Systematic review and meta-analysis assessing the effectiveness of local anesthetic, vasoconstrictive, and lubricating agents in flexible fibre-optic nasolaryngoscopy

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CRD summary
The review concluded that there was no difference in pain scores with vasoconstrictive agents, topical anaesthetics and lubricating agents for fibre-optic nasolaryngoscopy, but co-phenylcaine may cause greater taste unpleasantness and lidocaine may cause more pain. Limitations acknowledged by the authors and a lack of suitable data for meta-analysis suggest that the conclusions should be interpreted with caution.

Authors' objectives
To evaluate the effectiveness of intranasal local anaesthetic agents, vasoconstrictive agents and lubricating agents for flexible fibre-optic nasolaryngoscopy (FNN).

Searching
MEDLINE, CINAHL and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from January 1966 to October 2005 for articles published in English. Search terms were reported. Handsearches of reference lists of review articles and original papers was conducted.

Study selection
Randomised controlled trials (RCTs) in participants of any age who underwent FFN for any reason and who were treated with a preparative agent were eligible for inclusion.

The primary outcome was the patient's evaluation of FNN, such as pain, discomfort and taste unpleasantness; these were primarily measured by visual analogue scales (VAS). Secondary outcomes were the endoscopist's evaluation of treatment, such as ease of examination and quality of view. Trials in participants with rigid endoscopy or flexible endoscopy other than FNN were excluded. Trials in patients who had already received FNN were excluded.

The included trials compared topical anaesthetic plus vasoconstrictor (co-phenylcaine), topical anaesthetic only (lidocaine, tetracaine hydrochloride), vasoconstrictor only (ephedrine, xylometazoline spray) or lubricant (K-Y jelly) with other preparative agent, saline or nothing. Reported outcomes included VAS (0-10 or 0-100) of pain, discomfort, bad taste, burning or choking, five-point discomfort scale and quality of view.

One reviewer undertook study selection.

Assessment of study quality
Quality assessment was undertaken by one reviewer using an adapted form of the Users Guides to the Medical Literature by the American Medical Association to assess eight quality items: randomisation; blinding; concealed allocation; same treatment; baseline similarity; statistical analyses; intention-to-treat; and follow-up.

Data extraction
One reviewer extracted data on the patient's quantitative evaluation of FFN (pain, taste unpleasantness, discomfort) and the endoscopist's evaluation of the procedure. Weighted mean differences (WMD) and 95% confidence intervals (CIs) were calculated. Means and standard deviations were extracted; where standard deviations were not reported, these were calculated. Authors of the original trials were contacted for missing data.

Methods of synthesis
A random-effects meta-analysis pooled WMDs and 95% CIs where possible. Where meta-analysis was not possible, a narrative synthesis was presented which grouped studies by intervention.

Results of the review
Eight RCTs were included in the review (n=818 participants). The trial sample size ranged from 22 to 202 participants. Trial quality varied from 2 to 7 out of 8; six trials scored at least 5. The most common quality issues were a lack of allocation concealment and a lack of intention-to-treat analysis.

**Meta-analysis**: Compared with control, co-phenylcaine did not result in a statistically significant difference in pain VAS scores (WMD 0.34, 95% CI -0.22 to 0.90, I² = 0%; two RCTs).

**Narrative synthesis**: There was no difference in patient evaluation of pain and discomfort for lubricating agents compared with no treatment (one trial), co-phenylcaine compared with cocaine (two trials) and co-phenylcaine compared with no active preparative agent (three trials). When vasoconstrictors were compared with no active preparative agent, two trials showed no difference in pain and discomfort and one trial found a significantly lower overall unpleasantness score with xylometazoline. Compared with no preparative agent, topical anaesthetics showed no difference in pain or discomfort in two trials and one trial showed an higher overall unpleasantness score with topical anaesthetics. There was a greater incidence of taste unpleasantness with co-phenylcaine compared with saline (two trials) and there was a greater incidence of pain with lidocaine compared with control (one trial). Endoscopist opinion of treatment indicated that lubricants gave a significantly lower quality of view in one trial and another trial showed no difference.

**Authors' conclusions**

There was no difference in pain scores with vasoconstrictive agents, topical anaesthetics and lubricating agents. Co-phenylcaine may cause greater taste unpleasantness and lidocaine may cause more pain. Lubricants may aid examination, but gave lower quality of view.

**CRD commentary**

Inclusion criteria for the review were clearly defined. Several relevant databases were searched. Publication bias was not assessed and could not be ruled out. There was potential for language bias as only English-language articles were included. It appeared that there were no attempts to minimise reviewer error and bias during study selection, data extraction and quality assessment. Some of the included trials had small sample sizes and were of low quality (acknowledged by the authors). Trial outcomes were assessed using random-effects meta-analysis where possible. A narrative synthesis was presented where appropriate.

Limitations acknowledged by the authors, potential for bias in the review and a lack of suitable data for meta-analysis suggest that the conclusions should be interpreted with caution.

**Implications of the review for practice and research**

**Practice**: The authors did not state any implications for practice.

**Research**: The authors stated that future research should be directed firstly to confirming or refuting the findings of the single RCT of lubricating agents and secondly to determine the degree to which the poor quality of view associated with lubricating agents detracts from the procedure. Future trials should also conform to common methodological criteria, report complete data and use clearly defined and validated outcome measures to provide the endoscopist with an evidence-based approach to preparing a patient for FNN.

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