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[Intervention Review]

Induction of labour for improving birth outcomes for women at or beyond term

Philippa Middleton¹, Emily Shepherd², Caroline A Crowther³

¹Healthy Mothers, Babies and Children, South Australian Health and Medical Research Institute, Adelaide, Australia. ²ARCH: Australian Research Centre for Health of Women and Babies, Robinson Research Institute, Discipline of Obstetrics and Gynaecology, The University of Adelaide, Adelaide, Australia. ³Liggins Institute, The University of Auckland, Auckland, New Zealand

Contact address: Philippa Middleton, Healthy Mothers, Babies and Children, South Australian Health and Medical Research Institute, Women's and Children's Hospital, 72 King William Road, Adelaide, South Australia, 5006, Australia. philippa.middleton@adelaide.edu.au, mpm@ozemail.com.au.

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ABSTRACT

Background

Beyond term, the risks of stillbirth or neonatal death increase. It is unclear whether a policy of labour induction can reduce these risks. This Cochrane review is an update of a review that was originally published in 2006 and subsequently updated in 2012

Objectives

To assess the effects of a policy of labour induction at or beyond term compared with a policy of awaiting spontaneous labour or until an indication for birth induction of labour is identified) on pregnancy outcomes for infant and mother.

Search methods

We searched Cochrane Pregnancy and Childbirth's Trials Register, [ClinicalTrials.gov](https://www.clinicaltrials.gov) and the WHO International Clinical Trials Registry Platform (ICTRP) (9 October 2017), and reference lists of retrieved studies.

Selection criteria

Randomised controlled trials (RCTs) conducted in pregnant women at or beyond term, comparing a policy of labour induction with a policy of awaiting spontaneous onset of labour (expectant management). We also included trials published in abstract form only. Cluster-RCTs, quasi-RCTs and trials using a cross-over design are not eligible for inclusion in this review.

We included pregnant women at or beyond term. Since a risk factor at this stage of pregnancy would normally require an intervention, only trials including women at low risk for complications were eligible. We accepted the trialists' definition of 'low risk'. The trials of induction of labour in women with prelabour rupture of membranes at or beyond term were not considered in this review but are considered in a separate Cochrane review.

Data collection and analysis

Two reviewers independently assessed trials for inclusion, assessed risk of bias and extracted data. Data were checked for accuracy. We assessed the quality of evidence using the GRADE approach.

Main results

In this updated review, we included 30 RCTs (reporting on 12,479 women). The trials took place in Norway, China, Thailand, the USA, Austria, Turkey, Canada, UK, India, Tunisia, Finland, Spain, Sweden and the Netherlands. They were generally at a moderate risk of bias.

Compared with a policy of expectant management, a policy of labour induction was associated with fewer (all-cause) perinatal deaths (risk ratio (RR) 0.33, 95% confidence interval (CI) 0.14 to 0.78; 20 trials, 9960 infants; moderate-quality evidence). There were two perinatal deaths in the labour induction policy group compared with 16 perinatal deaths in the expectant management group. The number needed to treat to for an additional beneficial outcome (NNTB) with induction of labour in order to prevent one perinatal death was 426 (95% CI 338 to 1337). There were fewer stillbirths in the induction group (RR 0.33, 95% CI 0.11 to 0.96; 20 trials, 9960 infants; moderate-quality evidence); there was one stillbirth in the induction policy arm and 10 in the expectant management group.

For women in the policy of induction arms of trials, there were fewer caesarean sections compared with expectant management (RR 0.92, 95% CI 0.85 to 0.99; 27 trials, 11,738 women; moderate-quality evidence); and a corresponding marginal increase in operative vaginal births with induction (RR 1.07, 95% CI 0.99 to 1.16; 18 trials, 9281 women; moderate-quality evidence). There was no evidence of a difference between groups for perineal trauma (RR 1.09, 95% CI 0.65 to 1.83; 4 trials; 3028 women; low-quality evidence), postpartum haemorrhage (RR 1.09 95% CI 0.92 to 1.30, 5 trials; 3315 women; low-quality evidence), or length of maternal hospital stay (average mean difference (MD) -0.34 days, 95% CI -1.00 to 0.33; 5 trials; 1146 women; $\text{Tau}^2 = 0.49$; I^2 95%; very low-quality evidence).

Rates of neonatal intensive care unit (NICU) admission were lower (RR 0.88, 95% CI 0.77 to 1.01; 13 trials, 8531 infants; moderate-quality evidence) and fewer babies had Apgar scores less than seven at five minutes in the induction groups compared with expectant management (RR 0.70, 95% CI 0.50 to 0.98; 16 trials, 9047 infants; moderate-quality evidence).

There was no evidence of a difference for neonatal trauma (RR 1.18, 95% CI 0.68 to 2.05; 3 trials, 4255 infants; low-quality evidence), for induction compared with expectant management.

Neonatal encephalopathy, neurodevelopment at childhood follow-up, breastfeeding at discharge and postnatal depression were not reported by any trials.

In subgroup analyses, no clear differences between timing of induction (< 41 weeks versus \geq 41 weeks' gestation) or by state of cervix were seen for perinatal death, stillbirth, NICU admission, caesarean section, or perineal trauma. However, operative vaginal birth was more common in the inductions at < 41 weeks' gestation subgroup compared with inductions at later gestational ages. The majority of trials (about 75% of participants) adopted a policy of induction at \geq 41 weeks (> 287 days) gestation for the intervention arm.

Authors' conclusions

A policy of labour induction at or beyond term compared with expectant management is associated with fewer perinatal deaths and fewer caesarean sections; but more operative vaginal births. NICU admissions were lower and fewer babies had low Apgar scores with induction. No important differences were seen for most of the other maternal and infant outcomes.

Most of the important outcomes assessed using GRADE had a rating of moderate or low-quality evidence - with downgrading decisions generally due to study limitations such as lack of blinding (a condition inherent in comparisons between a policy of acting and of waiting), or imprecise effect estimates. One outcome (length of maternal stay) was downgraded further to very low-quality evidence due to inconsistency.

Although the absolute risk of perinatal death is small, it may be helpful to offer women appropriate counselling to help choose between scheduled induction for a post-term pregnancy or monitoring without (or later) induction).

The optimal timing of offering induction of labour to women at or beyond term warrants further investigation, as does further exploration of risk profiles of women and their values and preferences. Individual participant meta-analysis is likely to help elucidate the role of factors, such as parity, in influencing outcomes of induction compared with expectant management.

PLAIN LANGUAGE SUMMARY

Induction of labour in women with normal pregnancies at or beyond term

What is the issue?

A normal pregnancy lasts about 40 weeks from the start of the woman's last menstrual period, but anything from 37 to 42 weeks is considered as being at term (within the normal range). If a pregnancy goes too long, a woman and her clinician may wish to intervene to bring the birth on, for example, by induction.

Why is this important?

Births after 42 weeks' gestation may slightly increase risks for babies, including a greater risk of death (before or shortly after birth). However induction of labour may also have risks for mothers and their babies, especially if women are not ready to labour. No tests can predict if

babies would be better to stay inside their mother or if labour should be induced to make the birth happen sooner. Many hospitals therefore have policies for how long pregnancies should continue. This update (originally published in 2006 and subsequently updated in 2012) looks to see if inducing labour at a set time at or beyond term, could reduce risks for the babies.

What evidence did we find?

We searched for evidence up 9 October 2017 and identified 30 trials with over 12,000 women. The trials took place in Norway, China, Thailand, the USA, Austria, Turkey, Canada, UK, India, Tunisia, Finland, Spain, Sweden and the Netherlands. The evidence was mostly of moderate quality. The trials compared a policy to induce labour at or later than term (usually after 41 completed weeks of gestation (> 287 days)) with waiting for labour to start and/or waiting for a period before inducing labour.

We found that there were fewer deaths of babies in hospitals with a policy to induce when a pregnancy was continuing beyond term (moderate-quality evidence). Fewer caesarean births were required with induction compared with waiting, but more assisted vaginal births were required with induction. There were fewer admissions to the intensive care nursery and fewer low Apgar scores at five minutes after birth (a simple test to test babies' health) in the induction groups compared with waiting (moderate-quality evidence). We found that there were no clear differences between a policy to induce at or later than term or waiting in the risks of mothers having trauma to their perineum or bleeding after birth (both low-quality evidence), in the length of their hospital stay (very-low quality evidence), or in their babies having trauma (low-quality evidence). None of the trials provided information on breastfeeding at discharge from hospital, postnatal depression, or whether the babies had encephalopathy (early abnormal neurological function), or child development.

What does this mean?

A policy of labour induction compared with expectant management is associated with fewer deaths of babies and fewer caesarean sections; but more assisted vaginal births. Although the chances of babies dying are small, it may help to offer women appropriate counselling to make an informed choice between induction of labour for pregnancies at, or later than, term - or waiting for labour to start and/or waiting before inducing labour.

The best time to offer induction of labour to women at or beyond term is not yet clear and warrants further investigation. The risk profiles of women as well as their values and preferences could also be considered.