

## Enhancing Knowledge in CTG interpretation through Case based learning and interactive sessions

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### Abstract

#### Objective

Continuous intrapartum CTG monitoring is the norm in Sohar Hospital to reduce fetal neurologic injury due to fetal hypoxia, neonatal deaths and still birth. Modest interobserver variation in CTG interpretation was observed due to various guidelines. The primary objective of this study was to identify and reduce errors, variabilities in CTG interpretation based on visual patterns and strengthen the knowledge by implementing the physiology guideline of CTG interpretation 2018 which focuses on recognition of cycling, conversion patterns, hypoxic patterns. eventually reducing unnecessary obstetric intervention and expediting delivery when indicated.

**STUDY DESIGN**-Prospective study

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### Method

Case based learning and interactive sessions was initiated from March 2019 and CTG workshops from January 2019 were initiated for midwives and obstetricians.

The subjects were 10 seniors with >10 years of experience and 8 juniors with <10 years of experience in Case based learning.

18 obstetricians interpreted CTG readings from 96 parturient. Outcomes were blinded. The cases were selected randomly on daily basis from the maternity ward and the detailed history, demographics and labor room progress were documented in a prefilled CTG proforma with blinding of the outcome. The CTG features, baseline, variability, acceleration, decelerations, hyperstimulation, cycling, pattern were analyzed and each tracing was classified as normal, suspicious or pathologic, and actions advised by the observer were documented and analyzed. Interactive discussions were carried out which included the applications of the new CTG guidelines. After making the decision the fetal and neonatal outcomes were correlated and errors identified. Onsite education was implemented with interactive case discussion. Primary outcome was decrease in interobserver variability as an impact of the continuing education. Secondary outcome were decrease in instrumental vaginal deliveries and unindicated emergency cesareans and timely intervention for non-reassuring CTG and pathological CTG. Interobserver agreement in CTG interpretation and decision making was assessed via proportion of agreement (Pa), with 95% confidence intervals (CI). Incidence of emergency cesareans due to fetal distress and assisted vaginal deliveries were followed monthly.

### RESULTS:

The Pa were good (0.66-0.84) in normal cases for all elements of CTG except for the tonus of the contraction (0.2) and cycling (0.80-0.60) which was very low. In cases where there were recommendations Pa value were low (0.53, 95% CI 0.52- 0.54) than those where no recommendation for action, Pa values were high [0.65, 95% CI (0.64-0.66)]. The lowest Pa values were for variable deceleration and deceleration at second stage which led to unindicated instrumental deliveries. Higher Pa values were observed at the senior level than the junior level.

### Conclusion

Our study indicates assisted vaginal deliveries can decrease without increasing the risk of hypoxia with correct CTG interpretation. The main objective of reducing unindicated emergency cesarean sections/instrumental delivery and improving perinatal outcomes by timely interventions during acute events could be achieved by periodic training and recertification of CTG interpretation at all levels. A better understanding of hypoxic patterns was the result. Case based learning and discussions has markedly increased awareness and motivated the obstetric team to adhere to this guideline. Higher interobserver agreement and better management of intrapartum CTG is expected with this periodic and continuing medical education. CTG monitoring is only a part

of the monitoring process of mother and the fetus. There has to be a holistic approach and physiologic understanding of CTG to take appropriate decisions. Training was associated with improvement in CTG knowledge, higher interobserver agreement and better management of intrapartum CTG thus having a huge impact on patient safety and quality of care.

### **References**

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