Cranial compression ischemic encephalopathy: Fetal neurological injury related to the mechanical forces of labor and delivery

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Abstract

Intrapartum events including asphyxia in term fetuses account for significant amounts of subsequent neurological handicap, including cerebral palsy (CP). The prevention of such handicap is a major justification for fetal surveillance during labor as well as for the increasing cesarean delivery rate. Despite the pervasive application of electronic fetal heart rate (FHR) monitoring for the detection of fetal asphyxia and the rising cesarean rate, there has been no diminution of the rates of CP, neonatal seizures or neonatal encephalopathy, despite a reduction in the frequency of stillbirth attributable to asphyxia.

Fingerprint

Keywords

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The mechanical events during the first stage of labour are reviewed, showing how uterine contractions result in cervical dilatation and descent and rotation of the fetal head. The consequences of these forces on the fetal intracranial pressure and blood flow are discussed: FHR remains normal up to a certain pressure threshold, above which decelerations occur. Cord compression and functional modifications of intervillous space by mechanical forces may further compromise the biological status of the fetus, leading to severe asphyxia. Usually, when a neonate develops neurological injury, a host of various potentially adverse peripartum factors are assumed to be the aetiology, but without definitive evidence. Among these latter... CONTINUE READING.