Aiding Clinicians through Summarization of Perinatal Data

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Abstract
Exploratory analysis has focused on developing summarized views of monitor-captured perinatal data to support adherence to established clinical protocols. In addition to facilitating rapid access to significant clinical trends and reducing subjective interpretation of monitor-captured data, combining data summaries with traditional monitor review may assist in the anticipation of complications.

Introduction
Current fetal monitor devices:
Capture important physiological characteristics including Fetal Heart Rate (FHR) and uterine contractions
Lack sophisticated decision support and the ability to integrate clinical guidelines into the data display.

Enhanced presentation and summarization of monitor data provides:
Rapid “at-a-glance” access to significant trends
Opportunity for improving patient safety and clinician workflow through the reduction of subjective clinician interpretations.

Methods
Exploratory analysis of graphical properties and information processing techniques applied to digitized perinatal monitoring data focused on the development of a time-compressed summary view of synchronized FHR and uterine contraction data.

1) Long-term variability of the Fetal Heart Rate (FHR) 2) Occurrence, timing, and duration of FHR decelerations corresponding to uterine contractions

Results
The solid tracing represents FHR variability, with the level of variation at a particular time identified by the right vertical axis. The occurrence of each FHR deceleration is represented by a single dot. Vertical dot position, quantified by the left vertical axis, expresses the timing of the deceleration corresponding to a contraction. Lastly, dot size conveys the duration of the particular deceleration.

Summary of Conclusions
Variability and deceleration attributes can be extracted into a single time-compressed summarized view. This summary data view lends itself to guideline support, though usefulness of the summary is limited to general trending as opposed to pinpointing specific problems. Thus, in combination with the distinct fetal monitoring curves, the clinician is potentially aided. As clinical usability and acceptance grows, additional features can potentially be added to the “at-a-glance” summary of the perinatal monitor data.

References

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