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Spontaneous Rupture of an Unscarred Multigravid Uterus: A Case Report

Aremu Hadijat Ifedola, Odunola Abiola Abigeal, Omoyele-Abdussalam Hameedat Opeyemi, Oladosu-Aderolu Aminat, Akera-Adegboyega Ganiyat Ade, Andrew Irobosa Egua, and Olusina Olufemi David

Department of Obstetrics and Gynaecology, Federal Medical Centre, Abeokuta, Ogun State, Nigeria.

Corresponding Author:
Aremu Hadijat Ifedola
Department of Obstetrics and Gynaecology, Federal Medical Centre, Abeokuta, Ogun State, Nigeria.

Abstract

Introduction: Uterine rupture during pregnancy is a life-threatening condition that is associated with high maternal or foetal mortality. Maternal morbidity and mortality have been a major World Health Organization concern over the years, especially in sub-Saharan Africa, of which Nigeria is not exempt.

Method: This paper reports a case of uterine rupture with hypovolemic shock in an unscarred uterus. A previous scarred uterus is the commonest risk factor for uterine rupture. Spontaneous rupture is a rare occurrence.

Result: The patient was an unbooked 41-year-old gravida 5, para 4 + 0 (4 alive) at an estimated gestational age of 39 weeks + 4 days. The case was managed at our facility following a referral from a primary health centre in Abeokuta. She was referred on account of acute abdominal pain and signs and symptoms of haemorrhagic shock while in labour.

Conclusion: The foetal heart rate could not be heard with the handheld Doppler and bedside ultrasound scans. A suspicion of uterine rupture, complicated by hypovolemic shock and intrauterine foetal death, was entertained. She had uterine repair and bilateral tubal ligation. Severe anaemia was corrected with appropriate pints of blood. Postpartum period was uneventful.

Keywords: Spontaneous, Rupture, Unscarred, Multigravid uterus

Background

Early identification through a high index of suspicion is important for the successful management of spontaneous uterine rupture. Uterine rupture is associated with maternal morbidity and mortality.[1] In most cases it is usually accompanied by foetal mortality.[2] Maternal morbidity and mortality have been a major World Health Organization concern over the years, especially in sub-Saharan Africa, in which Nigeria is not exempt. [2] Total uterine rupture is the complete division of all uterine muscle layers with involvement of the endometrium, myometrium and perimetrium. In view occasion, the perimetrium may be intact, known as partial or uterine dehiscence. Total or complete rupture accounted for 86% of cases, while incomplete or partial rupture occurred in 14% of cases.[3] Early recognition and prompt treatment are crucial to ensure survival rate.

Case Report

Mrs S.M. was a 41-year-old G5P4+0 (4 alive) primary school teacher who presented to our labour ward at an estimated gestational age of 39 weeks and 4 days following a referral from a primary health centre on account of severe acute abdominal pain, signs, and symptoms of haemorrhagic shock. The foetal heart rate could not be heard with the handheld Doppler and bedside ultrasound scan. She had earlier presented at the referral centre with a history of on-and-off uterine contractions of 6 hours and rupture of membranes of 2 hours. Five hours into admission, she was noticed to have developed sudden abdominal pain with progressive dizziness and body weakness. She was therefore referred to our centre for expert care. No history of augmentation of labour. No history of bleeding per vagina or prior trauma to the abdomen. Pregnancy was unplanned but desired. She conceived spontaneously and confirmed via serum pregnancy test after 6 weeks of amenorrhoea and subsequently with an ultrasound scan. She booked at the referral centre. The pregnancy period was uneventful. Pregnancy, labour, and puerperium of the previous deliveries were uneventful. The children were delivered via the vaginal route. Physical examination revealed a young woman, conscious but weak, severely pale, anicteric, mildly dehydrated, and afebrile (36.5°C). Mrs S. M.'s respiratory rate was 25 cycles/min, breath sounds were vesicular, and oxygen saturation was 95% in room air. Her pulse rate was 123 beats/min. Her blood pressure was 80/40 mmHg, and first and second heart sounds were heard. The abdomen was distended, foetal parts were palpable per abdomen, and there was generalised tenderness. No contraction palpated. There was no foetal heart sound heard with the handheld Doppler, and the foetal heart was not seen on the bedside ultrasound scan. The liver, spleen and kidneys could not be palpated due to tenderness. A digital vaginal examination revealed a soft, central, and 8 cm dilated cervix with loss of presenting

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part. The gloved finger was stained with fresh blood. A diagnosis of suspected uterine rupture complicated by hypovolemic shock and intrauterine foetal death in an unbooked 41-year-old G5P4+0 (4A) was made. Management involved a multidisciplinary team. Active resuscitation was urgently commenced. Intravenous access was promptly established with two wide-bore cannulae (size 16). Blood samples were collected for urgent packed cell volume, HBsAg, HCV, full blood count, and renal function test. Four pints of blood were grouped and cross-matched. Intravenous 0.9% normal saline 1 litre fast was administered. Oxygen was administered by facemask at 6 litres per minute. An indwelling urethral catheter was passed to monitor urine output, and about 100 ml of concentrated, non-bloody urine was drained, and she was nursed in the left lateral position. A bedside ultrasound scan was done as resuscitation was ongoing, and it revealed an empty uterus with a uterine wall defect; the foetus, placenta, and free fluid were seen in the peritoneal cavity. She was commenced on intravenous antibiotics ceftriaxone 1 g 12 hourly and metronidazole 500 mg 8 hourly. She was counselled on the diagnosis and line of management. She requested bilateral tubal ligation because she has completed her family size (the pregnancy was unplanned and resulted from failed contraception). Consent was obtained for emergency exploratory laparotomy + bilateral tubal ligation and possible hysterectomy. Possible complications and prognosis were explained to her in the presence of her spouse. A consult was sent to the anaesthetist to review; theatre staff were informed, and surgery was booked. She was promptly transferred to the theatre. She had uterine repair with bilateral tubal ligation with the following intraoperative findings: hemoperitoneum of 1.5 litres and a fresh male extruded into the peritoneal cavity. There was a single transverse tear at the lower uterine segment that measured about 10cm, extending from the side of the left lower uterine segment to the other side of the right lower uterine segment close to the uterine artery on the right side (figure 1). Grossly normal-looking fallopian tubes and ovaries bilaterally. The modified Pomeroy method of bilateral tubal ligation was done. Clear post-operative urine. Estimated blood loss was 500 ml. She was transfused with three pints of compatible blood intraoperatively and one pint postoperatively, following which she had intravenous calcium gluconate (10 ml of 10% calcium gluconate over 15 minutes). She also had 1 pint of fresh frozen plasma. She was allowed to see the baby after she had recovered from the effects of anaesthesia and later handed him to her spouse. Mrs S. M. had antibiotics, analgesics, intravenous fluid, and breast care. She made a remarkable postoperative recovery. She was further counselled on her chance of conception since she had a uterine repair with bilateral tubal ligation. The risk of subsequent uterine rupture was clearly spelt out to her in case of failure. She was advised to continue the routine cervical screening

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programme and linked to a support group. She was subsequently followed up by the clinical psychologist in the clinic, and she was offered the necessary care to prevent postpartum depression.

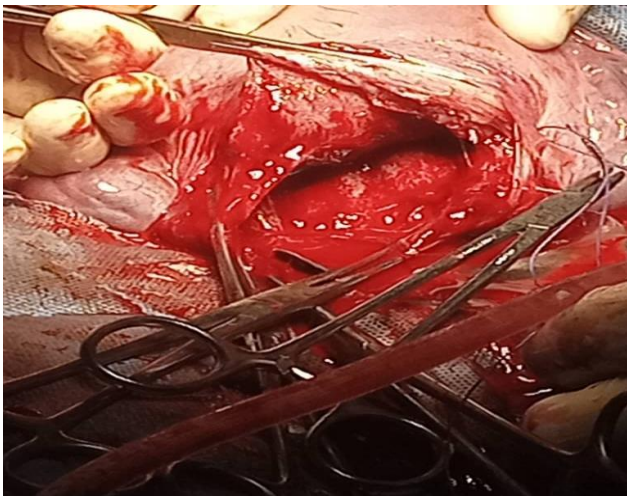

Figure 1: Transverse Lower uterine segment tear

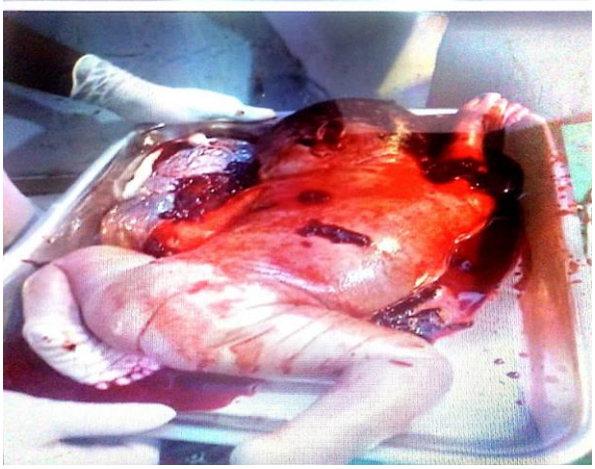

Figure 2: Dead baby lying on top of the placenta

Discussion

Uterine rupture accounts for 14% of all hemorrhage-related maternal mortality.[4] The incidence of uterine rupture among women with at least one prior CS is 0.5%.1 There is variation in the incidence depending on whether it is within high- or low-income countries, an incidence of 0.2% and 1.0% were reported in high-Human Development Index (HDI) countries and low-HDI countries respectively.5 Uterine rupture occurred mostly in a scarred uterus, accounting for 92.7% while 7.3% occurred in an unscarred uterus in the study reported by Wan et al in china.[6] A prevalence of 0.87% was reported in the eastern part of Nigeria.[7] The maternal and perinatal mortality from ruptured uterus accounted for 6.6% and 98.3% respectively while 1.7% were live birth.[7] The mortality from uterine ruptured that was reported in Ethiopia by Desta et al was 7.7%.8 Ruptured uterus can occur during pregnancy, labour or immediate postpartum. But most cases occurred during labour.[9] Mrs S. M had an intrapartum rupture. The risk factors are previous scarred uterus, uterine surgeries, injudicious use of oxytocic, trauma, prolonged obstructed labour, uterine over distension, and multiparity.[10] Mrs S.M is a multiparous patient which could be a risk

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factor for her condition. Other risk factors include procedure such as external cephalic version, internal podalic version, malpresentation, abnormal placentation such as placenta accreta spectrum, and iatrogenic causes from instrumentation during evacuation of a miscarriage.[9]

Clinical presentation depends on the type of rupture, duration, extent of rupture and haemodynamic status of the patient.[11]Patient could present with sudden and intense pain that persists between uterine contraction, light or moderate vaginal bleeding, dizziness, body weakness, shoulder tip pain depending on the level of hemoperitoneum.[11] Mrs S.M presented with severe abdominal pain, dizziness, body weakness, and hypotension. Other findings are fetal heart rate abnormalities or absent fetal heart rate, loss of fetal station, maternal tachycardia, tachypnea, hypotension, and cold clammy extremities.[12,13] Mrs S.M presented in shock. It should be noted that presentation of patients with partial uterine rupture may be mild and likely to be delayed compared to those with complete uterine rupture.[11] Mrs S.M had total uterine rupture which was diagnosed at presentation.

Diagnosis of ruptured uterus is mainly clinical, high index of suspicion is crucial in those with risk factors in order to avert its consequences. Diagnosis may also be delayed among the parturients with an unscared uterus, it will rather be linked with another differential like abruptio placental.[9] Abruptio placenta is characterized by vaginal bleeding, abdominal pain, tetanic uterine contraction, and fetal heart rate abnormality.[14]Mrs S.M had no history of elevated blood pressure in the index pregnancy, which is a major risk factor for placental abruption.[14]Also, when she was examined, there was no uterine contraction, and the fetal parts were easily palpable, which makes uterine rupture to be ranked 1st in our differential. Ultrasound scan was done which also confirm the diagnosis. The diagnosis was a bit delayed from the referral centre due to low suspicion. The midwives in the primary health facilities should be trained, and retrained on the sign, and symptoms of uterine rupture.

Ancillary and specific investigations that are necessary in evaluating affected patients are the full blood counts, packed cell volume, renal function test, HbsAg, HCV, retroviral screening, and random blood sugar. Ultrasound is the initial imaging modality of choice, others are Computed tomography when benefits outweigh the risk, Magnetic resonance imaging to evaluate the extent of the rupture and associated injuries, also, catheter angiography is a valuable tool with both diagnostic and therapeutic capability with potential for fertility preservation.[15] Mrs S.M had the blood investigations and ultrasound scan done but other imaging tests could not be performed because Computed tomography and Magnetic resonance imaging were not functional and she was hemodynamically unstable to have it done in the private facility.

The modality of treatment could be via laparoscopy or laparotomy.[16] The

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intraoperative management options depend on the extent of rupture, hemodynamic state of the patient, parity and the surgeon's skills. Patient can benefit from uterine repair alone, repair with bilateral tubal ligation, and hysterectomy which could be subtotal or total. Laparoscopic repair is reserved for stable patients.[16]Benefits of laparoscopy over laparotomy is that, it limits patient's hospital stay, ensure early recovery, reduce blood transfusion, and has significant cosmetic benefit.[17] However, patient with massive hemoperitoneum may not be suitable for this route. Laparoscopy offer limited visualization; therefore, it may miss extensive rupture that involved contiguous structures, it also required skilled personnel, and it associated with prolonged operating time when compared to laparotomy.[16] Mrs S.M had uterine repair with bilateral tubal ligation via laparotomy route. Uterine repair was considered in Mrs S.M because she has low transverse uterine rupture with no extension of tear to broad ligament, cervix or paracolpos. Hysterectomy maybe an option in the parturient with multiple rupture, in case of life-threatening uncontrollable haemorrhage or extensive rupture that involve bladder and or vagina or other contiguous structures.

Complications of uterine rupture may affect either the mother or the foetus and or both. The affected parturient may develop severe anaemia, hypovolemic shock, acute kidney injury, wound infection, Sheehan's syndrome and maternal death.[7] Perinatal morbidity including hypoxic ischemic encephalopathy, permanent neurological injury, and perinatal death could occur following uterine rupture.[18]

It is important to differentiate uterine rupture from placental abruption, bloody show and placenta praevia. Clinical presentation of the patient with abruptio placenta may mimic that of uterine rupture. Sudden vaginal bleeding, abdominal pain and inability to perceives fetal kicks may be seen in patient with abruptio placenta and uterine rupture.[14] But detailed clinical evaluation will help in the diagnosis. Patient with abruption placenta will have tetanic uterine contraction with difficulty in auscultating the fetal heart activity when compared to those with uterine rupture. However, uterine contraction will be absent, and fetal parts will be palpated easily in patient with uterine rupture. Patient with bloody show will have a clear liqour following amniotomy and uterine tenderness will be absent when compared to uterine rupture. Patient with placenta praevia is likely to have prior warning bleeds or ultrasound confirmation of placenta praevia.[14] Other causes of acute abdominal emergencies, such as appendicitis, pancreatitis, and ovarian accident must be rule out.[19] Early diagnosis and prompt management irrespective of the clinical presentation is crucial. Also, timely intervention can significantly reduce maternal complications and perinatal mortality rates.

Uterine rupture cannot be accurately predicted or diagnosed before it occurs.[19]

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However, parturients with any of the identifiable risk factors should be managed by a senior obstetrician in a facility with 24hours theatre and blood transfusion services. Mrs S.M was managed at Health centre that lacked the required services. Also, diagnosis might be delayed from this facility due to low index of suspicion because she has never had caesarean delivery. Therefore, she was referred when she developed hypovolemic shock. Management of uterine rupture must involve multidisciplinary team in order to prevent adverse outcome.

Overall, the case reported a spontaneous single transverse segment rupture of an unscarred uterus. This study further emphasized that rupture of an unscarred uterus is still occurring in our hospitals and timely recognition is crucial in its management. The study also revealed the need to train and retrain the midwives in the Primary health facilities on how to quickly recognize cardinal features of uterine rupture, offer initial care, and ensure prompt referral via ambulance service. This underscores the importance of System-based Health referral and its attendant logistics particularly ambulance services and communication network [20] as Mrs S.M was brought to our centre in a taxi. Also, clinical audit, and feedback would improve the general practice significantly.

Conclusion

In conclusion, rupture of an unscarred uterus carries more catastrophic maternal outcomes due to low index of suspicion and delay in instituting prompt management. Obstetricians should remain vigilant even in cases considered low-risk for classic symptoms and signs of rupture which are sudden or persistent abdominal pain, uterine tenderness, and unexplained fetal heart rate abnormality. Prompt surgical intervention is vital to reduce adverse outcomes for both the mother and the baby.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given her consent for the images and other clinical information to be reported in the journal. The patient understands that her names will not be published and due efforts will be made to conceal her identity.

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Conflicts of interest

There are no conflicts of interest.

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