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Clinical Performance of an All-inside Meniscal Repair Device: A Systematic Literature Review with Meta-analysis

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Disclosures:

- Darren Johnson, MD, FAAOS:
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  - Paid consultant: Smith & Nephew Endoscopy
- Paul Souter, PhD
  - Employee and shareholder of Smith & Nephew
- Matthew Sedgwick, PhD
  - Employee of Smith & Nephew

Background

- Meniscal tears are a common knee injury often treated with meniscectomy
- Meniscectomy has been shown to lead to long-term consequences which can be avoided by meniscal repair[1,2]
- Repair of meniscal tears with all-inside techniques has several advantages over traditional inside-out meniscal repair:
  - Reduce nerve complication[3]
  - Reduce operative time[3]

Purpose

The purpose of this study was to establish the success rate, revision rate and patient-reported outcome measures following repair of a meniscus tear using FAST-FIX™ all-inside meniscal repair devices (Smith & Nephew).

Study Design and Methods

- A systematic literature review of Embase and PubMed:
  - Embase search terms: fastfix OR ‘fast fix’ (27th June 2022)
  - PubMed search terms: fast-fix OR “fastfix” OR “fast fix” (26th June 2022)

Inclusion criteria	Exclusion criteria
• Patients of any age undergoing meniscal body repair • Sole use of FAST-FIX devices (any variant) for meniscal repair • ≥10 patients • Meniscal repair as either an isolated procedure or in conjunction with anterior cruciate ligament reconstruction • Reporting an outcome of interest • Primary empirical clinical study • Full-text publication or conference abstract • English language	• Meniscal root tear or ramp lesion repair • Use of meniscal allograft • Hybrid repairs (e.g., concurrent use of FAST-FIX and inside-out repair techniques) • Outcome data not specific to the FAST-FIX (i.e., pooled with other procedures or devices) • <10 patients • Animal or cadaveric studies • Laboratory-based studies • Surgical technique description without clinical data • Reviews, systematic literature reviews, editorials, and meta-analyses

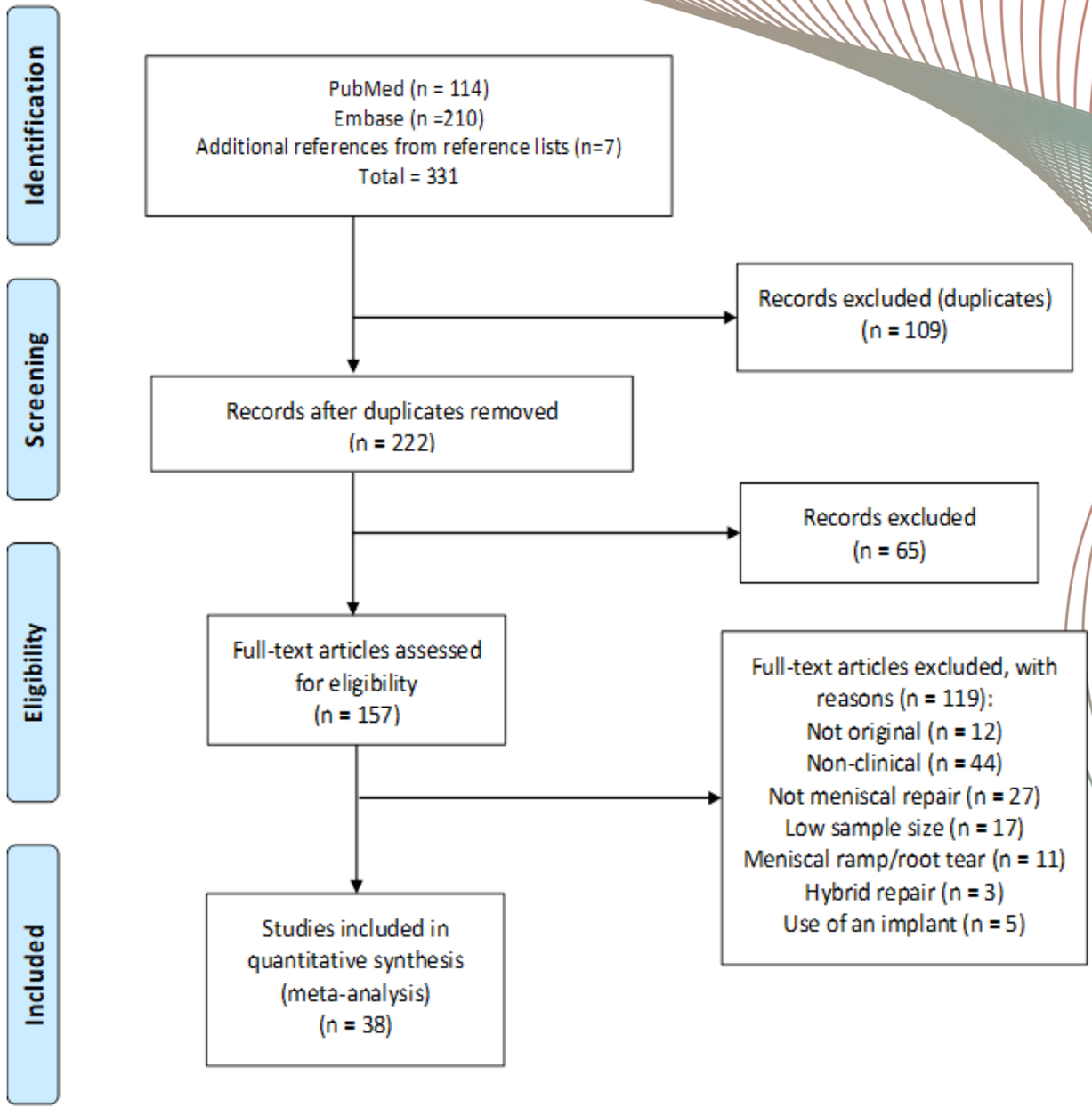
Study Design and Methods

- Outcomes:
  - Success rate of repair, as defined by the author
  - Need for revision meniscal operation
  - Patient-reported outcome measures: International Knee Documentation Committee (IKDC) score, Lysholm score, and Tegner activity score
- Meta-analysis was used to determine outcomes across the included studies for all repairs, isolated repairs and repairs with concomitant anterior cruciate ligament reconstruction.

Results: Overview

This review included:

- 38 studies
- 2007 patients
- 2114 meniscal tears



Study selection flow chart

Results: Success Rate

All repairs: 88% (95% CI, 86-90) success (Figure)

- 38 studies, 2114 meniscal tears, weighted mean follow-up of 34.4 months

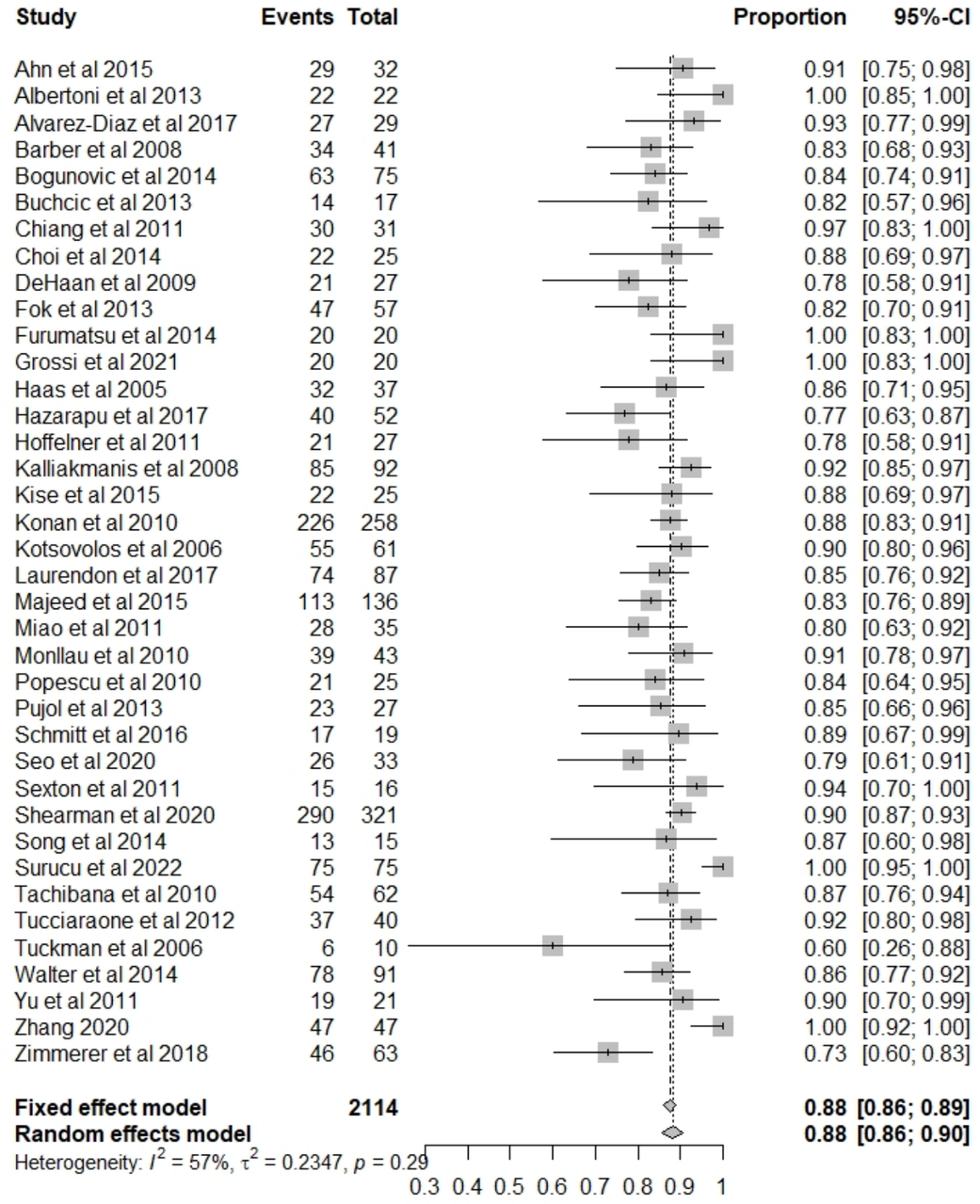
Isolated: 92% (95% CI, 89-94) success

- 17 studies, 365 meniscal tears, weighted mean follow-up of 32.2 months

Concomitant ACLR: 89% (95% CI, 87-91) success

- 23 studies, 941 meniscal tears, weighted mean follow-up of 37.2 months

CI = confidence interval, ACLR = anterior cruciate ligament reconstruction



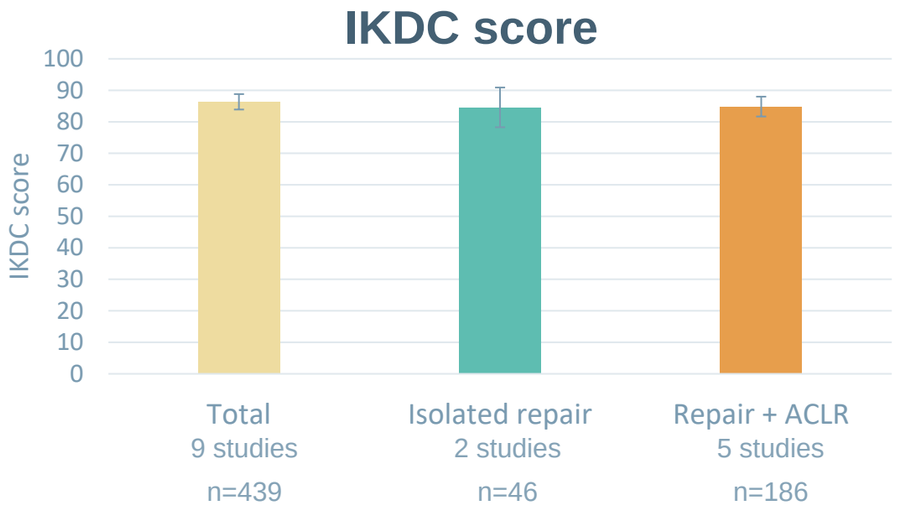
Success rate for all repairs

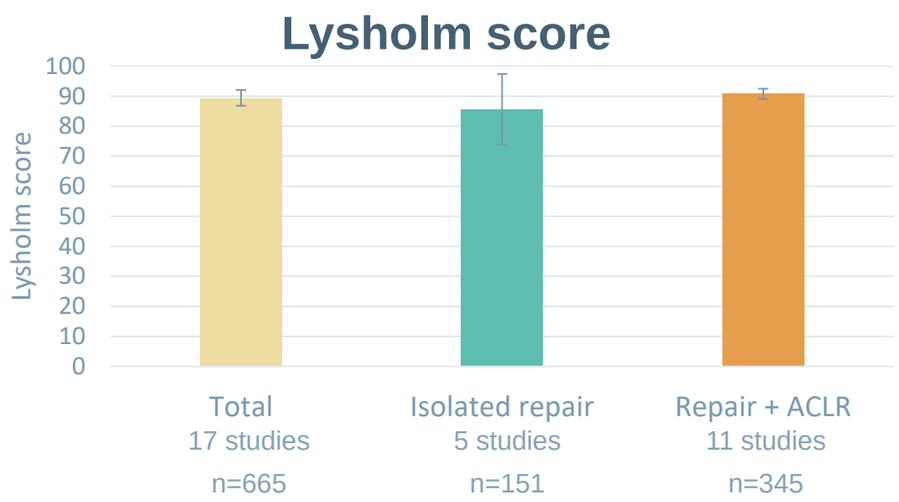
Results: Reoperation Rate (same meniscus)

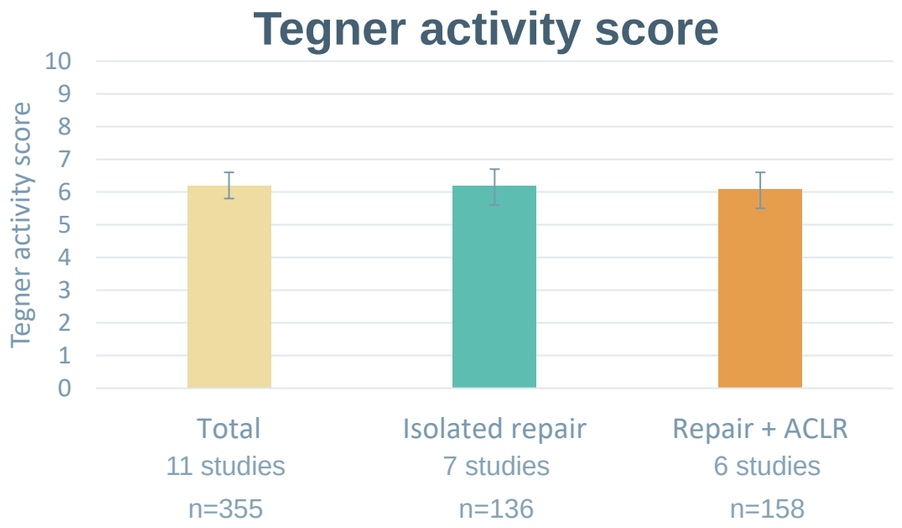
Repair type	Reoperation rate, % (95% CI)	Studies included	Patients, n	Weighted mean follow-up, months
Total repairs	10 (7-14)	26	1484	39.7
Isolated repair	6 (4-9)	14	273	36.5
Repair + ACLR	11 (9-14)	13	562	42.9

CI = confidence interval, Repair + ACLR = repair with concomitant anterior cruciate ligament reconstruction

Results: Patient-reported Outcome Measures







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Repair + ACLR = repair with concomitant anterior cruciate ligament reconstruction

IKDC = International Knee Documentation Committee

Conclusion

- Meniscal repairs using FAST-FIX all-inside device have a high success rate, similar to that reported for inside-out techniques[4]
- Post-operative outcomes are broadly similar for isolated meniscal repair and with concomitant anterior cruciate ligament reconstruction
- Patient-reported outcome measures were similar to normative values within the healthy population[5,6]

References

1. Persson F, Turkiewicz A, Bergkvist D, Neuman P, Englund M. *Osteoarthritis Cartilage* 2018;26(2):195-201.

2. Stein T, Mehling AP, Welsch F, von Eisenhart-Rothe R, Jäger A. *Am J Sports Med* 2010;38(8):1542-48.

3. Vint H, Quartley M, Robinson JR. *The Knee* 2021;28:326-37.

4. Nepple JJ, Block AM, Eisenberg MT, Palumbo N, Wright R. *J Bone Joint Surg* 2022;104(14):1311-20.

5. Briggs KK, Steadman JR, Hay CJ, Hines SL. *Am J Sports Med* 2009;37(5):898-901.

6. Anderson AF, Irrgang JJ, Kocher MS, Mann BJ, Harrast JJ. *Am J Sports Med* 2006;34(1):128-35.