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Original Article

Uterine Rupture Still an Obstetric Catastrophe - A Six-year review in Federal Medical Centre, Asaba.

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ABSTRACT

Background: Uterine rupture is a dire obstetric emergency with far-reaching maternal and perinatal morbidity and mortality. This study determined the incidence, predisposing factors and foeto-maternal outcomes of a ruptured uterus. **Methods:** A 6-year retrospective study of all cases of uterine ruptures that were managed in Federal Medical Centre, Asaba, Delta State, Nigeria between 1st January 2015 and 31st December 2020 was undertaken. Data collected from maternity records were transferred to a datasheet and analysed using SPSS statistical software, version 20 IBM. **Results:** The incidence of uterine rupture in this study was 1.2% or one in 89 deliveries. Unbooked parturient accounted for most of the cases of uterine rupture 54(91.5%). The mean age of women analysed in this study was 31.3 years (SD=4.7). Abdominal pain and vaginal bleeding 32(54.2%) were the commonest presenting complaint. Previous uterine scar 25(42.4%) was the commonest risk factor identified while rupture along a previous scar 33(55.9%) was the commonest site for uterine rupture in this study. Anaemia requiring multiple blood transfusions 46(78%) and wound infections 5(8.5%) were the commonest complications; repair alone 31(52.5%) was the surgical procedure in most of the cases. The decision intervention interval was more than thirty minutes in 94.9% of the women. The case fatality rate was 7.1%, while the perinatal mortality rate was 88.1%. There was a significant relationship between family socioeconomic status and maternal outcome P = 0.020. **Conclusion:** Uterine rupture is still a common obstetric emergency with increased maternal and perinatal morbidity and mortality. The commonest predisposing factor was previous uterine scar usually among unbooked parturients.

Keywords: Uterine rupture, foeto-maternal outcomes, previous scar, maternal morbidity and mortality

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INTRODUCTION

Uterine rupture is a dire obstetric emergency with far-reaching maternal and foetal morbidity and mortality. The prevalence is high in developing compared to developed countries and it varies among regions within a country.[1] Statistics drawn from several regions of Nigeria show a high prevalence of uterine rupture. Figures from Lagos University Teaching Hospital (LUTH), South-West, Nigeria was 0.61%,[2] University of Benin Teaching Hospital (UBTH), South-South, Nigeria was 0.58%,[3] Nnamdi Azikiwe University Teaching Hospital (NAUTH), South Eastern region of Nigeria was 0.62%,[4] University of Abuja Teaching Hospital (UATH), North Central, Nigeria was 0.85%[5] and Niger delta, South-South region of Nigeria was 1.03%.[6]

Furthermore, uterine rupture is associated with increased maternal morbidity and mortality, especially in developing countries. A study from Eku hospital, Delta state reported case fatality of uterine rupture at 23%,[7] while in LUTH, maternal deaths were reported at 2.2%,[2] additionally, a study from the Niger delta reported an overall maternal mortality of 6.89% while stillbirths were 82.76%.[6] Previous uterine scar is the most common risk factor in developed countries as against obstructed labour in developing countries.[1] Caesarean section rate is globally on the increase. The developing countries are not exempted and thus, may be contributing remarkably to the increasing rate of uterine rupture.[1] Other risk factors include higher parity, injudicious use of oxytocics, trauma and obstetric manipulations.[3-6]

Diagnosis is mainly clinical and requires a multi-disciplinary team to offer prompt resuscitation and emergency laparotomy. Surgical options include uterine repair with or without tubal ligation and hysterectomy.[7] this study, therefore, aimed to assess the incidence, predisposing factors and maternal and foetal outcomes of cases of ruptured uterus managed in the Federal Medical Centre, Asaba.

METHODOLOGY

A retrospective study of all cases of uterine rupture managed between 1st January 2015 and 31st December 2020 at the Federal Medical Centre, Asaba, Nigeria. Data were retrieved from the labour ward, obstetric theatre and post-surgical ward records and folders were collected from the Medical Records department. Information extracted included social demographic characteristics, year of presentation, decision intervention interval, site of rupture, and maternal and foetal outcomes. Data was collected using a study proforma. Finally, the data collected was analysed using SPSS version 20.

RESULTS

During the study, there were a total of 76 cases of uterine rupture out of 6747 deliveries, giving a prevalence of 1.2% or 1 in 89 deliveries. However, only 59 folders were retrieved and analysed giving a retrieval rate of 77.6%.

Table 1: Sociodemographic characteristics of women managed for uterine rupture at the Federal Medical Centre Asaba, Delta state Nigeria, from January 2015 to December 2020 (N=59)

Characteristic	Mean/Frequency	%
Mean age (years)	31.3 ±4.7	
Age group categories (years)		
20-24	6	10.2
25-29	19	32.2
30-34	18	30.5
≥ 35	16	27.1
Parity		
Nullipara	2	3.4
Primipara	13	22.0
Multipara	40	67.8
Grand-multipara*	4	6.8
Booking status		
Booked	5	8.5
Unbooked	54	91.5
Religion		
Christianity	59	100.0
Level of education		
None	2	3.4
Primary	11	18.6
Secondary	34	57.6
Tertiary	12	20.3
Occupation (recategorized)		
Unemployed	10	16.9
Informal sector	45	76.3
Formal sector	4	6.8
Family socioeconomic status**		
Lower social class	13	22.0
Middle social class	29	49.2
Upper social class	17	28.8

*Primipara=first delivery, multipara=2-4 deliveries, grand-multipara=5 or more deliveries.

** Classified by combining scores based on maternal education and partner's occupation as described by Olusanya et al[8]

Table 2: Clinical features at presentation and identifiable risk factors among women with uterine rupture managed at the Federal Medical Centre, Asaba, Delta State, Nigeria from January 2015 to December 2020

Variable	Frequency	Percentage
Clinical features at presentation		
Shock	8	13.6
Abdominal pain	19	32.2
Abdominal pain and vaginal bleeding	32	54.2
Identified risk factor for uterine rupture		
Previous uterine scar	25	42.4
Induction with misoprostol.	8	13.6
Grand-multiparity	2	3.4
Uterine scar and oxytocics	18	30.5
Multiparity and oxytocics	6	10.2

Table 3: Complications, maternal and fetal outcomes among women with uterine rupture managed at the Federal Medical Centre, Asaba, Delta State, Nigeria from January 2015 to December 2020

Variable	Frequency	Percentage
Maternal death	4	7.1%
Blood transfusion	46	78.0%
Wound infection	5	8.5%
Bowel injury	1	1.7%
Renal failure	1	1.7%
Vesico-vaginal fistula	2	3.4%
Perinatal Outcome		
Livebirth	7	11.9%
Stillbirth	52	88.1%

The mean age of the patients with uterine rupture was 31.3 years (SD=4.7). It was highest among women aged 25-29 years (32.2%). It also occurred among multipara in about 67.8%. women with a secondary level of education were the commonest and also middle social class was highest at about 49.2%. as shown in Table 1.

Abdominal pain and vaginal bleeding were the commonest presentations in about 54.2% of cases, whereas previous uterine scar was the commonest presentation in 42.4% of cases as shown in Table 2.

The need for blood transfusion was the commonest maternal morbidity in about 78% of cases. Maternal death occurred in 4 cases giving a case fatality of 7.1%. Perinatal mortality was 88.1% as shown in Table 3.

The woman's social class and presence of maternal shock were likely predictors of adverse maternal outcomes following uterine rupture as shown in table 4.

DISCUSSION

Uterine rupture has remained an important cause of maternal and perinatal morbidity and mortality, especially in low-middle-income countries where inadequate obstetric services alongside poor health-seeking behaviour of parturients abound.[3] The incidence of uterine rupture in this study was high (1.2%). This was similar to the 1.03% recorded in Bayelsa[6] and 1.0% in Enugu,[9] but was however higher than the 0.85% recorded in Abuja,[5] 0.62% in Nnewi,[4] 0.61% in Lagos,[2] 0.58% in Benin,[3] 0.06% in Netherlands[11] and 0.03% in Canada[12] but was lower than the 2.44% recorded in Ethiopia.[10] The wide variation could be related to the demographic characteristics and time of the studies.

The majority (91.5%) of the patients in this study were unbooked. A similar occurrence of uterine rupture mainly among unbooked patients has also been noted in other studies.[2, 3, 4, 6, 13, 14] It is not a surprise because most of the referring centres offer a lower standard of care due to the absence of specialists. The main risk factor for uterine rupture observed in this study was a previous uterine scar 42.4%. This was similar to the finding in Lagos[2], Benin,[3] Nnewi,[4] but was different from studies in Ilorin15 and Ethiopia10 where oxytocin use and obstructed labour were the major causes of uterine rupture respectively. Previously, obstructed labour used to be the commonest risk factor but because of the global rise in caesarean section rate, coupled with the concept of obstetric transition, the tide seems to be changing towards previous uterine scar because of increasing caesarean section.

Abdominal pain and vaginal bleeding were the commonest presenting complaints from women with uterine rupture recorded in this study. This was also similar to the findings in Lagos.[2,16] Shock was the pattern of presentation in 13.6% of the patients. Rupture of the uterus along the previous scar 33(55.9%) was the commonest site for uterine rupture as seen in this study. This was similar to the study conducted in Lagos but was, however, different from some other studies that simply identify the anterior wall of the uterus as the commonest site of rupture without being further specific.[2,4, 15, 16]

The management of uterine rupture starts with active resuscitation using plasma expanders and transfusion with blood with concurrent definitive surgical treatment planned.

Table 4: Univariate analysis of likely predictors of maternal death and neonatal outcome among women with uterine rupture managed at the Federal Medical Centre, Asaba, Delta State, Nigeria from January 2015 to December 2020 (N=59)

Characteristic	Maternal outcome				Fetal outcome			
	Alive (55)	Died (4)	Total (59)	P value	Livebirth(7)	Stillbirth(52)	Total(59)	P value
Mean age (years)	31.2±4.6	32±6.9	31.3±4.7	0.75	30.7±4.4	31.4±4.8	32.3±4.7	0.74
Age group (years)								
20-24	6(10.9)	0(0.0)	2(3.4)		1(14.3)	5(9.6)	6(10.2)	
25-29	17(30.9)	2(50.0)	19(32.2)		2(28.6)	17(32.7)	19(32.2)	
30-34	18(32.7)	0(0.0)	18(30.5)		3(42.9)	15(28.8)	18(30.5)	
≥35	14(25.5)	2(50.0)	16(27.1)	0.570	1(14.3)	15(28.8)	16(27.1)	0.760
Parity								
Nulliparous	2(3.6)	0(0.0)	2(3.4)		1(14.3)	1(1.9)	2(3.4)	
Primipara	11(20.0)	2(50.0)	13(22.2)		1(14.3)	12(23.1)	13(22)	
Multipara	38(69.1)	2(50.0)	40(67.8)		5(71.4)	35(67.3)	40(67.8)	
Grandmultipara	4(7.3)	0(0.0)	4(6.8)	0.520	0(0.0)	4(7.7)	4(6.8)	0.390
Family socioeconomic status								
Lower social class	9(16.4)	4(100.0)	13(22.0)		0(0.0)	13(25.0)	13(22.0)	
Middle social class	29(52.7)	0(0.0)	29(49.2)		3(42.9)	26(50.0)	29(49.2)	
Upper social class	17(30.9)	0(0.0)	0(0.0)	0.020*	4(57.1)	13(25.0)	17(28.8)	0.180
Booking status								
Booked	5(9.1)	0(0.0)	5(8.5)		2(28.6)	3(5.8)	5(8.5)	
Unbooked	50(90.9)	4(100.0)	54(91.5)	1.00	5(71.4)	49(94.2)	54(91.5)	0.100
Presence of shock								
No	51(92.7)	0(0.0)	51(86.4)		7(100.0)	44(84.6)	51(86.4)	
Yes	4(7.3)	4(100.0)	8(13.6)	0.001*	0(0.0)	8(15.4)	8(13.6)	0.340
Decision Intervention Interval								
≤ 30 minutes	3(5.5)	0(0.0)	3(5.1)		0(0.0)	3(5.8)	3(5.1)	
>30 minutes	52(94.5)	4(100.0)	56(94.9)	1.00	7(100.0)	49(94.2)	56(94.9)	1.000
Type of rupture								
Complete	54(98.2)	4(100.0)	58(98.3)		6(85.7)	52(100.0)	58(98.3)	
Incomplete	1(1.8)	0(0.0)	1(1.7)	1.00	1(14.3)	0(0.0)	1(1.7)	0.120
Site of rupture								
Previous scar	31(56.4)	2(50.0)	33(55.9)		2(28.6)	31(59.6)	33(55.9)	
Anterior	10(18.2)	0(0.0)	10(16.9)		1(14.3)	9(17.3)	10(16.9)	
Fundal	2(3.6)	0(0.0	2(3.4)		1(14.3)	1(1.9)	2(3.4)	
Right lateral	3(5.5)	2(50.0)	5(8.5)		1(14.3)	4(7.7)	5(8.5)	
Left lateral	1(1.8)	0(0.0)	1(1.7)		1(14.3)	0(0.0)	1(1.7)	
Posterior	8(14.5)	0(0.0)	8(13.6)	0.180	1(14.3)	7(13.5)	8(13.6)	0.560
Type of treatment								
Uterine repair only	29(52.7)	2(50.0)	31(52.5)		3(42.9)	28(53.8)	31(52.5)	
Uterine repair + BTL	12(21.8)	0(0.0)	12(20.3)		1(14.3)	11(21.2)	12(20.3)	
Hysterectomy	14(25.5)	2(50.0)	16(27.1)	0.646	3(42.9)	13(25.0)	16(27.1)	0.570

Independent t test, Mann-Whitney test for continuous variables, χ^2 test and Fisher's exact test for categorical variables
BTL- Bilateral Tubal Ligation

This definitive treatment should be individualized depending on the patient's clinical state, future reproductive wish, age, the skill of the surgeon, extent of the consent given by the patient, and type and extent of the rupture.[2, 4] The easiest and shortest procedure should be attempted in each case as speed is of the essence in the management of uterine rupture. Uterine repair alone 31(52.5%) was the commonest intervention carried out in this study and was similar to findings in other studies.[4, 6, 16] This is probably because it is the easiest and safest procedure in many cases. It might also be due to the desire to maintain a reproductive career and menstruation in a group of people who place a high

premium on childbirth and menstruation for various socio-cultural reasons.[16] Uterine repair and bilateral tubal ligation (BTL) was however the commonest intervention reported in some other studies.[2,15] Uterine repair alone was followed by hysterectomy 16(27.1%) and uterine repair plus bilateral tubal ligation 12(20.3%) in this study.

Anaemia requiring multiple blood transfusions 46(78%) and wound infection 5(8.5%) were the commonest complications noted in this study. This was similar to the finding in Lagos[2] and Nnewi.[4] Vesicovaginal fistula and wound infection were common postoperative complications found in Ethiopia.[17] Other co-morbidities noted in this study were vesico-vaginal fistula 2(3.4%), bowel injury 1(1.7%) and renal failure 1(1.7%). Vesicovaginal fistula is still a common complication in low resource settings, compared with developed countries, because of a strong aversion to caesarean section; many with previous uterine scar still end up with obstructed labour following attempts at the unsupervised trial of vaginal delivery from the referring centres.

Four (6.8%) maternal deaths were recorded in this study giving a maternal mortality ratio of 59.3 per 100,000 deliveries while 52(88.1%) stillbirths were delivered giving a perinatal mortality rate of 881 per 1000 deliveries. Similar high maternal and perinatal mortality rates have been reported in other studies.[2, 4, 9] Late presentation to the hospital due to poverty, delayed referral, poor transport network and poor ambulance system may have resulted in these high rates.[4] This however contrasts a study in the Netherlands where there was no maternal death following uterine rupture with over 90% of the foetuses surviving.[11] The decision to intervention interval in this study was high as it was more than thirty minutes in 56(94.9%) of the women. This third-level delay could contribute to increased maternal and perinatal morbidity and mortality though this was not statistically significant (P = 1.00)

There was no significant relationship between age, parity, booking status, type and site of rupture, type of treatment and maternal outcome as P>0.05. However, a significant relationship existed between family socioeconomic status and maternal outcome (P = 0.020), and between the presence of shock and maternal outcome (P = 0.001). Also, there was no significant relationship between the age, parity, family socio-economic status, booking status, presence of shock, type and site of rupture, type of treatment and foetal outcome as P>0.05.

CONCLUSION

The magnitude of uterine rupture was high in this study as in many other studies from low middle income countries. This trend, if not checkmated, will jeopardize the realisation of the first target of the third sustainable development goal, which tends to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. The risk factors for uterine rupture identified in this study are largely preventable. Women empowerment, health education, strengthening of primary, secondary and even tertiary health services to deliver emergency obstetric and newborn care, reduction in primary caesarean section rates, and appropriate antenatal care will reduce if not eliminate the occurrence of uterine rupture. Prompt diagnosis and management will further reduce the maternal and perinatal morbidity and mortality associated with uterine rupture.

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Conflicts of Interest
There are no conflicts of interest.

REFERENCES

1. Hofmeyr GJ, Say L, Gülmezoglu AM. WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. BJOG. 2005; 112: 1221-8
2. Adegbola O, Odeseye AK. Uterine rupture at Lagos University Teaching Hospital. J Clin Sci 2017; 14: 13-7
3. Osemwenkha PA, Osaikhuwuomwan JA. A 10-year review of uterine rupture and its outcome in the University of Benin Teaching Hospital, Benin City. Niger J Surg Sci 2016; 26:1-4
1. 4. Mbamara SU, Obiechina N, Eleje GU. An analysis of uterine rupture at the Nnamdi Azikiwe University Teaching Hospital Nnewi, Southeast Nigeria. Niger J Clin Pract 2012; 15: 448-52
4. Akaba GO, Onafowokan O, Offiong RA, Omonua K, Ekele BA. Uterine rupture: trends and feto-maternal outcome in a Nigerian teaching hospital. Niger J Med. 2013; 22: 304-8
5. Atombosoba EA, Udoye PE, Delta N, West O, Rivers H. Determinants and Factors influencing the prevalence of uterine rupture in a tertiary rural hospital in the Niger Delta: A 5-years retrospective study in NDUTH, Okolobiri. The Pharma Innovation J 2015; 4: 97-101
6. Eze JN, Anozie OB, Lawani OL, Ndukwe EO, Agwu UM, Obuna AJ. Evaluation of obstetricians' surgical decision making in the management of uterine rupture. BMC Pregnancy and Childbirth 2017; 17: 179
7. Olusanya O, Okpere E, Ezimokhai M. The impact of social class in voluntary fertility control in a developing country. West Afr Med J. 1985; 4: 205-212
8. Ezegwui HU, Nwogu-Ikojo EE. Trends in uterine rupture in Enugu, Nigeria. J Obstet Gynaecol 2005; 25: 260-2
9. Astatikie G, Limenih MA, Kebede M. Maternal and fetal outcomes of uterine rupture and factors associated with maternal death secondary to uterine rupture. BMC Pregnancy and Childbirth 2017; 17: 117
10. Zwart JJ, Richter JM, Ory F, de Vries JI, Bloemenkamp KW, van Roosemalen J. Uterine rupture in the Netherlands: A nationwide population-based cohort study. BJOG 2009; 116: 1069-78
11. Kieser KE, Baskett TF. A 10-years population-based study of uterine rupture. Obstet Gynecol 2002; 100: 749-53
12. Agu O, Yakasai I, Muhammed Z, Saidu A. Uterine rupture: A major contributor to obstetric morbidity in Kano, Northern Nigeria. Int J Gynecol Obstet 2009; 107: S39-96
13. Esike CO, Umeora OU, Eze JN, Igberase GO. Ruptured uterus: The unabating obstetric catastrophe in South Eastern Nigeria. Arch Gynecol Obstet 2011; 283: 993-7
14. Aboyeji AP, Ijaiya MD, Yahaya UR. Ruptured uterus: A study of 100 consecutive cases in Ilorin, Nigeria. J Obstet Gynaecol Res 2001; 27:341-8
15. Fabamwo A, Akinola O, Tayo A, Akpan E. Rupture of the gravid uterus: A never-ending obstetric disaster! The Ikeja experience. Internet J Gynaecol Obstet 2008; 10(2): 1-5
16. Amanael G, Mengiste MM. Ruptured uterus; eight-year retrospective analysis of causes and management outcome in Adigrat Hospital, Tigray Region, Ethiopia. J Health Dev 2002; 16: 241-5