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Continuous cardiotocography during labour: Analysis, classification and management

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ABSTRACT
The use of continuous intrapartum electronic fetal heart rate monitoring (EFM) using a cardiotocograph (CTG) was developed to enable obstetricians and midwives to analyse the changes of fetal heart rate during labour so as to institute timely intervention to avoid intrapartum hypoxic-ischaemic injury. Although CTG was initially developed as a screening tool to predict fetal hypoxia, its positive predictive value for intrapartum fetal hypoxia is approximately only 30%. Even though different international classifications have been developed with the aim of defining combinations of features that help predict intrapartum fetal hypoxia, the false-positive rate of the CTG is high (60%). Moreover, there has not been a demonstrable improvement in the rate of cerebral palsy or perinatal deaths since the introduction of CTG into clinical practice approximately 45 years ago. However, there has been a significant increase in intrapartum caesarean section and operative vaginal delivery rates. Unfortunately, existing guidelines employ the visual interpretation of CTG based on 'pattern recognition', which is fraught with inter- and intra-observer variability. Therefore, clinicians need to understand the physiology behind fetal heart rate changes and to respond to them accordingly, instead of purely relying on guidelines for management. It is very likely that such a 'physiology-based' approach would reduce unnecessary operative interventions and improve perinatal outcomes whilst reducing the need for 'additional tests' of fetal well-being.