All-inside meniscus repair: a systematic review

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CRD summary
This review aimed to assess the clinical effectiveness of all-inside meniscus repair devices used in the treatment of meniscal tears. The authors stated that no definite conclusions could be drawn about the difference in clinical outcomes of various all-inside meniscal repair devices. This conclusion correctly reflects the evidence presented in the review.

Authors' objectives
To assess the clinical effectiveness of all-inside meniscus repair devices used in the treatment of meniscal tears.

Searching
PubMed (January 1966 to July 2006) was searched for relevant clinical studies; the search terms were reported. In addition, the reference lists of the identified articles were checked. The search was limited to reports in the English language. Biomechanical studies, animal studies and in vitro studies were excluded.

Study selection
Study designs of evaluations included in the review
Inclusion criteria were not specified in terms of the study design. It appears that all designs were eligible.

Specific interventions included in the review
Trials of meniscal repair devices were eligible for inclusion. The devices studied in the included studies were meniscus arrow, T-Fix, FasT-Fix, meniscus screw, the Biostinger, the RapidLoc device, a meniscal repair system and a meniscal stapler.

Participants included in the review
Inclusion criteria were not clearly specified in terms of the patients. It appears that all patients with meniscal tears were eligible for inclusion. In the included studies, the average age of the patients was mainly between 25 and 30.

Outcomes assessed in the review
Device failure rates were the main outcome of interest.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors ascribed a level of evidence to each included study, based upon study design. It was unclear which rating scale was used. No assessment of methodological quality was undertaken.

Data extraction
Two reviewers independently extracted the data. It was not stated whether any disagreements occurred and, if so, how they were resolved. Data were extracted on the number of meniscal tear repairs, average patient age, meniscal tear characteristics, simultaneous anterior cruciate ligament repair, average follow-up, percentage failure, definition of failure and level of evidence.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
The studies were grouped by device used and length of follow-up.
Results of the review
Thirty-one articles reporting the results of 32 studies (n=1,241) were included in the review. The studies comprised 2 randomised controlled trials (n=53), 2 prospective comparative studies (n=132), 4 retrospective comparative studies (n=81) and 24 case series (n=975).

Device failure rates ranged from 0 to 43.5%. The most studied devices, meniscus arrows, had a failure rate ranging from 5 to 43.5%, whereas in half of the studies it was less than 15%. Failure rates for the other devices were as follows: meniscal stapler, 0%; Biostinger, 5 to 9%; FasT-Fix, 10 to 14%; Mitek Meniscal Repair System, 13.5%; meniscus screw, 10 to 25%; RapidLoc, 9 to 35%; and T-Fix, 2 to 43%.

Clinical failures were broadly defined as ‘clinical failures’, ‘clinical failures requiring partial meniscectomy’ or ‘clinical failures requiring further surgery’.

The length of follow-up in all but one study lasted at least 6 months. When studies were grouped according to length of follow-up, the devices had grouped failure rates of 10% (0 to 1 year), 18% (1 to 2 years), 12% (2 to 3 years) and 15% (more than 3 years).

Authors' conclusions
No definite conclusions could be drawn about the difference in clinical outcomes of various all-inside meniscal repair devices, owing to the lack of randomised controlled trials in this area.

CRD commentary
This review addressed a question that was clearly specified in terms of the intervention and outcomes. The authors searched relevant sources and reported their search strategy. However, the search was limited to English languages studies, thus increasing the potential for language bias. As the authors highlighted, the level of evidence in the included studies was low. Nevertheless, further quality assessment of the included studies would have been desirable. Moreover, it was not stated how the study selection was performed and how failure rates grouped according to follow-up were calculated. The authors were aware of several limitations of their review, e.g. in terms of the search strategy, level of available evidence and effects of clinical heterogeneity. Their conclusions correctly reflect the evidence presented.

Implications of the review for practice and research
The authors did not directly state any implications for practice or further research, but pointed out the importance of randomised controlled trials and prospective long-term studies in the evaluation of all-inside meniscal repair devices.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.