

Development of a simple, cost effective procedure for the rapid collection of placental tissue for high throughput screening assay studies

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Introduction:

The placenta offers information about the *in utero* environment for the developing fetus diagnostic and prognostic purposes. Unfortunately, optimal timing of collection after delivery and storage methods of placental tissue are unknown. With proper collection and storage procedures, the placenta offers researchers the opportunity to study RNA, proteins and other chemical species could be important for understanding perinatal/neonatal health, development and pathological mechanisms.

Methods:

Data collection forms captured factors that could potentially affect ‘placental health’, including maternal characteristics (age, parity, and gravidity) and complications during pregnancy (e.g., gestational diabetes, preeclampsia, bleeding) and labor (baby presentation, premature rupture of membranes). The duration of State II and State III labor was also captured. To date, several placentas have been collected after scheduled C-section. Each placenta was divided in half, with one half placed in room temperature buffered saline and the other half placed in ice-cold (4° C) buffered saline. Core biopsies of placental tissue were taken from each half over an eight-hour period, and assays performed to determine RNA integrity at each time point.

Results:

Preliminary data suggest that RNA may remain stable, defined as RNA Integrity Number (RIN) ≥ 8) for at least 30 minutes and possibly towards two hours at 4° C after collection in a Caesarian section procedure (Fig 1).

Conclusions:

We have developed the logistical and technical procedures to rapidly harvest core tissue samples of placenta for biochemical assay procedures. Additional sampling will be required to clarify the RIN values at the 1-hour sampling point. Further, it appears that placentas maintained in ice-cold saline may yield higher RIN values than those samples stored at room temperature. At present, we are also collecting samples from vaginal deliveries to determine what impact other variables associated with labor and delivery may have on RNA integrity.

