Lightweight versus heavyweight mesh in laparoscopic inguinal hernia repair: a meta-analysis
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CRD summary
This review found that light-weight and heavy-weight mesh appeared to have similar short and long-term outcomes, when used for laparoscopic inguinal hernia repair; more long-term trials were needed. The authors' conclusions require cautious interpretation, mainly because the trials may have been too small to show a difference between the interventions.

Authors' objectives
To compare light-weight versus heavy-weight mesh for the laparoscopic repair of an inguinal hernia.

Searching
EMBASE, MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), and Current Controlled Trials were searched for studies published from 1980 to 2011. Search terms were reported. The reviewers checked abstracts from the meetings of four professional bodies, and the reference lists of retrieved articles.

Study selection
Eligible for inclusion were controlled trials comparing heavy-weight versus light-weight mesh for the laparoscopic repair of inguinal herniae. The primary review outcomes were postoperative hernia recurrence and chronic pain (defined as pain persisting after at least one year). Secondary outcomes were mean pain, on a visual analogue scale, during the first postoperative week; seroma formation; and time to return to work.

Participants in most of the included trials underwent totally extraperitoneal surgical repair; a few trials were of transabdominal preperitoneal repair. The most common heavy-weight mesh was Prolene, and the most common light-weight mesh was Vypro II.

The authors did not state how many reviewers selected the studies.

Assessment of study quality
Trial quality was evaluated using the Jadad scale, for the adequacy of reported randomisation, double blinding, and withdrawals or drop-outs. Each trial was awarded a score out of a maximum of 5 points.

Two reviewers independently conducted the assessment.

Data extraction
The risk differences between the two groups, for dichotomous data, and standardised mean differences, for continuous data, were extracted or calculated for each trial, with 95% confidence intervals. Trial authors were contacted, if necessary, to request further data.

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

Methods of synthesis
Trial data were combined using the DerSimonian and Laird random-effects model, to calculate pooled risk differences or standardised mean differences, with 95% confidence intervals. Heterogeneity was assessed with $X^2$ and $I^2$. Subgroup analysis was conducted by type of surgery.

Results of the review
Eight randomised controlled trials (RCTs) were included in the review, with a total of 1,592 participants (range 25 to 600). The trials were of moderate to good quality: five studies scored 4, two scored 3, and one scored 2 on the Jadad scale. The mean follow-up ranged from two to 60 months.
There were no significant differences, between the two groups, in the: risk of hernia recurrence (RD 0.00, 95% CI -0.01 to 0.01; six RCTs; $I^2=0$), risk of chronic pain (RD -0.02, 95% CI -0.04 to 0.00; six RCTs; $I^2=0$), pain score at seven days (SMD -0.06, 95% CI -0.22 to 0.10; three RCTs; $I^2=0$), time to return to work (SMD -0.08, 95% CI -0.24 to 0.08; three RCTs; $I^2=0$), and risk of seroma (RD -0.00, 95% CI -0.02 to 0.02; seven RCTs; $I^2=0$).

In subgroup analyses by type of surgery, the results did not differ significantly from the main findings.

**Authors’ conclusions**
Light-weight and heavy-weight mesh appeared to have similar short and long-term outcomes, for laparoscopic inguinal hernia repair. More long-term trials were needed.

**CRD commentary**
The objectives and inclusion criteria were clear, and relevant sources were searched. It was unclear whether the review was limited by language, which could mean that some trials were missed. The risk of publication bias was not formally assessed, but there were too few trials for such an assessment to be informative. Steps were taken to limit the risks of reviewer bias and error in quality assessment, but it was unclear whether this applied to study selection and data extraction.

The Jadad scale was used to assess quality. The total score for each trial was reported, but not the details for each criterion. Some important aspects of quality were not assessed by the Jadad scale, such as allocation concealment. The authors noted that the included trials were small; did not uniformly report outcomes of interest in a form suitable for meta-analysis; varied in their clinical characteristics and reporting standards; and in some cases, had short follow-up. Appropriate methods were used to combine the data, assess statistical heterogeneity, and explore differences between the trials. It was unclear whether the meta-analysis was adequately powered to show differences between the two interventions, as some trials were small, with short follow-up, and the overall event rates were low.

The authors’ conclusions require cautious interpretation, mainly because the trials may have been too small to show a difference between the interventions.

**Implications of the review for practice and research**
**Practice:** The authors did not state any implications for practice.
**Research:** The authors stated that future studies of light-weight versus heavy-weight mesh, for laparoscopic inguinal hernia repair, should measure hernia recurrence and chronic pain, over a longer follow-up period.

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