Vaginal antisepsis for hysterectomy: a review of the literature

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Authors' objectives
To review the literature concerning antiseptic preparation of the vagina for surgery, in order to discover evidence on which practice may be based.

Searching
MEDLINE, Current Contents, and the Cochrane Library were searched from 1961 to 1996 to locate studies in English or French or with an English abstract, using the following search terms: 'hysterectomy', 'vagina', 'antisepsis', 'povidone-iodide', 'chlorhexidine', 'pre-operative care', 'postoperative complications', 'surgical wound infection' and 'disinfection'. The reference lists of the articles and textbooks on the subject were also searched.

Study selection
Study designs of evaluations included in the review
Comparative studies of pre-operative vaginal anti-sepsis. There were insufficient details on the design of most of the included studies, but several were randomised controlled trials. None of these, however, were conclusive.

Specific interventions included in the review
Pre-operative vaginal antisepsis including povidone-iodine diluted 1/10, chlorhexidine 0.05%, chlorhexidine 0.015%-cetrimide 0.15%, or normal saline. These antiseptics (liquid or gel) were administered using a surgical scrub, douche, pessary or tampon. Some studies used antibiotic prophylaxis in combination with antisepsis, such as metronidazole vaginal suppositories, prior to surgery.

Participants included in the review
Women undergoing hysterectomy (abdominal and vaginal).

Outcomes assessed in the review
Microbiological and clinical outcomes were assessed. The microbiological outcomes were the changes in bacterial counts and the total bacterial counts. The clinical outcomes included infectious morbidity and/or febrile morbidity.

How were decisions on the relevance of primary studies made?
The author does not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
Due to the lack of available evidence, no restrictions were placed on the methodological quality of trials for inclusion.

Data extraction
The author does not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined narratively.

How were differences between studies investigated?
Differences between the studies were investigated narratively.
Results of the review

Thirteen studies were reported in some detail (the total number of participants was not given). One of these studies used the antibacterial drug metronidazole. Other studies were referred to but no details were reported.

Three studies measured microbiological outcomes: one study (numbers not stated) followed quantitative and qualitative changes in bacterial counts, while the other 2 studies measured the total bacterial counts at single time points.

Ten studies measured clinical outcomes: there were 2 studies (n=251) of infectious morbidity, 3 studies (numbers not stated) of febrile morbidity, and 2 studies (n=345) of both infectious and febrile morbidity; no outcomes were reported for the other 3 studies (numbers not stated).

Studies reporting bacteriological outcomes.

One study found that, for quantitative bacterial counts of vaginal aspirates taken right after the preparation, chlorhexidine 0.05% was relatively ineffective, whilst povidone-iodine diluted 1/10 and chlorhexidine 0.015%-cetrimide 0.15% were quite effective. Another study found that povidone-iodine was the most effective agent when compared with chlorhexidine and normal saline. A further study measured comparative vaginal aerobic and anaerobic bacterial counts intermittently, several hours after the application of the povidone-iodide liquid or gel. After vaginal painting with the liquid, a dramatic initial fall in bacterial counts was followed by recovery to near baseline levels within 30 minutes. After vaginal application of the gel, effective bacterial action was documented over a 3-hour period with gradual recovery of bacterial counts.

Studies reporting clinical outcomes.

A small study (n=33) found no difference in febrile morbidity between women given two povidone-iodide douches and a povidone-iodine scrub and those give saline equivalents. In another study, the overall infectious morbidity was less in women having a povidone-iodine scrub and soaked tampon (14 out of 51 women) than in those who had no vaginal preparation (26 out of 45 women) (p<0.01). A further study compared four different vaginal antiseptics: 2 chlorhexidine douches or 2 povidone-iodine douches or 2 povidone-iodine douches with povidone-iodine gel the day previously or no douche. This study found that there were significant differences in total infectious morbidity among the four groups, with lower rates found in the povidone-iodine groups. A study of povidone-iodine pessaries plus povidone-iodine solution versus chlorhexidine 0.015%-cetrimide 0.15% found that infection (at any site) was diagnosed in 34 of the 51 women in the povidone-iodine group, and in 34 of the 52 women in the other group; antibiotic treatment directed at vault infection was used in 12 and 7 of the women, respectively. A further study found that for the outcomes of febrile mortality and prolonged febrile mortality, iodine vaginal gel was more effective than the standard treatment (historical controls).

Authors’ conclusions

No conclusive randomised controlled trials were found. Most of the studies had severe methodological problems, thereby limiting the interpretation of the results. The scant available data suggested that the use of vaginal antiseptics before the patient arrives in the operating room is probably not useful, and that the application of povidone-iodine vaginal gel at the beginning of abdominal hysterectomy is sufficiently promising to justify further investigation.

CRD commentary

This review attempted to answer the important clinical questions of whether antiseptics are effective in controlling vaginal bacteria, and in decreasing infections arising from vaginal contamination during hysterectomy. The search was reasonably comprehensive, although limiting the search to trials in English or French, or with an English abstract, could have resulted in trials being missed. Furthermore, although searching the Cochrane Library may have identified some unpublished studies, there is a possibility of publication bias.

No details of the methods of the review, such as the application of the inclusion criteria and the validity assessment, were provided. Due to the paucity of available data, the author took an inclusive approach and summarised the evidence from all comparative studies, regardless of their quality. However, a study of metronidazole was included;
metronidazole is an antibacterial agent and not an antiseptic, and therefore, not relevant to the review. It would have been useful if the readers had been given more details of the methodological quality of the included studies. The author reported the results narratively, which was appropriate. She also give directions for future research, which was useful given the paucity of available information.

As the author states, the results of the review should be interpreted with caution due to the lack of good-quality evidence.

Implications of the review for practice and research
The author states that future studies in this field must be randomised and large enough to detect the smallest clinical difference. Blinded outcome assessment must be maintained and other outcomes, such as antibiotic use and length of stay, should also be used.

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