Original Article

Clinical profile of patients with uterine rupture at a tertiary facility in North Central Nigeria

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Abstract

Background: Uterine rupture is a major obstetric emergency and an important cause of maternal and perinatal morbidity and mortality.

Aim: To determine the prevalence, clinical presentation, management options and pregnancy outcomes following uterine rupture.

Methods: It is a 5-year, descriptive, retrospective study of parturients who had uterine rupture between 1 January 2011 and 31 December, 2015, at Federal Medical Centre, Bida, North Central Nigeria. The case files of all parturients who had uterine rupture during this period were retrieved from the Medical Records department, and relevant information including maternal age, risk factors for uterine rupture, presenting symptoms, site of rupture and the definitive treatment as well as maternal and neonatal outcome using a data collection sheet was entered into a computer with SPSS version 20.0, which was also used for the analysis.

Results: The prevalence of uterine rupture was 1 in 202 deliveries (48/9,718); of these, 24 (50.0%) were aged 36–40 years and 28 (58.3%) were grandmultipara (parity ≥5); 42 (87.5%) cases had previous uterine scar, whereas 15 (31.3%) had labour augmentation with oxytocin while attempting vaginal birth after caesarean section. The common presenting complaints were intrapartum vaginal bleeding (24; 50%) and abdominal pain (10; 20.8%). The most common site of rupture was anterolateral (24; 50.0%), while the most common surgical intervention was uterine repair with bilateral tubal ligation (30; 62.5%). The case fatality rate was 18.8% (9/48), neonatal survival rate was 12.5% (6/48) and perinatal mortality rate was 875/1000 deliveries (42/48).

Conclusion: Uterine rupture remains an important cause of poor pregnancy outcomes in low-income settings. Previous caesarean delivery is the most common risk factor; women attempting vaginal birth after caesarean delivery should be managed by skilled health personnel in facilities with provision for emergency surgical intervention.

Keywords: Intrapartum complications, obstetric haemorrhage, severe maternal outcome, uterine rupture

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INTRODUCTION

Uterine rupture is an obstetric catastrophe that may complicate pregnancy, labour and delivery, with attendant foeto-maternal complications resulting in significant maternal, foetal or neonatal morbidities or mortality.[1,2] Uterine rupture has become rare in developed countries

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but remains a major public health problem in sub-Saharan Africa due to poverty, ignorance and poor utilisation of health facilities.[2,3] In most rural areas in Nigeria and other low-income countries, facilities for modern antenatal care services, effective referral system and emergency obstetric care are unavailable. This is sequel to the nonavailability of specialists; a report from Nigeria indicated that 84.8% of specialists are in urban areas[4] allowing quackery to thrive in rural areas, leading to complications including uterine rupture.

In Nigeria, reported prevalence for uterine rupture includes 14.6/1000 from Nigerian Christian Hospital in Uyo,[5] 6.1/1000 from Lagos University Teaching Hospital (LUTH) in Lagos[6] and 1 in 151 from Mater Misericordiae Hospital, Afikpo, Ebonyi state.[7] This results from variation in the occurrence of uterine rupture across health facilities and regions depending on the location, level of care provided, available facilities and the ease of access. A mission hospital in Southeast Nigeria reported seventy cases of uterine rupture over 5 years,[5] a tertiary government hospital in Lagos had eighty cases over 8 years,[6] while another missionary hospital in Ebonyi state recorded 74 cases in 10 years.[7]

In addition, when uterine rupture occurs, there is a significant difference in the outcome in high- compared to low-income countries. A WHO multicountry survey involving 359 facilities in 29 countries reported a 5-fold increase in uterine rupture in low- and middle-income countries compared to high Human Development Index (HDI) countries.[8] Thus, giving birth in a low- or medium HDI country (Nigeria) poses a significant risk to developing uterine rupture in the process.

Uterine rupture is associated with adverse maternal, foetal and neonatal outcomes. A multicountry survey of uterine rupture among women with prior caesarean delivery reported significant severe maternal outcomes (maternal near miss and maternal deaths), stillbirth and perinatal deaths following uterine rupture.[8] In addition, while studies from Europe included 0%[9] and 1.3%[10] maternal mortality from uterine rupture, reports from Nigeria recorded 3.6% from Afikpo[7] and 11.94% from Lagos[6] which are three to eleven times higher. This calls for a regular review in order to evaluate the trend in uterine rupture in low-resource settings.

Therefore, this study is aimed at reviewing the occurrence of uterine rupture, its associated risk factors, clinical presentation as well as maternal and perinatal outcomes in a tertiary health facility in North Central Nigeria.

METHODS

The study was a descriptive retrospective study of patients who were managed for uterine rupture at Federal Medical Centre, Bida, over a 5-year period (January 2011 to December 2015). The hospital is a tertiary care centre at a semi-urban setting and about 240 km from Nigeria's Federal Capital Territory. It is a 265-bed facility with an annual delivery of about 2400 babies with referrals from primary and secondary healthcare facilities from neighbouring states in North Central zone. The inclusion criteria were a diagnosis of uterine rupture, management at the study site and availability of the woman's medical record for evaluation. Women with incomplete data were excluded from the study and subsequent analysis. The list of eligible participants was compiled from the obstetric emergency ward as well as delivery and obstetric theatre registers after which the case files were retrieved from the Medical Records Department of the hospital. The information retrieved included age, parity, risk factors for uterine rupture, clinical presentation, management options as well as maternal and foetal outcomes. Data were collected using a data collection sheet designed for the study, and the results were entered into the computer and analysed using SPSS version 20.0 (IBM, Armonk, NY, USA) while results were represented in tables and percentages. Institutional approval was obtained from the hospital's Ethics Committee.

RESULTS

Out of the total 9718 deliveries, there were 48 cases of uterine rupture with a prevalence rate of 1 in 202 deliveries; all the cases of uterine rupture in this study occurred intrapartum.

Table 1 shows that 24 (50.0%) were aged 36–40 years, 28 (58.3%) were grandmultipara, while 15 (31.3%) had no formal education.

Table 1: Sociodemographic characteristics of women with uterine rupture

Parameter	Frequency (%)
Maternal age	
21-25	9 (18.8)
26-30	3 (6.2)
31-35	12 (25.0)
36-40	24 (50.0)
Parity	
0	3 (6.3)
1-4	17 (35.4)
≥5	28 (58.3)
Educational status	
No formal education	15 (31.3)
Primary	3 (6.2)
Secondary	18 (37.5)
Tertiary	12 (25.0)

Table 2 shows that the most common risk factor was previous caesarean section (42 [87.5%]), while 15 (35.7%) women had labour augmentation with oxytocin while attempting vaginal birth after caesarean section. In addition, all the participants had abdominal pain (48; 100.0%); 24 (50.0%) presented with intrapartum vaginal bleeding, while 10 (20.8%) had abdominal pain with cessation of uterine contractions.

The sites of the uterine rupture were anterolateral 24 (50.0%), anterior (21; 43.8%) and posterior (3; 6.3%). The definitive surgical procedure performed at laparotomy was uterine repair with bilateral tubal ligation (BTL) (30; 62.5%), repair of uterine rupture alone (12; 25.0%) and subtotal hysterectomy (6; 12.5%).

Table 3 shows that the most common maternal morbidity was anaemia (27; 56.3%); 24 (50.0%) had hypovolaemic shock and 2 (4.2%) had vesico-vagina fistula, while case fatality rate was 18.8%. Among the 48 babies delivered, 40 (83.3%) were stillborn and 6 (12.5%) survived, while perinatal mortality rate was 875/1000 deliveries.

Table 2: Risk factors and presenting complaints

Parameter	Frequency (%)
Risk factors	
One previous lower-segment CS	3 (6.3)
One previous classical CS	3 (6.3)
One previous lower-segment CS + fundal pressure	4 (8.3)
Obstructed labour with one previous lower-segment CS	5 (10.4)
Injudicious oxytocic use	6 (12.5)
Two lower-segment CS	12 (25.0)
Oxytocin + one lower-segment CS	15 (31.2)
Presenting symptom*	
Peripartum collapse	6 (12.5)
Haematuria	8 (16.7)
Cessation of uterine contractions	10 (20.8)
Intrapartum vaginal bleeding	24 (50.0)
Abdominal pain	48 (100.0)

*Some women had multiple presenting complaints. CS: Caesarean section

Table 3: Maternal and perinatal outcomes

Parameter	Frequency (%)
Maternal outcome	
Maternal morbidity	
Disseminated intravascular coagulopathy	1 (2.1)
Vesico-vaginal fistula	2 (4.2)
Surgical-site infection	9 (18.8)
Puerperal sepsis	12 (25.0)
Hypovolaemic shock	24 (50.0)
Anaemia	27 (56.3)
Maternal deaths	9 (18.8)
Perinatal outcome	
Stillborn	40 (83.3)
Live birth	8 (16.7)
Early neonatal death	2 (4.2)
Alive at discharge	6 (12.5)
Perinatal deaths	42 (87.5)

Some patients had multiple morbidities

DISCUSSION

The main findings from this study were uterine rupture prevalence of 1 in 202 with a case fatality rate of 18.8% and perinatal mortality of 875/1000 births. In addition, all the cases of uterine rupture in this study were intrapartum. The reported prevalence was lower than that of previous reports of 1 in 75[10] in Sokoto, 1 in 129[3] in UCH Ibadan, 1 in 151[7] from Mater Misericordiae Hospital, Afikpo Ebonyi state, and 6.1/1000[6] in LUTH Lagos in Nigeria. A possible explanation is that these previous reports were from older data; thus, it may signify an improvement in healthcare delivery in the country. In addition, the reported prevalence in this study is lower than 1 in 150 from Yemen[11] although the data were published over a decade before this study. In contrast, a health facility in the UK with an annual delivery rate of 6000 births reported 12 cases of uterine rupture over a 6-year period with a prevalence of 12 in 36,000 births,[12] whereas a national review in the UK reported an incidence of 0.2/1000 deliveries.[13] This variation may be due to local differences in presentation and available obstetric services. These include availability, access, utilisation and the quality of maternity services in the area. Many low-resource countries have not performed fairly relative to the availability of skilled obstetricians and quality maternity services.[2,3,9] When obstetric services are available, reports showed poor attitude and uptake among women who suffered uterine rupture.[2,3]

Reports from sub-Saharan Africa showed that uterine rupture is more common among grand multipara,[2,3,14] especially when they undergo induction of labour.[15] In addition, the prevailing poverty and poor financial capability for out-of-pocket payment for standard maternity care are additional relevant factors.[10,15] Meanwhile, researchers have documented bleeding per vaginum and abdominal pain as the common presenting complaints by women with uterine rupture[9,16] in keeping with the finding of this study.

The occurrence of uterine rupture in mostly women with previous uterine scars as seen in this study corroborates previous reports.[3,4,14] Attempt at vaginal birth following previous caesarean delivery has been associated with an increased risk of uterine rupture compared to repeat elective caesarean delivery.[17,18] In this study, 87.5% of women with uterine rupture attempted vaginal delivery with one or more previous caesarean section scars before the rupture. It has been recommended to conduct vaginal birth after previous uterine scar in appropriately equipped facilities for adequate monitoring, strict criteria for selection, cautious use of oxytocin if required and prompt intervention. In a study from Southeast Nigeria,

60% of the cases of uterine rupture were from previous uterine scar,[5] while women with previous caesarean scar constituted 46.28% in Southwest Nigeria[6] and 85.7% in Ebonyi state.[7] Other predisposing uterine surgeries include previous uterine rupture and cornual ectopic gestation.[11] Other intrapartum risk factors for uterine rupture include use of fundal pressure to aid delivery, obstructed labour, instrumental vaginal and assisted breech deliveries as well as injudicious use of oxytocin.[4,18] In addition, previous uterine rupture and previous cornual ectopic gestation are other important risk factors.[7] Similar to the above, obstructed labour and use of fundal pressure featured in this study as risk factors for uterine rupture. The use of fundal pressure to aid vaginal delivery is a commonly reported method used by unskilled birth attendants who conduct deliveries without formal training and are common in low-resource areas preying on the pervading poverty.[1,9] In addition, injudicious use of oxytocin[4] by unskilled birth attendants remains an important risk for uterine rupture in low-income countries like Nigeria.

There are multiple sites where uterine rupture can occur; a Nigerian report documented that anterior rupture is more common in scarred (71%) compared to lateral in unscarred uterus (39%).[5] The most common site of rupture in this study was anterior with lateral extension similar to the above report. In addition, involvement of contiguous structures is common in uterine rupture; rupture of the unscarred uterus often involve the cervix and vagina, while in scarred uterus, it involves the urinary bladder.[5]

Other morbidities in this study include anaemia, wound infection and genital sepsis, similar to the reports of earlier authors.[3,9,11,14] Another report documented a 7-fold risk for severe postpartum haemorrhage, 10-fold risk of exposure to general anaesthesia and a 23-fold risk for peripartum hysterectomy[17] following uterine rupture. This is similar to the findings in this study where all participants had surgery under general anaesthesia and more than half developed anaemia.

The treatment of uterine rupture varies depending on the surgical finding at laparotomy. However, the guiding principles favour the safest, shortest and most feasible option relative to the skill of the surgeon.[3,14,16] In this study, uterine repair with BTL was the most common treatment modality. This is usually employed to prevent spontaneous rupture and associated mortalities during subsequent pregnancy while the woman retains her uterus for other functions except childbirth. In a report, 51.9% of Nigerian obstetricians interviewed reported performing uterine repair with BTL or hysterectomy[4] for uterine rupture. In addition, another report indicated that more cases of uterine rupture involving previously scarred uterus require hysterectomy compared to unscarred uteri (14% vs. 5%).[5]

In addition to the morbidities, maternal and neonatal mortalities remain high in all reports from low-resource countries,[3,10,14] similar to this study. Maternal mortalities of 3.6%[7] and 11.94%[6] were reported by reports in Nigeria; while a facility in the UK reported no death from uterine rupture over a period of 6 years,[9] the UK national survey reported a 1.3% mortality.[19]

The high perinatal mortality reported in this study was similar to 79.1% in Lagos,[6] 92.9% from Ibadan[3] and 100.0% from Sokoto,[10] all in Nigeria compared to a national figure of 12.4% for the UK.[13] However, a comparative study reported that foetal survival was higher in scarred compared to unscarred uterus.[5] This may be due to dehiscence of the previous uterine scar with less bleeding and the foetus is still within the uterine cavity. The very high perinatal mortality associated with uterine rupture is connected to the late presentation, inadequate facilities for adequate intrapartum monitoring and late intervention. Foetal heart rate abnormalities which are early signs of uterine rupture may be missed in low-resource settings because adequate facilities for continuous intrapartum foetal monitoring are largely unavailable.

Limitations

The retrospective design of the study prevented real-time data collection which would have improved the data quality; this limited the study to the available data in the case files. In addition, the restriction to a single centre did not allow effective comparison over the same period of time which would have broaden the description, include more participants and improve the weight of the evidence. The study was confined to the local constraints that may be peculiar to the study area and the study site.

CONCLUSION

Uterine rupture and its attendant complications remain a major challenge to the survival of women and their babies in our centre and by extension in many low-resource countries, particularly sub-Saharan Africa. Vaginal birth after previous uterine scar is the greatest risk for uterine rupture and is worsened by augmentation of labour. We recommend a greater commitment in low-resource areas to have all births attended to by skilled birth attendants with caution in the use of oxytocic for induction or augmentation and available facilities for emergency surgical intervention.

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Conflicts of interest

There are no conflicts of interest.

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