Revision hip arthroscopy yields inferior patient reported outcome measures and 2-year satisfaction along with higher total hip arthroplasty conversion compared to the primary setting: A Systematic Review and Meta-Analysis

Juan Bernardo Villarreal-Espinosa, MD[1]; Fernando Gómez-Verdejo, MD[1]; Michael Murray, BS[1]; Kyleen Jan, MD[1]; Amelia L Hummel, MD[1]; Melissa Carpenter, BS[1]; Udit Dave, BS[1], Cameron Gerhold, BS[1], Kristen I Barton, MD, PhD[2]; Jorge Chahla, MD, PhD[1]

[1]Department of Orthopaedics, Rush University Medical Center; Chicago, IL, USA

[2]Western University, London, Ontario, Canada

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Disclosures

Dr. Jorge Chahla reports a relationship with American Orthopaedic Society for Sports Medicine that includes: board membership. Jorge Chahla reports a relationship with Arthrex Inc that includes: consulting or advisory. Jorge Chahla reports a relationship with Arthroscopy Association of North America that includes: board membership. Jorge Chahla reports a relationship with CONMED Corp that includes: consulting or advisory. Jorge Chahla reports a relationship with International Society of Arthroscopy Knee Surgery and Orthopaedic Sports Medicine that includes: board membership. Jorge Chahla reports a relationship with Ossur Americas that includes: consulting or advisory. Jorge Chahla reports a relationship with Smith and Nephew Inc that includes: consulting or advisory and speaking and lecture fees. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Introduction

Arthroscopic hip surgery has emerged as a viable option to address femoroacetabular impingement and hip labral tears.

As primary hip arthroscopy rates rise so do revision hip arthroscopy rates. It has been reported that 2-17% of patients undergoing a primary arthroscopic procedure may require revision surgery.

It remains unknown who benefits the most from revision hip arthroscopy and thus the indications for revision have not been well-established.

Purpose

To compare functional and patient reported outcomes between primary and revision hip arthroscopy.

Study Design: Systematic Review and Meta-Analysis of Level I-III studies.

Methods

- PRISMA Guidelines
- Inclusion:
  - Level I-III (comparative)
  - Clinical studies reporting primary vs. revision hip arthroscopy
  - Minimum 2-year follow-up
- Databases: PubMed, EMBASE, CIANAHL
- MINORS instrument
- Fixed/Random-effects meta-analysis

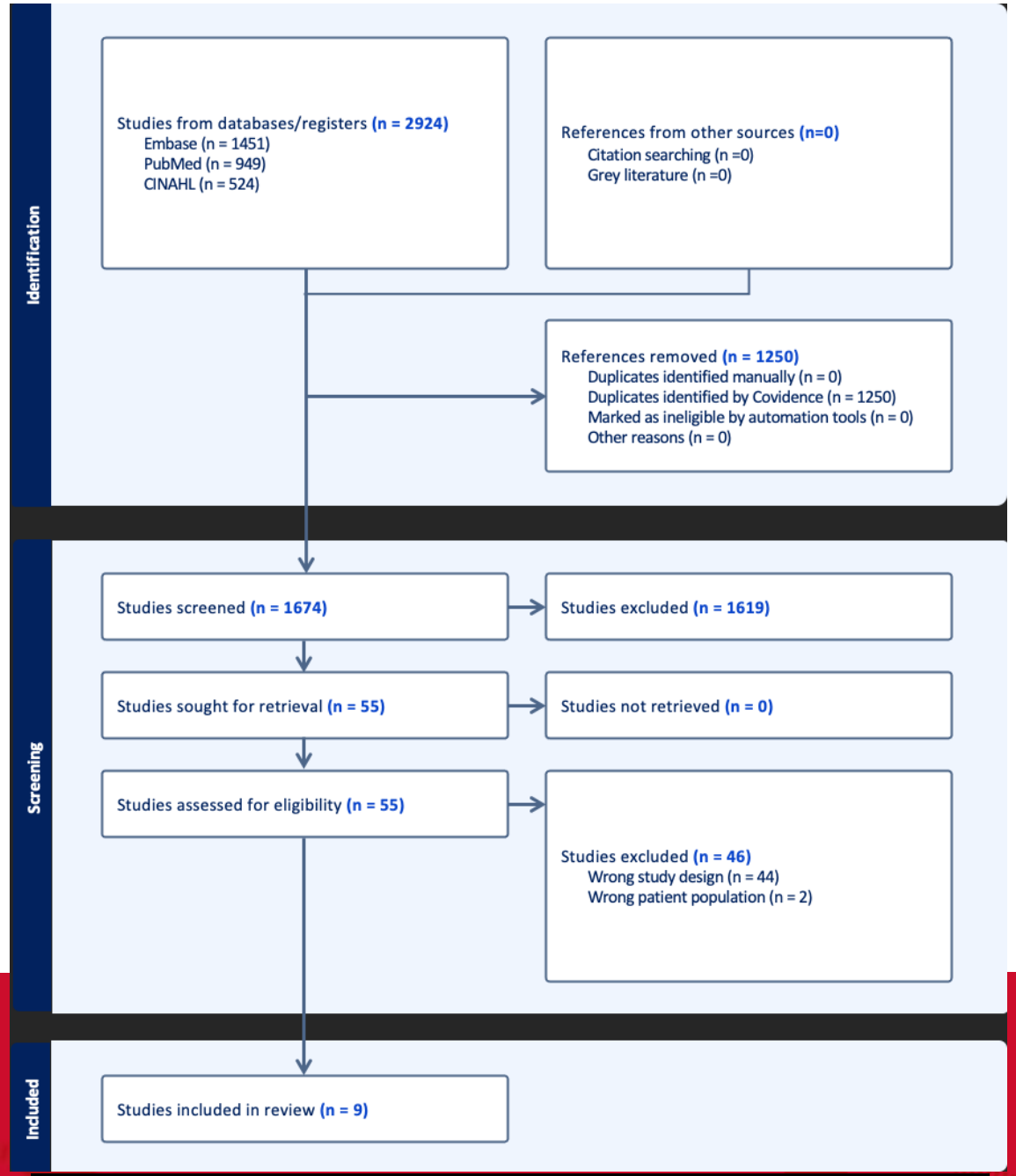

Figure 1. PRISMA Flowchart.

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Results

- **9 studies**
  - 2118 primary patients (2230 hips)
    - Mean follow-up: 42 (24 – 72.8) months
    - Mean age 34 (16 – 50) years
  - 723 revision patients (737 hips)
    - Mean follow-up: 49 (24 – 72.8) months
    - Mean age 34 (16 – 49) years

Table 1. Study and Patient Characteristics.

Study	Study design	MINORS	Cohorts	No. subjects	No. hips	Mean age (SD) (range)	Female, n (%)	Mean (SD) (range) Follow-up, months	Alpha Angle (SD) (range)	LCEA (SD) (range)
Chapman et al., 2024 [8]	Retrospective Cohort (Level III)	21	Primary	204	204	33.2 (11.2)	140 (68.6%)	62.9 (9.2)	59.3 (12.2)	31 (5.4)
			Revision	51	51	36.2 (10.2)	35 (68.6%)	63.9 (9.2)	52.2 (15.6)	29.6 (6.3)
Maldonado et al., 2021 [23]	Retrospective Cohort (Level III)	20	Primary	254	254	33.9 (13.2) (32.3-35.5)	179 (70.4%)	72.8 (21.2) (70.2-75.4)	44 (7)	29.7 (6.4)
			Revision	127	127	34.9 (12.4) (32.7-37)	94 (74%)	72.8 (23.3) (68.8-76.9)	45.2 (7.4)	30.3 (5.4)
Domb et al., 2016 [11]	Prospective Cohort (Level II)	19	Primary	824	931	36.6 (13.1-76.3)	479 (58.1%)	25.7 (12.1-68)	59.2 (11.8) (7-105)	29.7 (6.6) (11-54)
			Revision	97	107	33.7 (14.9-70.2)	66 (68%)	26.4 (11.9-66.1)	53.9 (13.2) (33-93)	29.6 (6.7) (14-49)
Maldonado et al., 2023 [22]	Case-Control (Level III)	20	Primary	87	87	50.3 (7) (48.8-51.8)	59 (67.8%)	66.1 (36.8) (58.4-73.8)	60.3 (10.7) (58-62.5)	31.2 (6.5) (29.8-32.6)
			Revision	87	87	49.5 (8) (47.8-51.2)	58 (66.7%)	63.5 (38.6) (55.4-71.6)	52.1 (11.7) (49.6-54.6)	30.6 (6) (28.7-31.3)
Monahan et al., 2021 [27]	Retrospective Cohort (Level III)	20	Primary	88	92	19.2 (18.7-20.5)	62 (67.4%)	median 36.5 (33.5-37.7)	60 (56.9-62.5)	31 (29.7-31.7)
			Revision	29	32	19.9 (19.1-21.3)	23 (71.9%)	median 29.5 (27.2-32.1)	50 (46.9-55.4)	29 (28-30.9)
Newman et al., 2016 [30]	Prospective Cohort (Level II)	22	Primary	492	492	33.4 (9)	290 (58.9%)	43 (15)	70 (14)	34 (8)
			Revision	246	246	32.1 (9)	145 (58.9%)	44 (16)	70 (32)	34 (8)
Newman et al., 2016 [29]	Retrospective Cohort (Level III)	21	Primary	84	84	16 (14-18)	68 (80.9%)	45 (18)	68 (14)	33 (9)
			Revision	42	42	16 (14-18)	34 (80.9%)	43 (17)	64 (20)	32 (7)
Labral reconstruction cohorts										
Locks et al., 2018 [19]	Retrospective Cohort (Level III)	16	Primary	35	36	33 (14)	28 (77.7%)	43.2 (12)	NR	NR
			Revision	17	18	33 (14)	14 (77.7%)	43.2 (12)	NR	NR
Yuro et al., 2023 [40]	Retrospective cohort (Level III)	18	Primary	50	50	47.5 (10.5)	32 (64%)	24	69.6 (9.8)	35.6 (8)
			Revision	27	27	39.1 (8.8)	19 (27.3%)	24	64.5 (10.8)	35.5 (4.5)

^Number (No/n); Standard Deviation (SD); Lateral center edge angle (LCEA)

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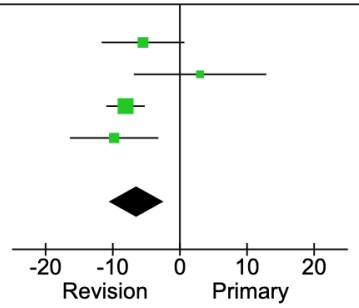
Results

- **Hip Outcome Score – Activities of Daily Living**

- **4 studies reported HOS-ADL**
  - 816 primary patients
  - 357 revision patients
  - Lower mean score observed in the revision group (MD=-6.53, 95%CI=-10.37, -2.69, p=0.0009, I^2=44%)

Study or Subgroup	Revision Mean	Revision SD	Revision Total	Primary Mean	Primary SD	Primary Total	Weight	Mean difference IV, Random, 95% CI
Chapman et al., 2024	80.4	21	51	85.9	15.7	204	23.2%	-5.50 [-11.65 , 0.65]
Locks et al., 2018	80	16	18	77	20	36	12.0%	3.00 [-6.86 , 12.86]
Newman et al., 2016	79.1	20	246	87.2	16	492	43.5%	-8.10 [-10.97 , -5.23]
Newman et al., 2016.	77.6	19	42	87.4	15	84	21.4%	-9.80 [-16.38 , -3.22]
Total (95% CI)			**357**			**816**	**100.0%**	**-6.53 [-10.37 , -2.69]**

Heterogeneity: Tau² = 6.67; Chi² = 5.37, df = 3 (P = 0.15); I² = 44%
Test for overall effect: Z = 3.34 (P = 0.0009)
Test for subgroup differences: Not applicable



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Results

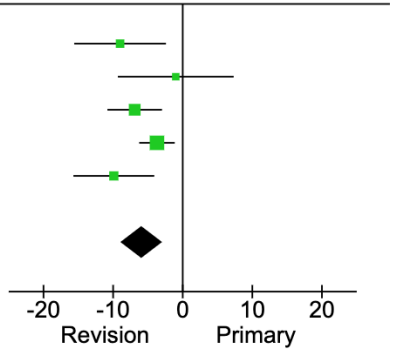
- **Modified Harris Hip Score**

- **5 studies reported mHHS**
  - 1,070 primary patients
  - 484 revision patients

  - Lower mean mHHS in the revision hip arthroscopy cohort (MD=-5.96, 95%CI=-8.76, -3.17, p=0.0001, I^2=41%)

Study or Subgroup	Revision Mean	Revision SD	Revision Total	Primary Mean	Primary SD	Primary Total	Weight	Mean difference IV, Random, 95% CI
Chapman et al., 2024	72.2	22.4	51	81.2	17.3	204	13.3%	-9.00 [-15.59 , -2.41]
Locks et al., 2018	79	14	18	80	16	36	9.3%	-1.00 [-9.32 , 7.32]
Maldonado et al., 2021	77.5	19.2	127	84.4	16.7	254	25.5%	-6.90 [-10.82 , -2.98]
Newman et al., 2016	79	17	246	82.7	16	492	35.9%	-3.70 [-6.25 , -1.15]
Newman et al., 2016.	74.3	16	42	84.2	15	84	16.0%	-9.90 [-15.71 , -4.09]
Total (95% CI)			**484**			**1070**	**100.0%**	**-5.96 [-8.76 , -3.17]**

Heterogeneity: Tau² = 3.98; Chi² = 6.80, df = 4 (P = 0.15); I² = 41%
Test for overall effect: Z = 4.18 (P < 0.0001)
Test for subgroup differences: Not applicable



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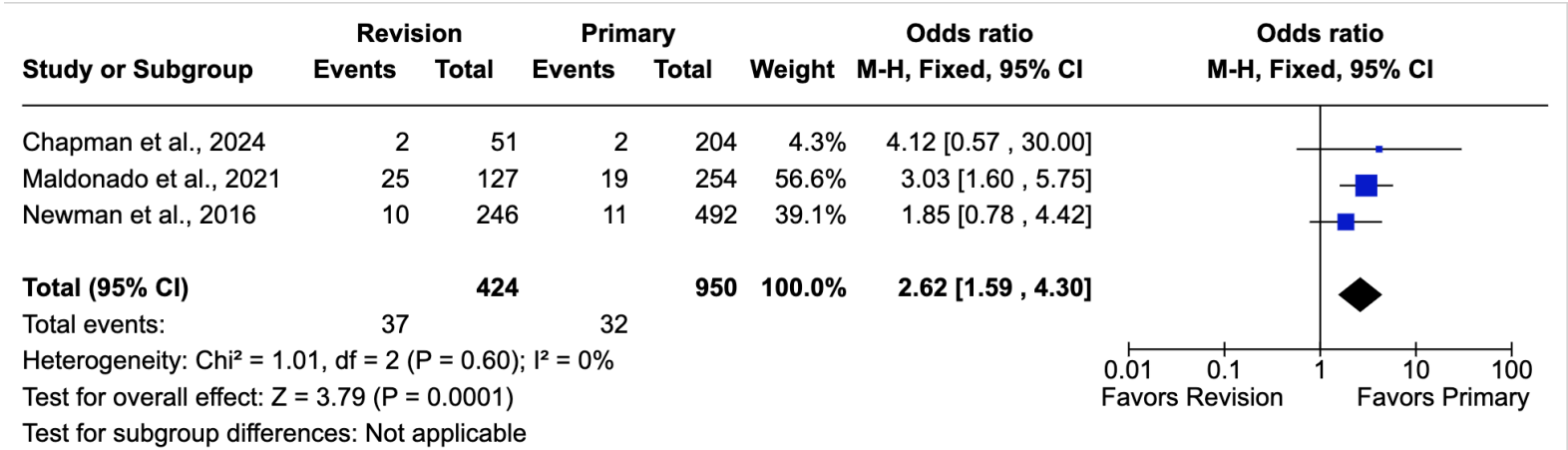
Results

- **Hip Arthroplasty conversion rate**

- **3 studies reported THA conversion**
  - 950 primary cases
  - 424 revision cases

  - Increased THA conversion in revision cohort (3.3% vs. 8.7%, OR=2.62, 95%CI=1.59, 4.30, p=0.0001, I^2=0%)



Discussion

- **Worse outcomes in revisions** – Revision hip arthroscopy shows poorer function, PROMs and patient satisfaction vs. primary.
- **Higher THA conversion** – Revision patients more likely to need conversion to total hip arthroplasty.
- **Lower PASS rates** – Revision patients consistently achieve lower PASS scores.

Limitations

- **Limited studies** – Small sample size due to few comparative studies.
- **Low evidence level** – Most studies were level III, risking group differences.
- **Patient overlap** – Some data overlap; most complete sets used.
- **Confounding procedures** – Extra procedures may affect outcomes.
- **Qualitative PASS/MCID** – PASS and MCID rates not fully quantified.

Conclusion

Patients undergoing revision hip arthroscopy achieve inferior patient satisfaction and functional outcomes, as reflected in patient reported outcome measures and PASS achievement rates, compared to those observed in the primary setting. No apparent revision arthroscopy differences were observed; however, the revision cohort was associated with higher total hip arthroplasty conversion rates.

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