Staple versus fibrin glue fixation in laparoscopic total extraperitoneal repair of inguinal hernia: a systematic review and meta-analysis


CRD summary

The authors concluded that for recurrence there was no advantage of staple fixation of mesh over fibrin glue fixation. Glue fixation might be preferable based on an associated decrease in chronic pain. The review findings rely on a small number of poor quality studies. The authors correctly acknowledged several limitations that warrant a cautious interpretation of their conclusion.

Authors’ objectives

To compare the effects of mesh fixation using a fibrin sealant versus staple fixation in patients undergoing laparoscopic total extraperitoneal repair of inguinal hernia.

Searching

PubMed was searched to December 2010 with no language restrictions. Some search terms were reported. Reference lists of relevant articles were scanned for further studies.

Study selection

Eligible studies were of patients who underwent laparoscopic total extraperitoneal repair of inguinal hernia. Studies needed to compare traditional mechanical mesh fixation with glue fixation. Case reports were excluded. The primary outcomes of interest were recurrence and chronic pain (chronic groin pain was defined as three months to one year after surgery). Eligible secondary outcomes were operative time, seroma formation, postoperative pain, length of hospital stay, time to resuming work and normal outdoor activities, and wound infection (definitions reported in the paper).

The included studies were conducted in Europe or China. Most patients were men. Mean age ranged from 55 to 66 years. Patients had unilateral, bilateral or recurrent hernias. All studies except one used a flat sheet of mesh; none of them reported the proximity between tack placement and deep ring. There was some variation in the amount of glue used in the fibrin sealant groups and in the type and number of tacks used in mechanical fixation.

Two reviewers selected the studies for inclusion.

Assessment of study quality

Study quality was assessed using criteria from the Scottish Intercollegiate Guidelines Network (SIGN) with a maximum achievable score of 21. Quality was rated as poor (score >8), fair (score between 8 and 14) or good (score ≥15).

The authors did not state how many reviewers were involved in the quality assessment.

Data extraction

Data were extracted to enable calculation of odds ratios (OR) and 95% confidence intervals (CI) for the outcomes of recurrence, chronic pain and seroma. Data for other outcomes were presented as reported in the primary study.

The authors did not state how many reviewers extracted the data.

Methods of synthesis

Odds ratios were pooled in a random-effects (DerSimonian and Laird) analysis. Statistical heterogeneity was assessed using the X² statistic. Other outcomes were synthesised narratively. Subgroup analysis was carried out for analgesic requirement in the immediate postoperative period.

Results of the review

Three observational studies (367 patients) were included in the meta-analysis. One randomised controlled trial (93
patients) was included in the review for comparison with the pooled results. All studies scored between 10 and 13 for quality, which was considered by the authors to be inadequate. Follow-up ranged from seven to 47 months.

There was no significant difference between the fixation groups in terms of reported hernia recurrence after surgery (three observational studies). A significantly increased incidence of chronic pain was reported in the staple fixed mesh group compared with glue fixation (OR 4.51, 95% CI 1.93 to 10.52; two trials). Heterogeneity was not reported. Results from the randomised controlled trial (RCT) were in concordance with the observational studies.

There was no significant difference between groups for secondary outcomes except for higher incidence of seroma formation following glue fixation (one RCT). Results of the subgroup analysis were reported in the paper.

**Cost information**
Two studies reported that glue fixation had a higher cost than staple fixation.

**Authors’ conclusions**
In terms of recurrence, there was no advantage of staple fixation of mesh over fibrin glue fixation for patients who underwent laparoscopic total extraperitoneal repair of inguinal hernia. Glue fixation might be the preferable technique based on its associated decreased incidence of chronic pain.

**CRD commentary**
The review question was clear. Inclusion criteria were detailed for interventions and outcomes and broad for study design. The search appeared to be limited but the absence of language restrictions will have helped to maximise the yield of studies. Study selection included attempts to minimise error and bias; the processes for data extraction and quality assessment were unclear. Appropriate quality assessment criteria were applied and the results were reported and taken into account in the authors' discussion of findings. Adequate study details were provided. Statistical heterogeneity was assessed but was not reported; the analyses comprised only two or three studies and forest plots suggested heterogeneity may have only been an issue for the recurrence analysis.

The review findings rely on a small number of poor quality studies. The authors correctly acknowledged several limitations that warrant a cautious interpretation of their conclusion.

**Implications of the review for practice and research**
Practice: The authors did not state any implications for practice.

Research: The authors stated that more prospective randomised trials (controlled for age and sex) were needed. Future research should consider the differential effects of fibrin glue volume on long-term recurrence.

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