CASE REPORT

Consequences of delivery at home in a woman without prenatal care

Nakul Kumar, Lisa Gilbert, Terry Ellis, Sandeep Krishnan

Department of Anesthesiology,
Wayne State University School
of Medicine, Detroit, Michigan,
USA

Correspondence to

Dr Sandeep Krishnan,
sakrishna@med.wayne.edu

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SUMMARY

This is a case report of a 39-year-old multigravida woman without allopathic prenatal care who, after three previous caesarean sections, attempted to deliver her fourth child at home with the help of a direct entry midwife. During labour, fetal movement and fetal heart tones became undetectable, at which time the patient was referred by the midwife to the hospital. The patient was diagnosed with uterine rupture, bladder rupture and fetal demise; she was rushed to emergency surgery. The patient's lack of allopathic prenatal care, attempt of vaginal birth after three previous caesarean sections, coupled with her desire for delivery at home, led to her complicated course. The patient related that she was never made aware that attempting a home birth after three prior caesarean sections put her at increased risk for complications, and she was also unaware that midwives could have varying levels of training.

CASE PRESENTATION

A 39-year-old G4P3 woman presented to the emergency department with acute abdominal pain and loss of fetal heart tones after referral by her midwife. She had undergone a trial of labour after caesarean (TOLAC) at home with the aid of a midwife. The patient denied having any allopathic prenatal care during the current pregnancy. She denied having gestational diabetes testing, blood work or detailed ultrasonography, but she stated that she had undergone regular Doppler and bedside ultrasound scans by her midwife. She was a healthy woman with no history of medical comorbidities, and her surgical history included previous caesarean sections only. The patient's only daily medications were prenatal vitamins. She did not smoke cigarettes, drink alcohol or use any illicit drugs. She had been pregnant three prior times with no complications including gestational diabetes, preeclampsia or hypertension. Her obstetrical history included three prior caesarean sections; the first was performed for non-reassuring fetal heart tones and the latter two were performed electively. During the first three pregnancies the patient had been under the care of a licenced obstetrician, and had gone for her routine prenatal appointments.

The patient was at 38 weeks and 2 days of pregnancy when she experienced spontaneous onset of labour in the early afternoon. The labour progressed slowly; however, fetal movement became indiscernible after ~4 hours of labouring and fetal heart tones became undetectable another 4 hours later. Recognising the loss of heart tones, the

patient was advised by the midwife to present to the emergency department for further evaluation.

On arrival to Labour and Delivery Triage, an immediate examination was conducted by the Obstetrics team using a bedside ultrasound scanner. No heart tones were heard and no cardiac or fetal movements were observed. There was difficulty in locating the fetus and fluid was noted in the peritoneal cavity on ultrasound examination. A Foley catheter was inserted into the bladder with immediate return of frank blood. The clinical picture was highly suspicious for uterine and bladder rupture with fetal demise. The anaesthesia team was notified of the need for emergent surgery, and patient was brought to the operating room for exploratory laparotomy. A rapid sequence induction was performed and general anaesthesia administered. A vertical incision was made from the umbilicus to the pubic bone. On peritoneal incision, the haemoperitoneum was immediately visible. On further dissection the uterus was located and found to be ruptured and the amniotic sac visible. The amniotic sac was then ruptured, with blood and meconium-stained fluid noted. The fetus was found to be in the breech position and on delivery, fetal demise was noted. Rupture of the left lower uterine segment was identified as was a complete bladder rupture at the dome. An attempt was made to repair the uterus, but the edges of the lower uterine segment proved to be too densely adhered to the bladder wall to be surgically separated. Consequently, the obstetrics team made the decision to perform an emergency supracervical hysterectomy. The urology team was emergently consulted to complete ureterolysis, bladder repair and ureteral reimplantation. The patient tolerated the procedure well, remained haemodynamically stable throughout and was transfused 3 units of packed red blood cells in the operating room due to significant blood loss prior to hospital arrival. She was discharged home in stable condition on hospital day 3 with an indwelling Foley catheter to remain in place for 2 weeks.

GLOBAL HEALTH PROBLEM LIST

- An increasing number of women around the world are attempting vaginal birth after caesarean section (VBAC) deliveries at home; the risks and benefits of these types of deliveries should be discussed with a physician prior to attempting.
- Midwives can have substantially varying degrees of training; patients are often unaware of this lack of uniformity.

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GLOBAL HEALTH PROBLEM ANALYSIS

Since 1970 the percentage of caesarean sections performed in the USA has increased from 5% to 31% of total deliveries. With this surge in caesarean sections has come an increased incidence of women attempting VBAC.¹ A small but growing portion of parturients are even attempting VBAC at home. The incidence of planned deliveries at home has skyrocketed in recent years, rising by 60% between 2008 and 2012, to 0.89% of all births.² Deliveries at home and VBAC have both been shown to offer faster recovery times and better psychological outcomes to the mother, although risks to the mother and infant still remain.^{3–5} Infants from planned home deliveries have been shown to have higher rates of complications and death.^{6–8} Around the world, the number of parturients attempting planned home VBAC attempts has continued to rise in recent years in spite of the risks, the most feared of which is a uterine rupture. The worldwide prevalence of uterine rupture after caesarean section is estimated at 1% of VBAC deliveries.⁹

Attempting TOLAC comes with inherent risks to both the mother and baby with outcomes ranging from healthy VBAC deliveries to uterine rupture with maternal and fetal mortality. A home VBAC attempt without the immediate ability to transition to caesarean delivery increases the risk to the mother and fetus. It is of vital importance to have a trained provider with the ability to recognise and initiate immediate escalation of the level of care prior to an attempt at home VBAC. The American College of Obstetricians and Gynecologists (ACOG) has issued a bulletin listing a number of factors associated with both increased probability of success (prior vaginal birth and spontaneous labour) and decreased probability of success (increased maternal age, non-white ethnicity, gestational age >40 weeks, preeclampsia, short interpregnancy interval, increased neonatal birth weight, maternal obesity) for TOLAC.¹ In addition, previous studies have shown that parturients with two or more prior sections are at a much higher risk of uterine rupture and subsequent need for hysterectomy; ACOG does not recommend attempting a VBAC on any mother with three or more prior caesareans due to a lack of evidence on their safety and efficacy.^{10–11} ACOG recommends that VBACs should be attempted only on women with an estimated 60–70% or higher chance of success. According to our patient's risk factors, her calculated chance of success was 54.4%.¹²

Bladder rupture with concomitant uterine rupture is a rare presentation of a failed TOLAC. It is important in women attempting a VBAC to be vigilant for signs of fetal distress, loss of station, altered uterine contour, increasing abdominal pain or cessation of labour, all of which can indicate a possible uterine rupture.¹³ Placement of a Foley catheter can monitor for signs of a bladder rupture, which include gross haematuria, vernixuria or meconiumuria, all of which have been reported in the literature.¹⁴ It is not merely enough to monitor the mother through the delivery of the fetus, however. Uterine and bladder ruptures have been reported during stage 3 of labour after successful VBAC.¹⁵ Attempting a high-risk delivery should not be undertaken by an unprepared or undertrained provider. It is important that mothers and the providers choose TOLAC deliveries (especially after >1 caesarean section) at home with trepidant vigilance.

Our patient chose a direct entry midwife to be her provider. Direct entry midwives are defined as independent practitioners educated in midwifery through self-study, apprenticeship, a midwifery school or a university-based programme. This is distinguished from Certified Nurse Midwives who are educated in the disciplines of nursing and midwifery, and are certified

according to the requirements of the American Midwifery Certification Board. In the USA, licensure and training varies per state, with ~50% of states not requiring licensure for direct entry midwives. Most patients are unaware of the difference between these two specialties and may not receive the necessary guidance to choose the appropriate provider for their needs. In the European Union (EU), the regulations for the equivalent of direct entry midwives are significantly different including requiring licensure, having collaborative privileges with local physicians/hospitals, regular annual meetings with supervising bodies and mandatory continuing education requirements.¹⁶ The EU has very detailed clinical requirements for midwife certification, including case logs for procedures/deliveries that must be performed. The USA does not have such thorough requirements across most states. It is imperative that this lack of uniformity among midwives in the USA should be addressed in the coming years.

Learning points

- ▶ Home trial of labour after caesarean (TOLAC) should only be attempted by experienced providers after appropriate maternal risk stratification and counselling.
- ▶ TOLAC at home should not be attempted without significant planning that takes the increased risk into account, and TOLAC should best be undertaken at a site where emergency facilities for caesarean section are immediately available.
- ▶ The risks of attempting TOLAC increase with each prior caesarean section, and therefore it is not recommended after three or more. Further, providers should counsel patients after a second caesarean section about the significant risks associated with vaginal birth after caesarean section (VBAC) thereafter.
- ▶ Identification of competence, training, certification and skill among non-physician providers varies greatly and can be difficult for the parturient to ascertain.
- ▶ All providers caring for patients who are attempting TOLAC must be vigilant and adept at recognising the signs and symptoms associated with uterine rupture, bladder rupture and possible fetal demise.

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