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Mechanical methods for induction of labour

Authors: de Vaan MDT, ten Eikelder MLG, Jozwiak M, Palmer KR, Davies-Tuck M, Bloemenkamp KWM, Mol BJ, Bouvain M

We set out to determine from randomised controlled trials the effectiveness and safety of mechanical methods to bring on labour in the third trimester of pregnancy (> 24 weeks' gestation). Use of a balloon to stretch the cervix (the lower end of the uterus) was compared with prostaglandin E2 (PGE2), low-dose misoprostol or oxytocin.

What is the issue?

Induction is carried out generally when the risk of continuing pregnancy outweighs the benefits, or at the request of pregnant women.

Mechanical methods for induction promote cervical ripening and onset of labour by stretching the cervix. They are amongst the oldest methods used to initiate labour. During the last decades, medication such as PGE2, misoprostol and oxytocin have partly replaced mechanical methods.

Why is this important?

More and more women have labour induced and indications are often not urgent. This means that the safety aspects of induction methods become more important, although this could be at the expense of effectiveness. Mechanical methods could have advantages over pharmacological methods as they are widely available, low in cost and may have fewer side effects, such as excessive contractions of the uterus (uterine hyperstimulation). This could potentially be safer for the baby because if contractions are too long or very close together, the baby may not receive sufficient oxygen.

What evidence did we find?

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For this review we included a total of 113 randomised controlled trials involving 22,373 women who were scheduled for induction of labour for different indications. The data contributed to 21 different comparisons and 20 subgroup comparisons. Overall, the evidence was graded from very low to moderate quality. For many comparisons there were too few women in the trials to determine any clear differences in serious illness for mothers and babies.

Twenty-eight trials (6619 women) showed mechanical induction with a balloon is as effective as vaginal PGE2 as there may be little or no difference in vaginal deliveries within 24 hours and there probably is little or no difference in caesarean sections between groups. However, a balloon appears to be safer for the neonate as it probably reduces the risk of uterine hyperstimulation with an abnormal heart rate of the baby, serious illness or death of the baby and may slightly reduce the risk for a neonatal intensive care unit admission. It was unclear if there was a difference in serious illness or death of the mother or in the five-minute Apgar score less than seven.

Thirteen trials (1818 women) compared induction of labour with a balloon with vaginal misoprostol and showed a balloon probably reduces the risk of uterine hyperstimulation with an abnormal heart rate of the baby, but may increase the risk of a caesarean section. It was unclear if there was a difference in vaginal deliveries within 24 hours, serious illness or death of the baby, serious illness or death of the mother, five-minute Apgar score less than seven or neonatal intensive care unit admissions.

Seven trials (3178 women) showed a balloon may be less effective than oral misoprostol as a balloon probably increases the risk of a vaginal delivery not achieved within 24 hours and probably slightly increases the risk of a caesarean section. Data on safety are still unclear as it is uncertain whether there is a difference in uterine hyperstimulation with an abnormal heart rate of the baby, serious illness or death of the baby, serious illness or death of the mother, five-minute Apgar score less than seven or neonatal intensive care unit admissions.

What does this mean?

Mechanical induction with a balloon is probably as effective as induction of labour with vaginal PGE2. However, a balloon seems to have a more favourable safety profile for the baby. More research on this comparison does not seem warranted.

A balloon catheter may be slightly less effective as oral misoprostol, but it remains unclear if there is a difference in safety outcomes for the baby. When compared to low-dose vaginal misoprostol, a balloon catheter may be less effective, but probably has a better safety profile for the baby.

Future research could focus more on safety aspects for the baby and maternal satisfaction.

Antibiotics for bacterial infection in the urine in pregnancy when there are no symptoms

Authors: Smaill FM, Vazquez JC

What is the issue?

Can giving antibiotics to pregnant women who have a urinary infection but no symptoms improve the outcomes for women and their babies?

Why is this important?

A bacterial infection of the urine without any of the typical symptoms that are associated with a urinary infection (asymptomatic bacteriuria) occurs in a number (2% to 15%) of pregnancies. Because of the changes happening in their body, pregnant women are more likely to develop a kidney infection (pyelonephritis) if they have a urinary infection. The infection may also contribute to a baby who is born preterm (before 37 weeks), or at a low birthweight (weighs less than 2500 g (5.5 pounds)).

What evidence did we find?

We found 15 randomised controlled studies involving over 2000 pregnant women with urinary infections, but no symptoms. Antibiotics may be effective in reducing the incidence of kidney infection in the mother (12 studies, 2017 women) and clearing the infection from the urine (four studies, 596 women). They may also reduce the incidence of preterm births (three studies, 327 women) and low birthweight babies (six studies, 1437 babies). None of the studies adequately assessed any adverse effects of antibiotic treatment for the mother or her baby, and often the way the study was done was not well described.

We assessed the three main outcomes with the GRADE approach, and found low-certainty evidence that antibiotic treatment may prevent pyelonephritis, preterm birth, and birthweight less than 2500 g.

What does this mean?

Antibiotic treatment may reduce the risk of kidney infections in pregnant women who have a urine infection but show no symptoms of infection. Antibiotics may also reduce the chance a baby will be born too early or have a low birthweight. However, because of the low certainty of the evidence, it is difficult to draw conclusions; more research is needed.

If you have any questions or comments with regard to the above document please feel free to contact me.

Kind regards

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