45
Change	22.4 (*P* = .00)	23.2 (*P* = .00)	.76
NAHS			
Preoperative	60.5 ± 20.5	59.0 ± 16.8	.57
Postoperative	83.8 ± 17.7	84.0 ± 14.7	.91
Change	23.3 (*P* = .00)	25.0 (*P* = .00)	.54
HOS-ADL			
Preoperative	65.3 ± 21.4	62.7 ± 19.2	.39
Postoperative	87.3 ± 17.2	86.2 ± 16.1	.65
Change	22.0 (*P* = .00)	23.5 (*P* = .00)	.62
HOS-SSS			
Preoperative	45.0 ± 26.1	40.1 ± 23.3	.18
Postoperative	75.1 ± 28.0	74.1 ± 25.4	.78
Change	30.1 (*P* = .00)	33.9 (*P* = .00)	.37
VAS			
Preoperative	5.7 ± 2.2	6.3 ± 1.9	.04
Postoperative	2.6 ± 2.5	2.8 ± 2.3	.43
Change	3.1 (*P* = .00)	3.5 (*P* = .00)	.38

[a]Preoperative and postoperative scores reported as mean ± SD. mHHS, modified Harris Hip Score; NAHS, Nonarthritic Hip Score; HOS-ADL, Hip Outcome Score–Activity of Daily Living; HOS-SSS, Hip Outcome Score–Sport-Specific Subscale; VAS, visual analog scale.

total hip arthroplasty. Seven patients underwent revision hip arthroscopy in the study group, and 8 patients in the control group underwent revision hip arthroscopy. Indications for revision surgery included labral reinjury, heterotopic ossification, adhesive capsulitis, and chondral injury. No differences in the rates of revision were noted between groups (*P* = .83).

TABLE 5
Comparison of the Change in Hip Scores Based on Sex and Labral Detachment at 2-Year Follow-up[a]

	Mean Change in Scores Preoperative to 2-Year Follow-up		
	Male	Female	*P*
Study group			
mHHS	18.82	23.94	.29
NAHS	17.00	25.8	.1
HOS-ADL	18.5	23.42	.35
HOS-SSS	26.3	31.7	.5
VAS	2.2	3.5	.1
Control group			
mHHS	21.86	24.26	.47
NAHS	23.59	26.01	.45
HOS-ADL	21.77	24.65	.41
HOS-SSS	36.57	31.94	.37
VAS	3.1	3.7	.24

[a]Study group (no labral detachment) and control group (labral detachment). No significant difference was identified in the 4 patient-reported outcome scores or VAS. mHHS, modified Harris Hip Score; NAHS, Nonarthritic Hip Score; HOS-ADL, Hip Outcome Score–Activity of Daily Living; HOS-SSS, Hip Outcome Score–Sport-Specific Subscale; VAS, visual analog scale.

DISCUSSION

Arthroscopic treatment of patients with pincer-type and combined-type FAI frequently involves acetabuloplasty with concomitant labral repair or debridement. Several arthroscopic techniques exist for managing pincer-type impingement during hip arthroscopy. Acetabuloplasty was initially described with detachment of the labrum to access the acetabular rim for resection, followed by labral refixation. Technical refinements have made possible acetabuloplasty and labral refixation without labral detachment. When acetabuloplasty can adequately be performed without detaching the labrum, this may be preferable to disturbing the transitional zone between the chondral surface and labrum. We therefore sought to determine whether patients treated with labral refixation without detachment improved 2 years from surgery and how they compared with a control group of patients undergoing labral refixation after detachment.

Several techniques exist for addressing labral tissue during arthroscopic acetabuloplasty for pincer-type impingement. Multiple authors have reported good outcomes when managing pincer-type impingement with acetabuloplasty and labral treatment.[6,7,16,18,19,22,25] The best method for managing the labrum during acetabuloplasty is controversial. Previous reports of labral debridement have shown satisfactory clinical outcomes.[3,7] However, multiple recent reports have shown improved

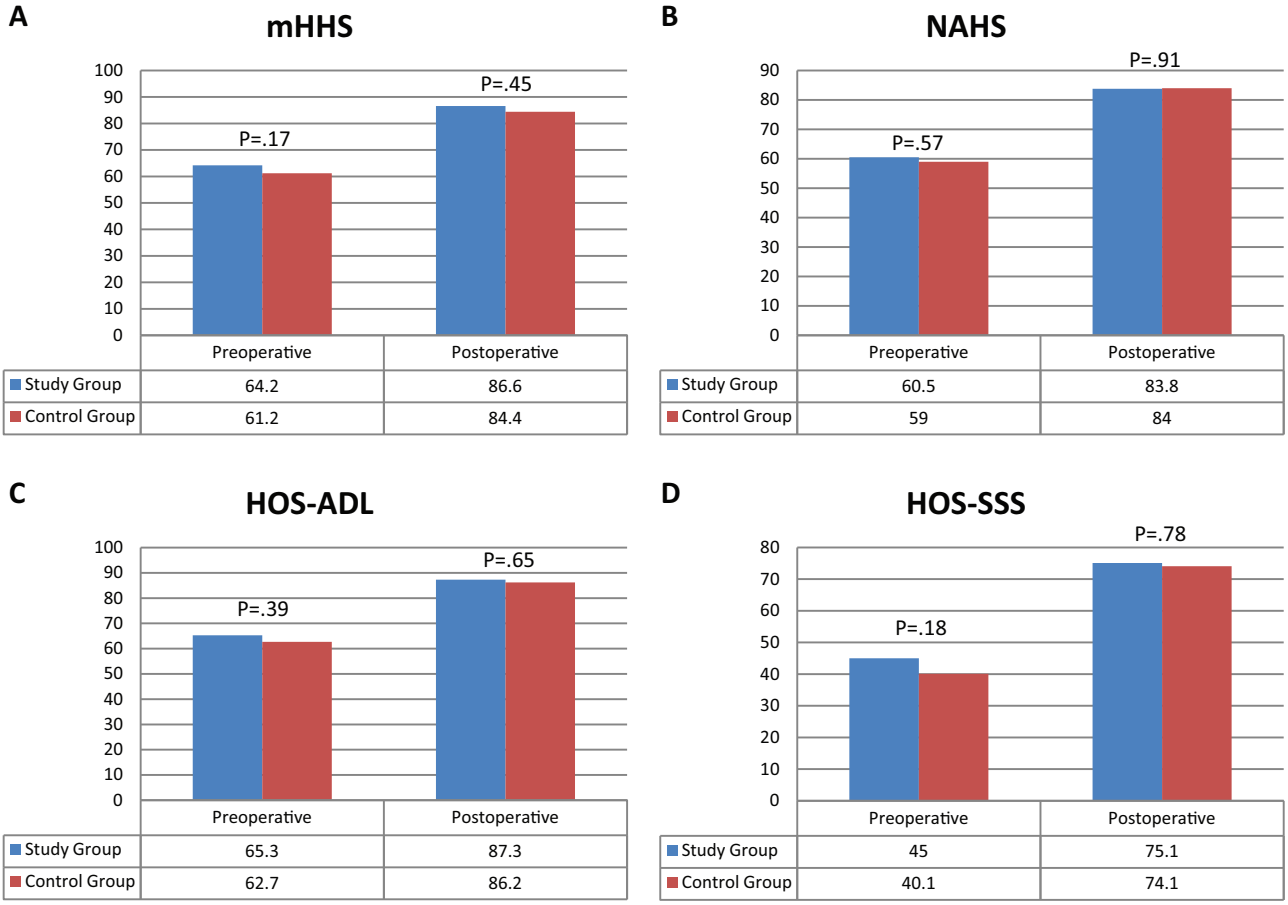

Figure 3. Comparison of preoperative and postoperative patient-reported outcome scores for the study group (no labral detachment) and control group (labral detachment). There was a significant increase in patient-reported outcome scores in both groups ($P < .05$). (A) mHHS, modified Harris Hip Score; (B) NAHS, Nonarthritic Hip Score; (C) HOS-ADL, Hip Outcome Score–Activity of Daily Living; and (D) HOS-SSS, Hip Outcome Score–Sport-Specific Subscale.

clinical outcomes when the labrum is repaired, or refixated, rather than debrided.[7,17-19,25,27] Espinosa et al[7] have shown improved clinical outcomes and fewer degenerative changes with open labral repair rather than resection during surgical hip dislocation. Larson et al[18,19] retrospectively compared results in patients who underwent labral refixation versus debridement and also noted improved clinical results in the refixation group. Krych et al[17] recently reported a prospectively designed study of patients with pincer-type impingement treated with arthroscopic acetabuloplasty and labral debridement versus refixation. This group also found improved clinical outcomes in the group that underwent labral refixation. Our study supports the hypothesis that treatment of pincer- and combined-type impingement with arthroscopic acetabuloplasty and labral refixation without detachment resulted in improved clinical outcomes at the 2-year follow-up. In addition, these outcomes were equivalent to a control group of patients undergoing labral refixation with detachment.

Krych et al[17] prospectively compared 18 female patients with pincer- and combined-type impingement treated with acetabuloplasty and labral debridement with 18 female patients who underwent acetabuloplasty and labral repair without detachment. Both groups demonstrated a statistically significant improvement in PRO scores. The debridement group's mean HOS scores improved from 60.2 to 80.9, and the repair group improved from 68.2 to 91.2. The repair group had a greater improvement in HOS scores compared with the debridement group that was statistically significant ($P < .05$). More patients in the repair group also subjectively rated their hip function as normal or nearly normal (94%). This study design excluded males with the rationale that females tend to have less pronounced cam-type impingement, and the results would be more attributable to labral treatment. In the current study, we included male and female patients, which may make the results more applicable to a generalized patient population; however, this also introduces bias due to the greater severity of cam lesions identified in our control group. In the current study, sex did not influence outcome data for VAS or the 4 PRO scores.

Larson et al[18,19] compared labral debridement with labral detachment and refixation retrospectively at 1 and 3.5

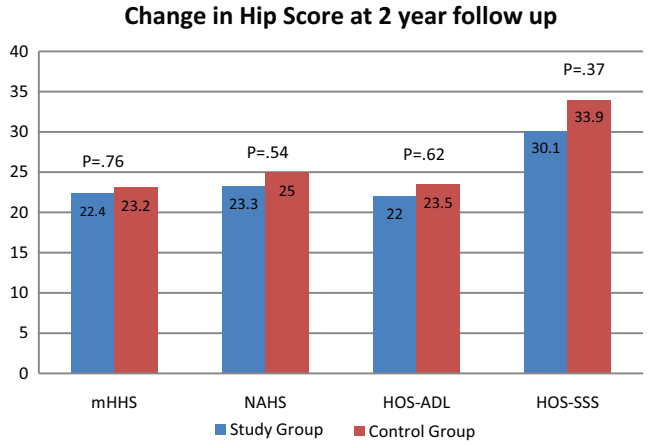

Figure 4. Comparison of the change in hip scores for the study group (no labral detachment) and control group (labral detachment). There was no significant difference between the 2 groups. mHHS, modified Harris Hip Score; NAHS, Non-arthritic Hip Score; HOS-ADL, Hip Outcome Score–Activity of Daily Living; HOS-SSS, Hip Outcome Score–Sport-Specific Subscale.

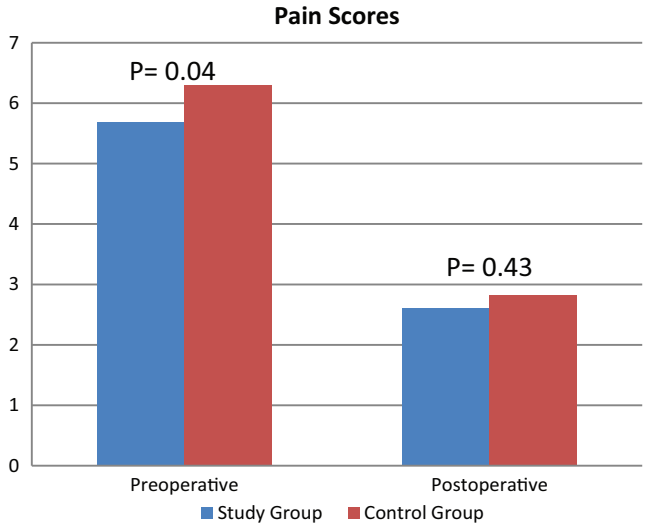

Figure 5. Comparison of preoperative and postoperative visual analog scale (VAS) scores for the study group (no labral detachment) and control group (labral detachment). There was no difference between the change in VAS between groups.

years and demonstrated superior results in the group that underwent refixation. The debridement group was evaluated before the development of labral repair techniques, from 2004 to 2006. At 3.5 years from surgery, the mean mHHS increased from 64.7 to 84.9, Short Form–12 (SF-12) increased from 63.8 to 82.2, and VAS decreased from 6.5 to 1.7 in the debridement group. The refixation group underwent labral detachment, acetabuloplasty, and refixation between 2006 and 2007. At 3.5 years after surgery, the mean mHHS increased from 64.5 to 94.3, SF-12 increased from 58.7 to 89.8, and VAS decreased from 5.7 to 0.7. Both groups showed statistically significant improvement in scores, and the change in HHS and SF-12 between the groups was statistically significant (P = .001 and P = .041, respectively). The refixation technique studied in this group involved labral detachment before the acetabuloplasty. This procedure is similar to the current study's control group of patients. The patient population in this report is similar to the current study; both patient populations were males and females undergoing FAI surgery for pincer-type or combined-type impingement. The current study also collected patients simultaneously, which should eliminate bias from technical improvements over time.

Schilders et al[27] retrospectively compared 69 patients who underwent labral repair with a simultaneous group of 32 patients who underwent labral debridement and also noted improved results in the repair group. The study is limited in assessing the effect of pincer-type impingement treatment, since less than half of the debridement group underwent acetabuloplasty compared with nearly the entire repair group. The decision to repair the labrum was also made intraoperatively based on tear pattern. Nonetheless, they did find a statistically significant improvement in mHHS in both groups. The mean mHHS in the labral repair group was 7.3 points greater than that of the debridement group, which was statistically significant (P = .036).

Limitations of the current study include the retrospective design, short-term follow-up, and some differences in anatomy between groups. The follow-up period of 2 years is unable to assess long-term results, although this time frame is consistent with previous reports on labral repair.[7,17,19] The decision to perform labral detachment was made intraoperatively based on the state of the chondrolabral junction by the senior author. It stands to reason that the control group treated with labral detachment and refixation may have had more severe pincer- or cam-type impingement. We noted a higher percentage of femoral osteoplasties and greater alpha angles in the control group, and it is known that patients with cam deformity frequently disrupt the chondrolabral interface. Patients in the control group also had greater ACEAs, which may have required a larger acetabuloplasty and the need for labral detachment. This introduces a source of bias for comparing the 2 groups. Another reason to consider a larger acetabuloplasty and labral takedown is to address more significant chondral injury. In our practice, this is typically followed by microfracture, and we did not see a difference in concomitant microfracture between groups. These morphological differences between groups are one weakness of this study; however, many of the patients in the control group underwent labral detachment since it was our preferred technique for performing acetabuloplasty before the introduction of acetabuloplasty without detachment. An additional limitation was that we were unable to attain postoperative MRIs to compare the labral anatomy postoperatively.

Preserving the chondrolabral junction when possible during acetabuloplasty may have some advantage to

detachment. The blood supply near the articular surface of the labrum is compromised in comparison to the capsular side, potentially leading to decreased healing potential at the chondrolabral junction.[15] Philippon et al[24] have demonstrated incomplete healing in this area in an ovine model. Whether this incomplete healing affects clinical results has yet to be seen, but our report did not detect a difference between groups that underwent disruption of the chondrolabral junction, labral detachment, at a 2-year follow-up. Further follow-up will be necessary to see if the results in the labral detachment group are maintained.

CONCLUSION

Treatment of pincer- and combined-type impingement with arthroscopic acetabuloplasty and labral refixation without detachment in cases with an intact chondrolabral junction resulted in similar patient outcomes compared with acetabuloplasty with labral detachment. We may conclude that in cases where the chondrolabral junction remains intact, acetabuloplasty and labral refixation without detachment is a viable option.

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