

Original Research Article

Prevalence, risk factors and management of uterine rupture: a five-year review at a tertiary hospital in South-West Nigeria

Eniowo Akinbowale Romance¹, Eniowo Patricia Ireti²,
Bewaji Temitayo Olubunmi^{3*}, Otor Victor Otor³, Owa Olorunfemi Oludele¹,
Akinyugha Akintunde Opeoluwa⁴, Adetola Hammed Hassan⁵

¹Department of Obstetrics and Gynecology, Federal Medical Centre, Owo, Ondo State, Nigeria

²Department of Pediatrics, Mother and Child Hospital, Akure, Ondo state, Nigeria

³Department of Pediatrics, Federal Medical Centre, Owo, Ondo state, Nigeria

⁴Department of Family Medicine, Federal Medical Centre, Owo, Ondo state, Nigeria

⁵Department of Pediatrics, Ministry of Health, Sierra Leone

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*Correspondence:

Dr. Bewaji Temitayo Olubunmi,

E-mail: chosentee@gmail.com

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ABSTRACT

Background: Uterine rupture is a catastrophic event which poses severe risks to both the mother and the fetus. This study aimed to determine the prevalence of uterine rupture, the risk factors, and evaluate the maternal and fetal outcomes at Federal Medical Centre Owo.

Methods: A 5-year retrospective cross-sectional study of cases of uterine rupture that were managed at the Federal Medical Centre, Owo from 1st January, 2019 to 31st December, 2023. The case notes of patients were retrieved from the medical record department. The relevant data were collated using a structured questionnaire and transferred to a data sheet and analyzed using the IBM Statistical Product and Service Solutions (SPSS) version 27.

Results: The prevalence of uterine rupture in this study was 0.69% or 1 in 144 deliveries. The mean age of women was 28.7 years (SD=3.3). Unbooked patients (92.6%) accounted for most of the cases of uterine rupture. Previous cesarean section scar (66.7%) and prolonged obstructed labour (37.0%) were the common associated risk factors. Nine (33.3%) of women required hysterectomy, while 66.7% had repair with or without bilateral tubal ligation. Maternal death was 11.1%, while perinatal mortality was 70.4%.

Conclusions: The high maternal and perinatal mortality due to uterine rupture requires attention and the need to reduce the risk factors.

Keywords: Outcome, Prevalence, Risk factors, Uterine rupture

INTRODUCTION

Uterine rupture is a calamitous event during childbirth that is characterized by the tearing of the uterine wall which poses severe danger to both the mother and the fetus.¹ The incidence of uterine rupture varies globally and it is influenced by factors such as the rate of cesarean deliveries, the quality of obstetric care and the utilization of labour-enhancing agents.^{2,3} In high-income countries, the incidence is relatively low due to advanced healthcare systems and strict guidelines of labour management.

Conversely, in low-resource settings, the incidence is significantly higher due to limited access to quality healthcare and higher rates of cesarean sections with less rigorous postoperative care.^{4,5}

The prevalence of uterine rupture in high-income countries like the United States and Sweden is less than 0.1%.^{6,7} In Nigeria, uterine rupture remains a pressing concern in obstetric care, with prevalence rates ranging from 1.8 to 2.7 per 1,000 deliveries.⁸⁻¹⁰ Despite advancements in obstetric care, the prevalence and impact

of uterine rupture remain significant in low-resource settings like Nigeria. High maternal and perinatal mortality rates associated with uterine rupture in Nigeria underscore the urgent need for focused research and improved clinical practices.¹¹

The risk factors for uterine rupture include previous uterine scar especially cesarean section, injudicious use of oxytocin, induction of labour, prolonged obstructed labour among others.¹² The clinical features include sudden onset of abdominal pain, vaginal bleeding, cessation of uterine contractions, and fetal distress.¹²⁻¹⁵ Despite these risk factors and clinical manifestation, timely diagnosis is crucial for preventing adverse maternal and fetal outcomes. The mode of management depends on many factors including extent of tear, haemodynamic status of the women and the skill of the surgeon.

Despite the high prevalence of uterine rupture reported in Nigeria, there is dearth study on the prevalence, risk factors, and management of uterine rupture in southwest Nigeria. This critical data that can guide healthcare providers in identifying high-risk pregnancies and implementing preventive measures. Similarly, understanding the local context and specific risk factors can help tailor interventions to the needs of the population served. Hence, this study aimed to determine the prevalence of uterine rupture, identify the risk factors, and evaluate the maternal and fetal outcomes at Federal Medical Centre Owo. The insights gained from this study could lead to better maternal and fetal health outcomes, aligning with global efforts to reduce maternal mortality and improve obstetric care.

METHODS

Study location

This study was carried out at the obstetrics unit of Federal Medical Centre, Owo, Ondo state. The hospital is a tertiary centre located in Owo, Owo local government of Ondo State which has a population close to five hundred thousand inhabitants. Federal Medical Centre, Owo is a referral hospital to all the General and private hospitals in Ondo State and neighbouring Edo, Ekiti and Osun States. The hospital has two hundred and thirty-seven (237) beds with thirty obstetric beds. Labour cases are admitted in labour ward which has an adjoining theatre and Special Care Baby Unit.

Study design and population

This was a retrospective cross-sectional study. All women diagnosed pre-operatively to have uterine rupture with evident clinical features and with intraoperative findings of uterine rupture regardless of pre-operative clinical features were included into the study, while women with missing data were excluded from the study.

Study duration

The study took place from 1st January, 2019 to 31st December, 2023.

Data collection

Patients who were managed for uterine rupture were identified from the obstetrics records, labour ward delivery register and theatre records. Their case notes were retrieved from the medical record department. Relevant information to the objectives of this study were entered into a pre-designed structured questionnaire. The questionnaire was divided into five sections to collect relevant information as follows: Section A: sociodemographic characteristics such as age, parity, level of education, occupation, and tribe; Section B: risk factors of uterine rupture such as previous cesarean section, prolonged obstructed labour, and injudicious use of oxytocin; Section C: the clinical features of uterine rupture such as vaginal bleeding, abdominal pain, fetal bradycardia, maternal bradycardia, and pallor; Section D: the nature of rupture which is either complete or incomplete rupture; Section E: the procedure done in patients with uterine rupture such as uterine repair only, repair with bilateral tubal ligation, and hysterectomy; Section F: maternal and fetal outcome include maternal death, fetal death, and perinatal asphyxiated baby.

Ethical consideration

This study was approved by the Health Research and Ethics committee of the hospital. All information and data obtained from the study were treated with confidentiality and used solely for the purpose of the study.

Data analysis

Data were analysed using SPSS for Windows software version 27. Means and standard deviations, proportions and percentages were determined as appropriate. The consistency of the data input was verified by random checking and double entry. Categorical variables were presented in frequency and percentages while continuous variables were expressed in mean and standard deviation. Test of associations between categorical variables was done using the Chi-squared test, and 95% confidence intervals (CI) were documented. The association between two continuous variables was determined using the correlation test. A probability (p) value of less than 0.05 was considered significant.

RESULTS

During the study period, there was a total of 27 cases of uterine rupture out of 3889 deliveries giving a prevalence of 0.69% or 1 in 144 deliveries. The predominant age group was age 30-34 years accounting for 40.7% of the study population while the least age group was age 20-24 years (7.4%). The mean age was 28.7±3.3 years. Twenty-

two (81.5%) were multipara and the majority (92.6%) were unbooked. More than half (59.3%) had primary school certificate as the highest level of education and

more than three-quarter (77.8%) were self-employed. Fifteen (55.6%) were in low-social economic class while barely one-fifth (18.5%) were in upper social class.

Table 1: Sociodemographic characteristics of women managed for uterine rupture.

Characteristics	Frequency	Percentage
Age group (years)		
20-24	2	7.4
25-29	8	29.6
30-34	11	40.7
≥35	6	22.3
Age (mean±SD) in years	28.7±3.3	
Parity		
Nulliparous	1	3.7
Primiparous	1	3.7
Multipara	22	81.5
Grand-Multipara	3	11.1
Booking status		
Booked	2	7.4
Unbooked	25	92.6
Religion		
Christian	20	74.1
Islam	7	25.9
Level of education		
None	3	11.1
Primary	16	59.3
Secondary	7	25.9
Tertiary	1	3.7
Occupation		
Employed	6	22.2
Self-employed	21	77.8
Socio-economic status		
Low social class	15	55.6
Middle social class	7	25.9
Upper social class	5	18.5
Ethnicity		
Yoruba	10	37.0
Hausa/Fulani	5	18.5
Igbo	1	3.7
Others	1	3.7
Interpregnancy interval (months)		
1-6	2	7.4
7-12	8	29.7
13-18	9	33.3
19-24	4	14.8
≥24	4	14.8
Gestational Age (weeks)		
28-32	0	0
33-36	1	3.7
37-39	21	77.8
≥40	1	3.7
Unsure	4	14.8
Place of Delivery		
Primary Health facility	7	25.9
Secondary Health facility	3	11.1
TBA	10	37.0
Home	7	25.9
Total	27	100

The pregnancy interval was predominantly 13-18 months (33.3%) while the least pregnancy interval was 1-6 months (7.4%). More than three-quarter (77.8%) had term (37-39 weeks) gestational age while 4 (14.8%) were unsure of their gestational age. The main place of delivery was the traditional birth attendance (TBA) seen among 10 (37.0%) participants and the least was in the secondary health facility (11.1%). The sociodemographic characteristics is seen in Table 1.

Table 2: The risk factors for uterine rupture.

Variables	Frequency	Percentage
Previous cesarean section	18	66.7
Previous myomectomy	3	11.1
Prolonged obstructed labour	10	37.0
Manual removal of placenta	2	7.4
Grandmultiparity	3	11.1
Injudicious use of oxytocic	7	25.9
Induction of labour with misoprostol	6	22.2

The risk factors for uterine rupture are shown in Table 2. The major (66.7%) risk factor was previous cesarean section followed by prolonged obstructed labour (37.0%) while the least was manual removal of placenta (7.4%).

Table 3: Clinical presentation of patients with uterine rupture.

Variables	Frequency	Percentage
Vaginal bleeding	23	85.2
Abdominal pain	26	96.3
Loss of foetal station	19	70.4
Evidence of shock	13	48.1
Foetal bradycardia	21	77.8
Maternal tachycardia	26	96.3
Pallor	24	88.9
Abdominal distention	22	74.1

Abdominal pain and maternal tachycardia (96.3%) were the major clinical presentation seen among the participants, this was closely followed by pallor (88.9%) and vaginal bleeding (85.2%). The least presentation was shock which was seen among 13 (48.1%) of the participants. The clinical presentation of the participants is seen in Table 3.

Fourteen (51.9%) of the participants had complete uterine rupture and involvement of the lower uterine segment was seen in 74.0% of the patients. The anterior part (62.9%) was the major site ruptured while the lateral site involvement was seen in 3 (11.1%) of the participants.

The major procedure done for the uterine rupture was repair of the uterus which was done for 10 (37.0%) of the participants and subtotal hysterectomy was done for 9 (33.3%) of the participants. Table 4 shows the nature of uterine rupture and procedure done for the patients.

Table 4: Nature of rupture and procedure done in patients with uterine rupture.

Nature of rupture	Frequency	Percentage
Complete rupture	14	51.9
Incomplete rupture	13	48.1
Uterine segment		
Upper	7	26.0
Lower	20	74.0
Site of rupture		
Anterior	17	62.9
Posterior	7	26.0
Lateral	3	11.1
Procedure done		
Repair only	10	37.0
Repair with BTL	8	29.7
Subtotal hysterectomy	9	33.3
Total hysterectomy	0	0
Blood loss (ml)		
<2000	12	44.4
>2000	15	55.6

BTL= bilateral tubal ligation

Table 5: Maternal and fetal outcomes among women with uterine rupture.

Variables	Frequency	Percentage
Haemorrhage	27	100.0
Hypovolemic shock	20	74.0
Acute Kidney Injury	5	18.5
Need for blood transfusion	27	100.0
Need for hysterectomy	9	33.3
Sepsis	8	29.6
Maternal death	3	11.1
Perinatal asphyxia	9	33.3
Perinatal death	19	70.4

Table 5 reveals the maternal and fetal outcome among women with uterine rupture. All (100%) of the participants had hemorrhage and need for blood transfusion. Almost three-quarter (74.0%) had hypovolemic shock. There were 3 (11.1%) maternal death. For the neonate, nineteen (70.4%) were perinatal death while one-third (33.3%) had perinatal asphyxia.

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 parturient abound. The prevalence of uterine rupture in this study was 0.69%. This was lower compared to a study in Abuja which recorded 0.85%, 0.74% in Bayelsa, and 0.9% in Enugu but was higher than 0.62% reported in Nnewi, 0.61% in Lagos and 0.58% in Benin.^{10,16-20} The prevalence in developed countries was far lower, 0.06% in Netherlands and 0.03% in Canada.^{21,22} A study in Ethiopia had prevalence of 2.44%. The wide variation could be related to the demographic characteristics.²³

The majority (94.6%) 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.^{10,16-20} It is not surprising 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 our study was previous cesarean section scar. This was similar to the findings in Lagos, Benin, and Nnewi but was different from studies in Ilorin and Ethiopia where oxytocin use and obstructed labour were the major causes of uterine rupture respectively.^{9,18,19,20,23} Also, in a study in Calabar, obstructed labour was seen as the commonest cause. Previously, obstructed labour used to be the commonest risk factor but because of the global rise in cesarean section rate, coupled with the concept of obstetric transition, the tide seems to be changing towards previous uterine scar because of increasing cesarean section.

About one-third of patients in our study had hysterectomy as their mode of management. Though, the majority of the patients had repair with or without BTL done. This finding was comparable to that reported in Calabar where 74.3% had repair with or without bilateral tubal ligation while 23.1% had hysterectomy.²⁴

Maternal mortality was reported in 11.1% of the patients. This was in contrasts to a study in Benin where the case fatality rate was 2.2%, Calabar 2.6% and also in the Netherlands where there was no maternal death following uterine rupture.^{20,21,24} The maternal case fatality rate reported in a study in Bida (18.8%), Kaduna (22.0%) and Ekiti, (18.8%) were higher than what was reported in our study.^{14,26,27} This might not be unrelated to late presentation from the referring centres with patients being moribund at the time of presentation.

Perinatal mortality was recorded in 70.4% of the patients with about 33.3% requiring neonatal admission for perinatal asphyxia. This finding in our study was higher than the perinatal mortality reported in Benin, 61.9% but lower than study in Calabar and Bida which was 82.05% and 87.5% respectively.^{14,24} Very low perinatal mortality (18-22%) was reported in studies from developed countries.^{21,25} This reflects the level of development in healthcare delivery in developed countries compared with developing countries.

CONCLUSION

In conclusion, the prevalence of uterine rupture is high in southwest Nigeria which calls for urgent intervention to reduce this preventable disease. The commonest risk factor was presence of cesarean section scar and the major management was repair with or without bilateral tubal ligation. The high maternal and perinatal mortality is of great concern and needs intervention.

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REFERENCES

1. Obed SA. Obstructed labour. In: Kwawukume EY, Ekele BA, Danso KA, Emuveyan EE, eds. *Comprehensive Obstetrics in the Tropics*. 2nd Ed. Accra-North, Ghana. Assemblies of God Literature centre Ltd; 2015:106-113.
2. Smith JG, Mertz HL, Merrill DC. Identifying risk factors for uterine rupture. *Clin Perinatol*. 2008;35(1):85-99.
3. Ronel D, Wiznitzer A, Sergienko R, Zlotnik A, Sheiner E. Trends, risk factors and pregnancy outcome in women with uterine rupture. *Arch Gynecol Obstet*. 2012;285:317-21.
4. Ekpo AA, Udoma EJ, Abasiattai AM, Bassey EA. Uterine rupture in a Nigerian tertiary hospital: a ten-year review. *Trop J Obstet Gynecol*. 2018;35(2):168-72.
5. Onoh RC, Eze JN, Onyebuchi AK, Lawani LO, Ezeonu PO, Nkwo PO. Uterine rupture during childbirth in Abakaliki, Nigeria: A five-year review. *Niger J Clin Pract*. 2014;17(4):448-52.
6. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med*. 2004;351(25):2581-9.
7. Kaczmarczyk M, Sparen P, Terry P, Cnattingius S, Ekblom A. Risk factors for uterine rupture and neonatal consequences of uterine rupture: a population-based study of successive pregnancies in Sweden. *BJOG*. 2007; 114(11), 1208-14.
8. Ezechi OC, Mabayoje P, Obiesie LO. Uterine rupture in Lagos: prevalence, risk factors and outcome. *Acta Obstet Gynecol Scand*. 2009;88(4):402-6.
9. Fawole AO, Omokanye LO, Adegbola O. Uterine rupture during pregnancy and labour in Ilorin, Nigeria. *Niger J Clin Pract*. 2012;15(4):448-52.
10. Akaba GO, Onafowokan O, Offiong RA, Omonua K, Ekele BA. Uterine rupture: trends and foeto-maternal outcome in a Nigerian teaching hospital. *Niger J Med*. 2013;22(4):304-8.
11. Anzaku AS, Musa J. Uterine rupture in a Nigerian tertiary hospital: prevalence, risk factors, and

- outcomes. *Int J Gynecol Obstet*. 2017;139(3):347-52.
12. Igwegbe AO, Eleje GU, Udegbonam OI. Risk factors and perinatal outcome of uterine rupture in a low-resource setting. *Niger Med J*. 2013;54(6):415-9.
13. Eze JN, Anozie OB, Lawani OL, Ndukwe EO, Agwu UM, Obuna JA. Evaluation of obstetricians' surgical decision making in the management of uterine rupture. *BMC Pregnancy Childbirth*. 2017;17:1-8.
14. Adewale FB, Adeniran AS, Ijaiya MA. Clinical profile of patients with uterine rupture at a tertiary facility in N. Central Nigeria. *Port Harcourt Med J*. 2019;13(1):32-6.
15. Dattijo LM, Umar NI, Yusuf BM. Ruptured uterus in Azare, north eastern Nigeria. *Jos J Med*. 2011;5(2):17-20.
16. Allagoa DO, Oriji PC, Wagio TJ, Briggs DC, Oguche IO, Mbooh TR, et al. A 5-year review of uterine rupture in the Federal Medical Centre, Yenagoa, South-South Nigeria. *Int J Res Rep Gynecol*. 2021;4(3):27-35.
17. Ezegwui HU, Nwogu-Ikojo EE. Trends in uterine rupture in Enugu, Nigeria. *J Obstet Gynaecol*. 2005;25(3):260-2.
18. Mbamara SU, Obiechina NJ, Eleje GU. An analysis of uterine rupture at the Nnamdi Azikiwe University teaching hospital Nnewi, Southeast Nigeria. *Niger J Clin Pract*. 2012;15(4):448-52.
19. Okusanya BO, Isah AY, Ibe J. Maternal and fetal outcomes in cases of uterine rupture: an analysis of 74 cases. *J Matern Fet Neonat Med*. 2014;27(8):767-70.
20. 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):1-4.
21. Zwart JJ, Richters JM, Öry F, De Vries JI, Bloemenkamp KW, Van Roosmalen J. Uterine rupture in the Netherlands: a nationwide population-based cohort study. *BJOG*. 2009;116(8):1069-80.
22. Figueiró-Filho EA, Gomez JM, Farine D. Risk Factors associated with uterine rupture and dehiscence: a cross-sectional Canadian study. *Revist Brasil Ginecol Obstet*. 2022;43:820-5.
23. Tadele A, Gelagay AA, Abera GB. Uterine rupture and its associated factors among women who gave birth in Debre Markos Referral Hospital, East Gojjam Zone, Northwest Ethiopia. *BMC Pregnancy Childbirth*. 2017;17(1):10.
24. Odusolu PO, Uduigwomen PA, Eyong EM, Okpebri KO, Egbe JJ. Uterine rupture at the University of Calabar Teaching Hospital, Calabar; Nigeria: a six-year review. *Int J Reprod Contracept Obstet Gynecol*. 2020;11(3):710.
25. Savukyne E, Bykovaite-Stankeviciene R, Machtejeviene E, Nadisauskiene R, Maciuleviciene R. Symptomatic uterine rupture: a fifteen-year review. *Medicina*. 2020; 56(11):574.
26. Onwuhafua A, Onwuhafua D, Omekara R, Ibrahim P. Ruptured uterus in Kaduna, Nigeria: a six-year review. *J Obstet Gynaecol*. 1998;18(5):419-23.
27. Aduloju O, Akintayo A, Aduloju T. Uterine rupture in Ekiti State University Teaching Hospital, Ado-Ekiti: a review of presentation and outcome of management. *Int Med*. 2020;2:28.

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