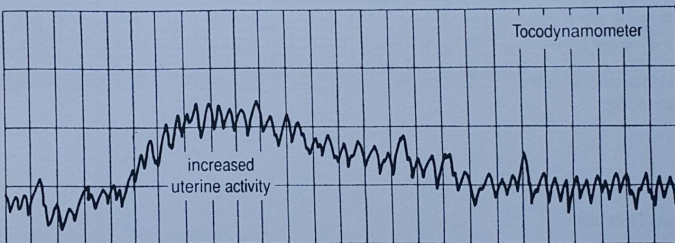
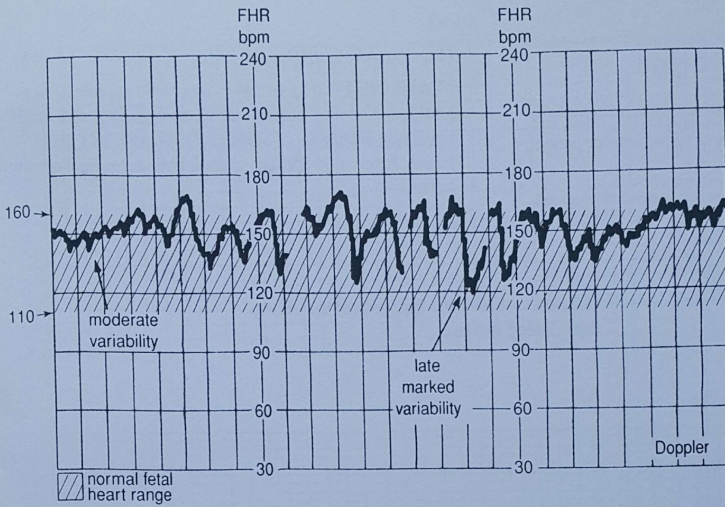


**Pattern Characteristic:
Late Marked Variability**

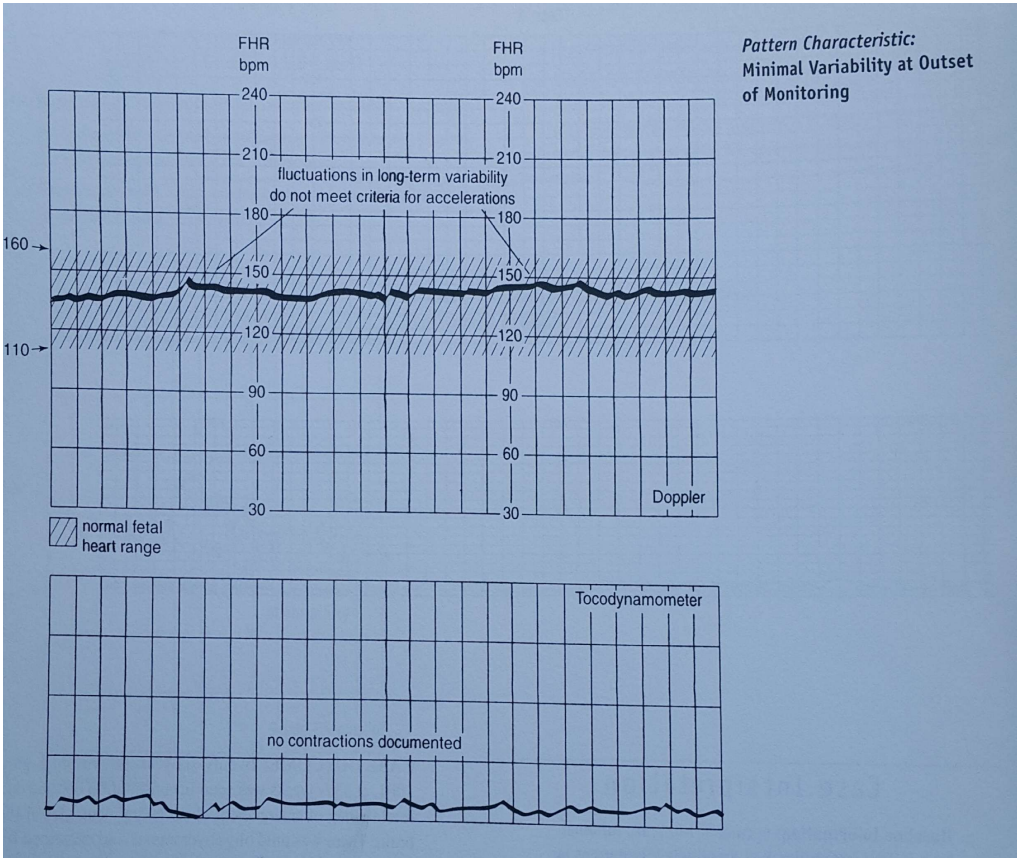


Case Interpretation

- **Baseline Information:** high normal rate to moderate tachycardia, moderate variability. Episodes of marked variability occur late, in association with uterine contractions.
- **Periodic or Nonperiodic Changes:** variable nonperiodic accelerations.
- **Uterine Activity:** prolonged, skewed contractions.
- **Significance:** a well-oxygenated but stressed fetus. When encountered during antepartum testing, an appropriate

response is to manage the fetus as though late decelerations were encountered.

- **CASE OUTCOME:** Twenty-four-year-old primigravida, with gestational-onset, diet-controlled diabetes, delivered at 41 weeks' gestation, with midforceps rotation and epidural anesthesia, an 8-pound, 13 $\frac{1}{2}$ -ounce (4011 gram) stillborn male. The placenta culture showed *Escherichia coli* and *Providencia stuartii*. This tracing was obtained during antepartum monitoring 3 days prior to the intrauterine fetal death.

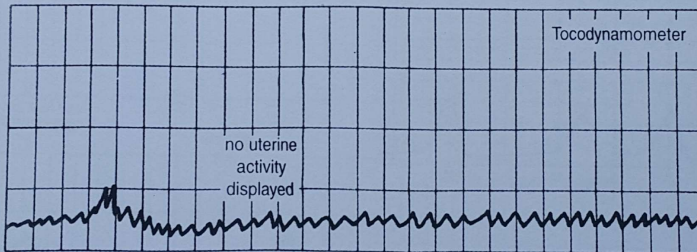
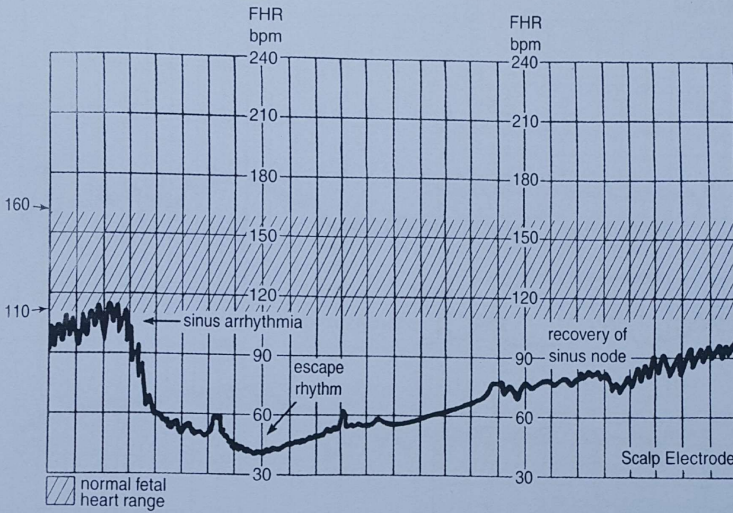


Case Interpretation

- **Baseline Information:** normal at 140 bpm, minimal beat-to-beat variability, low-amplitude fluctuations in long-term variability.
 - **Periodic or Nonperiodic Changes:** none demonstrated. Fluctuations in long-term variability do not meet criteria for accelerations.
 - **Uterine Activity:** no contractions displayed.
 - **Significance:** no assurance of fetal oxygenation is provided by the tracing segment.
- **CASE OUTCOME:** Twenty-six-year-old gravida 2, para 1001, at 35³/₇ weeks was seen in consultation because of a fetal finding of enlargement of the lateral ventricles of the brain. There was mild oligohydramnios and decreased fetal tone. The fetal heart rate pattern was interpreted as a fetal response to chronic hypoxia as well as a pre-existing neurologic condition. The patient delivered by cesarean section a 4-pound, 6-ounce (1984 gram) infant male; Apgar score 7/8. The infant demonstrated evidence of nonhypoxic, neurologic anomaly.

BASIC PATTERN COMPONENTS

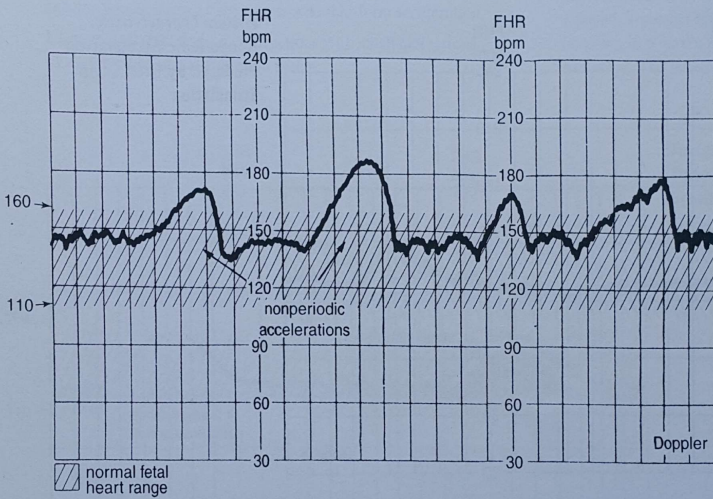
Pattern Characteristic:
Absent Variability, Sinus
Node Suppression



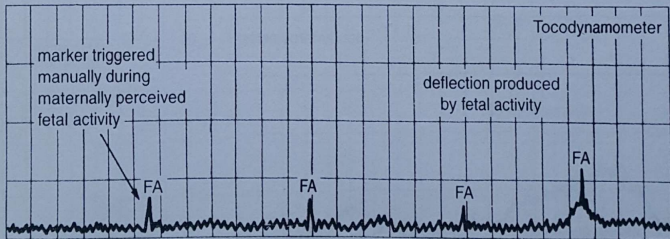
Case Interpretation

- **Baseline Information:** normal rate, moderate variability.
- **Periodic or Nonperiodic Changes:** prolonged nonperiodic deceleration with suppression of sinus node, resulting in a 2- to 2½-minute escape rhythm followed by sinus node recovery. The trace has not returned to baseline in this segment.
- **Uterine Activity:** none recorded.
- **Significance:** response of a well-oxygenated fetus to an environmental stimulus with resolution.
- **CASE OUTCOME:** Twenty-four-year-old gravida 2, para 0010, at 41½ weeks' gestation delivered vaginally, with outlet forceps and general anesthesia, a 9-pound, 8-ounce (4309 gram) female; Apgar score 5/9. The fetus was in a vertex presentation. The delivery was complicated by shoulder dystocia. Meconium was present. The infant followed an uncomplicated newborn course.

*Pattern Characteristic:
Nonperiodic Accelerations—
Associated with Fetal Activity*



▨ normal fetal heart range

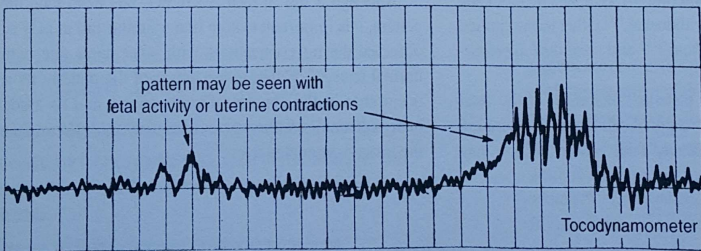
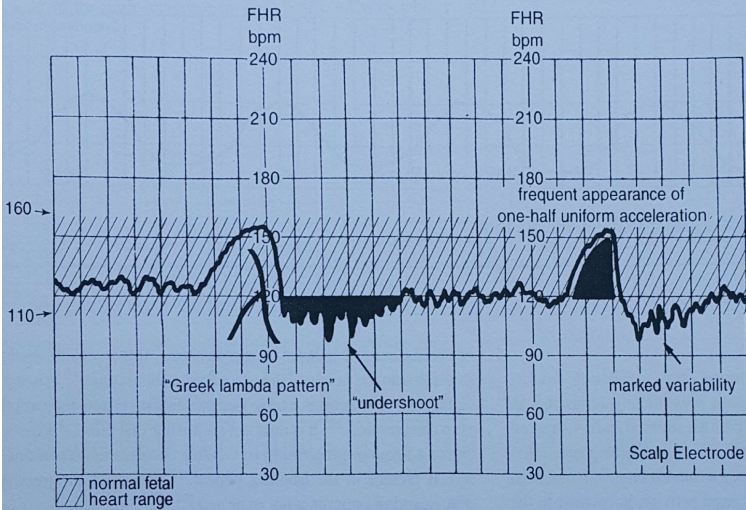


Case Interpretation

- ⌚ **Baseline Information:** normal rate, minimal variability.
- ⌚ **Periodic or Nonperiodic Changes:** accelerations occurring in association with the handwritten data entries that denote fetal activity.
- ⌚ **Uterine Activity:** none recorded.
- ⌚ **Significance:** a well-oxygenated fetus is depicted.

⌚ **CASE OUTCOME:** Twenty-eight-year-old gravida 3, para 2002, at 36 weeks' gestation at the time of a nonstress test performed for class A diabetes. At 40 weeks' gestation, she delivered by cesarean section performed for a failed serial induction of labor, under general anesthesia, an 8-pound, 6 $\frac{1}{2}$ -ounce (3813 gram) male; Apgar score 8/10. The infant followed a normal newborn course.

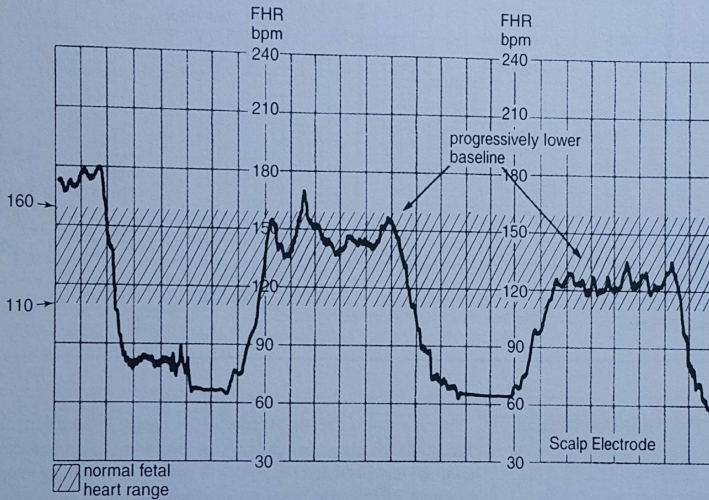
Pattern Characteristic:
Accelerations Followed by
Decelerations: Lambda Pattern



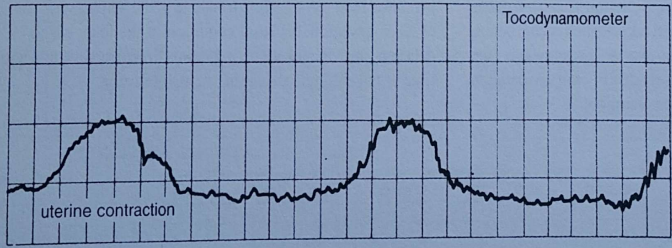
Case Interpretation

- ⦿ **Baseline Information:** low normal rate, moderate variability.
- ⦿ **Periodic or Nonperiodic Changes:** periodic accelerations followed by brief decelerations.
- ⦿ **Uterine Activity:** regular contractions.
- ⦿ **Significance:** a well-oxygenated fetus is depicted.
- ⦿ **CASE OUTCOME:** Seventeen-year-old primigravida delivered vaginally, with pudendal anesthesia, at 43 weeks'

gestation an 8½-pound (3674 gram) male; Apgar score 8/9. There was no meconium present and no abnormal cord position. The fetus was in a vertex presentation in a left occiput posterior position with spontaneous rotation to an occiput anterior position in late labor. The fetal scalp pHs were 7.3 to 7.4; tissue pHs were 7.18 to 7.26 (reflecting the usual 0.2 difference from scalp pHs); and umbilical cord pH was arterial 7.22, venous 7.31. The infant followed a normal newborn course.



Pattern Characteristic:
Decreasing Baseline Rate—with Decelerations

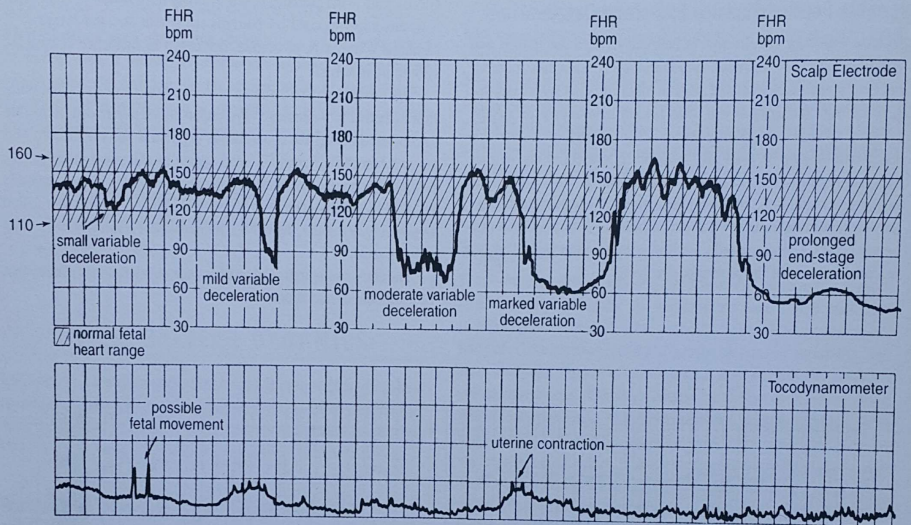


Case Interpretation

- **Baseline Information:** progressive lowering of the baseline after a deceleration from marked tachycardia, low normal range, moderate variability.
- **Periodic or Nonperiodic Changes:** variable decelerations that are “moderate to severe.” Atypia characterized by continuation of the baseline at a lower level.
- **Uterine Activity:** regular contractions, minimally skewed.
- **Significance:** one of the “atypical” variable decelerations, denoting increased risk of an eventual low Apgar score. The presence of moderate variability excludes a possibility of significant acidosis at this time. Management is based on the clinical setting and response to measures to improve the fetal umbilical flow and oxygenation.

• **CASE OUTCOME:** Twenty-five-year-old gravida 4, para 2012, at 32 weeks' gestation delivered vaginally, with pudendal anesthesia, a 4-pound (1814 gram) male; Apgar score 8/9. The pregnancy was complicated by illegal drug use. There were premature ruptured membranes for 24 hours before delivery. Chorioamnionitis was found, as were positive group B streptococcal amniotic fluid and placental cultures.

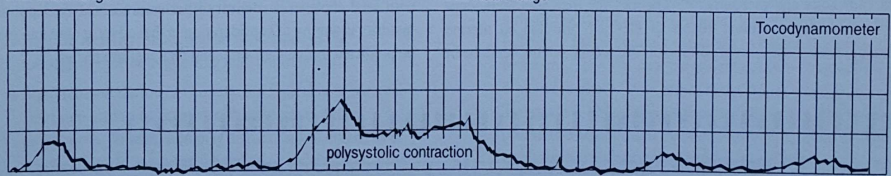
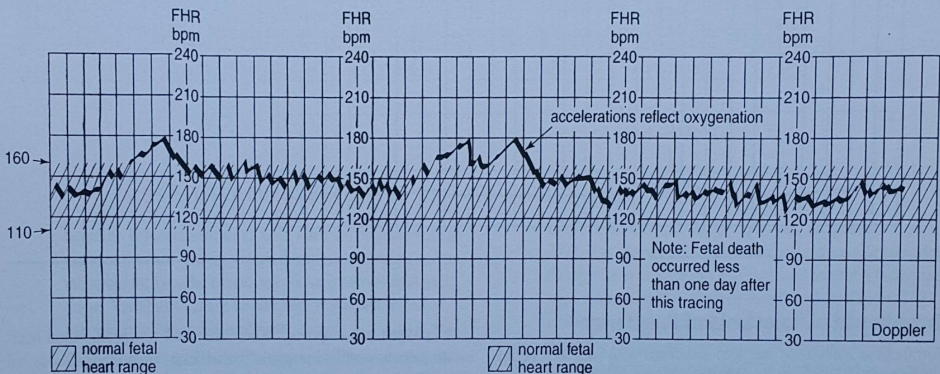
The newborn had negative cultures, was treated with antibiotics, and followed a normal course. No abnormal cord position was noted. The fetal monitoring pattern appeared early in labor and was followed by improvement.



Pattern Characteristic: Progression from Mild Variable Deceleration to End-Stage Deceleration

Case Interpretation

- **Baseline Information:** normal rate and moderate variability.
- **Periodic and Nonperiodic Changes:** progression from small variable decelerations through “mild,” “moderate,” and “marked” classical variable decelerations to an atypical variable deceleration (technically not a prolonged deceleration, as only 2 minutes were recorded).
- **Uterine Activity:** contractions are not well displayed; they appear to precede or coincide with decelerations.
- **Significance:** this pattern suggests progressive cord impingement. If this is the second stage and no recovery occurs, management is emergency delivery by the quickest and easiest route.
- **CASE OUTCOME:** Twenty-two-year-old gravida 3, para 1011, at 38 weeks' gestation was transferred to the delivery room, where she delivered, with epidural anesthesia and low forceps, a 5-pound, 7-ounce (2466 gram) male; Apgar score 9/10. Meconium was present. The cord encircled the neck. The infant followed a normal newborn course.



Pattern Characteristic: Tracing Not Predictive of Outcome. As Seen with Intrahepatic Cholestasis of Pregnancy

Case Interpretation

- **Baseline Information:** normal rate at 140 to 150 bpm with moderate variability.
- **Periodic or Nonperiodic Changes:** accelerations present. No decelerations despite 2.5-minute contraction.
- **Uterine Activity:** low-amplitude, brief contractions with the exception of a polysystolic contraction lasting 2.5 minutes.
- **Significance:** a well-oxygenated fetus depicted with capability of maintaining oxygenation in the presence of contractions of varying configuration. In a setting of intrahepatic cholestasis, the usually reassuring tracing does not preclude fetal jeopardy.
- **CASE OUTCOME:** Twenty-one-year-old gravida 2, para 0010, had an uncomplicated pregnancy until 34 weeks' gestation, when she developed pruritis without a rash. She was treated symptomatically until 36 weeks, when she complained

of dark urine. She had mildly increased hepatocellular enzymes and significantly elevated alkaline phosphatase. Total bilirubin was at 1.8 mg/dL with direct bilirubin of 1.4 mg/dL. Evaluation for gallbladder and bile duct disease was negative. She was treated with cholestyramine. At 39 weeks' gestation, a nonstress test was reactive with a negative spontaneous contraction stress test. There was a single polysystolic contraction interspersed with occasional contractions of normal configuration, none of which were perceived by the patient. The fetus demonstrated no stress with any contraction, yet the next day the patient presented to the hospital labor and delivery unit in possible early labor with decreased fetal movement. An intrauterine fetal death was diagnosed. She delivered vaginally a 7-pound, 11-ounce male. There was no evidence of placental abruption, and autopsy was negative for infection or genetic disorders.