Minimally invasive surgical techniques versus open myomectomy for uterine fibroids

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RHL summary

Key findings

- Subjective pain scores were reduced by 1-3 points on a 0-10 point pain scale at 6 and 48 hours in women undergoing laparoscopic myomectomy versus open myomectomy.
- A lower risk of postoperative fever was found with laparoscopic myomectomy versus open myomectomy.
- No difference in pain scores at 24 hours
- No difference in unscheduled return to theatre, laparoconversion or injury to pelvic organs

Evidence included in this review

Nine trials with a total of 808 women were included in the review. Included trials were conducted in Italy, Austria and China.

Quality assessment

The overall risk of bias in the included studies was low; adequate blinding procedures were reported in only three trials, and adequate allocation concealment was only reported in five.

GRADE quality of evidence varied for different analyses. It was moderate for all reported outcomes except for unscheduled return to theatre (low quality).

Clinical implications

There is reduced postoperative pain, reduced postoperative fever and shorter hospitals stays with laparoscopic myomectomy versus all types of open myomectomy.

Further research

Larger trials with longer follow-up are required to address impact on quality of life, need for repeat surgery, prevalence of visceral injury, uterine rupture and improvement in menstrual symptoms.

Trials are also required to compare laparoscopy assisted mini-laparotomy, open myomectomy, laparoscopic myomectomy and hysteroscopic myomectomy.
Cochrane review


Abstract

Fibroids are common benign tumours arising in the uterus. Myomectomy is the surgical treatment of choice for women with symptomatic fibroids who prefer or want uterine conservation. Myomectomy can be performed by conventional laparotomy, by mini-laparotomy or by minimal access techniques such as hysteroscopy and laparoscopy.

To determine the benefits and harms of laparoscopic or hysteroscopic myomectomy compared with open myomectomy.

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (inception to July 2014), the Menstrual Disorders and Subfertility Group (MDSG) Specialised Register of Controlled Trials (inception to July 2014), MEDLINE(R) (inception to July 2014), EMBASE (inception to July 2014), PsycINFO (inception to July 2014) and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (inception to July 2014) to identify relevant randomised controlled trials (RCTs). We also searched trial registers and references from selected relevant trials and review articles. We applied no language restriction in these searches.

All published and unpublished randomised controlled trials comparing myomectomy via laparotomy, mini-laparotomy or laparoscopically assisted mini-laparotomy versus laparoscopy or hysteroscopy in premenopausal women with uterine fibroids diagnosed by clinical and ultrasound examination were included in the meta-analysis.

We conducted study selection and extracted data in duplicate. Primary outcomes were postoperative pain, reported in six studies, and in-hospital adverse events, reported in eight studies. Secondary outcomes included length of hospital stay, reported in four studies, operating time, reported in eight studies and recurrence of fibroids, reported in three studies. Each of the other secondary outcomes—improvement in menstrual symptoms, change in quality of life, repeat myomectomy and hysterectomy at a later date—was reported in a single study. Odds ratios (ORs), mean differences (MDs) and 95% confidence intervals (CIs) were calculated and data combined using the fixed-effect model. The quality of evidence was assessed using Grades of Recommendation, Assessment, Development and Evaluation (GRADE) methods.

We found 23 potentially relevant trials, of which nine were eligible for inclusion in this review. The nine trials included in our meta-analysis had a total of 808 women. The overall risk of bias of included studies was low, as most studies properly reported their methods.

Postoperative pain: Postoperative pain was measured on a visual analogue scale (VAS), with zero meaning 'no pain at all' and 10 signifying 'pain as bad as it could be.' Postoperative pain was significantly less, as determined by subjectively assessed pain score at six hours (MD -2.40, 95% CI -2.88 to -1.92, one study, 148 women, moderate-quality evidence) and 48 hours postoperatively (MD -1.90, 95% CI -2.80 to -1.00, two studies, 80 women, I² = 0%, moderate-quality evidence) in the laparoscopic myomectomy group compared with the open myomectomy group. This means that among women undergoing laparoscopic myomectomy, mean pain score at six hours and 48 hours would be likely to range from about three points
lower to one point lower on a VAS zero-to-10 scale. No significant difference in postoperative pain score was noted between the laparoscopic and open myomectomy groups at 24 hours (MD -0.29, 95% CI -0.7 to 0.12, four studies, 232 women, $I^2 = 43\%$, moderate-quality evidence). The overall quality of these findings is moderate; therefore further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

In-hospital adverse events: No evidence suggested a difference in unscheduled return to theatre (OR 3.04, 95% CI 0.12 to 75.86, two studies, 188 women, $I^2 = 0\%$, low-quality evidence) and laparoconversion (OR 1.11, 95% CI 0.44 to 2.83, eight studies, 756 women, $I^2 = 53\%$, moderate-quality evidence) when open myomectomy was compared with laparoscopic myomectomy. Only one study including 148 women reported injury to pelvic organs (no events were described in other studies), and no significant difference was noted between laparoscopic myomectomy and laparoscopically assisted mini-laparotomy myomectomy (OR 3.04, 95% CI 0.12 to 75.86). Significantly lower risk of postoperative fever was observed in the laparoscopic myomectomy group compared with groups treated with all types of open myomectomy (OR 0.44, 95% CI 0.26 to 0.77, $I^2 = 0\%$, six studies, 635 women). This indicates that among women undergoing laparoscopic myomectomy, the risk of postoperative fever is 50% lower than among those treated with open surgery. No studies reported immediate hysterectomy, uterine rupture, thromboembolism or mortality. Six studies including 549 women reported haemoglobin drop, but these studies were not pooled because of extreme heterogeneity ($I^2 = 97\%$) and therefore could not be included in the analysis.

Laparoscopic myomectomy is a procedure associated with less subjectively reported postoperative pain, lower postoperative fever and shorter hospital stay compared with all types of open myomectomy. No evidence suggested a difference in recurrence risk between laparoscopic and open myomectomy. More studies are needed to assess rates of uterine rupture, occurrence of thromboembolism, need for repeat myomectomy and hysterectomy at a later stage.

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