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[Intervention Review]

Internal versus external tocodynamometry during induced or augmented labour

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ABSTRACT

Background

Uterine contractions can be registered by external tocodynamometry (ET) or, after rupture of the membranes, by internal tocodynamometry (IT). Monitoring of the frequency of contractions is important especially when intravenous oxytocin is used as excessive uterine activity (hyperstimulation or tachysystole) can cause fetal distress. During induction of labour as well as during augmentation with intravenous oxytocin, some clinicians choose to monitor frequency and strength of contractions with IT rather than with ET as an intrauterine pressure catheter measures intrauterine activity more accurately than an extra-abdominal tocodynamometry device. However, insertion of an intrauterine catheter has higher costs and also potential risks for mother and child.

Objectives

To assess the effectiveness of IT compared with using ET when intravenous oxytocin is used for induction or augmentation of labour.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (11 April 2012) and PubMed (1966 to 7 March 2012).

Selection criteria

We included all published randomised controlled trials with data from women in whom IT was compared with ET in induced or augmented labour with oxytocin. We excluded trials that employed quasi-randomised methods of treatment allocation. We found no unpublished or ongoing studies on this subject.

Data collection and analysis

Two review authors independently assessed trial eligibility and risk of bias, and independently extracted data. Data were checked for accuracy. Where necessary, we contacted study authors for additional information.

Main results

Three studies involving a total of 1945 women were included. Overall, risk of bias across the three trials was mixed. No serious complications were reported in the trials and no neonatal or maternal deaths occurred. The neonatal outcome was not statistically different between groups: Apgar score less than seven at five minutes (RR 1.78, 95% CI 0.83 to 3.83; three studies, n = 1945); umbilical artery pH less than

7.15 (RR 1.31, 95% CI 0.95 to 1.79; one study, n = 1456); umbilical artery pH less than 7.16 (RR 1.23, 95% CI 0.39 to 3.92; one study, n = 239); admission to the neonatal intensive care unit (RR 0.34, 95% CI 0.07 to 1.67; two studies, n = 489); and more than 48 hours hospitalisation (RR 0.92, 95% CI 0.71 to 1.20; one study, n = 1456). The pooled risk for instrumental delivery (including caesarean section, ventouse and forceps extraction) was not statistically significantly different (RR 1.05, 95% CI 0.91 to 1.21; three studies, n = 1945). Hyperstimulation was reported in two studies (n = 489), but there was no statistically significant difference between groups (RR 1.21, 95% CI 0.78 to 1.88).

Authors' conclusions

This review found no differences between the two types of monitoring (internal or external tocodynamometry) for any of the maternal or neonatal outcomes. Given that this review is based on three studies (N = 1945 women) of moderate quality, there is insufficient evidence to recommend the use of one form of tocodynamometry over another for women where intravenous oxytocin was administered for induction or augmentation of labour.

PLAIN LANGUAGE SUMMARY

Internal versus external registration of contractions during induced or augmented labour

Induction and augmentation of labour are common procedures within obstetric practice with various indications for mother and child. When contractions are stimulated by intravenous oxytocin, registration of the frequency of contractions is important for determination of the right dosage of medication. Uterine contractions can be monitored through the abdominal wall of the mother by using a small device that is placed on the skin using a belt to hold it in position, where the device measures changes in the shape of the uterus (external tocodynamometry (ET)), or by positioning an intrauterine pressure catheter inside the uterus next to the baby (internal tocodynamometry (IT)). Use of IT is only possible after rupture of the membranes and is an easy, painless procedure done during vaginal examination by the midwife or doctor in charge. During induction or augmentation of labour with intravenous oxytocin, some clinicians choose to monitor contractions with an IT rather than with ET. An intrauterine pressure catheter measures the contractions more accurately and could result in a better dosage of the oxytocin. This could, therefore, reduce the risk of hyperstimulation, for example too frequent contractions, and subsequently reduce the risk for fetal distress. Moreover with the modern central monitoring systems and the accurate registration with the use of IT there is no need for the caregivers to be physical present in the labour room to assess the frequency of contractions. However, besides higher costs of IT, insertion of an intrauterine catheter in the uterus of the mother has rare but potentially hazardous risks for both mother and child, like placental and fetal vessel damage.

The aim of this review was to compare the effectiveness of IT compared with ET. We included three randomised controlled studies (1945 women). The methodological quality of the studies was considered to be moderate. When comparing internal registration of contractions with external registration of contractions during induced or augmented labour, there were no differences in any of the outcomes for mother or child: adverse neonatal outcomes, instrumental deliveries, caesarean section, use of analgesia or time to delivery. No increased risk for infection was reported when an intrauterine catheter was used in these studies.

There is insufficient evidence to recommend the use of one form of tocodynamometry over another for women where intravenous oxytocin is administered for induction or augmentation of labour.