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External cephalic version complicated by bradycardia and placental abruption– a case report

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ABSTRACT

Introduction: Pregnancies with the fetus in breech position at term are routinely managed by offering external cephalic version to increase the likelihood of vaginal birth in the cephalic position and reducing the risk of cesarean delivery. Although complications from external cephalic version are infrequent, placental abruption is a rare but serious risk, occurring in 0.08% of attempts.

Methods: This case report details the experience of a woman with an uncomplicated singleton pregnancy with fetal breech presentation at gestational age 37 weeks and 2 days, coming for an outpatient external cephalic version. Preceding the external cephalic version, a fetal ultrasound and cardiotocography were both normal. Intravenous salbutamol was administered shortly before the procedure.

Results: The external cephalic version was complicated by a three minute episode of fetal bradycardia, which resolved spontaneously without any maternal symptoms of abdominal pain or vaginal bleeding. Within 35 minutes post-procedure, an ultrasound revealed a de novo placental lake with a jet, potentially coming from a placental artery. The patient also started reporting increasing pain and upon palpation of the abdomen, increased uterine tone was noted. Emergency cesarean was performed resulting in the birth of a healthy girl with normal Apgar scores. Fetal hemoglobin was low at 8.3 mmol/L (reference 9.4 -14.4 mmol/L).

Conclusion: This case accentuates the importance of caution in women with symptoms of placental abruption such as uterine contractions, increased tone, or vaginal bleeding, especially following a bradycardic event after external cephalic version. While such complications are rare, clinicians should consider a post-procedure fetal ultrasound before discharge in cases where bradycardia is observed.

Keywords: External Cephalic Version; Abruptio Placentae

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INTRODUCTION

The fetus is in the breech position in approximately 3-4% of all term pregnancies(1). Vaginal delivery of a fetus in the breech position is associated with increased perinatal mortality and morbidity compared to elective cesarean delivery (2). Therefore, external cephalic version (ECV) is recommended for breech and transverse lie as it has been demonstrated to increase the probability of vaginal birth and reduce the relative risk of cesarean delivery and have few complications (3). On average the success rate of turning a breech fetus to a cephalic position is about 58% (4).

Here we present a case of a fetal bradycardic episode during an external cephalic version possibly due to placental abruption detected on an ultrasound exam.

The patient and her partner have given written permission to publish this case report.

CASE REPORT

A healthy 36 year old para 1 presented for an outpatient ECV due to fetal breech presentation at 37 weeks and 2 days gestation. The patient had had an uncomplicated vaginal delivery 7 years previously and the current pregnancy had been uncomplicated with no obstetric risk factors. Pre-pregnancy BMI was 22.7 kg/m2. The patient was Rhesus positive. There were no contraindications for the external version.

Because of the breech presentation, she had undergone a fetal ultrasound scan 9 days prior with normal estimated fetal weight of -12.6% and normal umbilical artery and middle cerebral artery flows, as well as a normal amount of amniotic fluid. The ultrasound was repeated on the day of the attempted external version, again showing normal flows and amount of amniotic fluid. The placenta was located high on the posterior wall of the uterus and no abnormalities had been noted regarding the placenta during any of the ultrasound exams. Cardiotocography (CTG) was normal prior to the procedure.

Intravenous salbutamol 0.25 mg was administered immediately prior to the procedure and the patient was placed on her back in the Trendelenburg position. Ultrasound monitoring was performed throughout the procedure. Two attempts at external version were made and the heart rate remained normal between the attempts. During the second attempt the fetal heart rate decreased to below 60 beats per minute (bpm) for a few seconds, the procedure was discontinued with the fetus still in the original position. The patient was then positioned on her left side, with a slight improvement in the fetal heart rate. The patient changed position to her right side and the CTG was resumed (Figure 1), with a fetal heart rate baseline of about 90 bpm and normal variability. After about three minutes the fetal heart rate elevated to about 100-110 bpm, but prior to this, the parents were warned that we had to prepare for an emergency cesarean section. Registration of the fetal heart rate was intermittent for a further 3 minutes but could be heard to be steadily increasing to above 110 bpm, a little over 8 minutes from the initial event of fetal heart rate deceleration. The CTG remained normal for the remainder of the observation period. The patient had no abdominal pain during or immediately after the procedure and felt relatively well throughout the procedure.

CTG monitoring continued for 35 minutes where the baseline had increased to 130 bpm, variability was normal at 5-25 bpm, with no decelerations, and multiple accelerations. The CTG was evaluated as normal. A bedside fetal ultrasound examination was then performed, despite not being strictly indicated, showing a placenta high on the posterior uterine wall and fundus. Centrally in the placenta there was a placental lake, approximately 1.9x3.1 cm in size, with a jet stream at a frequency of about once per second, not detectable on Doppler (Figure 2). There was a placental artery visible with Doppler, leading up to the jet-stream. During the examination the placental lake increased in size to about 2x4 cm. The patient reported increasing uterine tension and the uterus was clinically evaluated to have become increased in tone. On the suspicion of placental abruption, an emergency grade 2 cesarean delivery (intended time to delivery less than 30 minutes) was performed. The CTG was normal until delivery of the infant.

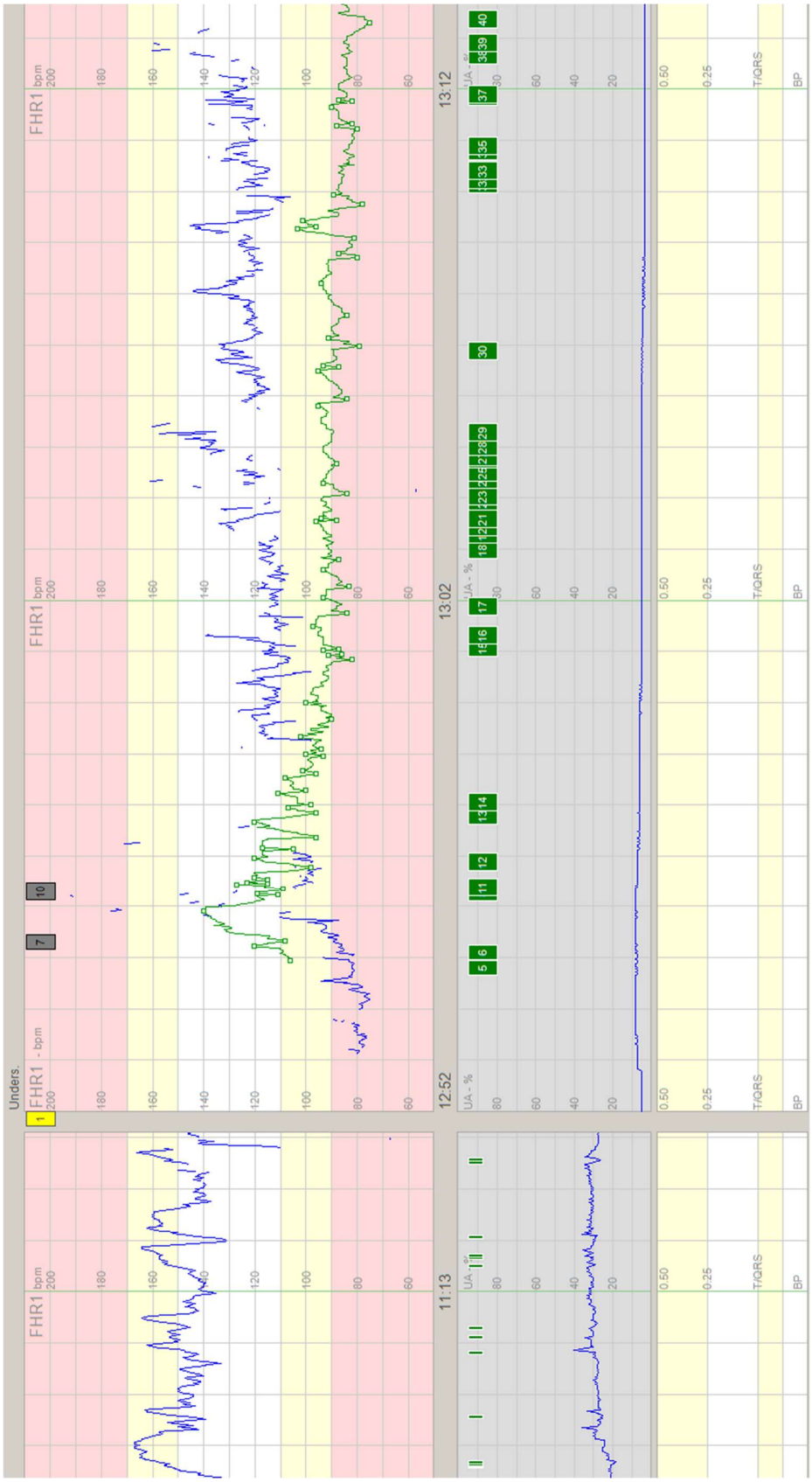

Figure 1: The cardiotocography (CTG) performed prior to the external cephalic version (prior to timestamp 12.52), and resumed after timestamp 12.52, a few seconds after the bradycardic episode started. Blue line depicts the fetal heartrate, the green line is the maternal heartrate.

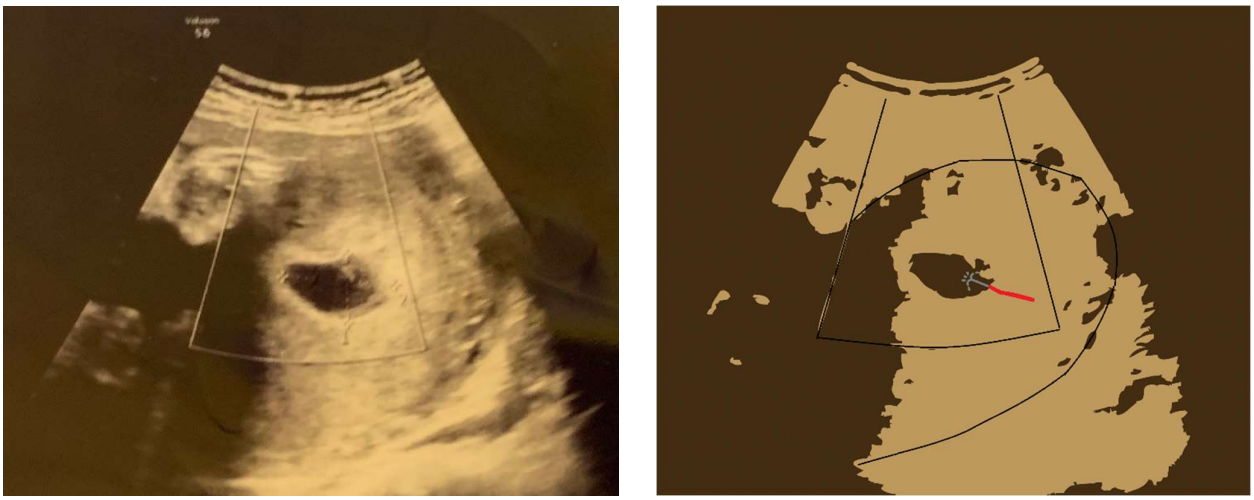

Figure 2: Abdominal ultrasound of the patient performed about 35 minutes after the bradycardic episode started, showing the placenta high in the uterine fundus, with a central lake of about 3,1x1,9cm in size (pictured left). There was a visible, intermittent, jet-stream with a rate of about 60-80 per minute, originating from the right corner of the lake, but not visible on Doppler (pictured right, in gray). In immediate relation to the jet-stream, a placental artery was visible on Doppler (pictured right, in red).

A live born girl of 2835 grams (-6.0%) was delivered, with an Apgar score of 10 after 1 and 5 minutes, umbilical artery pH of 7.35, venous pH 7.4, base-excess 2.4. The placenta weight was 565 grams and was seen with a central cavity on the maternal side a few centimeters from the umbilical stem on the opposite side (Figure 3). Fetal hemoglobin was 8.3 mmol/L (reference 9.4 - 14.4 mmol/L) taken from the umbilical artery and repeated the following day at 8.7 mmol/L. The mother had an intraoperative bleeding of 430 milliliters, the cesarean section was without complications and she made a speedy recovery.

DISCUSSION

This case of suspected placental abruption after an unsuccessful external cephalic version ended with an emergency cesarean delivery and a healthy outcome for mother and child. Prior to the diagnosis of placental abruption, fetal bradycardia was detected for about 3 minutes. Fetal bradycardia has been reported to occur in about 4% of all attempts at external cephalic version, but only about 0.2% of all attempts lead to an immediate cesarean delivery (4). If the umbilical cord is short or wrapped around the fetus´ neck, the procedure may restrict blood flow through the umbilical cord and therefore reversing the procedure should restore blood flow. As the fetal heart rate improved in the current case after repositioning the mother, we initially suspected that the umbilical cord had been compressed during the procedure. Only upon performing an ultrasound exam did suspicion arise of placental abruption.

However, the final diagnosis of placental abruption was based both on the ultrasound findings and the clinical presentation. Placental lakes are a normal finding on an antenatal ultrasound, however the jet streams that were visible regularly at about the same frequency as the maternal heart rate, being in immediate relation to an arteriole, and the increasing size of the lake, made us suspicious of a placental abruption. The macroscopic appearance of the placenta postpartum and low fetal hemoglobin further supported our diagnosis

Figure 3: The maternal side of the placenta. The surgeon is holding their index finger inside the cavity that was presumed to be the lacuna or placental abruption seen at the ultrasound immediately prior to the emergency cesarean.

postpartum. However, it should be noted that placental abruption is a clinical diagnosis and there may not be any suspicious ultrasound findings.
There are no Danish guidelines describing how to monitor pregnancies after a bradycardic episode following an external cephalic version. In the case of this rare complication, it might be prudent to perform extended CTG monitoring and an ultrasound exam during the subsequent observation period, even though placental abruption is described in only 0.08% of all attempts (4). In the study by Grootscholten et al, 4 out of 11 placental abruptions were diagnosed immediately after ECV, 2 within the first 24 hours, 3 after 24 hours and in 2 cases the time of diagnosis was unknown. A single intrauterine fetal demise occurred out of the 11 placenta abruptions despite immediate emergency cesarean (4).
All women undergoing ECV should be made aware of symptoms for placental abruption in the form of uterine contractions, increased tone or vaginal bleeding but at the same time reassured that such complications are rare. Women experiencing bradycardia after ECV should in particular be made aware of such symptoms. Fetal ultrasound is a practical diagnostic tool that can be considered before discharge.

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