HIP ARTHROSCOPY IMPROVES OUTCOMES WITH MODERATE CONVERSION TO TOTAL HIP ARTHROPLASTY RATES IN PATIENTS AGED 50 YEARS OR OLDER: A SYSTEMATIC REVIEW

Ajaykumar Shanmugaraj, Mithilesh V. Kumar, Omar Alnaji, Nicole Simunovic, Marc J. Philippon, Olufemi R. Ayeni

MacOrtho

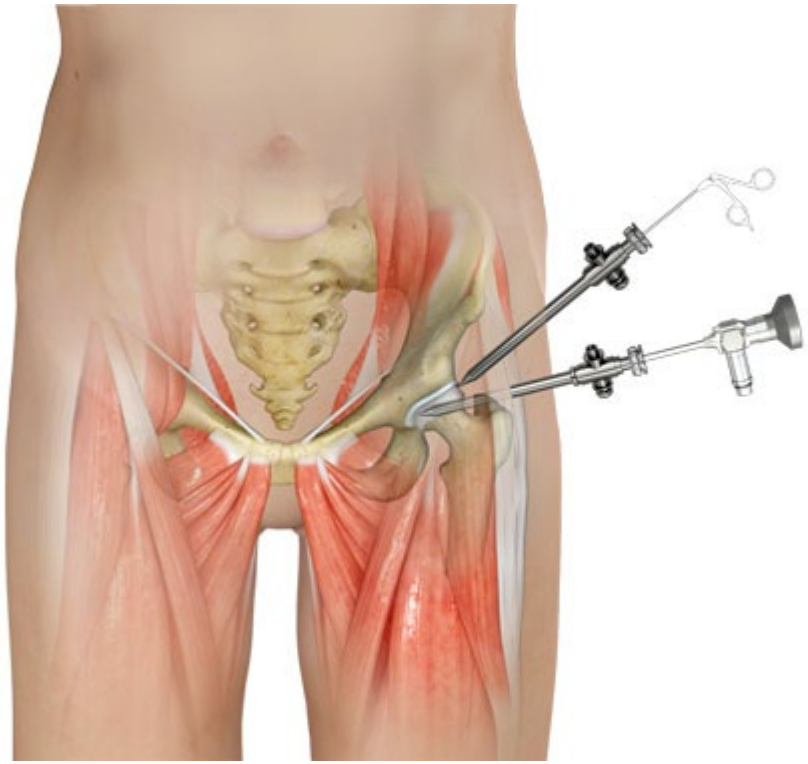
ISAKOS CONGRESS 2023

Boston Massachusetts June 18–June 21

McMaster University

Disclosures

- MJP
  - Personal fees from Smith & Nephew, Arthrosurface MJP Innovations, MIS, Synthes, Siemens, Bledsoe, ConMed Linvatec, DJO, Slack, and Elsevier
- MJP
  - Shareholder of Smith & Nephew, MIS, Vail Valley Surgical Center, Vail MSO Holdings, EffRx, Olatec, and iBalance (Arthrex), Stryker, Trimble, 3M, Bristol Meyers Squibb, Pfizer, AbbVie, and Johnson & Johnson
- MJP
  - Received grants from Smith & Nephew, Ossur, Arthrex, and Siemens
- MJP
  - Board member of Vail Health Services, Vail Valley Surgical Center, International Society of Hip Arthroscopy, Orthopedics Today, and AJSM
- MJP
  - Co-chair of the Steadman Philippon Research Institute, and investor in Manna Tree Partners, outside the submitted work
- ORA
  - Educational consultant for the Speakers Bureau of ConMed.



MacOrtho

Introduction & Background

- The prevalence of hip pain increases significantly with age in both the male and female populations [1-3], wherein 1 in 4 individuals are expected to develop hip pain by the age of 85 [4]

- This is often a result of age-related wear and tear, osteoarthritis (OA), and several musculoskeletal pathologies of the hip. Hip pain can be severely debilitating in the elderly and compromise their independence [5]

- A systematic review evaluating the utility of arthroscopy in patients aged 40 or older found that patients had significant improvements in postoperative outcomes compared to baseline, with a conversion to total hip arthroplasty (THA) at a rate of 18.1% at a mean of 25 months postoperatively [6]

- Given the significant increase in the prevalence of hip pathologies with increasing age [3] as well as the increased risk in conversion to THA [5-7], there is a need to assess the utility of hip arthroscopy in older age groups as well

MacOrtho

Purpose & Hypothesis

Purpose

- Evaluate the effectiveness and safety profile of hip arthroscopy in individuals aged 50 or older compared to younger patients

Hypothesis

- Patients will experience significant improvements in postoperative clinical outcomes compared to baseline, but may have a moderately increased risk of conversion to total hip arthroplasty (THA) compared to younger patients

MacOrtho

Methods

- Included studies reporting on the outcomes of primary hip arthroscopy for patients aged 50 years or older
- All levels of evidence
- Excluded editorials, reviews, technique studies and non-human or cadaveric studies

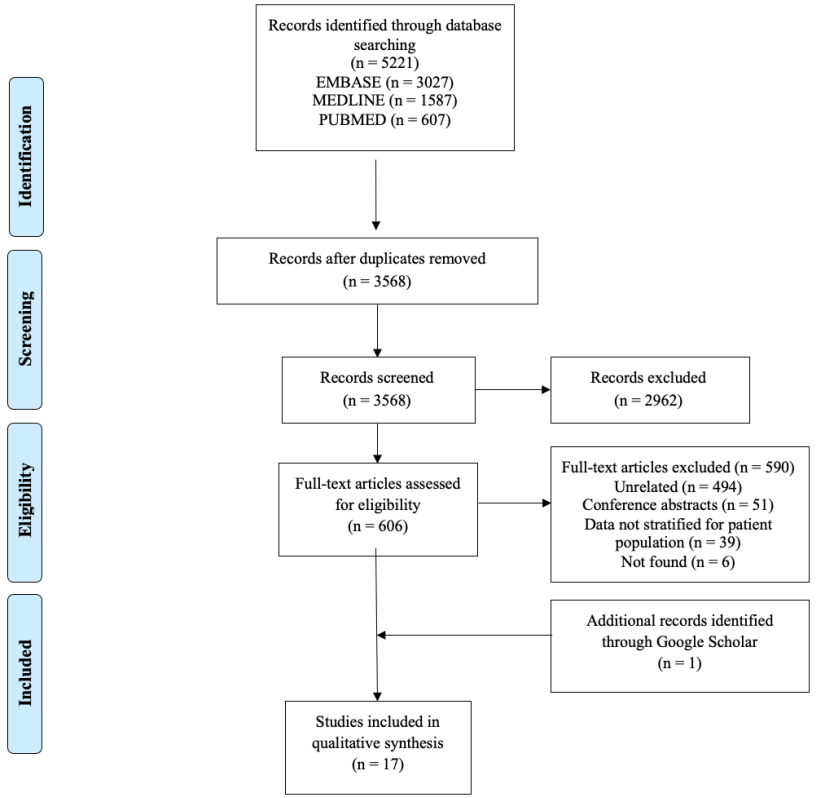


Fig 1. Preferred reporting items for systematic reviews and meta-analyses (PRISMA) flow diagram, demonstrating the systematic review of the literature for the use of hip arthroscopy for patients aged 50 years or older.

MacOrtho

RESULTS

Systematic review of the literature yielded 17 included studies with a total of 6,696 patients.

Demographic Data	
Total N (Hips)	6,696 (6,701)
Total N of Hips	6,701
Mean age	61.4 ± 5.0 years
Median follow-up	24 (range: 1.4-70.1)
Indications	
Undefined Pathology/Distribution of Pathologies Unclear	93.8%
FAI, OA + Labral Tear	2.7%
FAI	2.6%
Other (isolated labral tear, septic arthritis)	0.9%

MacOrtho

Outcomes

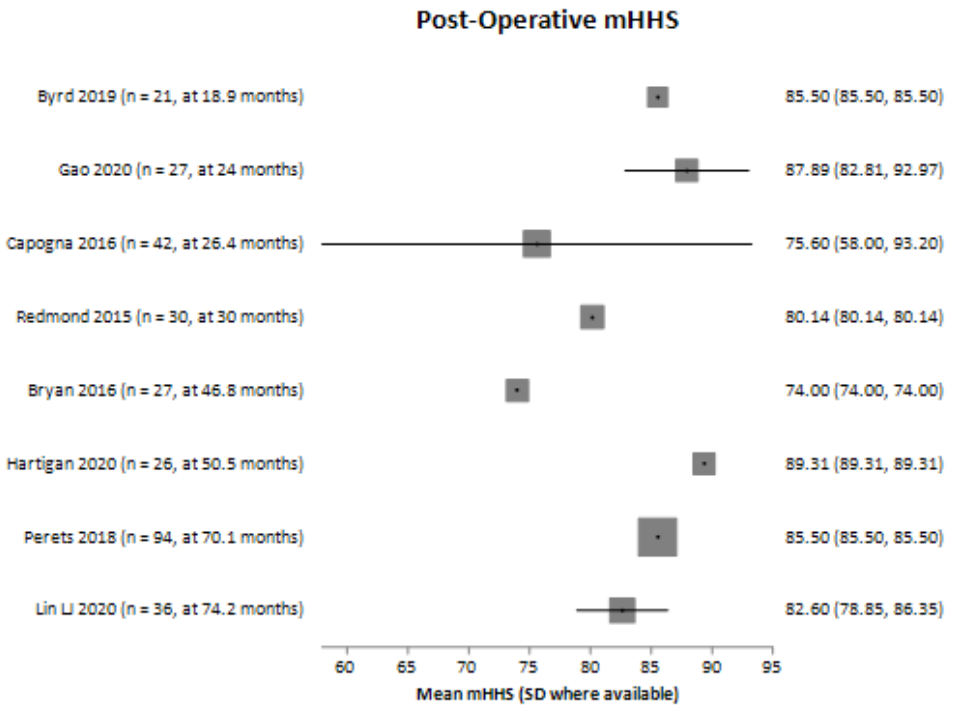


Fig. 2. Graphical representation depicting the mean (± SD) postoperative Harris Hip Score (mHHS) scores across studies reporting this outcome.

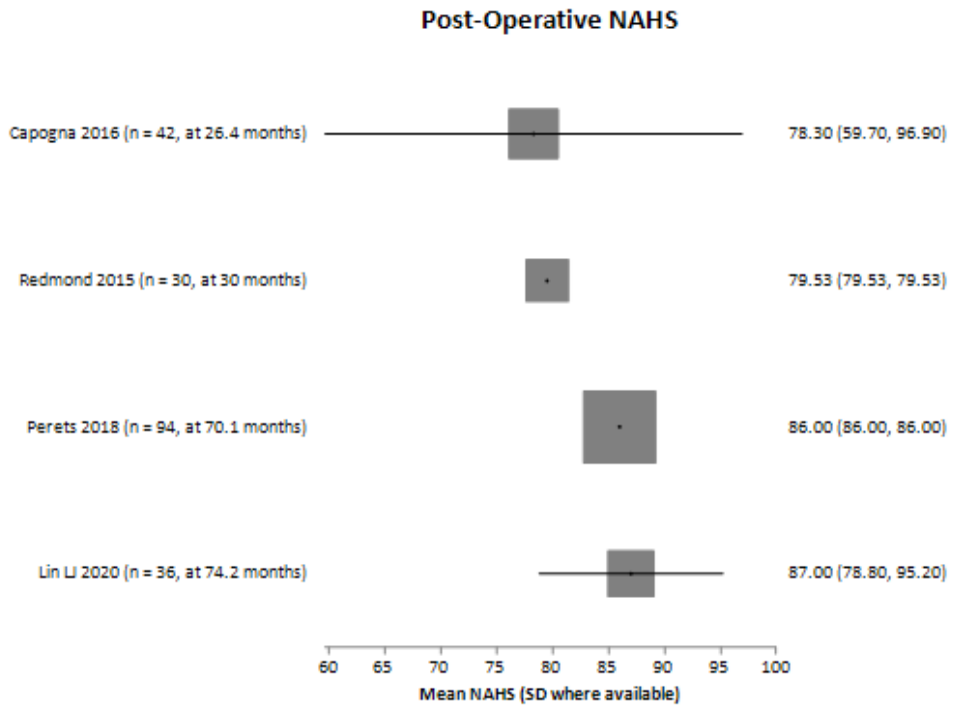


Fig. 5. Graphical representation depicting the mean (± SD) postoperative Nonarthritic Hip Score (NAHS) scores across studies reporting this outcome

MacOrtho

Outcomes (Cont'd)

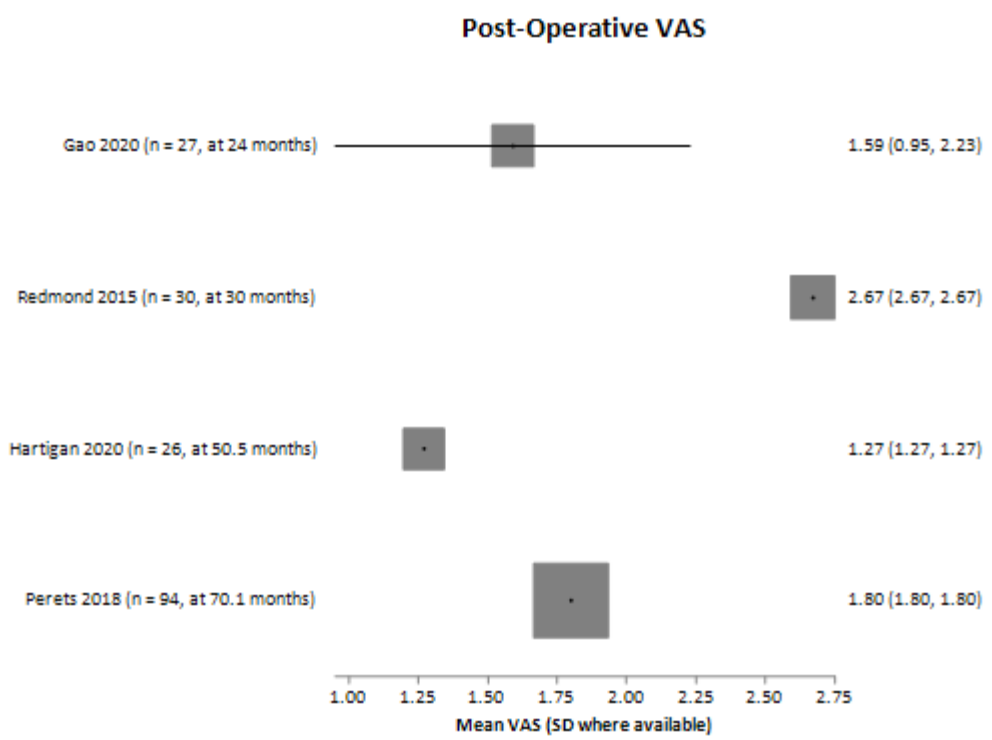


Fig. 4. Graphical representation depicting the mean (± SD) postoperative visual analog scale (VAS) scores across studies reporting this outcome.

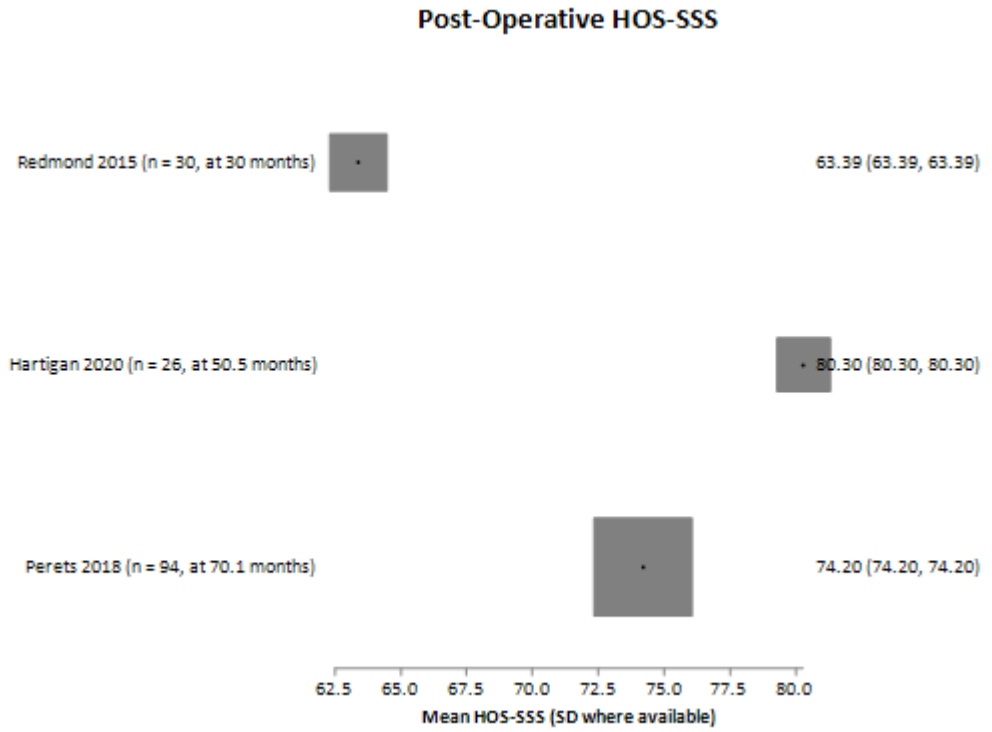


Fig. 5. Graphical representation depicting the mean (± SD) postoperative Hip Outcome Score-Sport Scale (HOS-SSS) scores across studies reporting this outcome

MacOrtho

Comparative Outcomes

- Patients aged 50 years or older, had significantly worse postoperative outcomes compared to those younger than 50 years of age ($p < 0.05$) [8-10]
- This was in outcome measures such as WOMAC (total, pain, stiffness and functionality subscales), HOS-ADL, HOS-SSS, and NAHS
- Studies also found that patients aged 50 years or older had a significantly higher risk of conversion to THA compared to younger counterparts ($p < 0.05$) [11,12]
- It was also found that those who required conversion to THA had significantly higher preoperative pain, acetabular inclination, severe chondral damage, and lower preoperative mHHS and HOS-ADL scores compared to those who did not require conversion [13]

MacOrtho

Complications

- The overall complication rates studies ranged from 0% to 38.3%

- Complications included conversion to THA (range: 0 to 34.6%), revision hip arthroscopy (range: 0 to 10.8%) and other minor complications (e.g., deep vein thrombosis, superficial wound infection, heterotopic ossification, etc.) (range: 0 to 17.4%)

- Mean time to conversion to THA ranged from 6 to 60 months postoperatively

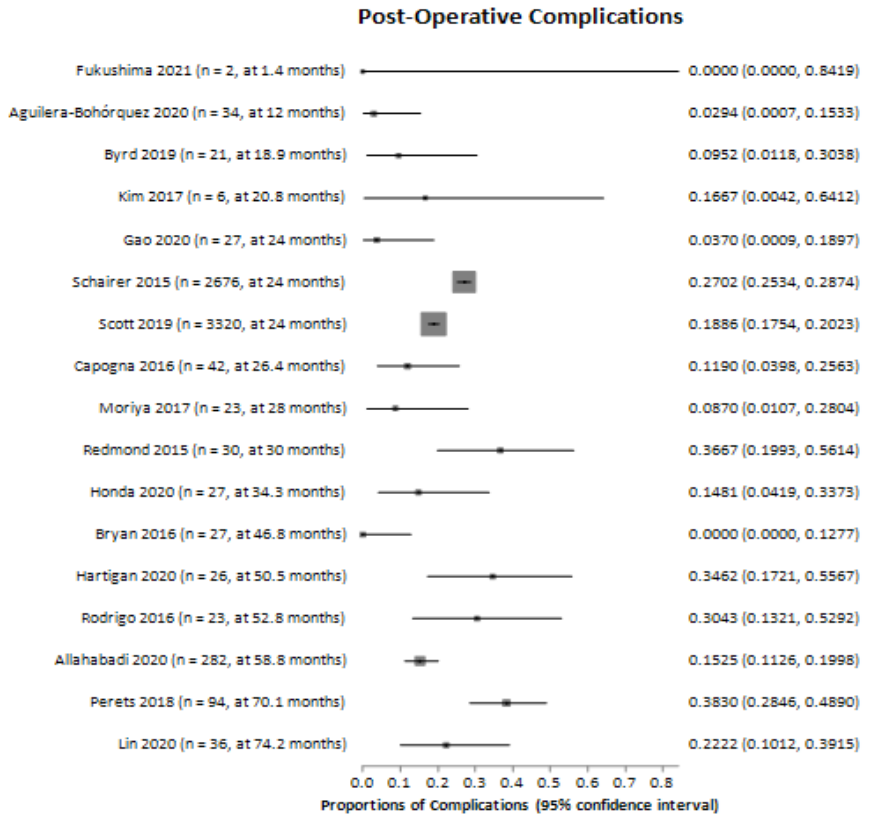


Fig. 6. Graphical representation depicting the proportion (95% confidence interval [CI]) of patients with postoperative complications across studies reporting complications.

MacOrtho

Limitations

- Low quality of evidence (64.7% Level IV studies)
- The methodological heterogeneity precluded a meta-analysis
- Seldom reporting of preoperative radiographic data, thus limiting our ability to identify whether patients were already at risk to failure, revision surgery, or conversion to THA prior to hip arthroscopy
- Variability of indications, surgical techniques, and rehabilitation protocol employed across included studies. Thus, an optimal operative management for older patients with hip pain undergoing hip arthroscopy could not be identified.

MacOrtho

Conclusions

- Hip arthroscopy for patients aged 50 years or older yields improvements in patient-reported outcomes postoperatively compared to baseline, with a moderate rate of conversion to THA (range: 0 to 34.6%).

- Clinicians should consider patient history (e.g., imaging, comorbidities, etc.) and values when electing for hip arthroscopy in the older population.

MacOrtho

References

1. Dawson J, Linsell L, Zondervan K, et al. Epidemiology of hip and knee pain and its impact on overall health status in older adults. Rheumatology (Oxford) 2004;43:497-504
2. Jung-Ho P, Jae-Young H, Kyungdo H, et al. Prevalence of symptomatic hip, knee, and spine osteoarthritis nationwide health survey analysis of an elderly Korean population. Medicine (United States) 2017;96:e6372.
3. Birrell F, Lunt M, Macfarlane G, Silman A. Association between pain in the hip region and radiographic changes of osteoarthritis: Results from a population-based study. Rheumatology 2005;44:337-341.
4. Murphy LB, Helmick CG, Schwartz TA, et al. One in four people may develop symptomatic hip osteoarthritis in his or her lifetime. Osteoarthritis Cartilage 2010;18:1372-1379.
5. Schon L, Zuckerman JD. Hip pain in the elderly: evaluation and diagnosis. Geriatrics 1988;43:48-62.
6. Horner NS, Ekhtiari S, Simunovic N, Safran MR, Philippon MJ, Ayeni OR. Hip arthroscopy in patients age 40 or older: A systematic review. Arthroscopy 2017;33: 464-475.e3
7. Griffin DW, Kinnard MJ, Formby PM, McCabe MP, Anderson TD. Outcomes of hip arthroscopy in the older adult: A systematic review of the literature. Am J Sports Med 2017;45:1928-1936.
8. Honda E, Utsunomiya H, Hatakeyama A, et al. Patients aged in their 70s do not have a high risk of progressive osteoarthritis following arthroscopic femoroacetabular impingement correction and labral preservation surgery. Knee Surg Sports Traumatol Arthrosc 2020;28: 1648-1655.
9. Aguilera-Bohorquez B, Brugiatti M, Coaquira R, Cardozo O, Cantor E. Functional outcomes of arthroscopic treatment in femoroacetabular impingement in patients over 60 years old compared with patients aged 40 years or younger. Rev Bras Ortop (Sao Paulo) 2020;55:715-721.
10. Bryan AJ, Krych AJ, Pareek A, Reardon PJ, Berardelli R, Levy BA. Are short-term outcomes of hip arthroscopy in patients 55 years and older inferior to those in younger patients? Am J Sports Med 2016;44:2526-2530
11. Lin LJ, Akpinar B, Bloom DA, Youm T. Age and outcomes in hip arthroscopy for femoroacetabular impingement: A comparison across 3 age groups. Am J Sports Med 2021;49: 82-89
12. Schairer WW, Nwachukwu BU, McCormick F, Lyman S, Mayman D. Use of hip arthroscopy and risk of conversion to total hip arthroplasty: A population-based analysis. Arthroscopy 2016;32:587-593.
13. Redmond JM, Gupta A, Cregar WM, Hammarstedt JE, Gui C, Domb BG. Arthroscopic treatment of labral tears in patients aged 60 years or older. Arthroscopy 2015;31: 1921-1927.

MacOrtho