

Case Report


A case report on management of spontaneous rupture of uterine vessels during puerperal period

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Abstract

Increased uterine blood flow during pregnancy may alter the integrity of pelvic vessels leading to increased risk of spontaneous rupture of uterine vessels during pregnancy, labour or during puerperal period. A 39-year old pregnant woman, para-1 was admitted in our hospital for an elective Lower Segment Cesarean section (LSCS). About 2 hours post delivery the case developed symptoms of shock and was diagnosed with hemoperitoneum based on emergency ultrasonography. An emergency laparotomy was performed which confirmed the presence of hemoperitoneum and a hemotoma. The bleeding site was identified to be at the right aspect of post uterine wall that was surgically managed. Previous case reports have recommended exploratory laparotomy and embolization (interventional radiology) as the management options for this life threatening condition. Our present case report emphasizes the need for active and careful post-delivery monitoring in order to promptly identify this rarer cause of puerperal shock that can be well managed by early operative intervention thereby preventing severe hemorrhage that may lead to hysterectomy, severe morbidity and maternal mortality.

Key words

Obstetric hemorrhage, Uterine vascular rupture, Intra-abdominal hemorrhage, Puerperal complication.

Introduction

Spontaneous rupture of uterine vessel during pregnancy and delivery is a rare life threatening obstetric complication and even rarer during the Puerperium. Hemoperitoneum in the puerperal period may present with vague and non-specific clinical signs and symptoms. Without timely diagnosis and treatment the condition may result in serious complications [1]. Presently there are scarce literature and research studies on this topic. The statistical reports from few of the available literature reveal that the prevalence of hemoperitoneum is 61% before child birth, 18% during child birth, and 21% in early puerperium [2]. This case demonstrates the need for careful post-delivery monitoring for diagnosis and management of puerperal hemorrhage due to rupture of uterine vessels.

Case report

A 30 year old, pregnant woman, Gravida 3, Para 1 at 39 weeks + 6 days of gestational week was admitted at a private birthing centre at Chennai for elective Lower Segment Cesarean section (LSCS) on February 3, 2023. The present case was booked and properly immunized.

The case had a history of iron deficiency anemia and was treated with 2 doses of injectable iron during pregnancy. During antenatal checkups her hemoglobin level during 39th week was 10.9 g/dl. She had two previous pregnancies. During her first pregnancy, she had a history of failed induction at 42 weeks followed by LSCS in 2016 and delivered a girl baby weighing 3.2 kg and her second pregnancy (spontaneous conception) on 2018 ended with missed abortion for which dilatation and curettage was performed.

The patient underwent an elective repeat LSCS at 8 AM, done through Suprapubic Transverse Incision (SPT). Adhesions were found involving parietal peritoneum, rectus muscle and anterior wall of uterus due to which the right fallopian tube and ovary were not visualized. The adhesions were partially released. Lower uterine segment (LUS) was formed and LSCS was done

as per the usual protocol. The liquor was clear and the case delivered a boy baby, 3.01 kg at 8:23 am with an Apgar score of 8/10, 9/10 at one minute and 5 minutes respectively. The uterine incision was closed in single layer with 1 vicryl. In the raw areas where adhesions were present hemostasis was secured using box sutures. Ab gel was kept after securing hemostasis and abdomen closed in layers after ensuring hemostasis.

The case was monitored in the recovery room in the post operative period wherein she was first noticed to have tachycardia (112 beats/minute) and oxygen saturation SPO₂ of 98% associated with fall in blood pressure (70/30 mmHg) approximately 2 hours post delivery (10.30 AM). On examination, the patient was pale, abdomen was soft and uterus was well contracted. Local examination showed that the bleeding was within normal limits and the case was managed in Surgical Intensive Care Unit (SICU) and 1 pint normal saline was rushed and the case was started on colloid and Injection Ephedrine under the management of intensivist. Following these interventions, there was an improvement in Blood pressure at 11:05 am (88/50 mmHg) and Pulse rate was 89 beats/minute and relevant investigation (Complete Blood Count) was sent. About 3.20 PM, the hemoglobin level was 6.2 g/dl blood following which Plasma red blood cells (PRBC) transfusion was arranged and an emergency bedside ultrasonogram (USG) of abdomen was done. Per abdominal examination showed distension of abdomen with abdominal girth of 96 cm. The USG revealed free fluid with internal echoes in abdomen. Maximum vertical pocket in right paracolic gutter was 4.4 cm and left paracolic gutter was 2.4 cm. Also the USG showed perihepatic, perisplenic fluid collection and morrison's pouch fluid collection. Further hemorrhagic fluid was revealed through USG guided abdominal tap and decision was made to go for relaprotomy with the assistance of surgeon after a duly signed consent form by the patient's relatives.

At 10 pm, under general anesthesia the abdomen was opened through previous SPT incision. 750

ml blood and 780 grams of clots were recovered from the right and left paracolic gutters. Adhesions involving parietal peritoneum on right side released with cautery. Uterus was exteriorized and no active bleed was noted in LSCS incision site. A hematoma (5 cm x 3 cm) was seen in right aspect of post uterine wall. The same was opened and the bleeding vessel was identified, sutured and hemostasis was secured. Wash was given and the abdomen was closed in layers and the uterus was preserved. The case was transfused a total of 4 units of PRBC, 3 units of fresh frozen plasma (FFP) during intraoperative and immediate postoperative period. The case was started on injection Piptaz and Metrogyl. On 1st day post operative day (POD) patient developed breathlessness and abdominal distension which was further evaluated. The evaluation showed electrolyte imbalance and potassium correction was done. Chest physiotherapy and spirometry was also started. Patient started on oral fluids on 3rd POD after passing flatus. Repeat hemoglobin on 3rd POD (5/02/23) was 8.4 g/dl and 1 gram of Injection ferrium was given and the case was discharged in fair condition on 09/02/23. The patient was further followed up in out-patient department for suture removal. There were no other complaints and the wound was healthy.

Discussion

Hemoperitonium in pregnancy and puerperium is a rare but clinically lethal condition with a prevalence ratio of 1/1000 during pregnancy [3]. The literature regarding this issue reveals that the rate of prevalence is 61% before child birth, 18% during child birth, and 21% in early puerperium [4]. Though hemoperitoneum can occur at any stages of pregnancy, it is more common during third trimester.

In the present case, the uterine vessel rupture has occurred in the early post partum about 2 hours post delivery. During early pregnancy the commonest cause of hemoperitoneum is a ruptured ectopic pregnancy and in immediately after delivery it can be suggestive of a masked

intra-abdominal pathology [5]. The common obstetric causes include the rupture of uterine scars, aberrant placental implantation, and rupture of rudimentary uterine horn of pregnancy. The other common causes include pelvic and abdominal vascular rupture, rupture of parenchymal organs (such as liver, spleen, and kidney) and idiopathic intra-abdominal hemorrhage [6].

Rupture of subserosal uterine vessels has been reported as rarer causes of intraabdominal hemorrhage [6]. Spontaneous rupture of uterine vessels is an extremely rare event which should be considered especially during the third trimester or rarely during puerperal period when a pregnant mother complains of sudden abdominal pain with hemodynamic collapse and decrease Hb levels. As per published reports, there are only 150 cases described of spontaneous hemoperitoneum in pregnancy secondary to rupture of the uteroovarian vessels or uterine varicose veins [7]. Until now, very few articles have been published regarding shock caused by spontaneous rupture of uterine vessels during puerperal period [8]. The possible reasons are markedly increase of blood flow in the uterine vessels during late pregnancy, hypercoagulable state of blood during pregnancy, thin-walled and superficial surface of veins under perimetrium which may be torn or damaged to rupture during uterine contraction or external impact or sudden increase of abdominal pressure. Moreover, the pressure of the inferior vena cava and iliac vessels by the gravid uterus can also lead to an overall increase in the venous pressure [9]. Endometriosis also a main high-risk factor for spontaneous rupture of uterine or pelvic vessels during pregnancy due to the spontaneous rupture of uterine ovary/ pelvic vessels or bleeding from endometriotic implants [6-7]. Chronic inflammation caused by endometriosis, can increase the fragility of pelvic vessels or pelvic adhesions where the enlarging pregnancy pulls the pelvic blood vessels, thus leading to blood vessel rupture and subsequent bleeding. Recent hypothesis suggested that decidualization, chronic inflammation, and preexisting adhesion

of endometriosis play a role in spontaneous hemoperitoneum development.

This present study reports a case of hemoperitoneum in the early postpartum period diagnosed clinically and confirmed by ultrasound that was managed by laparotomy. The bleeding site was found to be a hematoma (5cm x 3cm) seen in right aspect of posterior uterine wall and the same was opened and the rupture site of vessels was identified and sutured (Figure - 1, 2). Similar to our case other retrospective studies also report that 90% of the rupture site of vessels was located in the posterior wall of the uterus and parametrial tissue [9].

Hung-Chung, et al. has also reported similar case where multirow computed tomographic angiography was used to identify the cause of hemoperitoneum [10]. Though we could not afford such diagnostic method in our set up, we have adopted similar treatment principle as of hemorrhage due to other causes during pregnancy. The immediate transfusion of crystalloid, colloid, and blood products is very crucial to maintain blood volume. The report emphasizes vigilant monitoring during postoperative period and easy availability of bedside USG, which provided rapid indication for systemic correction of hypovolemia and immediate surgery via laparotomy [11]. Moreover, the cardinal fact for the successful management of this condition is a multidisciplinary approach and the timely surgical intervention (relaparotomy) when there was a suspected hemoperitoneum. Upon considering the net outcome, indicators of maternal morbidity are intensive care unit (ICU) admission and extended hospitalization [11]. After the surgery the present case recovered smoothly and was discharged at sixth post operative day in a fair condition and there were no signs of morbidity on further follow up indicating the successful management in this dreadful condition.

Conclusion

The key to the successful management of the present case is early diagnosis, and timely laparotomy. The present case report reveal that a high suspicion of this life threatening clinical entity is essential for early diagnosis, use of available modalities such as USG/CT etc to aid prompt diagnosis. Effective fluid management, appropriate use of blood products are highly demanded towards the management and prevention of complications such as Disseminated intravascular Coagulation (DIC). The study necessitates the need for an open-minded approach for adopting a precise and timely surgical intervention for the management of ruptured uterine vessels to prevent severe morbidity and mortality.

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