

# Hip Arthroscopy Versus Physical Therapy for the Treatment of Symptomatic Acetabular Labral Tears in Patients Older than 40 Years: A 2-Year Report of a Randomized Controlled Trial

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## INTRODUCTION:

Acetabular labral tears have gained recognition as a significant cause of hip pain in the non-arthritis population. The utilization of arthroscopic labral repair with femoroacetabular osteoplasty has increased in treating symptomatic labral tears associated with femoroacetabular impingement, yielding positive outcomes and symptom improvement. However, numerous studies have identified older age and advanced osteoarthritis (OA) as strong predictors of inferior outcomes, suggesting that non-surgical treatment with physical therapy (PT) may be more appropriate for older patients. Given that hip cartilage lesions are very common in patients older than 40 years, it remains unclear whether OA is a confounder of the effects of age on surgical outcomes seen in these studies or if age alone portends inferior outcomes. Thus the purpose of the current study was to perform a randomized controlled trial (RCT) comparing arthroscopic surgical management versus nonoperative management in patients with symptomatic labral tears who were older than 40 years and did not have severe arthritis. We hypothesized that hip arthroscopy would not be more clinically effective than physical therapy.

**METHODS:** A single-surgeon prospective RCT was performed. Inclusion criteria required participants to be 40 years or older, have a diagnosis of acetabular labral tear, and have completed at least three months of conservative management. Exclusion criteria included the presence of significant OA (Tonnis Grade 3 changes), clinical suspicion of extra-articular hip or back processes, and previous hip surgery. Patients were randomized 1:1 to either the surgery and physical therapy (SPT) group or physical therapy alone (PTA) group. PTA patients were permitted to cross over to SPT if they completed  $\geq 14$  weeks of PT, and their physical therapists determined they achieved the maximal possible improvement from PTA. Patient-reported outcome metrics (PROMs), including International Hip Outcome Tool-33 (iHOT-33) and modified Harris Hip Score (mHHS), visual analog scale (VAS) for pain, and conversion to total hip arthroplasty (THA) were compared. Outcomes were assessed at baseline and at 3, 6, 12, and 24 months after randomization. Primary analysis was performed on an intention-to-treat basis using linear mixed-effect models. Sensitivity analyses included modified as-treated analysis and treatment-failure analysis. Due to infeasibility, patients and healthcare providers were both unblinded.

**RESULTS:** A total of 110 patients were enrolled in the present study. Of these patients, 7 (3 SPT, 4 PTA) did not undergo their assigned treatment protocol, and 6 (2 SPT, 4 PTA) were lost to follow up before 24 months or THA conversion. Thus, 97 patients (40 [41.2%] males, 57 [58.8%] females) with 24-month follow up and mean (standard deviation) age 48.34 (5.7) years, BMI 26.38 (4.1) kg/m<sup>2</sup>, and Tönnis grade 0.85 (0.8) were included in our analysis, with 52 (53.6%) in the SPT group and 45 (46.4%) in the PTA group. At the time of analysis, 32 (71.1%) PTA patients failed to achieve adequate progression and crossed over to arthroscopy. In the intention-to-treat analysis, SPT resulted in significantly superior mean overall iHOT-33, mHHS, and VAS pain scores and improvements compared with PTA across the treatment period (**Tables I & II**). Similarly, in a modified as-treated analysis, SPT resulted in significantly superior mean overall iHOT-33, mHHS, and VAS pain scores and improvements compared with PTA across the treatment period (**Table III & IV**). In the treatment-failure analysis, SPT resulted in significantly higher overall iHOT-33 and mHHS scores, and lower overall VAS pain scores compared to PTA (**Table V**). Finally, 18 (18.6%) patients in the study sample converted to THA, including 10 (19.2%) from the SPT group [mean months after primary arthroscopy (SD); 51.9 (25.2)], 7 (21.9%) from those in the PTA group that crossed over [37.9 (25.8) months], and 1 from the PTA group 23.6 months after PT initiation.

**DISCUSSION AND CONCLUSION:** In patients older than 40 years with limited osteoarthritis, arthroscopic acetabular labral repair with postoperative physical therapy led to better outcomes than physical therapy alone. Thus, age over 40 years should not be considered a contraindication to arthroscopic acetabular labral repair.

**Table I.** Weighted Differences in Average PROM/Pain Scores Between SPT and PTA Groups: Intention-to-Treat Analysis\*

PROM	Weighted Difference in Average Scores (95% CI)	P value
mHHS	5.0 (0.4, 11.3)	<b>0.007</b>
iHOT-33	9.7 (2.3, 17.2)	<b>0.011</b>
VAS pain	-0.9 (-1.8, -0.1)	<b>0.060</b>

\*Weighted differences in scores are reported as mean (95% confidence interval). Reference group: PTA group. †A significant difference between groups. PROM, patient-reported outcome metric; SPT, surgery and physical therapy; PTA, physical therapy alone; CI, confidence interval; mHHS, modified Harris Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

**Table II.** Weighted Differences in PROM/Pain Score Improvements Between SPT and PTA Groups: Intention-to-Treat Analysis\*

PROM	Weighted Difference in Average Improvement (95% CI)	P value
mHHS	8.1 (1.8, 14.0)	<b>0.012</b>
iHOT-33	13.5 (4.5, 22.5)	<b>0.003</b>
VAS	-1.7 (-2.9, -0.4)	<b>0.011</b>

\*Weighted differences in improvements are reported as mean (95% confidence interval). Reference group: PTA group. †A significant difference between groups. PROM, patient-reported outcome metric; SPT, surgery and physical therapy; PTA, physical therapy alone; CI, confidence interval; mHHS, modified Harris Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

**Table III.** Weighted Differences in Average PROM/Pain Scores Between SPT and PTA Groups: Modified As-Treated Analysis\*

PROM	Weighted Difference in Average Scores (95% CI)	P value
mHHS	6.2 (0.3, 11.5)	<b>0.023</b>
iHOT-33	11.9 (4.7, 19.2)	<b>0.001</b>
VAS pain	-1.7 (-2.9, -0.4)	<b>0.004</b>

\*Weighted differences in scores are reported as mean (95% confidence interval). Reference group: PTA group. †A significant difference between groups. PROM, patient-reported outcome metric; SPT, surgery and physical therapy; PTA, physical therapy alone; CI, confidence interval; mHHS, modified Harris Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

**Table IV.** Weighted Differences in Average PROM/Pain Scores Between SPT and PTA Groups: Modified As-Treated Analysis\*

PROM	Weighted Difference in Average Scores (95% CI)	P value
mHHS	11.6 (4.3, 18.9)	<b>0.002</b>
iHOT-33	16.6 (6.6, 26.7)	<b>&lt;0.001</b>
VAS pain	-2.6 (-4.0, -1.2)	<b>&lt;0.001</b>

\*Weighted differences in scores are reported as mean (95% confidence interval). Reference group: PTA group. †A significant difference between groups. PROM, patient-reported outcome metric; SPT, surgery and physical therapy; PTA, physical therapy alone; CI, confidence interval; mHHS, modified Harris Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.

**Table V.** Treatment Failure: Patients Who Crossed Over to Total Hip Arthroplasty

PROM	SPT Group	PTA Group	Difference in SPT and PTA (95% CI)	P value
mHHS	21.1 (17.2, 25.0)	14.0 (11.2, 16.8)	7.1 (3.1, 11.1)	<b>&lt;0.001</b>
iHOT-33	44.6 (40.6, 48.6)	34.0 (31.1, 36.9)	10.6 (6.6, 14.6)	<b>0.001</b>
VAS pain	-1.1 (-1.8, -0.4)	-1.1 (-1.1, -1.1)	0.0 (-0.1, 0.1)	<b>0.881</b>

\*Patients who converted to THA were included in the ITT analysis but not in the as-treated analysis. Reference group: PTA group. PROM, patient-reported outcome metric; SPT, surgery and physical therapy; PTA, physical therapy alone; CI, confidence interval; mHHS, modified Harris Hip Score; iHOT-33, International Hip Outcome Tool-33; VAS, visual analog scale.