Local anaesthesia for pain control during outpatient hysteroscopy: systematic review and meta-analysis

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CRD summary
This review concluded that paracervical local anaesthetic injection was the best method of pain control for women who undergo hysteroscopy as out-patients. The authors' conclusion reflected the evidence available. However, given the limitations of the review and available evidence, the conclusions appear overly strong in favour of the one method.

Authors' objectives
To compare the effects of different types of local anaesthesia for pain control during outpatient hysteroscopy.

Searching
MEDLINE, EMBASE, CINAHL and The Cochrane Library were searched without language restrictions from inception to September 2008; search terms were reported. Reference lists of selected articles were searched.

Study selection
Randomised controlled trials (RCTs) where a local anaesthetic was used during diagnostic or operative hysteroscopy compared with no analgesia, oral analgesia or conscious sedation were eligible for inclusion. The primary outcome was assessment of pain. A secondary outcome of vasovagal events was assessed. Studies were excluded if raw data for pain outcomes were not reported and these data could not be obtained from the trialists.

Most included studies used hysteroscopy as a diagnostic tool. The most commonly used local anaesthetics in the studies were lidocaine and mepivacaine, administered via intracervical, transcervical and paracervical injections. Most studies administered the anaesthetic five minutes prior to the procedure. Most comparator arms used saline injections; some used reduced dose of the same local anaesthetic. Ages of the women were not reported.

Two reviewers independently selected studies for the review; disagreements were resolved by consensus.

Assessment of study quality
One reviewer assessed study quality using the Jadad scale (maximum score 5; a score of 3 or more was considered high quality).

Data extraction
Mean pain scores with standard deviations were extracted from which standardised mean differences (SMD) and 95% confidence intervals (CI) were calculated. Data to complete 2x2 tables for vasovagal events were extracted from which odds ratios (OR) and 95% CI were calculated. Overall pain score for the procedure was preferentially extracted; where this was not available, the overall pain score recorded soonest after procedure end or the specific score that related to the uterine cavity were extracted. One reviewer extracted data.

Methods of synthesis
Pooled standardised mean differences and Peto odds ratios, with 95% CI, were calculated using a random-effects model. Heterogeneity was assessed using the I² statistic (>75% was defined as considerable heterogeneity). Meta-regression was used to investigate whether there was superiority of any one type of local anaesthetic. Sensitivity analysis was conducted using only good-quality studies. Publication bias was investigated using a funnel plot.

Results of the review
Twenty RCTs met the inclusion criteria (n=2,851), 15 of which provided comparable pain score data to allow a meta-analysis. Of the 20 RCTs, 16 reported method of randomisation, 10 were double blind and all reported on withdrawals. Ten studies had a Jadad score of 3 or more and were considered high quality.
Use of local anaesthesia significantly reduced pain during outpatient hysteroscopy (SMD -0.54, 95% CI -0.86 to -0.23; 15 RCTs). There was substantial heterogeneity for this outcome; similar results and heterogeneity was observed in the subgroup of high quality trials.

When analysed separately, intracervical anaesthesia (SMD -0.36, 95% CI -0.61 to -0.10; three RCTs) and paracervical anaesthesia (SMD -1.28, 95% CI -2.22 to -0.35; five RCTs) significantly reduced pain, but transcervical anaesthesia (five RCTs) and topical anaesthesia (two RCTs) did not. The significant benefit of intracervical anaesthesia was lost when one study that reported data in a different manner was excluded. Heterogeneity was substantial for the analyses of paracervical anaesthesia. Meta-regression showed paracervical injection to be most effective. There was no significant difference between local anaesthesia and controls in terms of incidence of vasovagal events.

The funnel plot was reported as being asymmetrical. There was evidence that studies that showed no benefit may have been missed.

Authors' conclusions
Paracervical local anaesthetic injection was the best method of pain control for women who underwent hysteroscopy as outpatients.

CRD commentary
The review addressed a clear question supported by appropriate inclusion criteria. Several relevant sources were searched without language restriction. Unpublished studies were not sought and asymmetry was observed in a funnel, so publication bias may be present. Two reviewers selected studies, which reduced potential for error and bias. However, only one reviewer performed data extraction and the quality assessment. Trial quality was assessed using established criteria and the results were investigated as a source of heterogeneity. Half of the included trials were considered to be of poor quality and most had small sample sizes. There was substantial heterogeneity across trials for several analyses, which made the reliability of the pooled results uncertain. The authors' conclusion reflected the evidence available. However, given the limitations of the review and available evidence, the conclusions appear overly strong in favour of the one method.

Implications of the review for practice and research
Practice: The authors stated that injectable local anaesthetic, preferably paracervical, should be used for women who undergo outpatient hysteroscopy. Although local anaesthetic did not reduce the pain of hysteroscopy, it should be used when a tenaculum is applied to the cervix.

Research: The authors stated that there was a need for large trials that compared how different hysteroscopic techniques affected pain and the incidence of vasovagal events during outpatient hysteroscopy. Such trials should explicitly define and standardise the procedures and examine acceptability and quality of life as well as pain scores. Patient factors such as parity and menopausal status and modes of anaesthetic administration and hysteroscopic operative techniques also needed investigation.

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