Outcomes After Hip Arthroscopy in Patients With Workers’ Compensation Claims

JOHN P. SALVO, MD; SOMMER HAMMOUD, MD; RUSSELL FLATO, BA; NICOLE SGROMOLO, BA; ELLIOT S. MENDELSOHN, MD

**abstract**

Patients with a workers’ compensation claim have been shown to have inferior outcomes after various orthopedic procedures. In hip arthroscopy, good to excellent results have been shown in the athletic and prearthritic population in short-term and long-term follow-up. In the current study, the authors’ hypothesis was that patients with a workers’ compensation claim would have inferior outcomes after hip arthroscopy compared with patients without a workers’ compensation claim. All patients with a workers’ compensation claim who underwent hip arthroscopy over a 2-year period were studied. Postoperative functional outcomes were assessed with the Hip Outcome Score and modified Harris Hip Score. A cohort of 30 patients who did not have a workers’ compensation claim was selected for comparison. Twenty-six patients were identified who had a workers’ compensation claim and underwent hip arthroscopy performed by a single surgeon at the authors’ institution with at least 6 months of follow-up. These patients were compared with 30 patients who did not have a workers’ compensation claim. The workers’ compensation group had a Hip Outcome Score of 66.5±28.8 and the non-workers’ compensation group had a Hip Outcome Score of 89.4±12.0. This difference was statistically significant with Wilcoxon test (P=.003). The workers’ compensation group had an average modified Harris Hip Score of 72.5±20.7 (mean±SD), and the non-workers’ compensation group had a modified Harris Hip Score of 75.6±15.3. This difference was not significantly significant with Wilcoxon test (P=.9). At latest follow-up, 15 patients in the workers’ compensation group (58%) were working. Patients returned to work an average of 6.8 months after surgery. The current study showed that postoperative functional outcomes in the workers’ compensation group, as measured by Hip Outcome Score, were significantly inferior to those in the non-workers’ compensation group. No statistical difference in postoperative modified Harris Hip Score was seen. [Orthopedics. 2015; 38(2):e94-e98.]

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Patients with workers’ compensation claims have been shown to have inferior outcomes after various orthopedic procedures, including total knee arthroplasty,1 rotator cuff repair,2 anterior shoulder stabilization,3 acromioplasty,4 and anterior cruciate ligament reconstruction.5 A systematic review of the orthopedic and nonorthopedic surgical literature showed that patients treated under workers’ compensation plans or undergoing litigation consistently have significantly worse outcomes after surgery than those without workers’ compensation claims.6

Hip arthroscopy has been associated with good to excellent short-term and long-term results in the athletic and prearthritic population.7-9 A recent cohort of patients with workers’ compensation claims who underwent hip arthroscopy showed significant improvement in functional outcome scores and a high rate of return to work in the early postoperative period.10

The authors’ hypothesis was that the workers’ compensation group would have inferior outcomes after hip arthroscopy compared with the non-workers’ compensation group. In addition, the authors investigated whether the workers’ compensation group had a higher percentage of permanent disability and were less likely to return to preinjury work status than was previously reported.

MATERIALS AND METHODS

After institutional review board approval was obtained, data were collected on patient age, sex, occupation, mechanism of injury, time from injury to surgery, surgical procedure performed, and ability to return to preinjury work level (disability status, work status, and length of time to return to work) for all patients with workers’ compensation claims who underwent hip arthroscopy performed by a single surgeon (J.P.S.) over a 2-year period. For comparison, a cohort of 30 patients was selected in the same surgical time frame who did not have workers’ compensation claims. These patients underwent hip arthroscopy during the same period performed by the senior author (J.P.S.) at the same institution. All patients had been managed conservatively before surgery with a combination of pharmacotherapy (eg, nonsteroidal anti-inflammatory drugs), physical therapy, injections, and activity modification. In all patients, conservative management was unsuccessful. All patients had standard preoperative weight-bearing radiographs (anteroposterior pelvis, anteroposterior hip, and lateral hip) to confirm the absence of arthritis. They also underwent magnetic resonance imaging to confirm intra-articular pathology. Final follow-up was obtained by telephone or mail and included 2 patient-reported outcome questionnaires: the Hip Outcome Score and the modified Harris Hip Score.

RESULTS

The authors identified 26 patients with workers’ compensation claims who underwent hip arthroscopy performed by a single surgeon (J.P.S.) at the authors’ institution from September 2010 through September 2012. All patients had at least 6 months of follow-up. Mean age of the workers’ compensation cohort was significantly different from that of the non-workers’ compensation cohort: 43 years (range, 25-58 years) vs 37 years (range, 18-56 years), respectively (P=.02, Wilcoxon rank-sum test). Significantly more men were included in the workers’ compensation cohort (21 of 26, 81%) than in the non-workers’ compensation cohort (10 of 30, 33%) (P=.0005, Fisher’s exact test).

Occupation and mechanism of injury are summarized in Table 1. Of the jobs held by the study participants, 19 of 26 (73%) were classified as medium or heavy according to the US Department of Labor Job Classification.11

Surgical procedures performed were similar between the 2 cohorts and are summarized in Table 2. Two patients underwent revision surgery, both in the workers’ compensation cohort. Most of the patients had a preoperative magnetic resonance arthrogram that showed a labral tear and radiographic evidence of femoroacetabular impingement. In the workers’ compensation cohort, the average time from injury to surgery was 11 months, and 4 patients had additional surgery after the index procedure. One patient underwent revision hip arthroscopy for iliopsoas release to treat iliopsoas tendinitis 5 months postoperatively. A second patient underwent total hip arthroplasty 2 years postoperatively. A third patient had a revision hip arthroscopy for debridement of scar tissue. A fourth patient had a revision hip arthroscopy to address a labral retear after previous repair as a result of postoperative reinjury.

In the 26 patients in the workers’ compensation cohort, 1 complication (4%) occurred: deep venous thrombosis diagnosed 1 week postoperatively that was treated with oral anticoagulation. In the non-workers’ compensation cohort, no complications occurred and no additional operations were performed. Several postoperative injections were administered in the workers’ compensation cohort: 3 patients had an ultrasound-guided iliopsoas percutaneous needle tenotomy; 1 patient had an ultrasound-guided tenotomy of the gluteus medius and tensor fascia latae; 1 patient had an injection for greater trochanteric bursitis; and 1 patient had an intra-articular corticosteroid injection.

In the workers’ compensation cohort, 15 of 26 patients (58%) had returned to work at latest follow-up. Of these, 11 returned to full duty and 4 returned to modified duty. Five of 26 patients (19%) remained on total disability, and 1 was out of work at most recent follow-up. Those who returned to work, on average, returned in some capacity (modified or full duty) 6.8 months, or 205 days, after surgery (range, 55-403 days).

The workers’ compensation group had an average follow-up of 1.5 years (range, 6 months to 2.3 years). For the non-workers’ compensation cohort, average
Follow-up was 1.9 years (range, 1.4-2.4 years). Follow-up patient-reported outcome measures were available for 18 of the 26 patients in the workers’ compensation cohort and all 30 patients in the non-workers’ compensation cohort. At last follow-up, the non-workers’ compensation group had a mean Hip Outcome Score of 89.4±12.0 and the workers’ compensation group had a mean Hip Outcome Score of 66.5±28.8. This difference was statistically significant with Wilcoxon rank-sum test (P=.003). The non-workers’ compensation group had a mean modified Harris Hip Score of 75.6±15.3, and the workers’ compensation group had a mean modified Harris Hip Score of 72.5±20.7. This difference was not statistically significant with Wilcoxon rank-sum test (P=.9). Age and sex were not associated with lower modified Harris Hip Score or Hip Outcome Score with multivariate regression analysis (P=.35 and P=.17, respectively).

DISCUSSION

The study findings showed inferior postoperative functional outcomes in the workers’ compensation group, as measured by Hip Outcome Score, compared with the non-workers’ compensation group. The difference was statistically significant. No statistical difference in modified Harris Hip Score was shown. Because of poor self-assessed function and health status, baseline differences were seen in the workers’ compensation group in back injuries, shoulder injuries,12 and hip injuries.10 Therefore, the relative improvement in postoperative patient-reported outcome measures from baseline may be more meaningful in patients with workers’

Table 1

Demographic and Occupational Characteristics of the Workers’ Compensation Group

<table>
<thead>
<tr>
<th>Age, y/Sex</th>
<th>Occupation</th>
<th>US Department of Labor Job Classification</th>
<th>Mechanism of Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/M</td>
<td>Professional football player</td>
<td>Heavy</td>
<td>Football-related injury—tackle</td>
</tr>
<tr>
<td>54/M</td>
<td>Mechanic</td>
<td>Heavy</td>
<td>T-bone car accident with air bags deployed</td>
</tr>
<tr>
<td>40/M</td>
<td>Masonry laborer</td>
<td>Heavy</td>
<td>Tripped over bricks while carrying a heavy bucket</td>
</tr>
<tr>
<td>42/F</td>
<td>Veterinary technician</td>
<td>Medium</td>
<td>No history of injury</td>
</tr>
<tr>
<td>33/M</td>
<td>Police officer</td>
<td>Medium</td>
<td>Slipped on ice and performed a split</td>
</tr>
<tr>
<td>41/F</td>
<td>Store manager</td>
<td>Light</td>
<td>Ground-level fall while putting down a plunger</td>
</tr>
<tr>
<td>46/M</td>
<td>Maintenance</td>
<td>Medium</td>
<td>Thrown from a tractor and landed on a concrete bumper</td>
</tr>
<tr>
<td>44/F</td>
<td>Administrative assistant</td>
<td>Light</td>
<td>Hit by a car</td>
</tr>
<tr>
<td>36/M</td>
<td>Police detective</td>
<td>Medium</td>
<td>Motor vehicle accident</td>
</tr>
<tr>
<td>25/M</td>
<td>Police officer</td>
<td>Medium</td>
<td>Sudden onset of pain during training for K-9 unit</td>
</tr>
<tr>
<td>39/M</td>
<td>Postal service driver</td>
<td>Medium</td>
<td>Heard a pop and felt pain while unloading a truck</td>
</tr>
<tr>
<td>39/M</td>
<td>Police sergeant</td>
<td>Medium</td>
<td>During training, right leg gave out while pivoting</td>
</tr>
<tr>
<td>40/M</td>
<td>Security officer</td>
<td>Medium</td>
<td>Slipped on steps and fell at work</td>
</tr>
<tr>
<td>40/M</td>
<td>Truck driver</td>
<td>Medium</td>
<td>Motor vehicle accident</td>
</tr>
<tr>
<td>47/M</td>
<td>Postal service driver</td>
<td>Medium</td>
<td>Injured when stepping out of a truck</td>
</tr>
<tr>
<td>48/M</td>
<td>Maintenance</td>
<td>Medium</td>
<td>Injured at work while moving a pallet of salt</td>
</tr>
<tr>
<td>44/M</td>
<td>Unknown</td>
<td>Medium</td>
<td>Slipped on a rainy day</td>
</tr>
<tr>
<td>52/M</td>
<td>Fire alarm technician</td>
<td>Medium</td>
<td>Unknown</td>
</tr>
<tr>
<td>36/M</td>
<td>Unknown</td>
<td></td>
<td>Injured while twisting when stepping off a forklift</td>
</tr>
<tr>
<td>50/M</td>
<td>Carpenter</td>
<td>Heavy</td>
<td>Fell into a hole on a construction site</td>
</tr>
<tr>
<td>58/M</td>
<td>Security officer</td>
<td>Medium</td>
<td>Twisting injury; forklift ran down on foot</td>
</tr>
<tr>
<td>52/F</td>
<td>Unknown</td>
<td></td>
<td>Fell while shoveling snow</td>
</tr>
<tr>
<td>49/M</td>
<td>Welder</td>
<td>Heavy</td>
<td>Twisting injury; pulling steel</td>
</tr>
<tr>
<td>28/M</td>
<td>Unknown</td>
<td></td>
<td>Motor vehicle accident</td>
</tr>
<tr>
<td>49/M</td>
<td>Police officer</td>
<td>Medium</td>
<td>Motor vehicle accident</td>
</tr>
<tr>
<td>52/F</td>
<td>Unknown</td>
<td></td>
<td>Twisted ankle while stepping on a piece of a pallet at work</td>
</tr>
</tbody>
</table>
compensation claims. Some differences were noted between the cohorts in addition to workers’ compensation status. Although relative improvement from a lower baseline may occur among patients with workers’ compensation claims, secondary gain must be considered when measuring outcomes in this patient population. Patients in the workers’ compensation group were slightly older and included a higher percentage of men. They were also more likely to undergo reoperation. Because patients with nonlabral procedures were not excluded from the study, some procedures were done infrequently, which limits direct comparison of the 2 cohorts.

In the current series, postoperative functional outcome scores in the workers’ compensation group were similar to those reported previously. At most recent follow-up, mean Hip Outcome Score and modified Harris Hip Score were 66.5 and 72.5, respectively. Stake et al\textsuperscript{10} reported 2-year follow-up data for patients undergoing hip arthroscopy for labral tears that were comparable to those in the authors’ series: mean modified Harris Hip Score of 67.7, mean Hip Outcome Score-Activity of Daily Living Scale of 69.5, and mean Hip Outcome Score-Sports subscale of 49.8.

Other studies showed inferior outcomes in the workers’ compensation population. Byrd and Jones\textsuperscript{9} found poorer results in patients with workers’ compensation claims and/or pending litigation. However, they concluded that hip arthroscopy was not contraindicated in this cohort because patients still showed improvement. In the military population, Potter et al\textsuperscript{13} found a significantly lower mean modified Harris Hip Score in patients with disability status than in those without this status: 61.1 vs 92.4, respectively ($P<.0001$). Short Form-36 subscale scores were significantly lower in disability patients ($P<.02$). Patient-reported satisfaction rates were 50% for those who were undergoing disability evaluations and 84% for those who were not ($P<.04$).

The authors found that the workers’ compensation group had a longer time to return to work and a higher percentage of patients remaining on permanent disability compared with a previous report.\textsuperscript{10} In the current series, a significant number of patients did not return to their pre-injury work status (42%) and remained on permanent disability (19%). Those who returned to work did so in some capacity on average at 6.8 months or 205 days after surgery. In comparison, Stake et al\textsuperscript{10} reported that patients in their workers’ compensation group had a longer time to return to work and a higher percentage of patients remaining on permanent disability (19%). The outcomes of patients in the non-workers’ compensation group in the current study were similar to reports in the literature. Patients undergoing hip arthroscopy for labral tears that were comparable to those in the authors’ series: mean modified Harris Hip Score of 67.7, mean Hip Outcome Score-Activity of Daily Living Scale of 69.5, and mean Hip Outcome Score-Sports subscale of 49.8.

The outcomes of patients in the non-workers’ compensation group in the current study were similar to reports in the literature. Patients undergoing hip arthroscopy for labral tears that were comparable to those in the authors’ series: mean modified Harris Hip Score of 67.7, mean Hip Outcome Score-Activity of Daily Living Scale of 69.5, and mean Hip Outcome Score-Sports subscale of 49.8.

### Table 2

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Workers’ Compensation Group (n=26)</th>
<th>Non-workers’ Compensation Group (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labral debridement</td>
<td>18 (69%)</td>
<td>19 (63%)</td>
</tr>
<tr>
<td>Chondroplasty</td>
<td>17 (65%)</td>
<td>9 (30%)</td>
</tr>
<tr>
<td>Acetabuloplasty</td>
<td>9 (35%)</td>
<td>9 (30%)</td>
</tr>
<tr>
<td>Labral repair</td>
<td>7 (27%)</td>
<td>12 (40%)</td>
</tr>
<tr>
<td>Synovectomy</td>
<td>8 (31%)</td>
<td>5 (17%)</td>
</tr>
<tr>
<td>Ligamentum teres debridement</td>
<td>3 (12%)</td>
<td>5 (17%)</td>
</tr>
<tr>
<td>Iliopsoas release</td>
<td>2 (8%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Femoroplasty</td>
<td>3 (12%)</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Loose body removal</td>
<td>1 (4%)</td>
<td>2 (7%)</td>
</tr>
<tr>
<td>Trochanteric bursectomy</td>
<td>3 (12%)</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Gluteus medius repair</td>
<td>1 (4%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Microfracture</td>
<td>0 (0%)</td>
<td>2 (7%)</td>
</tr>
<tr>
<td>Resection of os acetabuli</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Iliotibial band release</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>

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tears, including chondral injury, synovitis, trochanteric bursitis, iliotibial band syndrome, gluteus medius tear, loose bodies, and peripheral villonodular synovitis.

In the current series, demographic characteristics were significantly different between the workers’ compensation and non-workers’ compensation cohorts in age and sex, but neither variable was associated with an inferior modified Harris Hip Score or Hip Outcome Score. Although age- and sex-matched control subjects have been used when assessing outcomes after hip arthroscopy, there is inconsistency in the association between these demographic characteristics and clinical outcomes. Unpredictable outcomes after hip arthroscopy for labral debridement have been reported in patients older than 45 years and with minimal degenerative changes.15 Similarly, superior long-term outcomes were found after hip arthroscopy in patients in the fourth decade or younger.9 In contrast, another study showed improvement in short-term functional outcome scores and low rates of conversion to total hip arthroplasty in patients 50 years or older who had femoroacetabular impingement and underwent hip arthroscopy with a well-preserved joint space.16 Arthritis at the time of index surgery and pre-existing chondral injury have been associated with inferior outcomes.8 Therefore, these factors are likely more important prognostic factors than age.

The relationship between sex and outcome after hip arthroscopy is also unclear. One series found no significant difference in functional outcome scores between men and women undergoing hip arthroscopy.9 In another series, men undergoing hip arthroscopy had improved short-term functional outcome scores and reported greater satisfaction with the procedure compared with women, but these differences were not statistically significant under multivariate analysis when other variables, such as disability status, were considered.13

Limitations
This study had the following limitations: Preoperative functional outcome scores were not available for comparison to analyze relative improvement postoperatively. Follow-up was less than 2 years, precluding long-term assessment of outcome. Finally, although the number of patients studied was large enough for statistical analysis and was comparable to other studies in the literature, the results were weakened by the relatively small sample size.

CONCLUSION
The authors’ study showed that functional outcomes in the workers’ compensation patients receiving workers’ compensation were low, with a statistically significant difference in Hip Outcome Score. Moreover, a significant number of patients did not return to their preinjury work status. Secondary gain must be considered in this patient population.

REFERENCES