Systematic review and meta-analysis of published randomized controlled trials comparing the role of self-gripping mesh against suture mesh fixation in patients undergoing open inguinal hernia repair

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CRD summary
This review concluded that self-gripping mesh did not reduce postoperative groin pain, hernia recurrence, postoperative complications or length of hospital stay compared to suture mesh fixation. However, it was associated with shorter operative time. This conclusion reflects the evidence, but is based on small numbers of patients. The authors' caution about considering their conclusions definitive seems appropriate.

Authors' objectives
To compared self-gripping mesh with suture mesh fixation in patients undergoing inguinal hernia repair.

Searching
MEDLINE, EMBASE and The Cochrane Library were searched without language restriction. Search terms and search dates were not reported. References from identified studies were also checked.

Study selection
Randomised controlled trials (RCTs) were included if they compared self-gripping mesh with suture mesh fixation in surgical patients with an open inguinal hernia repair. Trials had to report chronic groin pain or recurrence of hernia (primary outcomes). Secondary outcomes were postoperative complications, duration of operations and length of hospital stay.

All included trials recruited patients with unilateral uncomplicated primary inguinal hernias. Two trials only enrolled men, while two had mixed populations. Mean ages in trial arms ranged from 49 to 60. Three trials were conducted in European countries, the fourth was multinational. All studies used standard Lichtenstein repair methods for the suture mesh fixation groups. Analgesia methods and other details of procedures were reported in the paper.

The authors did not state how many reviewers were involved in selecting studies for the review.

Assessment of study quality
The studies were assessed for validity using the Jadad scale, the criteria of Chalmers et al and the GRADE criteria. The authors did not state how many reviewers were involved in the assessment

Data extraction
Data were extracted to allow the calculation of odds ratios for dichotomous outcomes and mean differences for continuous outcomes, both with 95% confidence intervals. Data were extracted on in intention-to-treat basis where possible.

Two reviewers independently extracted data using a pre-specified form; differences were resolved through agreement.

Methods of synthesis
Pooled odds ratios or standardised mean differences were calculated together with 95% confidence intervals using a random-effects model. Statistical heterogeneity was assessed using the X² and I² statistics. A sensitivity analysis was conducted which added a 0.5 correction to cells with zero events.

Results of the review
Four RCTs with 1,115 patients were included in the review. Two trials were considered to be of adequate quality, one was moderate (without an intention-to-treat analysis) and one was poor quality (inadequate on multiple criteria). Follow-up was 12 months in two trials, three months in one trial and only one week in the fourth trial.
Neither chronic groin pain (OR 1.04, 95% CI 0.72 to 1.49; three trials; I²=0%) nor hernia recurrence (OR 0.76, 95% CI 0.14 to 4.08; four trials; I²=0%) showed significant differences between the two techniques. There was also no difference in the incidence of postoperative complications, but this was the only outcome to show moderate heterogeneity (OR 0.71, 95% CI 0.40 to 1.24; four trials; I²=40%).

The length of the operation (SMD -0.36; 95% CI -0.47 to -0.24; four trials, I²=0%) was shorter in groups treated with self-gripping mesh, but the length of hospital stay did not differ significantly (SMD 0.07, 95% CI -0.08 to 0.23; two trials; I²=0%).

**Authors' conclusions**
Self-gripping mesh did not reduce the incidence of postoperative groin pain, hernia recurrence, postoperative complications or length of hospital stay compared to suture mesh fixation. However it was associated with shorter operative time.

**CRD commentary**
The review question was clear and the inclusion criteria specific. Three relevant databases were searched. The authors reported carrying out some but not all stages of the review process in duplicate. Validity was assessed using a number of relevant criteria. Most patients were in studies assessed as being adequate quality and only around 10% were in a poor quality study. There were some clinical differences between studies; these were acknowledged by the authors. An appropriate synthesis found little evidence of statistical differences between their estimates of effectiveness.

The conclusions reflect the results of the review and the authors acknowledged the relatively small numbers of patients involved should be considered. The authors' recommendations for practice, and caution about considering their conclusions definitive appears appropriate.

**Implications of the review for practice and research**

**Practice:** The authors stated that shorter operative time could not be considered a strong reason to recommend routine use of self-gripping mesh in open repair of inguinal hernia.

**Research:** The authors stated that there was a need for trials to evaluate the costs of self-gripping mesh and suture mesh fixation and measure quality of life in patients undergoing open inguinal hernia repair. These trials should also have longer follow-up and evaluate chronic groin pain with a standardised measurement tool.

**Funding**
Not stated.

**Bibliographic details**
Sajid MS, Farag S, Singh KK, Miles WF. Systematic review and meta-analysis of published randomized controlled trials comparing the role of self-gripping mesh against suture mesh fixation in patients undergoing open inguinal hernia repair. Updates in Surgery 2013: epub

**PubMedID**
24146297

**DOI**
10.1007/s13304-013-0237-9

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Hernia, Inguinal; Humans; Surgical Mesh; Surgical Stapling; Sutures

**AccessionNumber**
12013062628
Record Status
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.