Effect of prophylactic dexamethasone on nausea and vomiting after laparoscopic gynecological operation: meta-analysis

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CRD summary
This review found that prophylactic administration of dexamethasone was associated with less postoperative nausea and vomiting in patients who underwent laparoscopic gynecological surgery. Potential for some biases and a lack of information on study quality make the reliability of the authors' conclusions unclear.

Authors' objectives
To evaluate the effect of prophylactic administration of dexamethasone on post-surgical nausea and vomiting in patients who underwent laparoscopic gynaecological surgery.

Searching
PubMed, EMBASE, Web of Science and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from January 1998 to December 2009 for relevant studies in English; search terms were reported.

Study selection
Randomised clinical trials that evaluated the effect of prophylactic dexamethasone on postoperative nausea, vomiting, pain and postoperative complications in patients who underwent gynaecological laparoscopic surgery were eligible for inclusion. Postoperative pain was evaluated by assessing the need for rescue analgesia.

The included patients underwent laparoscopic surgery for tubal ligation, myomectomy, hysterectomy, salpingo-oophorectomy, oophorocystectomy and diagnostic laparoscopy. Single doses of dexamethasone were administered intravenously. Timing of administration ranged from two minutes before induction of anaesthesia to at the end of surgery. There was some variation in doses of dexamethasone administered across the studies; most trials used 8mg. The mean age of the patients ranged from 28.7 years to 43.1 years and their mean weight ranged between 53.0kg to 66.1kg. Outcomes were measured while patients were in the post-anaesthesia care unit and within the first 24 hours post-surgery.

Two reviewers performed the study selection; any disagreements were resolved by consensus.

Assessment of study quality
The authors did not state they assessed methodological quality.

Data extraction
Data were extracted by two independent reviewers to calculate odds ratios (OR) and 95% confidence intervals (CI) for the estimates. Any disagreements between the reviewers were resolved by consensus.

Methods of synthesis
Pooled odds ratios and 95% CIs were calculated using a Mantel-Haenszel fixed-effect model for nausea, vomiting, postoperative nausea and vomiting and use of rescue antiemetics. Statistical heterogeneity was assessed using the Cochran Q test and $I^2$.

Results of the review
Eleven RCTs (1,801 patients, range 40 to 614) were included in the review.

During time in the post-anaesthesia care unit, significant reductions were observed with prophylactic administration of dexamethasone compared to placebo in nausea (OR 0.51, 95% CI 0.31 to 0.84; six trials), vomiting (OR 0.31, 95% CI 0.17 to 0.56; five trials), postoperative nausea and vomiting (OR 0.33, 95% CI 0.21 to 0.50; six trials) and need for rescue antiemetic (OR 0.22, 95% CI 0.10 to 0.49; three trials).
Similar significant reductions in the incidence of complications were observed in the first 24 hours post surgery with dexamethasone-treated patients compared to placebo-treated patients in nausea (OR 0.46, 95% CI 0.32 to 0.66; eight trials), vomiting (OR 0.27, 95% CI 0.19 to 0.40; eight trials), postoperative nausea and vomiting (OR 0.18, 95% CI 0.13 to 0.26; eight trials) and need for rescue antiemetic (OR 0.26, 95% CI 0.16 to 0.41; three trials).

There were no statistically significant differences between dexamethasone groups and placebo-treated groups for incidence of rescue analgesia but there was a trend towards reduced requirement in the dexamethasone group (OR 0.68, 95% CI 0.40 to 1.18; four trials). Little statistically significant heterogeneity was observed between the trials (I²=0% for most of the outcomes).

**Authors’ conclusions**
Administration of prophylactic dexamethasone reduced the incidence of postoperative nausea and vomiting in patients who underwent laparoscopic gynaecological surgery.

**CRD commentary**
The review addressed a clearly defined question. Inclusion criteria were stipulated. Appropriate databases were searched for relevant studies but the restriction to studies in English meant that there was some risk of language bias. There were no attempts to identify unpublished studies so there was a risk of publication bias. Steps were taken to minimise reviewer error and bias for study selection and data extraction. The methodological quality of the studies was not evaluated so it was difficult to make a judgement on the reliability of the results of the studies.

Risks of language and publication biases and the lack of information on study quality make it difficult to assess the reliability of the authors' conclusions. The results of the review should be interpreted with some caution.

**Implications of the review for practice and research**
**Practice:** The authors stated that dexamethasone was safe and economic to use to prevent postoperative nausea and vomiting in surgical patients undergoing laparoscopic gynaecological procedures.

**Research:** The authors did not state any implications for research.

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