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Understanding cardiotocographic patterns associated with intrapartum fetal hypoxia and neurologic injury.

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ABSTRACT:

Widespread use of fetal heart rate monitoring for intrapartum fetal surveillance preceded our detailed understanding of the behaviour and regulation of the fetal cardiovascular system during labour. The fetal heart rate is sensitive to fetal hypoxaemia and hypoxia, but lacks specificity for fetal acidosis, the end point of unmitigated hypoxaemia and hypoxia. Original interpretations of fetal heart rate patterns equated decelerations to 'fetal distress' and mandated operative intervention. Since then, obstetricians have been trained to focus on the morphological appearances of fetal heart rate decelerations rather than to understand the underlying physiological mechanisms, how the fetus compensates and defends itself, and those patterns that suggest progressive loss of compensation. Consequently, operative interventions are commonly undertaken to 'rescue' fetuses that display benign signs of fetal heart rate adaption to events in labour. Failure to recognise abnormal fetal heart rate patterns remains the leading cause of avoidable brain injury and litigation. In this chapter the general characteristics of the fetal heart rate, the changes in fetal heart rate pattern that may occur during labour, and the patterns that suggest failure of the fetal compensatory mechanisms leading to injury are discussed.