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[Intervention Review]

Skin preparation for preventing infection following caesarean section

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ABSTRACT

Background

The risk of maternal mortality and morbidity (particularly postoperative infection) is higher for caesarean section than for vaginal birth. With the increase in caesarean section, it is important that the risks to the mother are minimised as far as possible. This review focuses on different forms and methods for preoperative skin preparation to prevent infection.

Objectives

To compare the effects of different agent forms and methods of preoperative skin preparation for preventing postcaesarean infection.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (2 January 2012) and the reference lists of all included studies and review articles

Selection criteria

Randomised and quasi-randomised trials, including cluster-randomised trials, evaluating any type of preoperative skin preparation agents, forms and methods of application for caesarean section.

Data collection and analysis

Three review authors independently assessed all potential studies for inclusion, assessed risk of bias and extracted the data using a predesigned form. Data were checked for accuracy.

Main results

We included five trials with a total of 1462 women. No difference was found in the primary outcomes of either wound infection or endometritis. Two trials of 1294 women, compared drape with no drape (one trial using iodine and the other using chlorhexidine) and found no significant difference in wound infection (risk ratio (RR) 1.29; 95% confidence interval (CI) 0.97 to 1.71). One trial of 79 women comparing alcohol scrub and iodophor drape with iodophor scrub without drape reported no wound infection in either group. One trial of 50 women comparing parachlorometaxylenol plus iodine with iodine alone reported no significant difference in wound infection (RR 0.33; 95% CI 0.04 to 2.99).

Two trials reported endometritis, one trial comparing alcohol scrub and iodophor drape with iodophor scrub only found no significant difference (RR 1.62; 95% CI 0.29 to 9.16). The other trial of 50 women comparing parachlorometaxylenol plus iodine with iodine alone reported no significant difference in endometritis (RR 0.88; 95% CI 0.56 to 1.38). No difference was found in the secondary outcome of either length of stay or reduction of skin bacteria colony count. No trial reported other maternal outcomes, i.e. maternal mortality, repeat surgery

and re-admission resulting from infection. One trial, which was only available as an abstract, investigated the effect of skin preparation on neonatal adverse events and found cord blood iodine concentration to be significantly higher in the iodine group.

Authors' conclusions

Little evidence is available from the included randomised controlled trials to evaluate different agent forms, concentrations and methods of skin preparation for preventing infection following caesarean section. Therefore, it is not yet clear what sort of skin preparation may be most efficient for preventing postcaesarean wound and surgical site infection. There is a need for high-quality, properly designed randomised controlled trials with larger sample sizes in this field. High priority questions include comparing types of antiseptic (especially iodine versus chlorhexidine), the timing and duration of applying the antiseptic (especially previous night versus day of surgery, and application methods (scrubbing, swabbing and draping).

PLAIN LANGUAGE SUMMARY

Skin preparation for preventing infection following caesarean section

Surgical site infections are the third most frequently reported hospital acquired infection. Women who give birth by caesarean section are exposed to the possibility of infection from their own, and external or environmental, sources of infection. Preventing infection by properly preparing the skin before incision is thus a vital part of the overall care given to women prior to caesarean birth. An antiseptic is applied to remove or reduce bacteria. These antiseptics include iodine or povidone-iodine, alcohol, chlorhexidine and parachlorometaxylenol and can be applied as liquids or powders, scrubs, paints, swabs or on impregnated drapes.

The available evidence from the randomised trials identified for this review (five trials involving 1462 women) is not sufficient to guide the best type of skin preparation for preventing wound or surgery site infection following caesarean section. Comparing different antiseptic procedures, no difference was found in wound infection (four trials) or uterine infection including of the lining (endometritis) (two trials). The five included trials studied different forms, concentrations and methods of applying skin preparations for surgery. Of the five trials, two were reasonably large and the other three involved only small numbers of women.

Guidance about preparation is needed for women, particularly those at higher risk of surgical site infection, such as malnourished women, women with diabetes mellitus or obesity, or those who have an established infection before caesarean section.