

Maternal Pulse Oximetry Perfusion Index as a Predictor of Early Adverse Respiratory Neonatal Outcome after Elective Cesarean Delivery.

De Felice C., Leoni L., Tommasini E., Tonni G., Toti P., Del Vecchio A., Ladisa G., Latini G.
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Objective

Evidence suggests increased morbidity, in particular early neonatal respiratory complications, in newborns from elective cesarean section compared with those from vaginal delivery. No reliable maternal predictors of adverse neonatal outcome at elective cesarean section are known. Here, we prospectively tested the hypothesis that a low maternal perfusion index at the baseline phase (i.e., preanesthesia) of the elective cesarean section is a predictor of early adverse neonatal respiratory outcome.

Methods

Design: Prospective cohort study. *Setting:* Operating and delivery rooms of a public health hospital with a tertiary-level neonatal intensive care unit. *Patients:* Forty-four healthy pregnant women with no known risk factors undergoing elective cesarean section at term gestation. *Interventions:* Elective cesarean section was divided into nine phases. Analysis of pulse oximetry-derived signals (perfusion index, pulse rate, and oximetry) and systolic, diastolic, and differential blood pressure were recorded. Maternal arterial and venous newborn cord blood gas analyses and placental histology were evaluated

Results

Early respiratory complications (transient tachypnea of the newborn, $n = 5$; respiratory distress syndrome, $n = 1$) were observed in 13.6% (6 of 44) of the newborns. A maternal perfusion index ≤ 1.9 (lower quartile) during the preanesthesia phase of the elective cesarean section was an independent predictor of early adverse neonatal respiratory outcome (odds ratio 68.0, 95% confidence interval 6.02-767.72; $p < .0001$).

Conclusions

A decreased perfusion index value in the preanesthesia phase of elective cesarean section is a maternal predictor of increased neonatal morbidity and is significantly related to subclinical placental inflammatory disease. These observations suggest the feasibility of a noninvasive pulse oximeter prenatal screening of the high-risk fetus/newborn in elective cesarean section.