

Uterine Rupture in Early Pregnancy - Case Report and Review of Literature

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Abstract: *Uterine rupture is an uncommon obstetric emergency that usually occurs in third trimester or in labour. The common causes include previous uterine surgery, obstructed labour, trauma. Its occurrence in early pregnancy is extremely rare but life-threatening. Here, we report a case of uterine rupture in a primigravida at 8 weeks of pregnancy. A 42-year-old primigravida with history of adenomyomectomy presented at 8 weeks with vague gastrointestinal complaints. She was diagnosed to have uterine rupture by ultrasound and underwent laparotomy and repair of uterine rent. Timely diagnosis and intervention is the key in such cases.*

Keywords: Uterine rupture, first trimester complications, obstetric emergency, scarred uterus

1. Introduction

Uterine rupture is the full thickness disruption of uterine wall including the serosa. It may or may not be accompanied by expulsion of the uterine contents into the peritoneal cavity¹. It is mostly seen in pregnancy though reports of rupture of non-pregnant uterus due to trauma, cancer etc have been reported. It is usually accompanied by torrential haemorrhage thus endangering the life of the pregnant woman and the fetus. It has an overall incidence of about 6 per 10,000 deliveries¹. Asymptomatic uterine rupture has also been described without significant hemorrhage and symptoms. Uterine rupture has to be differentiated from uterine dehiscence which is a partial thickness separation of the uterine wall with intact serosa.

Uterine rupture is more commonly seen in labor or near term. The usual causes involve previous uterine scar or intrapartum complications. It is mostly seen in multigravida with obstructed labour or in women with previous caesarean section who goes into spontaneous labour or undergoes trial of labour after caesarean section. It may also be precipitated by injudicious use of oxytocin or prostaglandin analogues used for induction or augmentation of labour. Occurrence of rupture in primigravida is rare. The uterus of a primigravida was usually described as "immune to rupture" as often they go into inertia rather than rupture when labor becomes obstructed. Contrary to this popular belief, over recent years rupture of primigravid uterus has been reported with increasing incidence. This can mostly be attributed to the increasing maternal age and fertility issues and hence most of

these women have already undergone some surgical procedures on the uterus. This includes dilatation and curettage, myomectomy, adenomyomectomy, septal resection. Uterine rupture can also be caused by trauma including road traffic accidents, domestic violence, abuse. Spontaneous rupture of unscarred uterus has also been very rarely reported.

2. Case Report

A 42-year-old primigravida with twin pregnancy (confirmed by ultrasound at 6 weeks) conceived by in vitro fertilisation was referred to our emergency department at 8 weeks of pregnancy as a case of gastroenteritis with complaints of multiple episodes of vomiting, loose stools and associated epigastric discomfort following history of food intake from outside. There was no history of bleeding per vaginum. She had history of prolonged infertility treatment and had undergone laparoscopic adenomyomectomy less than a year ago. On examination, her vitals were stable. She had mild pallor and was dehydrated. Her abdomen was soft and nontender. She was started on antiemetics and intravenous fluids. As a part of her evaluation, an ultrasound abdomen and pelvis was done mainly to confirm viability but it showed live twin pregnancy with one sac inside the uterus [sac 1] and the other sac [sac 2] eccentrically placed to the right side towards the fundal aspect with adjacent myometrium showing focal thinning and discontinuity along the sac wall with defect measuring 5.5 mm. Right adnexa showed hypoechoic poorly circumscribed contents suggestive of organised clots along with minimal free fluid.

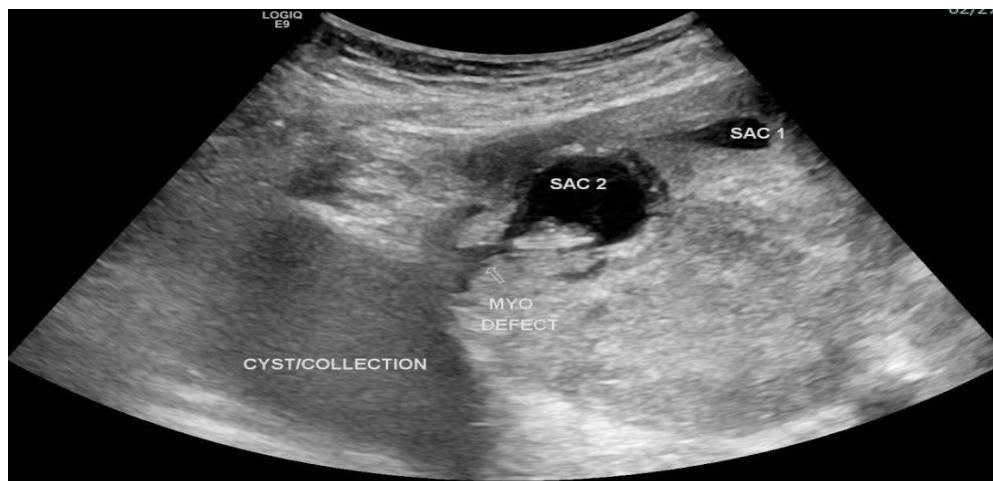


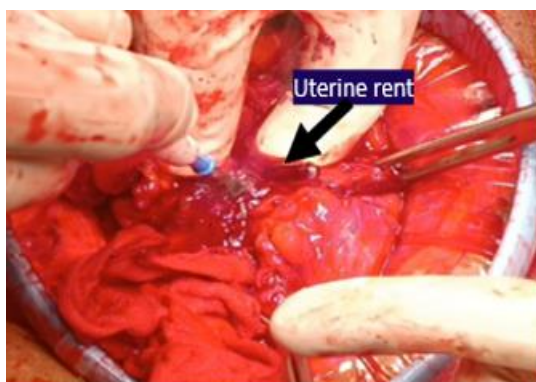
Figure 1: Ultrasound image showing defect in the myometrium and adjacent organised collection



Figure 2: Ultrasound image showing hemoperitoneum

She underwent emergency diagnostic laparoscopy which confirmed the ultrasound findings. Hence, proceeded with laparotomy. Uterus was enlarged to 14 weeks size and bowel was densely adherent to fundus and right lateral side. There was mild hemoperitoneum and collection of clots along right adnexa. There was a 5 cm x 2cm rent on right fundoanterior aspect of the uterus. One sac was seen protruding through the

rent. Both sacs were removed. Bowel was dissected and uterine rent was repaired in two layers. Both ovaries were normal. There was no uterine anomaly. Haemostasis achieved. 2 PRBC transfused intraoperatively. Postoperative period was uneventful. She was discharged on postoperative day 6.



Figures 3 and 4: Intraoperative images showing uterine defect

3. Discussion

Uterine rupture accounts for 14% of all hemorrhage related maternal mortality². Factors associated with uterine rupture include multiparity, previous uterine scar (previous rupture, caesarean section, myomectomy, adenomyomectomy,

dilatation and curettage, septal resection), abnormal placenta implantation, placenta accreta spectrum, uterine anomalies, malpresentations, injudicious use of uterotonics, instrumental delivery, prolonged and obstructed labor². With increasing number of uterine surgeries being performed as part of fertility treatment, the incidence of early uterine rupture in

primigravids have increased. Uterine ruptures involving the scarred area, typically demonstrate abnormally high concentrations of collagen in the tissues near the rupture sites as well as fewer smooth muscle fibers. As a result, there is a high possibility that the strength of the uterine muscle layer has been undermined³.

Amongst the mentioned uterine surgeries, adenomyomectomy has a notably elevated and early risk of rupture compared to the others as it often involves extensive resection due to its diffuse and ill-defined margins⁴. The risk of uterine rupture during pregnancy after adenomyomectomy exceeds 1.0%, compared to 0.26% in pregnancies following myomectomy⁵. In a five year national survey conducted in Japan, it was found that uterine rupture occurred significantly early in scarred uterus, with average gestational age of rupture as follows- 39 weeks for unscarred uterus, 37 weeks for previous caesarean, 32 weeks for myomectomy and 30-32 weeks for adenomyomectomy⁶.

Clinical presentation varies depending on gestational age, site of rupture and other factors. Symptoms include sudden abdominal pain, bleeding per vaginum, hematuria, giddiness, fetal bradycardia, cessation of uterine contractions. Examination findings may include tachycardia, hypotension, abdominal distension, pallor, loss of uterine contour, receding presenting part on per vaginal examination. Consequences include hypotension, hemorrhagic shock, maternal collapse, acute kidney injury, multiorgan dysfunction, multiple blood transfusions, bladder injury, need for hysterectomy, fetal hypoxia and acidosis, stillbirth, neonatal morbidity and mortality and even maternal mortality.

Diagnosis of rupture in early pregnancy is often challenging because these women often present with nonspecific and vague symptoms⁷. Most of these are asymptomatic ruptures where the sac herniates through a rather avascular scar⁸. The uterus is also less bulky and vascular than at term. Hence these may not be associated with usual symptoms and signs of massive hemorrhage and hemoperitoneum. So having a low index of suspicion is very important. Eliciting a proper history including history of uterine surgeries may give a clue. Imaging modalities like ultrasound and CT may help if the uterine defect is significant and there is hemoperitoneum⁹. The most common site of rupture in early pregnancy is the fundus. If any suspicion is present, a diagnostic laparoscopy can be done to confirm findings¹⁰. Surgery is mainly aimed at control of hemorrhage and either repair of uterine defect or hysterectomy¹¹. Choice of procedure depends on various factors including age of patient, hemodynamic stability, expertise of surgeon, site and extent of defect. During surgery, any uterine anomaly has to be looked for.

Primary prevention of such complications is also essential to improve obstetrical outcome in women. When any surgery is performed on the uterus of a woman who is yet to complete her family, it should be done only when deemed absolutely necessary and the subsequent pregnancy should be adequately spaced. At least a gap of 3 to 6 months is advised after myomectomy and adenomyomectomy before planning conception¹². The risk of rupture in subsequent pregnancies is increased following laparoscopic procedure compared to

laparotomy due to possible myometrial necrosis and impaired scar healing caused by electrocautery and incompletely repaired muscle defects¹². A histological delay has been noted in healing after use of electrocautery compared to surgical blade¹³.

Secondary prevention includes taking a detailed history at booking visit itself to identify any risk factors that may predispose to rupture. Any history of preterm or difficult caesarean sections should also be noted as there could have been an extension of scar into the upper uterine segment. Reassessment of risk factors should be done at subsequent visits also and delivery plan should be made accordingly.

The recurrence risk of uterine rupture in literature ranges from 4–33% in subsequent pregnancies¹⁴. In subsequent pregnancies, elective caesarean section has to be scheduled at term before the onset of spontaneous labour. There are no clear guidelines for the management of pregnancy after conservative management of uterine rupture in early pregnancy due to the rarity of this condition. Reproductive options have to be discussed with these women. If family is completed, family planning methods including sterilisation can be discussed. If not, extremely close monitoring has to be suggested in next pregnancy to identify early rupture. Options of surrogacy and adoption also have to be discussed in cases of recurrent uterine rupture.

4. Conclusion

Uterine rupture, though a rare obstetric emergency, may still occur even in primigravids and in early pregnancy. If not managed properly, it can lead to significant morbidity and mortality. The clinical presentation of uterine rupture in the first trimester might be nonspecific leading to delay in diagnosis which can cause catastrophic bleeding and mortality. Timely diagnosis and early intervention remain the key to saving lives.

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