CASE REPORT

REVISED Case Report: severe hemoperitoneum due to spontaneous rupture of uterine vessels during the second trimester of pregnancy [version 2; peer review: 1 approved]

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Abstract

Spontaneous rupture of uterine vessels during pregnancy is a life-threatening condition though, it has a rare occurrence. This case report discusses about a 32-year-old lady at 16 weeks of gestation presented with spontaneous rupture of uterine artery and she was managed with emergency laparotomy with suturing of ruptured artery. She had delivered a healthy baby after 37 weeks of gestation by a caesarean section due to pregnancy induced hypertension at 36 weeks of gestation.

Keywords

Rare complications in Pregnancy, spontaneous uterine vessel rupture, Second-trimester abdominal pain, decidualization of endometriotic tissue, Spontaneous Hemoperitoneum

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Any reports and responses or comments on the article can be found at the end of the article.

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REVISED Amendments from Version 1

Some of the minor grammatical mistakes were corrected by an English supervisor.

Any further responses from the reviewers can be found at the end of the article

Introduction

Spontaneous hemoperitoneum in the second trimester of pregnancy is a rare complication that gives potentially high mortality for both the mother and foetus.¹ This may result from ruptured ectopic, ruptured uterine or ovarian vessels, ruptured spleen, or rupture of the pelvic vessel due to decidualization of the endometriotic deposits. Clinical features include acute abdominal pain, hypovolemic shock, and features of hemoperitoneum. Prompt clinical suspicion and diagnosis, timely intervention with volume replacement and emergency surgical approach will provide the best outcome.

We report this case of spontaneous hemoperitoneum in the second trimester due to rupture of uterine vessels, that had a good maternal and foetal outcome, with the objective of sharing our experience of diagnosis and management of rare obstetric complication. Obstetricians may find this article helpful as it is essential to be keen on this kind of rare condition that can endanger both the maternal and foetal lives.

Case report

A 32-year-old Sri Lankan woman in her third pregnancy at 16 weeks of gestation was admitted to the ward at midnight with a history of acute abdominal pain lasting for six hours. She had a previous history of primary subfertility for three years and underwent a laparotomic cystectomy and adhesiolysis four years back, where she was diagnosed with grade four endometriosis. Following that, she had one first trimester miscarriage and one normal vaginal delivery. Other than that, she had denied having any history of trauma to the abdomen, significant medical, family or psychosocial history.

The house officer had seen her on admission, pain killers were given, and urine investigations were sent, with suspicions of urinary tract infection. No scan or further investigations performed as the patient was haemodynamically stable other than having abdominal pain.

The following morning, the patient was in severe pain, she could not lie down on the bed and complained of fainting and shoulder tip pain. A senior registrar had seen her and on examination she was pale, her heart rate was 120/min (70/min), blood pressure was 90/60 mmHg (120/80 mmHg) and her abdomen was tense and tender. A clinical suspicion of an internal bleeding was made.

A bedside Ultrasound Scan (USS) was done and it had shown free fluid, probably blood in the peritoneal cavity with viable intrauterine pregnancy at 16 weeks of gestation. Her haemoglobin level was found to be 7.4 g/dL (>11.0 g/dL).

Uterine rupture, abdominal, liver or splenic rupture, ruptured appendix and peptic ulcer perforation were suspected as differential diagnosis and immediate surgical intervention was needed.

She had an emergency laparotomy in which she was found to have hemoperitoneum with an estimated blood loss of one litre. Once the blood was removed, it was difficult to find the bleeding point. The gravid uterus was exteriorised and active bleeding from left uterine vessels noted (Figure 1). Significant decidualized endometriotic tissue patches around the ruptured vessels and the posterior aspect of the uterus were noted. Left uterine vessels were ligated above and below the bleeding points (Figure 2). The uterus was put back and the abdominal wall was closed following the insertion of a drain. She had been transfused two pints of blood intra-operatively. A specimen of suspected endometriotic patches was not sent for histological confirmation.

Her recovery was normal. She was discharged on the third day of post-op after confirmation of the foetal wellbeing by a USS.

She was followed up at the clinic regularly with routine USS. Her pregnancy went uncomplicated until 36 weeks where she developed pregnancy-induced hypertension. She underwent caesarean section at 37 weeks by the same surgeon who performed the laparotomy. A healthy baby was delivered and her post-partum period was uneventful.

Figure 1. Active bleeding from the left uterine artery.

Figure 2. Left uterine artery sutured.

Discussion

Spontaneous rupture of uterine vessels remains a rare condition that causes abdominal pain during pregnancy and it can be a life-threatening complication.² Several studies highlight that the maternal mortality rate is 3.6% with a perinatal mortality rate of 30%.³ Though this condition is common during the 3rd trimester,⁴ there has been evidence to prove that this can occur during other trimesters and puerperium.⁵ This case report contains a second-trimester spontaneous uterine vessel rupture which is a rarer condition.

The patient presented with severe abdominal pain that was later followed by hypovolemia, low haemoglobin level and a positive USS for fluid in the abdominal cavity. Usually, these patients present with acute onset severe abdominal pain and hypovolemic shock with decreased haemoglobin levels, but there is usually no trauma or bleeding history. An ultrasound scan can be used to detect free fluid in the abdomen and paracentesis and has been done in hemodynamically stable patients to identify the fluid type if the patient is stable.³ It would be immensely helpful if the bedside USS could be done immediately after admission in pregnant women presenting with severe abdominal pain. However, the diagnosis was difficult as several causes can give rise to similar presentation such as uterine rupture, abdominal, liver or splenic rupture, appendicitis, peptic ulcer perforation, urinary tract infections, HELLP syndrome intestinal obstruction and rarely ectopic pregnancies.⁶

High utero-ovarian venous tension in combination with conditions causing high intra-abdominal pressure such as defecation, pushing in the second stage of pregnancy, and inflamed vessels and adhesions associated with endometrial deposits have been reported as potential mechanisms.⁶ In this case report, decidualization of endometrial deposits over the uterine vessels causing rupture of the vessels can be considered as the mechanism.

The following paragraphs describe two cases that have been published regarding spontaneous rupture of uterine vessels before the third trimester with different presentation, management and outcomes.

One case study described a 30-year-old pregnant woman (G2P0) presenting with a history of acute abdominal pain that lasted a 12 hour duration during the 20 weeks of gestation. This patient was haemodynamically unstable with a blood pressure of 65/30 mmHg and had a tender uterus. Ultrasound scan showed an absent foetal heartbeat and placental abruption was taken as a provisional diagnosis. Following resuscitation with colloids, she had undergone a laparotomy and found out there was a three liter hemoperitoneum with a normal uterus, liver, and spleen. The foetus and placenta were delivered with a small anterior hysterotomy and there was no evidence for placental abruption. After lifting the uterus there was a fresh venous blood collection at the left side uterine artery with a purplish mass attached in between the cervix and pelvic sidewall. The tissue sample sent for histopathology confirmed the presence of endometrial tissue. The patient with a four liter blood loss and transfusion of 10 units of blood, recovered well following 24-hour ICU care and discharged on day seven.³ Unlike our patient this patient already had lost the foetus without the option to continue the pregnancy till term.

In another case study, a 23-year-old pregnant woman in her 22 weeks of gestation presented with sudden abdominal pain and hemodynamically unstable condition with hypovolemic shock without a trauma history. She had undergone an exploratory laparotomy and found a laceration in the right-side uterine artery and the bleeding vessel ligated with sutures. However, the patient continued her pregnancy for 38 weeks of gestation.⁶ This is a similar case to our case though the presentation is more acute.

The treatment is immediate surgical intervention following maintenance of the balance of intravascular circulation. In this case, the patient underwent an immediate laparotomy and found to have ruptured uterine vessels due to decidualization of endometrial deposits. Though it is essential to confirm endometrial tissue with histology, the sample had not been sent during the surgical intervention.

In the above case records, there was a similar case to our case report as the woman also ended up delivering a baby even though the foetus was at 20 weeks of gestation when presented. In our patient, the ligation of uterine vessels might contribute to causing pregnancy-induced hypertension, but no association is discussed in this case report. This case report can be presented as a peculiar condition compared to most of the similar cases that had ended up with hysterotomy and uterine artery ligation with sutures to control bleeding.

Conclusion

Obstetricians should consider this rare and potentially life-threatening condition in pregnant women presenting with abdominal pain and hypovolemic shock. It requires a keen observation to identify this condition as it is usually masked by several other conditions as mentioned in the discussion. With maintaining intra-vascular circulation properly, the patient

should undergo an urgent laparotomy to identify the cause. During the procedure, there is a chance of continuing the pregnancy if the foetus is viable and maternal stability could establish with surgery, so that, suturing of ruptured vessels can be done without a hysterotomy. If this condition occurred at term, both the mother and the neonate should be treated with extra care. However, there is an open path to identify the prevalence of presentation and outcome of this kind of clinical condition.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

Consent

Written informed consent for publication of their clinical details and clinical images was obtained from the patient.

Author contributions

Dr G.K.C. Jayalath – the surgeon who detected the case and performed the surgery, Conceptualization, Investigation, Resources, Supervision, Writing – Original Draft Preparation.

Prof. R. Pathiraja – Supervision.

Dr G.V.I.G.B. Jayarathna – Writing – Review & Editing.

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Augustus Keshala Prabhodana Ranaweera

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I am happy with the revisions. I can recommend this article for indexing.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal medicine

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

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The case is a rare but interesting case. I would think it would benefit readers especially clinicians providing care for pregnant women. This will allow readers to keep an open mind and to be aware of life-threatening rare conditions otherwise missed and may cause maternal or neonatal mortality.

My main criticism is there are many grammatical errors that need attention before indexing. The content is enough to get a comprehensive picture and to be aware of the important aspects of the management.

If these mistakes are corrected this should be considered for indexing.

Is the background of the case's history and progression described in sufficient detail?

Yes

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Yes

Is the case presented with sufficient detail to be useful for other practitioners?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Maternal medicine

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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