CASE REPORT

Placental abruption leading to hysterectomy

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SUMMARY

A 32-year-old multigravid patient at 21 weeks gestation presents with major concealed placental abruption and subsequent fetal demise. During an eventually failed misoprostol regime aiming for vaginal delivery she develops severe disseminated intravascular coagulopathy. Subsequent hysterotomy reveals Couvelaire uterus with major haemorrhage and requires subtotal hysterectomy for haemostasis. This case highlights the severity of the systemic response to abruption and fetal demise in utero and the multifactorial nature of its management.

BACKGROUND

Placental abruption occurs when the placenta partially or completely separates from the wall of the uterus and complicates ~1% of pregnancies. It is associated with typical clinical features and a variety of risk factors.

It carries significant risk to the fetus due to interruption of placental blood flow and the risk of fetal demise is clearly appreciated. It also increases maternal morbidity with the risk of haemorrhage, hysterectomy and consumptive coagulopathy.¹ In the presence of a known coagulopathy operative delivery is likely to prove challenging and further increases maternal morbidity therefore optimum delivery is via vaginal route.²

Couvelaire uterus is a rare condition diagnosed by direct visualisation of the uterus, with characteristic ecchymosis discolouration, secondary to extravasation of blood into the myometrium and serosa.³ This does not usually affect the uterine ability to contract, particularly after amniotomy and decompression to allow constriction of spiral arteries.⁴

Here we present an unusual case of insidious placental abruption at <24 weeks in the setting of no discernable risk factors. The fetal demise was not immediate nor was maternal collapse. In the setting of major coagulopathy and Couvelaire uterus the only management option was surgical hysterotomy and hysterectomy.

CASE PRESENTATION

A 32-year-old gravida 8 para 4 at 21 weeks and 6 days gestation presented to the assessment unit of a secondary obstetric hospital with a sudden onset of abdominal pain at rest with no bleeding per vagina. There was a history of no perceived fetal movements since 12 hours prior and a single episode of vomiting with no residual nausea. There were no precipitating events, abdominal trauma or recent illness.

The pregnancy had been uncomplicated to date, with an unremarkable fetal anatomy scan

performed at 19 weeks gestation. There was no history of drug abuse or domestic violence.

Her obstetric history included four uncomplicated term spontaneous vaginal deliveries and three spontaneous miscarriages at 12 weeks gestation. There was no maternal medical history of significance.

At the time the patient was haemodynamically stable with a soft non-tender uterus. Bedside ultrasound scan showed a single live intrauterine pregnancy; however, a formal ultrasound scan less than an hour later demonstrated interim fetal demise. The patient was counselled and elected to return the following day for induction of labour.

She re-presented 2 hours later with per vaginal bleeding. The uterus was rigid and severely tender and a diagnosis of abruption was made. The haemoglobin was 112 g/L with thrombocytopenia of $77 \times 10^9/L$. Urgent coagulation studies revealed an international normalised ratio (INR) 1.9, activated partial thromboplastin time (APTT) 57 sec, and fibrinogen 0.4 g/L. In an effort to reverse the coagulopathy, the patient received 4 units of cryoprecipitate and 2 units fresh frozen plasma (FFP). She was started on a per vaginal misoprostol regime for induction of labour.

Subsequent haemoglobin 2 hours later had dropped by 30 points to 77 g/L and platelets $62 \times 10^9/L$. The patient became notably coagulopathic with blood oozing from cannula sites and bruising noted on her forearms. She received a further 2 units packed red blood cells (PRBCs) and 2 units FFP.

As per the protocol she had 4 hourly misoprostol, receiving in total 2000 mcg (3×400 mcg, 1×800 mcg). The cervix remained closed with 2 cm of length making artificial rupture of membranes inaccessible.

Twelve hours after misoprostol was started, the estimated blood loss (EBL) was 650 mL. With no cervical change, a decision was made for surgical management. At the time of operation, the coagulation studies had been normalised (INR 1.2, APTT 34 sec, and fibrinogen 2.0 g/L).

Under general anaesthesia, a lower segment hysterotomy was performed via midline laparotomy and the fetus was delivered with intact membranes and an entirely separated placenta. In total, 600 mL of organised clot was evacuated. The appearance of the uterus was initially atonic and consistent with Couvelaire uterus (figure 1). Efforts were made to conserve the uterus—it was closed in two layers and uterotonics were given in the form of Ergometrine 500 mcg intra-muscular injection (IMU), oxytocin infusion 30 units/500 mL at 240 mL/hour and intra-myometrial prostaglandin F_{2α}.

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Figure 1 Appearance of uterus following hysterotomy.

As the uterus failed to contract it also became dusky, oedematous and cold with marked intramyometrial haemorrhage (figure 2). A decision for subtotal hysterectomy was made and this was carried out via four pedicles.

The EBL was 1700 mL. The patient received 3 units of PRBCs, 16 units of cryoprecipitate, 3 units of FFP and 1 megapack of platelets.

The haemoglobin nadir was 63 g/L. The patient was managed in the intensive care unit postoperatively. Her postoperative course was unremarkable and she was discharged home on day 5.

Histopathology of placenta showed features in keeping with Couvelaire uterus and placental abruption. There were no haematological disorders identified in routine investigation of fetal demise.

The diagnosis in this case was of abruption leading to fetal death in utero (FDIU) at 21+6 weeks gestation, disseminated intravascular coagulopathy and Couvelaire uterus requiring hysterectomy.

OUTCOME AND FOLLOW-UP

The patient engaged with pregnancy loss services. She did not consent to postmortem of the fetus and had a private burial.

Figure 2 Couvelaire uterus.

She underwent routine Fetal Death in Utero (FDIU) investigations and is awaiting formal follow-up in the gynaecology clinic 6 weeks postdischarge.

DISCUSSION

Placental abruption is a serious and life-threatening complication for both the mother and fetus with abruption being directly linked to poor perinatal outcomes and fetal death.⁵ The severity of the abruption and the duration of bleeding increase the likelihood of poor outcome for both mother and fetus.

The diagnosis of placental abruption is clinical. Most commonly patients present with a painful, tender and rigid uterus and may have uterine contractions. Vaginal bleeding is also common, the amount not always relative to the severity of abruption. Fetal demise is indicative of severe abruption and predisposes to Disseminated Intravascular Coagulation (DIC).⁶ In this setting the laboratory investigation of falling haemoglobin is extremely concerning.

There has been much discussion about diagnostic criteria for abruption. Ultrasound scanning has some value,⁷ and definitely the finding of a retroplacental clot on ultrasound scan is a risk factor for abruption.⁸ However, in our case our patient had had a recent normal anatomy ultrasound scan and the ultrasound examination only showed FDIU with no recognised signs of abruption—therefore she was allowed home with a diagnosis of unexplained FDIU.

The history of the case of placental abruption can also indicate the diagnosis. Once again our patient did not have any of the recognised risk factors such as early pregnancy bleeding, hypertension or thrombophilia,⁸ or abdominal trauma. She was also below the most common gestation at diagnosis of 24–26 weeks.

Of the limited literature one case series found the incidence of coagulopathy in abruption to be 5.8% and Couvelaire uterus 16.8%.⁵ Our patient progressed to severe DIC in a matter of hours following fetal demise. In this situation the only management strategy to improve outcome is supportive measures, replacement of blood products and removal of the cause of the coagulopathy.⁹ Owing to our case involving fetal demise we were able to initiate delivery quickly, without having to discuss termination.

There is no guideline from the college as to the most appropriate method of delivery. However, it can be deduced that in the setting of coagulopathy that surgical route would be best avoided. Our patient had successfully had four spontaneous vaginal deliveries and we therefore assumed the vaginal route would not be challenging to achieve. Also other authors have commented that abruption and Couvelaire uterus should not impair the myometrial ability to contract, therefore vaginal delivery is still possible.¹⁰ In our case the patient received the maximum recommended dose of misoprostol with no discernable cervical dilation. As the cervix was closed artificial rupture of membranes was not possible. To avoid maternal deterioration we were faced with no other option than hysterotomy.

Like other cases we found that hysterotomy, removal of the pregnancy and aggressive blood product replacement, did lead to resolution of the patient's condition¹¹ with improvement in the patients coagulation profile noted intraoperatively on rotational thromboelastometry. However, we were then faced with the complication of an obviously Couvelaire uterus. We diagnosed this on direct visualisation and confirmed this on histopathology.

There have been reports of successful conservative management of Couvelaire uterus.¹⁰ We therefore thoroughly considered the possibility of leaving the uterus in situ. The decision to proceed

was made by two consultant specialists in conjunction with the consultant anaesthetist. The main deciding factor was continued blood loss from the uterus despite the full postpartum haemorrhage regime. This was coupled with the oedematous and friable nature of the uterus making insertion of compression sutures or Bakri balloon impossible. Another factor in our case was that our patient had four living children. Possibly the decision would have been more difficult had she not had a family.

Given our patient's rapid recovery and discharge on day five we felt that her management had been optimal for her. In a case that is unusual given the history, presentation and severity we felt the only possible management plan had been followed, unfortunately we could not avoid fetal mortality; however, we limited maternal morbidity.

Learning points

- ▶ When dealing with abruption the severity of DIC should not be underestimated and is a life-threatening condition.
- ▶ The importance of a multidisciplinary team approach in a unit with intensive care support when managing such patients.
- ▶ In the case of FDIU, to appreciate the lack of response to standard management induction protocols due to the abnormal contractile function of the uterus with abruption and Couvelaire.
- ▶ To use therapeutic hysterectomy when there is profound myometrial damage.

Contributors HCS is the primary author and initial preceptor of the idea of writing up this case. Carried out the literature review and is the writer of the discussion part of the case. Final editor of figures and text. Was the on call labour ward doctor during this patient's entire stay and assistant surgeon at the procedure in question. Have liaised with the patient and family and gained patient consent. MS is the coauthor, and was involved in the planning and development of the clinical part of the case write up. Designed the first draft of the case report and involved in subsequent editing.

Competing interests None declared.

Patient consent Obtained.

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