Long-term Results of Arthroscopic Labral Debridement: Predictors of Outcomes

MORTEZA MEFTAH, MD; JOSE A. RODRIGUEZ, MD; GEORGIA PANAGOPoulos, PhD;
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**abstract**

Limited data exist regarding the long-term results of labral debridement and the effect of coexisting pathology on outcomes. Our hypothesis was that untreated coexisting hip pathologies such as femoroacetabular impingement and arthritis significantly affect the outcomes of arthroscopic labral debridement.

Between 1996 and 2003, fifty consecutive patients who underwent hip arthroscopy and labral debridement with a mean follow-up of 8.4 years were included in our study. Patients’ preoperative Harris Hip Scores and coexisting pathologies such as femoroacetabular impingement, dysplasia, or arthritis were recorded as variables. Postoperative Harris Hip Score and satisfaction at final follow-up were recorded as outcomes. Good or excellent results were achieved in 62% of cases (58% in patients with untreated femoroacetabular impingement and 19% in patients with arthritis). Failures included 2 cases that were converted to total hip replacement (4.5 and 5.2 years after index procedure) due to advancement of arthritis and 1 case of repeat arthroscopy for cam decompression. Patients with no coexisting pathology had significantly higher satisfaction and Harris Hip Scores. Almost all of the patients with low postoperative Harris Hip Scores had arthritic changes. Arthritis had a significant correlation with low postoperative Harris Hip Scores and satisfaction.

Coexisting pathology, especially arthritis and untreated femoroacetabular impingement, can result in inferior outcomes. Arthroscopic labral debridement of symptomatic tears in selected patients with no coexisting pathology can result in favorable long-term results. Arthritis is the strongest independent predictor of poor outcomes.

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Drs Meftah, Rodriguez, Panagopoulos, and Alexiades have no relevant financial relationships to disclose.

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bral tears are now recognized as a common pathology, especially in young adults. Treatment of these tears historically consisted of simple debridement and removal of the damaged labrum. Several studies have demonstrated the importance of labrum on enhancing hip joint stability by negative pressure and sealing mechanism. With advancements in arthroscopic techniques and instruments, most recently published literature is focused on labral repair or refixation, which show superior results compared to simple debridement in short- to mid-term follow-up. Although favorable results of selective labral debridement has been reported, limited data exist regarding the presence and effect of coexisting hip pathology such as femoroacetabular impingement, hip arthritis, and dysplasia as confounding factors on outcomes.

The purpose of this study was to evaluate the long-term results of arthroscopic labral debridement and investigate the correlation between copathology and outcomes.

MATERIAL AND METHODS

Between October 1996 and April 2003, fifty consecutive patients (50 hips) that underwent arthroscopic labral debridement were included in this study and prospectively followed for a minimum of 7 years postoperatively. Twenty-two men and 28 women had a mean age of 40.1±12.7 years (range, 19-77 years). All patients had documented labral tears on magnetic resonance imaging (MRI) and failed conservative management such as hip injections, pain management including nonsteroidal anti-inflammatory drugs, and physical therapy. Exclusion criteria for hip arthroscopy included patients younger than 18 years, prior ipsilateral hip surgery, or advanced osteoarthritis on preoperative radiographs.

Arthroscopy was performed with the patient in the supine position using a fracture table and fluoroscopy as previously described. Clinical analysis included pre- and postoperative Harris Hip Score and a 4-point Likert-type scale for satisfaction based on pain relief and recovery of function at the final follow-up (1=extremely dissatisfied, 2=dissatisfied, 3=satisfied, and 4=extremely satisfied).

Coexisting pathologies were defined in 3 categories: femoroacetabular impingement, dysplasia, and arthritis. Failure was defined as any patient undergoing a second arthroscopy or a conversion to total hip replacement (THR). The diagnosis of a cam lesion was made based on an alpha angle >55° measured on MRI, and a pincer deformity was defined as acetabular retroversion, coxa profunda, or coxa protrusio. Dysplasia was defined as a center-edge angle <25°3,14 and/or Tönnis angle >10°.15

Diagnosis of arthritis (primary, posttraumatic; or secondary to femoroacetabular impingement) was based on joint space narrowing, the presence of sclerosis, or cyst formation (Table 1) or an intraoperative finding of cartilage wear. Joint space narrowing was defined as the narrowest point between the cortical surface of the acetabulum and the bone contour of the femoral head on anteroposterior pelvic radiographs. The minimum amount of joint space narrowing that was tolerated prior to consideration was 3 mm, and the presence of subchondral sclerosis and osteophytes were exclusion criteria.

Spearman’s rho correlation coefficient was calculated between predictors (age, sex, preoperative Harris Hip Score, and presence of coexisting pathology) and outcomes (postoperative Harris Hip Score, change in Harris Hip Score, patient satisfaction score, and failures). Regression analysis was performed to analyze the strongest independent predictors. Two-tailed P values <.05 were considered statistically significant. All descriptive statistical analysis was done with SPSS version 16.0.2 (SPSS, Chicago, Illinois).

RESULTS

Mean follow-up was 8.4±1.7 years (range, 7.1-13.6 years). Mean Harris Hip Score improved from 79.3±8.2 (range, 58-86) preoperatively to 92.2±12.1 (range, 46-100) at final follow-up. Good or excellent results (Harris Hip Score 90-100) were achieved in 62% of cases (58% in patients with untreated femoroacetabular impingement and 19% in patients with arthritis). Failures included 2 cases that were converted to THR due to advancement of arthritis—primary in 1 (4.5 years after index procedure) and secondary to femoroacetabular impingement in another (5.2 years after index procedure)—and 1 case of repeat arthroscopy for cam decompression. Twenty patients did not have a clear copathology; all were satisfied (satisfaction scores 3 and 4) with a mean Harris Hip Score of 98.6±2.4. All other patients (n=30) had identified copathology: 21 cases of arthritis, 12 cases of femoroacetabular impingement, and 6 cases of dysplasia (9 patients had >1 copathology).

<table>
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<tr>
<th>Table 1</th>
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<tr>
<td><strong>Preoperative Radiographic Measurements</strong></td>
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<td><strong>Radiographic Finding</strong></td>
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<tr>
<td>Joint space narrowing (osteoarthritis)</td>
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<tr>
<td>Femoroacetabular cysts (osteoarthritis)</td>
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<td>Femoroacetabular subchondral sclerosis</td>
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<td>Femoroacetabular osteophytes</td>
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<tr>
<td>Tönnis angle (dysplasia)</td>
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<td>Center-edge angle</td>
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In correlation analysis, age and sex did not correlate with any outcome. Higher postoperative Harris Hip Score had a strong correlation with satisfaction and absence of copathology, especially arthritis (Table 2). When comparing patients with copathology (n=30) with patients without copathology, postoperative Harris Hip Score was significantly lower in the copathology group (Table 3). Almost all patients with low postoperative Harris Hip Scores had arthritic changes (Figure). Mean Harris Hip Score in arthritic patients improved from 75.1±8.4 to 83.9±16.5, which was statistically lower than patients without arthritis (P<.05).

Eighty-four percent of patients were satisfied. All dissatisfied patients (n=8) had arthritis, 2 of whom also had untreated femoroacetabular impingement since femoroacetabular impingement was not yet defined at the time of initial evaluation. Higher satisfaction scores had a strong correlation with the absence of copathology, and more so with arthritis (Table 4). In regression analysis, the presence of arthritis was the strongest predictor of low Harris Hip Score and low satisfaction (P<.001).

**DISCUSSION**

Few reports describe the long-term results of labral debridement. Several recent studies have reported superior short- to mid-term results of labral repair compared to labral debridement after treatment of femoroacetabular impingement. Byrd and Jones reported favorable long-term results of arthroscopic labral debridement in selected patients and demonstrated arthritis as a poor prognostic factor for outcomes. However, no reports investigate the long-term results of arthroscopic labral debridement with correlation to copathology. The objective of this study was to evaluate the impact of copathology on long-term outcomes of arthroscopic labral debridement.

Our results showed 62% good or excellent outcomes, similar to the reported results of Tönnis but with longer follow-up. Several other studies have shown similar results of arthroscopic labral debridement. Farjo et al reported good or excellent results in 71% patients without arthritis, and Santori and Villar reported a 67% overall patient satisfaction rate after labral debridement with 3.5 years of follow-up. Twenty patients in our study had no clear copathology. This may be due to the retrospective nature of the study and limitations in terms of accurate

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**Table 2**

<table>
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<tr>
<th>Correlation Between Postoperative Harris Hip Score and Coexisting Pathology, Arthritis, and Satisfaction</th>
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<tbody>
<tr>
<td>Postoperative Harris Hip Score</td>
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<tr>
<td>Pearson correlation</td>
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<tr>
<td>P value (2-tailed)</td>
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**Table 3**

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<th>Comparison of Postoperative Harris Hip Score Based on Copathology</th>
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<td>With Copathology (n=30)</td>
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<tr>
<td>Postoperative Harris Hip Score</td>
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**Figure**: Distribution of postoperative Harris Hip Score based on arthritis. The green column represents patients with arthritis and the blue column patients without arthritis. Abbreviations: HHS, Harris Hip Score; post-op, postoperative.
Arthroscopic labral debridement of symptomatic labral tears can result in favorable long-term outcomes in selected patients without coexisting pathology. The presence of arthritis identified on preoperative radiographs is indicative of inferior results, and this should be discussed with the patient. The presence of coexisting arthritis should be considered a strong contraindication to performing labral debridement alone. An additional failure to address the underlying etiology for labral tearing, such as femoroacetabular impingement, could also result in poor outcomes.

**REFERENCES**


**Table 4**

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>Copathology</th>
<th>Arthritis</th>
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<tr>
<td>Pearson correlation</td>
<td>-0.541</td>
<td>-0.556</td>
</tr>
<tr>
<td>P value (2-tailed)</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
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radiographic images and quality of MRIs. Nine patients had femoroacetabular impingement and dysplasia. This is similar to other reports that radiographic features of femoroacetabular impingement and dysplasia may coexist.23 Only 58% of patients with a labral tear and untreated femoroacetabular impingement had good outcomes. This finding reiterated the importance of identifying and treating femoroacetabular impingement and a common cause of labral tear.

Arthritis was the strongest predictor of poor outcomes after arthroscopic labral debridement in this study. Our results show only 19% good or excellent outcomes in patients with arthritic changes. Similar to our findings, it has been demonstrated that the presence of associated arthritic changes is a poor prognostic indicator.5,22 Farjo et al22 reported only 21% good or excellent results in patients with arthritis at a mean 34 months of follow-up. Byrd and Jones9 reported a 31% increase in average modified Harris Hip Score at 2 years following labral debridement in patients with isolated labral tears, compared to only 18% improvement in patients with a labral tear and chondral injury or arthritic changes.

Limitations of our study were the use of the Harris Hip Score, the relatively small number of patients, and old instrumentation and techniques of hip arthroscopy. However, the long-term follow-up investigating the effect of untreated femoroacetabular impingement and arthritis on outcomes makes this study unique. Outcome measurement modalities for hip pathology have historically included the Harris Hip Score, the modified Harris Hip Score, and the Nonarthritic Hip Score.24 Although they are not specifically designed for labral tears, several studies have validated their usefulness based on the pain and function portion of these scores.25-27 Since most studies of long-term results2 measure these scores, for consistency and comparison of the data, we also measured the Harris Hip Score in follow-up. Consistently high Harris Hip Scores in many of these studies reveal the relative insensitivity and ceiling effect of the Harris Hip Score in higher-functioning patients as seen in femoroacetabular impingement and labral tears.


