ARTERIAL LINE SAMPLING
Supporting information

Samples should be analysed immediately in order to avoid inaccurate results?

A study of 74 umbilical cords concluded that time does have significant effects on cord blood analysis (Fan, 2020). Yet, these changes are minor and may not have any clinical significance. Samples were analysed at 0, 20, 40, and 60 minutes after delivery for pH and lactate levels. Over time, a statistically significant decrease in pH and a reciprocal increase in lactate levels were observed. The mean change in arterial pH following 60 min was 0.021 ± 0.028 (room-temperature) and 0.016 ± 0.023 (refrigerated); $p < 0.001$. Compared to pH, a greater change was demonstrated in lactate levels over time; the mean change in lactate following 60 min was -0.896 ± 0.535 (room temperature) and -0.512 ± 0.450 mmol/L (refrigerated).

A study of 38 placentas of infants delivered by elective caesarean section (Armstrong, 2006) looked at arterial samples from 20 placentas, and venous samples from 18 placentas. Arterial and venous lactate was significantly higher than at time 0 by 20 minutes in both clamped and unclamped vessels. Changes in unclamped vessels were greater than in clamped vessels. The pH remained unchanged over 60 minutes in clamped vessels, but changed significantly in unclamped vessels. Base excess changed significantly in both clamped and unclamped vessels. The authors concluded that cord blood samples taken after 20 minutes delay were unreliable for lactate measurement, even if the vessel had been doubly clamped to isolate the blood from the placenta.

Armstrong L; Stenson B. Effect of delayed sampling on umbilical cord arterial and venous lactate and blood gases in clamped and unclamped vessels. Arch Dis Child Fetal Neonatal Ed 2006;91:F342-5 http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2672835/

Fan I, Hiersch L, Belov Y et al. The effects of time and temperature on umbilical cord gas analysis. J Matern Fetal Neonatal Med. 2020;1-7

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