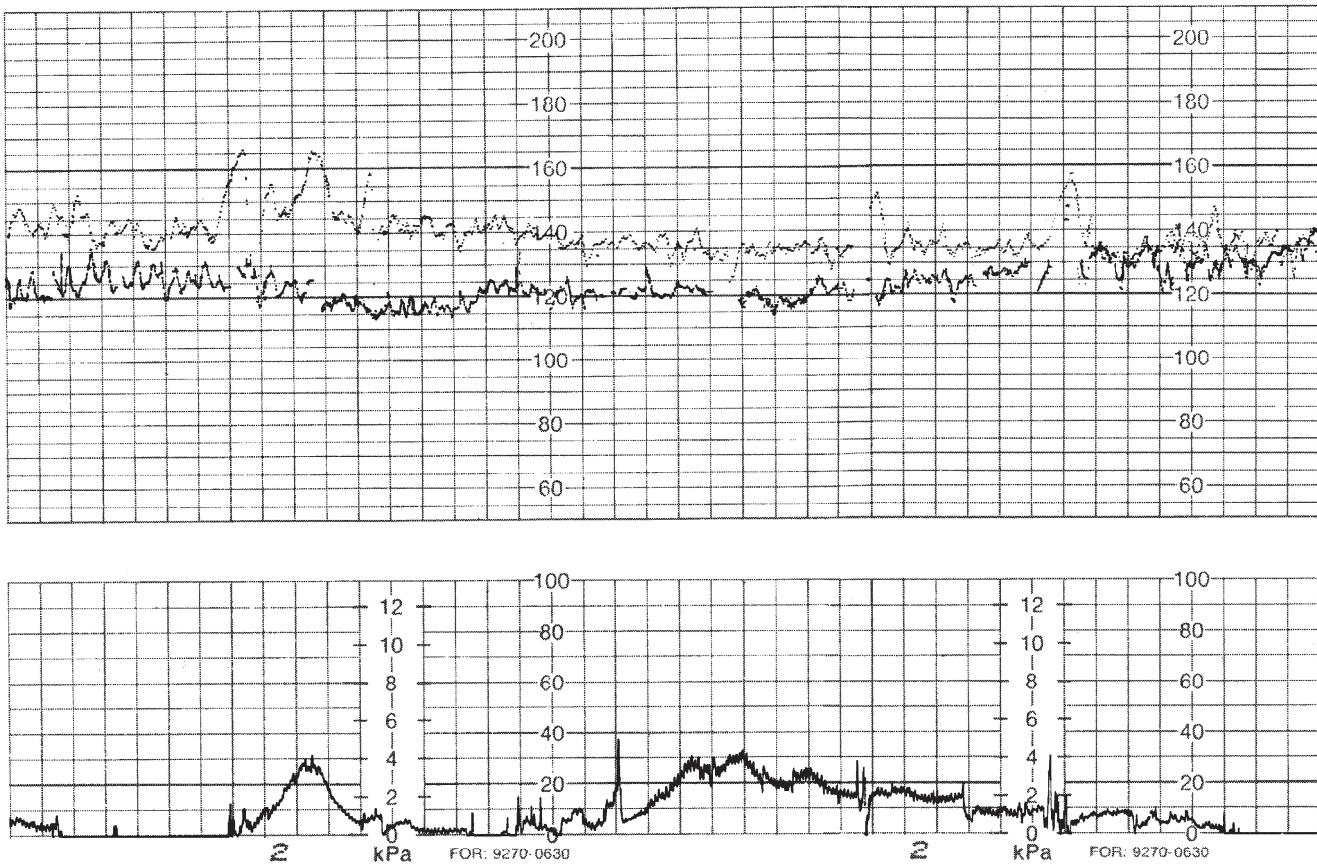


Case Study

Fig. 4.1



HISTORY

25-year-old gravida 3, para 1 + 1.

Past history

Nil relevant.

Antenatal period

Twin pregnancy diagnosed on booking scan. Admitted at 37 weeks with spontaneous rupture of membranes and contractions.

Labour

04.00 hours

Cervical os 4 cm dilated.

Clear liquor draining.

Fetal scalp electrode applied to twin 1 (faint line on CTG).

Twin 2 monitored externally (darker line on CTG).

Contractions monitored externally.

04.50 hours

Epidural analgesia commenced.

06.00 hours

Cervical os 6 cm dilated.

CTG (Fig. 4.1).

CTG

- 1 What do you notice about the baseline?
- 2 What do you notice about the baseline variability?
- 3 What periodic changes, if any, are present?
- 4 What do you notice about the uterine activity?
- 5 Would you categorise this CTG as normal/suspicious/pathological?
- 6 What is the most probable cause of fetal heart rate abnormality shown on this trace?
- 7 What treatment and/or intervention would you consider necessary for this fetal heart rate pattern?

NOTES

1

2

3

4

5

6

7

ANALYSIS**Twin 1 (dark line)**

- 1 Baseline 135–140 bpm
- 2 Variability 5–10 beats
- 3 Accelerations present
- 4 Contractions not monitored adequately.
- 5 All features fall into reassuring category: the CTG is classified as normal.
- 6 No abnormalities present.
- 7 Contractions should be monitored. No other action is necessary. When monitoring the fetal heart rate of twins there can be difficulties in interpretation if the fetal heart rates are very similar. Most modern monitors now allow for the fetal heart rates to be recorded with a 20-beat difference for a 10-minute period. This allows for clearer interpretation.

Twin 2 (faint line)

- Baseline 115–120 bpm
- Variability 5–10 beats
- Accelerations present
- No decelerations

- Reassuring**
- Reassuring**
- Reassuring**
- Reassuring**

OUTCOME**10.35 hours**

Progressed to second stage of labour.

12.06 hours

Straight forceps delivery of twin 1.
Live girl.

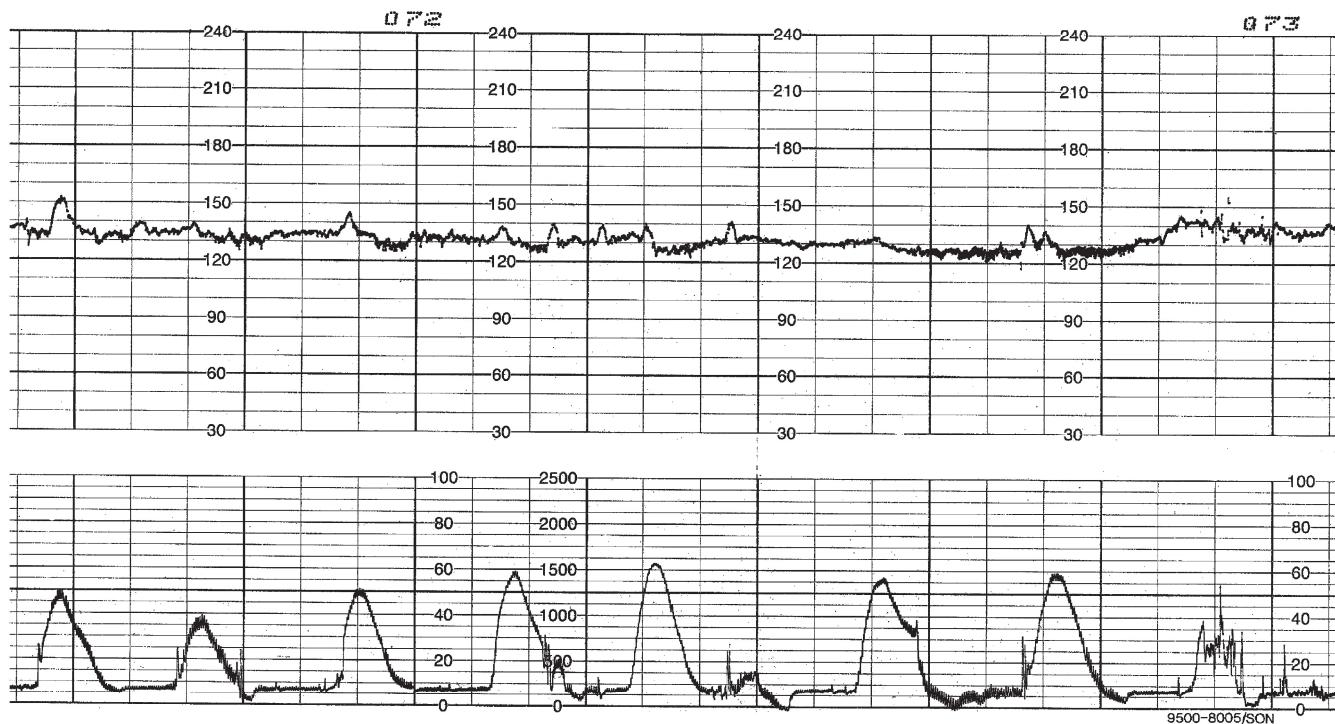
Apgar score 9/1 9/5.
Birthweight 2.470 kg.

12.20 hours

Straight forceps delivery of twin 2.
Live girl.

Apgar score 8/1 9/5. Birthweight 2.560 kg.

Fig. 4.2

**HISTORY**

30-year-old gravida 2, para 1.

Past history

Nil relevant.

Antenatal period

Progressed normally.

Admitted at 41 + 2 in spontaneous labour.

Labour**03.20 hours**

Cervical os 7 cm dilated.

Clear liquor draining.

Requesting epidural analgesia.

03.40 hours

Epidural analgesia commenced.

Continuous external monitoring in progress.

04.30 hours

CTG (Fig. 4.2).

CTG

- 1 What do you notice about the baseline?
- 2 What do you notice about the baseline variability?
- 3 What periodic changes, if any, are present?
- 4 What do you notice about the uterine activity?
- 5 Would you categorise this CTG as normal/suspicious/pathological?
- 6 What is the most probable cause of fetal heart rate abnormality shown on this trace?
- 7 What treatment and/or intervention would you consider necessary for this fetal heart rate pattern?

NOTES

1

2

3

4

5

6

7

ANALYSIS

- | | | |
|---|--|------------|
| 1 | Baseline 130–135 bpm | Reassuring |
| 2 | Variability around 5 beats | Reassuring |
| 3 | No decelerations, accelerations present | Reassuring |
| 4 | Contracting 3–4 in 10 minutes. | |
| 5 | All features reassuring: CTG classified as normal. | |
| 6 | No abnormalities present. | |
| 7 | No action necessary. | |

OUTCOME

Progressed to second stage of labour.

09.58 hours

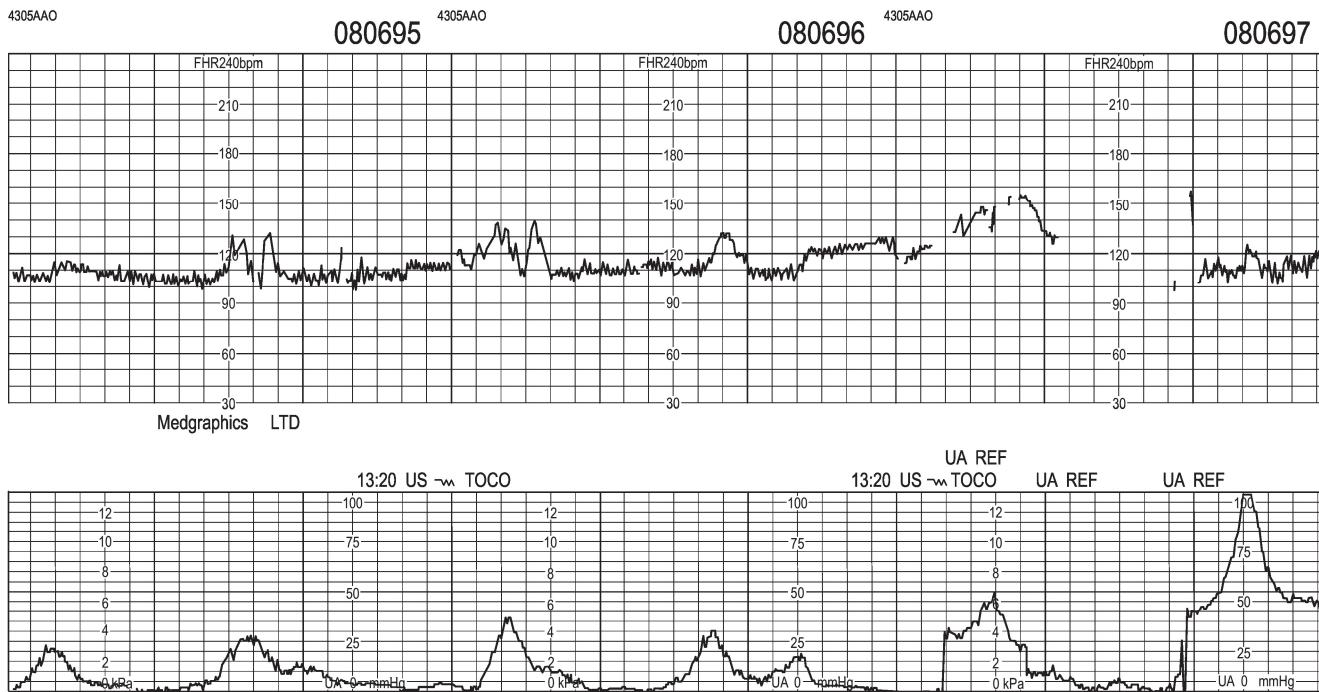
Normal delivery.

Live boy.

Apgar score 9/1 9/5.

Birthweight 3.58 kg.

Fig. 4.3



HISTORY

24-year-old gravida 4, para 1 + 2.

Past history

Previous normal delivery.
Deep-vein thrombosis 6 years ago, on Fragmin (dalteparin sodium).

Antenatal period

Normal.

Admitted at 39 weeks' gestation in spontaneous labour.

Labour

Vaginal assessment on admission revealed cervix to be thin and well applied to presenting part; cervical os was 5 cm dilated.

Membranes intact.

Fetal heart monitored by external transducer.

No analgesia.

CTG (Fig. 4.3).

CTG

- 1 What do you notice about the baseline?
- 2 What do you notice about the baseline variability?
- 3 What periodic changes, if any, are present?
- 4 What do you notice about the uterine activity?
- 5 Would you categorise this CTG as normal/suspicious/pathological?
- 6 What is the most probable cause of fetal heart rate abnormality shown on this trace?
- 7 What treatment and/or intervention would you consider necessary for this fetal heart rate pattern?

NOTES

1

2

3

4

5

6

7

ANALYSIS

- | | |
|--|------------|
| 1 Baseline 110 bpm | Reassuring |
| 2 Variability 5–10 beats | Reassuring |
| 3 None, accelerations with contractions | Reassuring |
| 4 Contracting 1:3. | |
| 5 All features reassuring: CTG classifies as normal. | |
| 6 No abnormalities. | |
| 7 No action required. This woman has been deemed as low-risk during labour. Intermittent auscultation is the recommended method of fetal heart rate monitoring. The reason for continuous fetal heart rate monitoring in labour should be questioned. Following discussion between the woman and her midwife, highlighting best-practice guidelines, intermittent auscultation should be offered as the preferred method of fetal heart rate monitoring. If the woman chooses continuous monitoring there must be documentary evidence in the case notes of the risks and benefits that were discussed and that informed consent was gained. | |

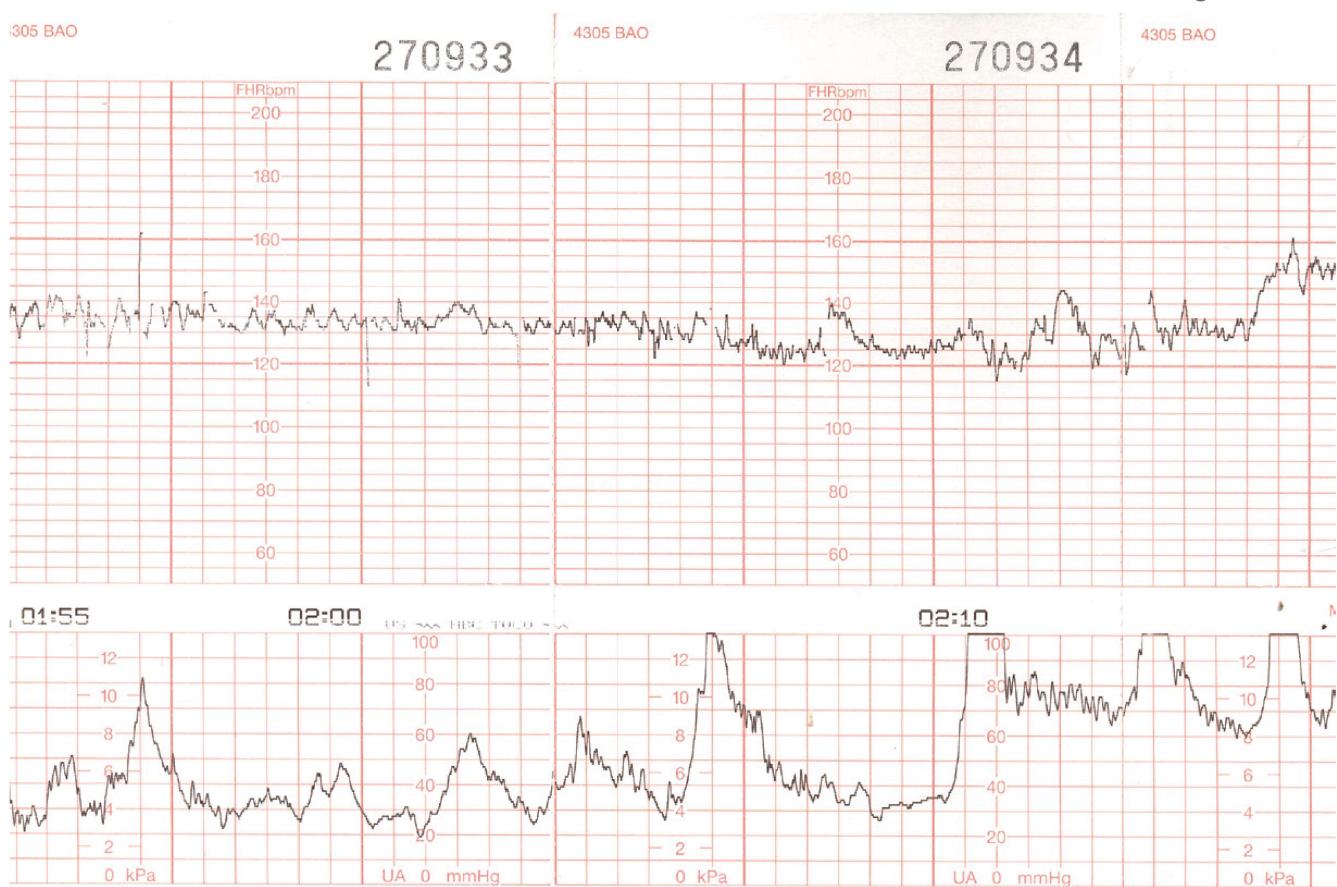
OUTCOME

At the end of the portion of CTG, the woman was feeling urges to push. A repeat vaginal assessment revealed the cervix to be thin and well applied to the presenting part. The cervical os was 9 cm dilated. Membranes were ruptured artificially with clear liquor evident. The CTG remained in progress.

Second stage of labour was diagnosed 15 minutes later. Progress was slow, resulting in a straight forceps delivery 2 hours into the second stage.
Live girl, Apgar score 8 and 8. Birthweight 3.260 kg.

Cord gases	pH	Base excess (mmol/l)
UA	7.13	5.5
UV	7.27	6.5

Fig. 4.4, Part 1

**HISTORY**

Gravida 3, para 2.

Past history

Previous caesarean section for breech presentation, normal birth since.

No medical disorders, no other problems noted.

Antenatal period

Planned vaginal birth.

Growth good, on 90th centile.

Admitted at 38 weeks in spontaneous labour at 01.30 hours.

Labour**01.45**

Vaginal examination performed, cervical os 7 cm dilated, membranes intact.

External continuous electronic monitoring of the fetal heart commenced in view of previous caesarean section.

01.55

CTG (Fig. 4.4, Part 1).

CTG

- 1 What do you notice about the baseline?
- 2 What do you notice about the baseline variability?
- 3 What periodic changes, if any, are present?
- 4 What do you notice about the uterine activity?
- 5 Would you categorise this CTG as normal/suspicious/pathological?
- 6 What is the most probable cause of fetal heart rate abnormality shown on this trace?
- 7 What treatment and/or intervention would you consider necessary for this fetal heart rate pattern?

NOTES

1

2

3

4

5

6

7

ANALYSIS

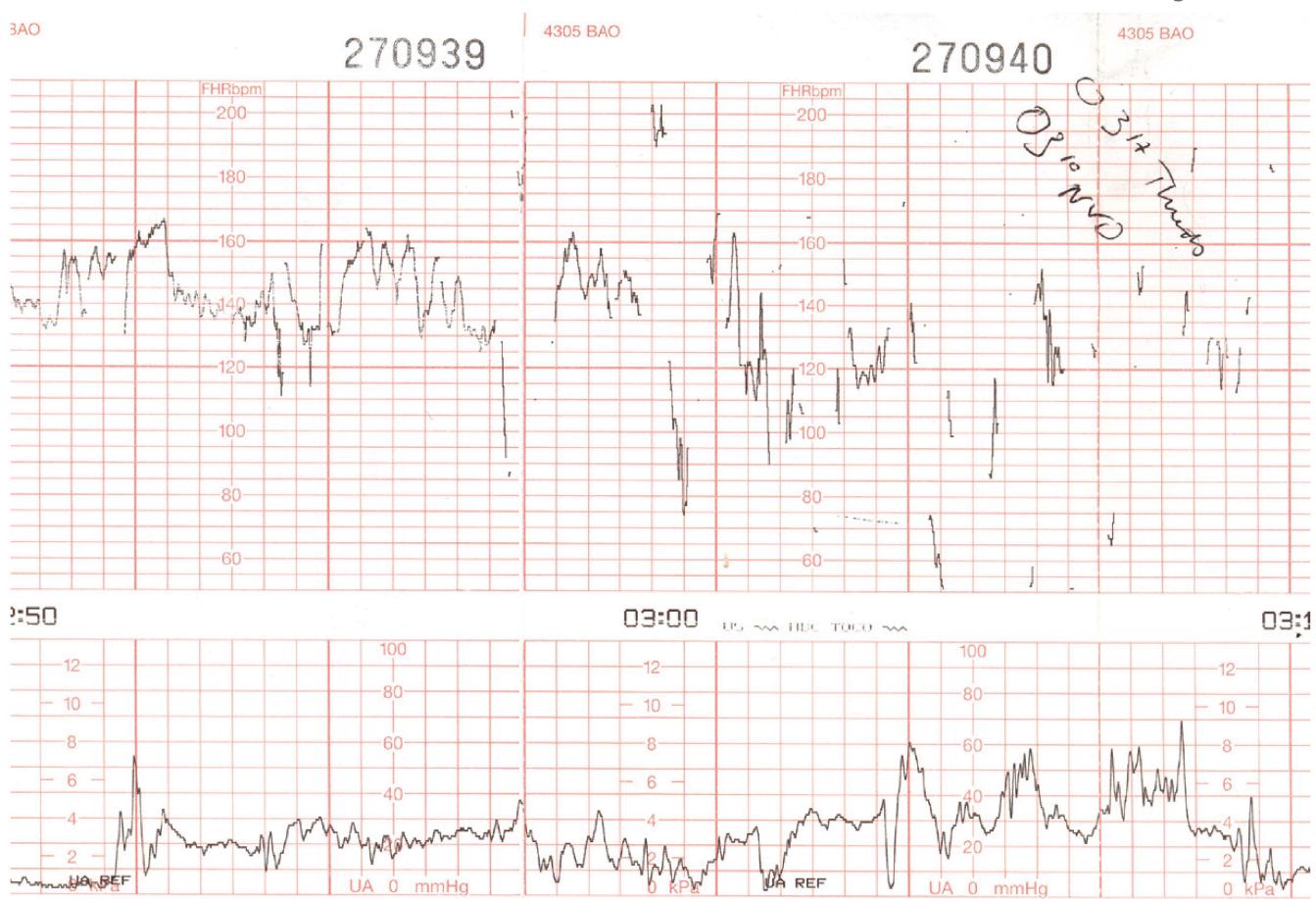
- | | | |
|---|--|------------|
| 1 | Baseline 125–135 bpm | Reassuring |
| 2 | Variability 5–10 beats | Reassuring |
| 3 | No decelerations, accelerations present | Reassuring |
| 4 | Difficult to interpret but appear to be 3–4 in 10. | |
| 5 | All features reassuring; CTG classified as normal. | |
| 6 | No abnormalities present. | |
| 7 | Attempts should be made to monitor the uterine activity more accurately. | |

Labour continued**02.35**

Bulging membranes visible at intriotus. CTG remains normal as previously. No urges to push.

03.00

Spontaneous rupture of membranes, clear liquor, actively pushing.
CTG (Fig. 4.4, Part 2).

PART 4: CASE STUDIES*Case 4 continued***Fig. 4.4, Part 2****CTG**

- 1 What do you notice about the baseline?
- 2 What do you notice about the baseline variability?
- 3 What periodic changes, if any, are present?
- 4 What do you notice about the uterine activity?
- 5 Would you categorise this CTG as normal/suspicious/pathological?
- 6 What is the most probable cause of fetal heart rate abnormality shown on this trace?
- 7 What treatment and/or intervention would you consider necessary for this fetal heart rate pattern?

NOTES

1

2

3

4

5

6

7

ANALYSIS

- | | |
|--|------------|
| 1 Baseline 130–135 bpm | Reassuring |
| 2 Variability 5–10 beats | Reassuring |
| 3 Accelerations present
Atypical variable decelerations for last 10 minutes | Reassuring |
| 4 Contractions not monitored adequately. | Abnormal |
| 5 One abnormal feature: the CTG is classified as pathological. | |
| 6 Variable decelerations are caused by cord compression. Atypical variables suggest a degree of hypoxia. This is a typical pattern of late second stage of labour. | |
| 7 In this case labour has progressed quickly and the fetus is descending through the birth canal. The CTG has been normal beforehand, which is reassuring. If good progress was not being made in the second stage of labour then consideration should be given to expediting birth. | |

OUTCOME**03.10**

Normal birth, cord around the neck loosely.

Live boy, Apgar score 8/1 9/5.

Birthweight 3.800 kg.

Cord gases	pH	Base excess (mmol/l)
UA	6.99	16.1
UV	7.35	6.1

DISCUSSION

The arterial blood cord gases show a low pH and a high base excess. There is a large arteriovenous difference, suggestive of an acute acidaemia. The baby was behaving normally and did not display any concerning signs. This demonstrates the rapidity of the fall in fetal blood pH during the second stage even though the CTG has been normal previously.