

# ST Analysis of the Fetal Electrocardiogram in Intrapartum Fetal Monitoring: A Meta-Analysis.

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**OBJECTIVE:** To compare the effects of ST-waveform analysis in combination with cardiotocography with conventional cardiotocography for intrapartum fetal monitoring.

**DATA SOURCES:** We searched MEDLINE, Embase, and PubMed for randomized controlled trials (RCTs) evaluating ST-waveform analysis for intrapartum fetal monitoring.

**METHODS OF STUDY SELECTION:** We identified RCTs that compared ST-waveform analysis and conventional cardiotocography for intrapartum fetal monitoring of singleton pregnancies in cephalic presentation beyond 34 weeks of gestation and evaluating at least one of the following: metabolic acidosis, umbilical cord pH less than 7.15, umbilical cord pH less than 7.10, umbilical cord pH less than 7.05, umbilical cord pH less than 7.00, Apgar scores less than 7 at 5 minutes, admittance to the neonatal intensive care unit, need for intubation, presence of hypoxic ischemic encephalopathy, perinatal death, operative delivery, and number of fetal blood samplings.

**TABULATION, INTEGRATION, AND RESULTS:** Five RCTs, which included 15,352 patients, met the selection criteria. Random-effects models were used to estimate the combined relative risks (RRs) of ST analysis compared with conventional cardiotocography. Compared with conventional cardiotocography, ST analysis showed a nonsignificant reduction in metabolic acidosis (RR 0.72, 95% confidence interval 0.43-1.19, number needed to treat [NNT] 357). ST analysis significantly reduced the incidence of additional fetal blood sampling (RR 0.59, 95% confidence interval 0.44-0.79, NNT 11), operative vaginal deliveries (RR 0.88, 95% confidence interval 0.80-0.97, NNT 64), and total operative deliveries (RR 0.94, 95% confidence interval 0.89-0.99, NNT 64). For other outcomes, no differences in effect were seen between ST analysis and conventional cardiotocography, or data were not suitable for meta-analysis.

**CONCLUSION:** The additional use of ST analysis for intrapartum monitoring reduced the incidence of operative vaginal deliveries and the need for fetal blood sampling but did not reduce the incidence of metabolic acidosis at birth.