International Trends In Arthroscopic Hip Preservation Surgery: Are We Treating The Same Patient?

Joshua D. Harris, MD, Brandon J. Erickson, MD, Philip Noble, PhD, Brian Lewis, MD, Patrick McCulloch, MD, Shane J. Nho, MD, MS

Investigation performed at:
Houston Methodist Orthopedics & Sports Medicine
Houston, Texas, USA
Disclosures

**JDH**: Editorial Board for Arthroscopy: The Journal of Arthroscopic and Related Surgery; Receives royalties from SLACK, Inc.

**SJN**: Paid consultant for Ossur, Stryker; Receives research from Allosource, Arthrex, Athletico, DJ Orthopaedics, Linvatec, Miomed, Smith & Nephew, Stryker; Editorial Board for J Bone Joint Surg, Am.

**PCN**: Royalties from Zimmer, Stryker, Omni, Springer; Speakers bureau for Zimmer; Paid consultant for Zimmer, Omni, DePuy; Research support from Zimmer; Editorial board for Journal of Arthroplasty, Hip Society.

All other authors no potential conflict of interest
Introduction

- Symptomatic femoroacetabular impingement (FAI)
  - Cam
  - Pincer
  - Labral injury
- Arthroscopic hip preservation surgery
  - Femoral cam osteochondroplasty
  - Pincer acetabuloplasty “rim trimming”
  - Labral repair
  - Complete capsular closure
- Variable subjects, indications, techniques, definitions, assessments, and outcomes across the world
Purpose

• To perform a systematic review and meta-analysis of the entire arthroscopic hip preservation literature to:
  – Identify and compare summative characteristics of:
    • Studies published
    • Subjects analyzed
    • Surgical techniques performed
    • Outcomes measured
  – Compare continents and countries of publication
Methods

• PROSPERO registration
• PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines utilized
• Eligible studies included:
  – Therapeutic clinic outcome studies
  – Level I, II, III, IV evidence
  – No minimum follow-up length
• All study, subject, surgical, outcome variables analyzed
• Comparisons made: Continents, Countries
• Student’s t-test, ANOVA, $\chi^2$, 2-proportion Z-test
Results

Potentially relevant studies identified and screened
N = 158

Potentially relevant clinical studies identified and screened
N = 157

No reported demographics
N = 1

Potentially relevant studies identified and screened
N = 155

Patients only undergoing hip arthroscopy for septic arthritis
N = 2

Potentially relevant studies identified and screened
N = 153

Patients undergoing hip arthroscopy for complications after THA
N = 2

Potentially relevant studies identified and screened
N = 151

Patients undergoing hip arthroscopy for extra-articular pathology only
N = 2

Potentially relevant studies identified and screened
N = 150

Patients undergoing only diagnostic hip arthroscopy
N = 1

Studies included for final analysis in review
N = 134

Duplicate patient population
N = 16
Results

• 134 studies (10,752 subjects; 11,007 hips)
  – 88% Level IV evidence
    • Significantly (p<0.05) improved with later publication date
  – Mean Modified Coleman Methodology Score 32 (poor)
    • Significantly (p<0.05) improved with later publication date
  – 93% single-center investigations
  – 52% studies denied presence of financial conflict of interest
  – 51% female; 49% male
  – Mean age 37.6 years
  – Mean 27.2 months follow-up
Results

Number of studies increased over time $p < 0.05$
Results

• North America (58%) published largest number of studies
  – Also, largest number of subjects (55%) and hips (56%)
  – Followed by:
    • Europe
    • Asia
    • Australia
    • South America

• USA (54%) published largest number of studies
  – Also, largest number of subjects (52%) and hips (53%)
  – Followed by:
    • England
    • Switzerland
    • Germany
    • Australia
Results

- Poorly defined indications globally
  - Cam FAI
    - Explicit definition in 9 - 20% of studies
  - Pincer FAI
    - Explicit definition in 9 - 22% of studies
  - Dysplasia
    - Explicit definition in 14 - 21% of studies
  - Osteoarthritis
    - Explicit definition in 40 - 65% of studies
Results

• Hip arthroscopy in osteoarthritis
  – Australia (22%)
  – Europe (18%)

• Hip arthroscopy in dysplasia, borderline dysplasia
  – North America (2.7%)
  – Europe (2.0%)

• Most frequently performed:
  – Supine:
    • North America, South America, Asia
  – Lateral:
    • Europe, Australia
Results

• Only 44% of studies utilized at least one clinical outcome score following hip arthroscopy
• Modified Harris Hip Score was most common outcome measure utilized (24% of studies)
  – Followed by Non-Arthritic Hip Score and Hip Outcome Score
Results

• No significant difference between continents in:
  – Level of evidence \((p = 0.285)\)
  – MCMS \((p = 0.828)\)
  – Length of follow-up \((p = 0.957)\)
  – Gender \((p = 0.694)\)
  – Age \((p = 0.522)\)
  – Body mass index \((p = 0.650)\)
  – Mean alpha angle \((p = 0.727)\)
  – Mean lateral center edge angle \((p = 0.936)\)

• Modified Harris Hip Score was different between continents \((p = 0.014)\)
Conclusions

• Quantity and quality of arthroscopic hip preservation literature is significantly increasing with time

• Several significant differences in study, subject, and surgical technique demographics between continents and countries were identified

• Deficiencies in study reporting were identified
  – Serve as international impetus for future study quality improvements
References


