



Spontaneous fundal uterine rupture in a non-labouring 31-week twin pregnancy and unknown previous hysteroscopic adhesiolysis: A case report

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ABSTRACT

A 46-year-old woman presented at 31 weeks of gestation with a twin pregnancy (dichorionic, diamniotic) and with mild abdominal pain, not in labour, leading to complete spontaneous fundal uterine rupture. She underwent prompt surgical intervention and resuscitation with packed red cells, cell-salvage blood and fresh frozen plasma (FFP). Twin 1 survived and twin 2 died. Risk factors for *fundal* uterine rupture were multiple pregnancy and hysteroscopic adhesiolysis, which was unknown during antenatal care. The mother and twin 1 made excellent progress post-operatively. This case highlights the importance of swift intervention to minimise maternal and perinatal morbidity and mortality.

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1. Introduction

Uterine rupture in pregnancy is a serious condition, carrying high materno-fetal morbidity and mortality [1]. To achieve the best outcome, surgical intervention must occur without delay. Classically, symptoms include sudden severe abdominal pain, usually with preceding contractions. Signs include vaginal bleeding, hypovolaemic shock, prominent fetal parts on palpation and fetal heart rate abnormalities [1,2].

Risk factors for uterine rupture are those that make the uterus inherently weaker, for example previous caesarean section, previous uterine surgery, induction of labour, obstruction of labour, multiple pregnancy and multiparity [3].

Our patient had two known risk factors: previous lower-segment caesarean section and twin pregnancy. Crucially, she was not in labour and the uterine rupture happened at the fundus without involvement of her lower-segment scar.

2. Case Presentation

A 46-year-old woman with previous elective lower-segment caesarean section presented at 31 weeks of gestation with dichorionic, diamniotic twins. She had conceived through IVF with donor egg. She

reported mild abdominal pain, with no vaginal bleeding or rupture of membranes. Observations, urinalysis and CTG were all normal.

The patient suddenly experienced worsening upper abdominal pain, with a concomitant difficulty in auscultating the fetal heart of the presenting twin. Ultrasound showed both fetal hearts were bradycardic. The patient quickly became pale, clammy and poorly perfused. A category 1 caesarean section under general anaesthetic was performed.

Intraoperatively, there was a 12 cm complete fundal uterine rupture. Twin 1 (i.e. twin nearer the fundus) was completely in the abdomen, membranes intact, and twin 2 was partially inside the contracted uterus. Delivery occurred within 9 minutes of the decision. There was a large haemo-peritoneum, but no active bleeding following myometrial contraction. A systematic check of the anatomy showed no bladder damage, no extension into the broad ligaments or cervix and an intact lower-segment scar. The fundus was closed in three layers and the abdomen closed routinely with the insertion of a Robinson's drain. The patient did not require hysterectomy as haemostasis was achieved. Total blood loss was 4500mls. She received 4 units RBC, 1300mls cell-salvage blood, and 2 units of FFP and her 4-h post-operative haemoglobin was 11.2 g/dl. Post-operatively she was transferred to ITU. Twin 1 (1500 g) was born with Apgar scores of 3, 4 and 8. Initial resuscitation included inflation breaths and PEEP (positive end-expiratory pressure) therapy. On the neonatal unit, he responded well to CPAP (continuous positive airway pressure), requiring a few hours of this before self-ventilating in air. He was also treated for suspected sepsis with intravenous antibiotics. He made excellent

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progress and after 3 days was stepped down to supportive care only. Sadly, twin 2 (1550 g) was born with Apgar scores of 0, 0 and 0 and died at 77 minutes old.

After extubation on day 1, the patient was debriefed by the operating surgeon. The patient divulged that five months prior to commencing her IVF in Greece, she underwent hysteroscopy and had "scar tissue removed". We requested a copy of the operation note, which reported findings of a hypoplastic uterus with endometritis and 'scar tissue'. It is not clear what operative intervention was made; however, we assume that this surgery was hysteroscopic adhesiolysis, which potentially weakened the fundus, leading to risk of uterine rupture.

3. Discussion

Hysteroscopy is a procedure which is performed safely worldwide. Overall complication rates are reported as 0.28%. Risk of uterine rupture after hysteroscopy depends on the procedure. Previous myomectomy or septum resection carry the highest incidence (OR 7.4 and 4.0 respectively), with previous diagnostic hysteroscopy or polypectomy being associated with the lowest risk (OR 0.5 and 0.1 respectively). Most published cases of uterine rupture after hysteroscopy have occurred at the end of the pregnancy; however, there are reported cases as early as the 10th and 22nd weeks of pregnancy [4].

This case highlights the necessity of prompt recognition and management of a patient with uterine rupture. At the time of acute onset of abdominal pain, we expected a concealed placental abruption to have occurred as the patient was not in labour and the clinical findings can be similar to that of uterine rupture. It is likely that the hysteroscopic surgery weakened the fundus of the uterus. This, in addition to a short interval between the surgery and pregnancy, heightened her risk further as there was little time for the uterus to heal. Literature states that uterine ruptures occurring after hysteroscopic treatment happen within one year of surgery [4,5].

Additionally, the patient's uterus underwent more physiological distension due to the twin pregnancy and so put greater pressure on a weaker area in the fundus of the uterus. Perhaps the uterine rupture would have happened at a later gestation or even not have happened if it was a singleton pregnancy.

The patient was placed under the care of a bereavement midwife and was planned for debrief 8 weeks after delivery. This was to include detailed discussion both of the events and of plans for future pregnancies. The reported rate of repeat uterine rupture is 4.3–19% [6]. Management of a future pregnancy should therefore include additional surveillance and delivery by elective caesarean section at an early stage of gestation with administration of antenatal corticosteroids.

In conclusion, clinicians should be aware of all the risk factors for uterine rupture. If the present patient's hysteroscopic adhesiolysis had been known about, it would not have changed the peripartum management. Perhaps antenatally her surveillance would have been increased on entering her third trimester, taking into account the short interval between the hysteroscopic procedure and IVF treatment.

We hope that this case will make other clinicians aware of the differential diagnosis of uterine rupture when a patient with multiple risk factors is presenting with pain and is not in labour.

Contributors

Georgia Smith was responsible for planning of the article, gaining the patient's informed consent, and the main write-up of the article.

Sarah Walker was responsible for the write-up of patient information and details of patient care.

Ravi Vandhana was responsible for editing of the article.

Rebecca Swingler was responsible for overall review and final edit of the article.

Conflict of Interest

The authors declare that they have no conflict of interest regarding the publication of this case report.

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Patient Consent

The patient to which this case report refers provided full informed consent for write-up and publication of her case.

Provenance and Peer Review

This case report was peer reviewed.

References

- [1] Şahin Zeteroğlu, et al., Uterine rupture in pregnancy subsequent to hysteroscopic surgery: a case series, *Turkish J. Obstet. Gynecol.* 14 (4) (2017) 252–255, <https://doi.org/10.4274/tjod.77642>.
- [2] M. Misra, R. Roychowdhury, N.C. Sarkar, M.M. Koley, The spontaneous prelabour rupture of an unscarred uterus at 34 weeks of pregnancy, *J. Clin. Diagn. Res.* 7 (3) (2013) 548.
- [3] K. Ofir, E. Sheiner, A. Levy, M. Katz, M. Mazor, Uterine rupture: risk factors and pregnancy outcome, *Am. J. Obstet. Gynecol.* 189 (4) (2003) 1042–1046.
- [4] L. Sentilhes, F. Sergent, H. Roman, E. Verspyck, L. Marpeau, Late complications of operative hysteroscopy: predicting patients at risk of uterine rupture during subsequent pregnancy, *Eur. J. Obstet. Gynecol. Reprod. Biol.* 120 (2) (2005) 134–138.
- [5] A.M. Propst, R.F. Liberman, B.L. Harlow, E.S. Ginsburg, Complications of hysteroscopic surgery: predicting patients at risk, *Obstet. Gynecol.* 96 (2000) 517–520.
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