Antibiotic prophylaxis versus no prophylaxis for preventing infection after caesarean section

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RHL Summary

Key findings

- Routine prophylactic antibiotics for caesarean section reduced the risk of wound infection, endometritis and severe infection by 60% or more
- Antibiotic prophylaxis effective whether given before or after cord clamping
- Antibiotic prophylaxis effective in elective caesarean sections as well as all other cases
- No clear difference between various antibiotics
- No evidence relating to effects of antibiotic prophylaxis on the baby

Evidence included in this review

Ninety-five randomized trials including over 15 000 women.

Quality assessment

Overall, trials of moderate quality were included.

Clinical implications

Caesarean section is one of the most common major operations worldwide, and sepsis is an important complication, which may be more prevalent in low-income settings. Single dose antibiotic prophylaxis, with a first generation cephalosporin, is recommended for all women undergoing caesarean section, and should be an audited standard. No difference in effectiveness was observed with use of antibiotic prophylaxis whether administered before or after cord clamping. No evidence was available on effects on the baby. The review recommends administration after cord clamping to avoid the possibility of adverse effects of unnecessary antibiotic exposure to the baby.

Further research

Further research should focus on the choice of antibiotic in various settings, and effects on the baby in settings where antibiotics are administered before cord clamping

Cochrane review
Abstract

The single most important risk factor for postpartum maternal infection is cesarean section. Although guidelines endorse the use of prophylactic antibiotics for women undergoing cesarean section, there is not uniform implementation of this recommendation. This is an update of a Cochrane review first published in 1995 and last updated in 2010.

To assess the effects of prophylactic antibiotics compared with no prophylactic antibiotics on infectious complications in women undergoing cesarean section.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 July 2014) and reference lists of retrieved papers.

Randomized controlled trials (RCTs) and quasi-RCTs comparing the effects of prophylactic antibiotics versus no treatment in women undergoing cesarean section.

Two review authors independently assessed the studies for inclusion, assessed risk of bias and carried out data extraction. The clinically important primary outcomes were wound infection, endometritis, serious maternal infectious complications and adverse effects on the infant. We presented dichotomous data as risk ratios (RR), with 95% confidence intervals (CIs) and combined trials in meta-analyses. We assessed the quality of evidence using the GRADE approach.

We identified 95 studies enrolling over 15,000 women. Compared with placebo or no treatment, the use of prophylactic antibiotics in women undergoing cesarean section reduced the incidence of wound infection (RR 0.40, 95% CI 0.35 to 0.46, 82 studies, 14,407 women), endometritis (RR 0.38, 95% CI 0.34 to 0.42, 83 studies, 13,548 women) and maternal serious infectious complications (RR 0.31, 95% CI 0.20 to 0.49, 32 studies, 6159 women). When only studies that included women undergoing an elective cesarean section were analyzed, there was also a reduction in the incidence of wound infections (RR 0.62, 95% CI 0.47 to 0.82, 17 studies, 3537 women) and endometritis (RR 0.38, 95% CI 0.24 to 0.61, 15 studies, 2502 women) with prophylactic antibiotics. Similar estimates of effect were seen whether the antibiotics were administered before the cord was clamped or after. The effect of different antibiotic regimens was studied and similar reductions in the incidence of infections were seen for most of the antibiotics and combinations.

There were no data on which to estimate the effect of maternal administration of antibiotics on infant outcomes. No studies systematically collected and reported on adverse infant outcomes nor the effect of antibiotics on the developing infant immune system. No studies reported on the incidence of oral candidiasis (thush) in babies. Maternal adverse effects were also rarely described.

We judged the evidence for antibiotic treatment compared with no treatment to be of moderate quality; most studies lacked an adequate description of methods and were assessed as being at unclear risk of bias.
The conclusions of this review support the recommendation that prophylactic antibiotics should be routinely administered to all women undergoing cesarean section to prevent infection. Compared with placebo or no treatment, the use of prophylactic antibiotics in women undergoing cesarean section reduced the incidence of wound infection, endometritis and serious infectious complications by 60% to 70%. There were few data on adverse effects and no information on the effect of antibiotics on the baby, making the assessment of overall benefits and harms difficult. Prophylactic antibiotics given to all women undergoing elective or non-elective cesarean section is beneficial for women but there is uncertainty about the consequences for the baby.

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