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Meniscal Repair as a Solution in “Older” Patients: A Systematic Literature Review with Meta-analysis

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Disclosures

Alan Getgood, MD, FRCS(Tr&Orth), DipSEM:

- Speaker for Smith & Nephew
- Paid consultant for Smith & Nephew, Precision OS
- Stock received from Spring Loaded Technology, Precision OS, LinkX Robotics
- Support received from Smith & Nephew, Ossur

Christopher Saunders, PhD:

- Employee of Smith & Nephew

Matthew J Sedgwick, PhD:

- Employee of Smith & Nephew



Background

- Meniscectomy has traditionally been the treatment of choice for meniscal tears but leads to degeneration resulting in an increased risk of osteoarthritis¹, total knee arthroplasty² and loss of function³
- Meniscal preservation can mitigate these negative effects³⁻⁶
- Despite the long-term benefits of meniscal repair, it appears to be less commonly adopted in older populations due to a concern that it is less likely to be successful



Purpose

1. To establish the success rates and patient outcomes of meniscal repair in “older” patients (≥ 40 years)
2. To compare the success rates and patient outcomes of meniscal repair in “older” and “younger” (< 40 years) patients



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Study Design and Methods

Systematic literature review

- Two prior systematic literature reviews^{7,8}
- Updated literature search using Embase and PubMed on 29 Sept 2021
 - (“meniscus repair” OR “meniscal repair”) AND (age OR old OR older)
 - Filters: English language; 1 Jan 2017 - 29 Sept 2021

Inclusion Criteria

Population:

- All patients ≥ 40 years with a main body meniscal tear
- $N \geq 5$ patients

Intervention:

- Meniscal repair with or without concomitant anterior cruciate ligament reconstruction

Comparator

- No comparator required
- Meniscal repair, with or without concomitant anterior cruciate ligament reconstruction, in patients aged < 40 years

Outcome:

- Meniscal repair failure rate, as defined by each individual study
- Revision procedure (meniscus repair or meniscectomy) rate
- Patient-reported outcome measures

Other:

- Primary empirical clinical study (i.e. reviews, systematic literature reviews, editorials, and meta-analyses were excluded)
- Full-text publication (i.e. conference abstracts were excluded)
- English language



Results: Overview

16 articles representing 15 studies included^a (Figure)

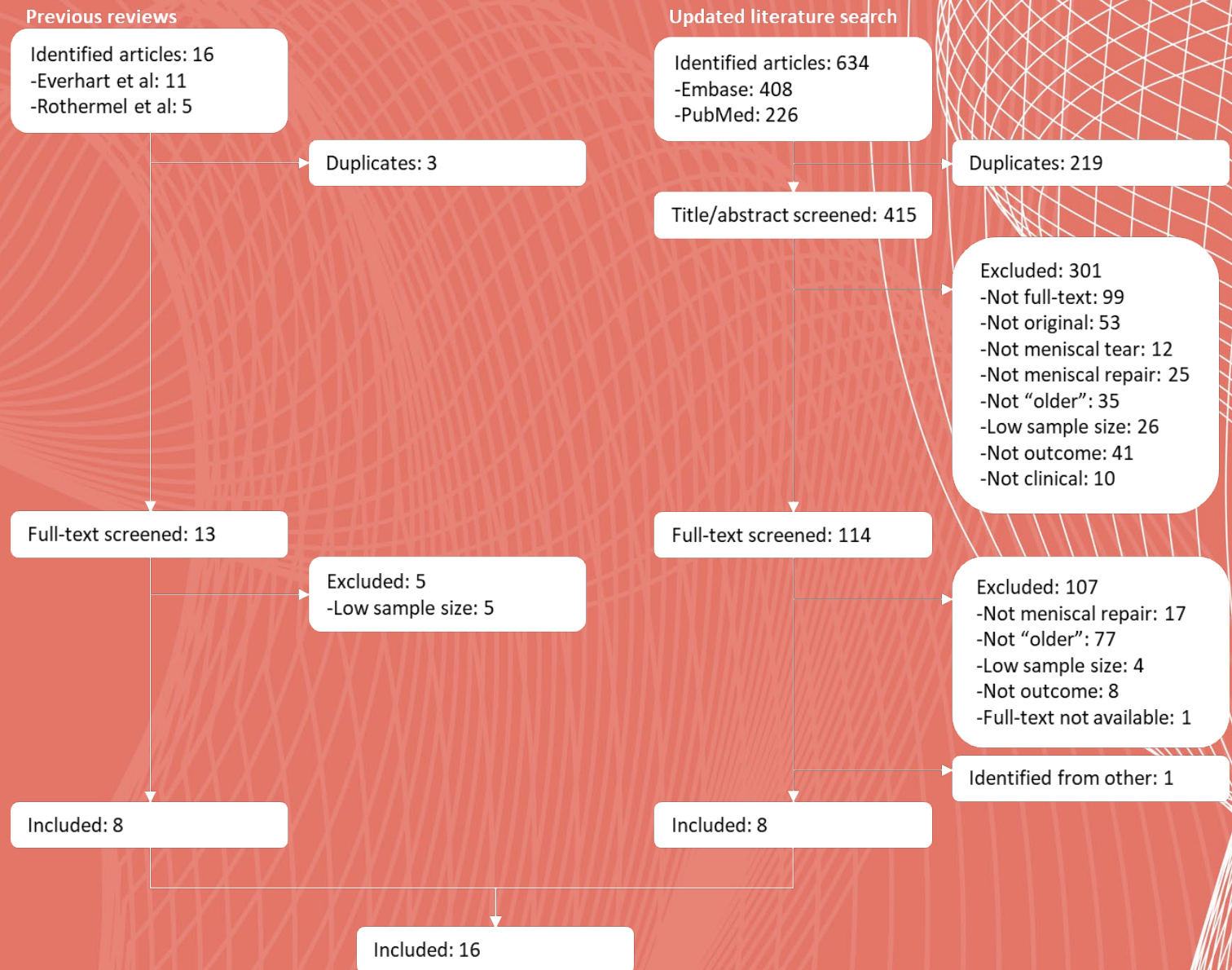
- 7 retrospective cohort studies^b
- 5 retrospective case series studies^c
- 3 prospective case series studies
- 1 retrospective case-control study^d

a Two articles on same patient cohort

b One article considered older ≥ 45 and younger < 45 years of age

c All provided individual patient data allowing for an “older” and “younger” comparison

d Case study arm was meniscal repair, control study arm was meniscectomy



Results: Failure Rate

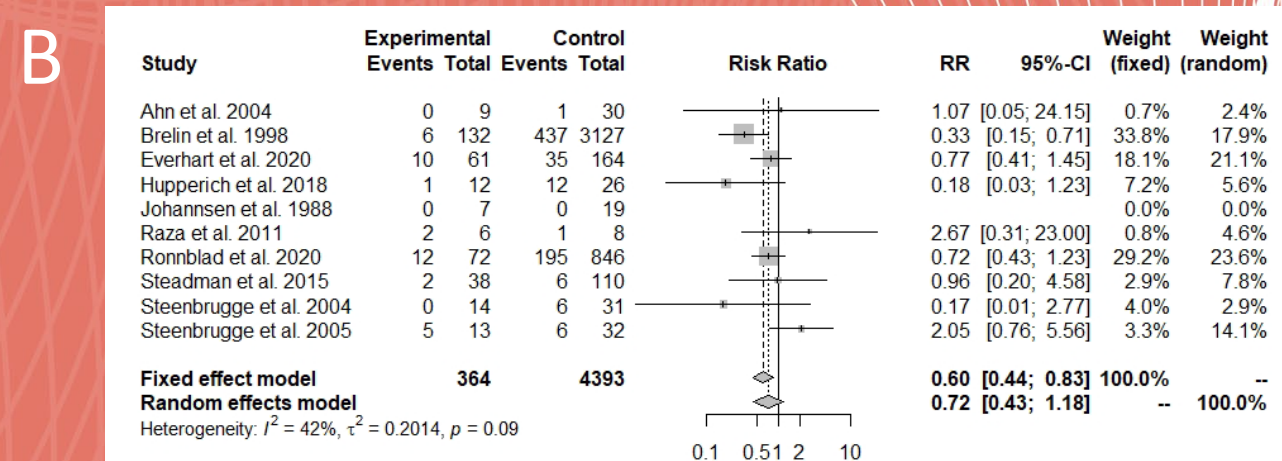
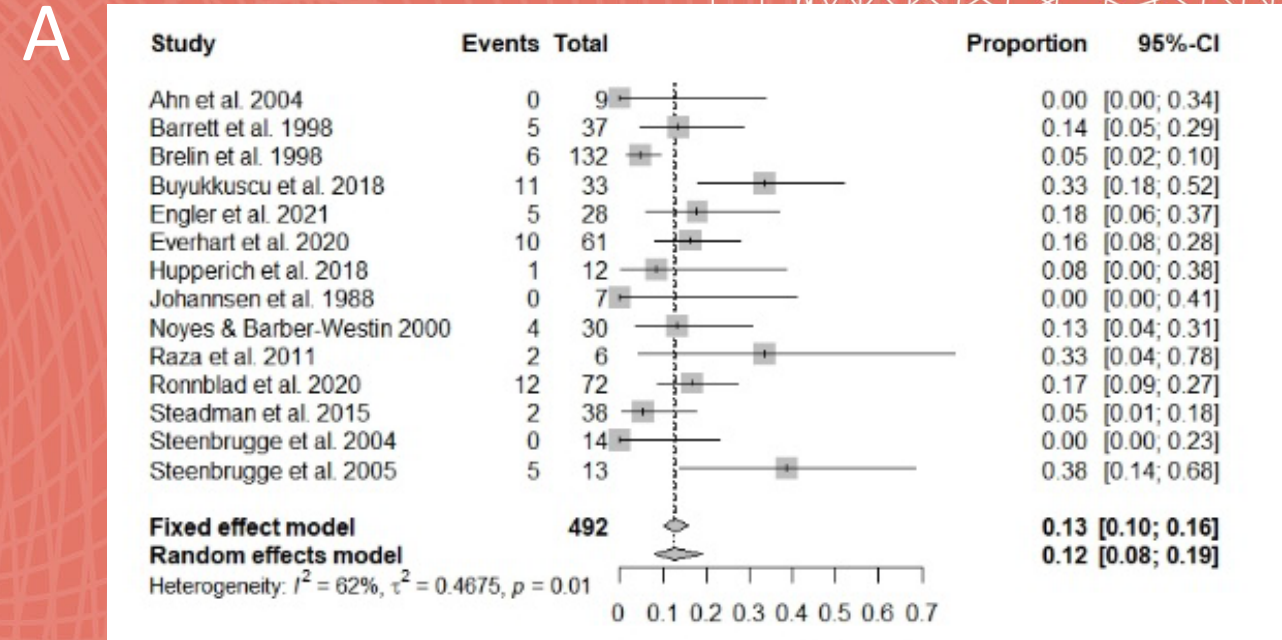
In “older” patients (Figure A)

- 12.5% (95% CI, 8.0 – 19.1)

“Older” vs. “younger” patients (Figure B)

- RR 0.60 (95% CI, 0.44 – 0.83; $p = 0.0020$)

CI = confidence interval, RR = risk ratio



Meniscal failure rate in “older” patients (top) and relative risk of meniscal failure rate in “older” compared with “younger” patients (bottom). Failure as defined by individual studies.

Results: Meniscus Revision Rate

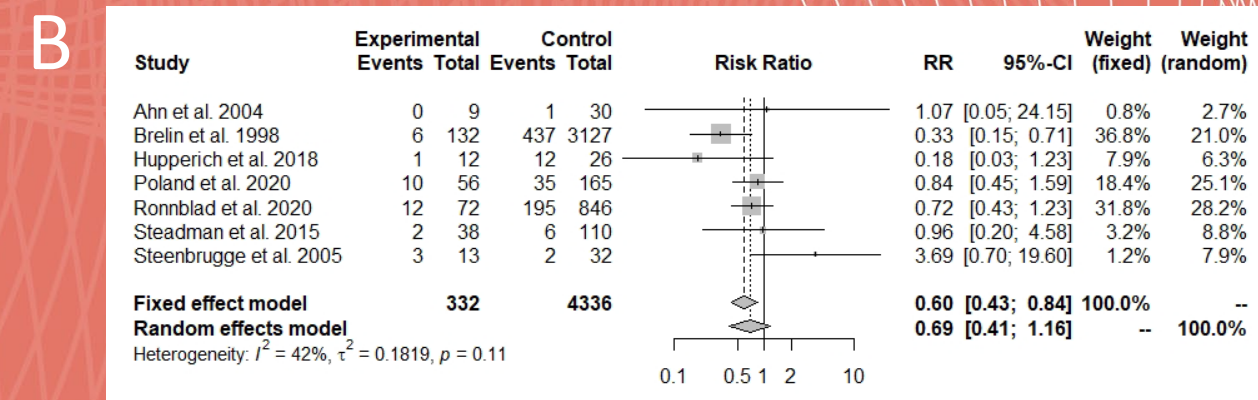
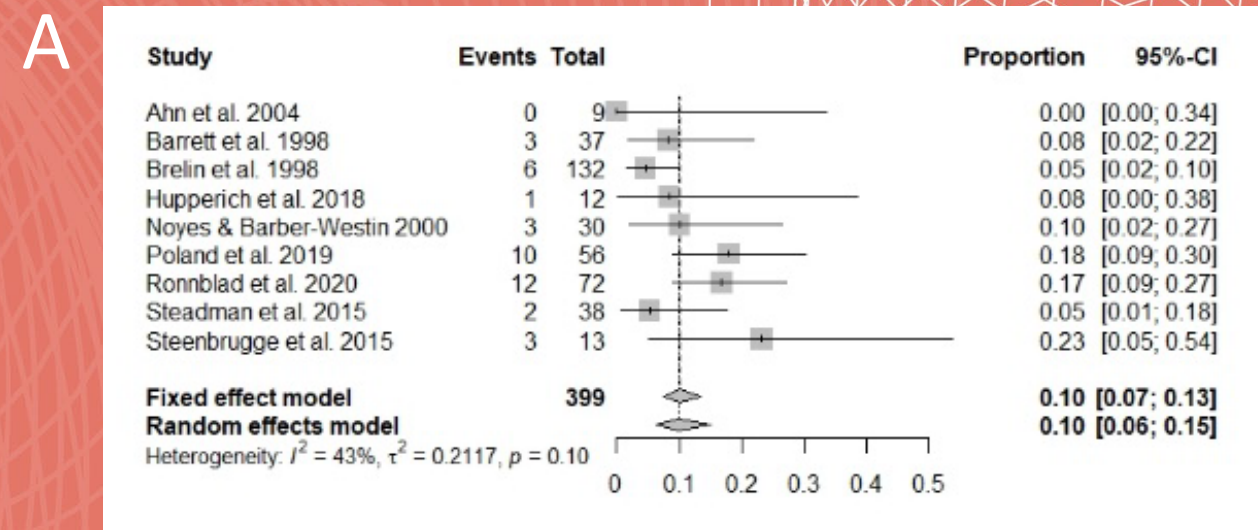
In “older” patients (Figure A)

- 10.0% (95% CI, 7.4 – 13.4)

“Older” vs. “younger” patients (Figure B)

- RR 0.60 (95% CI, 0.43 – 0.84; $p = 0.0030$)

CI = confidence interval, RR = risk ratio



Meniscus revision rate in “older” patients (top) and relative of meniscal revision in “older” compared with “younger” patients (bottom). Revision considered as second meniscus repair or meniscectomy on the originally repaired meniscus.



Patient-Reported Outcome Measures

Post-operative International Knee Documentation Committee (IKDC) score

- “Older” patients: 76.9 (95% CI, 69.2 – 84.5; 4 studies)

Post-operative Lysholm score

- “Older” patients: 86.7 (95% CI, 81.7 – 91.7; 4 studies)
- “Older” vs. “younger” patients: Mean difference 2.3 (95% CI, 4.7 – 9.2; $p = 0.528$; 3 studies).



Conclusions

- Meniscal repair in patients aged ≥ 40 years shown to result in similar or better success rates and patient-reported outcome measures to those of patients aged < 40 years
 - Observations may be confounded by factors associated with age and a more stringent algorithm in place for patients ≥ 40 years (selection bias)
- Meniscal repairs can be performed in at least a specific portion of “older” patients, and age per se should not be a sole determining factor in the selection to perform a meniscal repair



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