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Delayed umbilical cord clamping at birth has effects on arterial and venous blood gases and lactate concentrations.

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OBJECTIVE: To estimate the influence of delayed umbilical cord clamping at birth on arterial and venous umbilical cord blood gases, bicarbonate (HCO_3^-), base excess (BE) and lactate in vigorous newborns. **SETTING:** University hospital.

DESIGN: Prospective observational.

SAMPLE: Vaginally delivered term newborns.

MATERIAL AND METHODS: Umbilical cord arterial and venous blood was sampled repeatedly every 45 seconds (T(0)= time zero; T(45)= 45 seconds, T(90)= 90 seconds) until the cord pulsations spontaneously ceased in 66 vigorous singletons with cephalic vaginal delivery at 36-42 weeks. Longitudinal comparisons were performed with the Wilcoxon signed-ranks matched pairs test. Mixed effect models were used to describe the shape of the regression curves.

MAIN OUTCOME MEASURES: Longitudinal changes of umbilical cord blood gases and lactate. **RESULTS:** In arterial cord blood, there were significant decreases of pH (7.24-7.21), HCO_3^- (18.9-18.1 mmol/l) and BE (-4.85 to -6.14 mmol/l), and significant increases of PaCO_2 (7.64-8.07 kPa), PO_2 (2.30-2.74 kPa) and lactate (5.3-5.9 mmol/l) from T(0) to T(90), with the most pronounced changes at T(0)-T(45). Similar changes occurred in venous blood pH (7.32-7.31), HCO_3^- (19.54-19.33 mmol/l), BE (-4.93 to -5.19 mmol/l), PaCO_2 (5.69-5.81 kPa) and lactate (5.0-5.3 mmol/l), although the changes were smaller and most pronounced at T(45)-T(90). No significant changes were observed in venous PO_2 . **CONCLUSION:** Persistent cord pulsations and delayed cord clamping at birth result in significantly different measured values of cord blood acid-base parameters.