TITLE: Infection Reduction Interventions for Women Post-Cesarean Section: Evidence for Use

DATE: 8 March 2010

RESEARCH QUESTION:

What is the evidence regarding interventions to reduce infection rates in women after cesarean section?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including Medline, the Cochrane Library (Issue 2 2010), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between 2005 and February 2010. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials (RCTs), controlled clinical trials, observational studies, and guidelines. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS:

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by RCTs, controlled clinical trials, and evidence-based guidelines.

Five systematic reviews and meta-analyses, seven RCTs, one controlled clinical trial, and two evidence-based guidelines were identified pertaining to interventions to reduce infection rates in women after cesarean section. No relevant health technology assessment reports were
identified. Additional information that may be of interest, such as observational studies and studies pertaining to the timing of antibiotics, has been included in the appendix.

OVERALL SUMMARY OF FINDINGS:

Overall, evidence from systematic reviews,1-3 RCTs,7,10,11 and international guidelines14,15 suggests that prophylactic antibiotic regimens are effective in reducing infections in women undergoing cesarean section. Other techniques and procedures that may also reduce the risk of infection are the Joel-Cohen based cesarean section technique,4 vaginal preparation with a povidone-iodine solution,12 and the use of incise drapes.15

Use of antibiotics to reduce infection

Three systematic reviews examined the use of prophylactic antibiotics for the prevention of infections in women undergoing cesarean section.1-3 Prophylactic antibiotics were associated with a reduction in wound infections,1,2 febrile morbidity,2 serious maternal infectious complications,2 and endometritis.1,2 One systematic review compared prophylactic cefazolin to extended-spectrum antibiotic regimens (azithromycin or metronidazole) administered upon cord clamping.7 The authors reported that both therapy options have the potential to reduce post-cesarean section infection rates by up to 50%.3 While the authors of one systematic review concluded that their results justified a policy of recommending antibiotic prophylaxis for all women undergoing cesarean section,1 the authors of two other systematic reviews suggested that additional research should be conducted regarding the effect of antibiotics on neonatal outcomes.2,3

Three RCTs investigated the effects of different antibiotic regimens on infectious outcomes in women undergoing cesarean-section.7,10,11 One RCT did not find any differences between the rates of infection (e.g., endometritis, urinary tract infections, and wound infections) in women receiving ceftriaxone versus a triple antibiotic regimen (ampiclox, gentamicin, and metronidazole) and concluded that the regimens were equally effective.7 A second RCT found a lower rate of wound infection in patients receiving co-amoxiclav (amoxicillin and clavulanic acid), when compared to a prophylactic triple antibiotic therapy (ampicillin, gentamicin, and metronidazole).10 A third RCT compared cephalothin administered pre-operatively, penicillin administered post-operatively, and no antibiotic administration; prophylactic cephalothin was found to have the lowest rates of post-cesarean infection.11

The Scottish Intercollegiate Guidelines Network highly recommends the use of prophylactic antibiotics for the prevention of surgical site infections in women undergoing cesarean section.14 The National Institute for Clinical Excellence (NICE) guideline on the prevention and treatment of surgical site infections states that there is insufficient evidence to withhold antibiotic prophylaxis in women undergoing cesarean section.15

Surgical techniques and procedures to reduce infection

In a systematic review comparing various surgical techniques for cesarean section, the Joel-Choen based technique was associated with lower rates of fever and blood loss than the Pfannenstiel technique.4 Another systematic review concluded that prophylactic subcutaneous
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Drainage was not associated with a reduction in wound complications in women undergoing cesarean section.5

One RCT6 and one controlled clinical trial13 examined the effects of routine cervical dilation during cesarean section on maternal outcomes. No reductions in post-operative fever,6,13 wound infection,6,13 or other infectious outcomes3 were found. The authors of the RCT concluded that routine cervical dilation during elective cesarean section was not recommended.6 Another RCT compared extra-abdominal versus intra-abdominal repair of the uterine incision, the authors concluded that neither technique reduced rates of post-surgical infections.8

The NICE guidelines on the prevention and treatment of surgical site infections suggest that the use of incise drapes may reduce infection rates, but intracavity lavage and irrigation,15 and intraoperative topical antiseptics are not likely to reduce infection rates.15

Other techniques to reduce infection

In one RCT, the addition of preoperative vaginal preparation with a povidone-iodine to the standard abdominal scrub decreased the incidence of post-cesarean endometritis but did not decrease overall risk of postoperative fever or wound infection.12 Another RCT examined the use of perioperative high-concentration inspired oxygen and the authors concluded that the use of high-concentration oxygen did not decrease the risk of post-cesarean surgical site infection.9
REFERENCES SUMMARIZED:

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses


Randomized controlled trials


**Controlled clinical trials**


**Guidelines and recommendations**


   See pg 20: Recommended indications for antibiotic prophylaxis to prevent SSIs – Gynaecological


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APPENDIX – FURTHER INFORMATION:

Systematic reviews and meta-analyses- timing of antibiotics


Randomized controlled trials- timing of antibiotics


Randomized controlled trials


Additional references
