

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20215071>

Original Research Article

Circumstances of occurrence of uterine ruptures treated in a national reference maternity department in Benin from 2015 to 2019

Ogourinde M. Ogoudjobi^{1*}, Patrice D. Dangbemey¹, Achille A. A. Obossou², Abdel S. Saleh³,
Fiacre P. D. Hounnouvi¹, Christiane Tshabu-Aguemon¹, Justin L. Denakpo¹

¹Faculty of Health Sciences, University of Abomey-Calavi, Cotonou, Benin

²Faculty of Medicine, University of Parakou, Benin

³Mother and Child Hospital of N'Djamena, Tchad

Received: 21 November 2021

Accepted: 09 December 2021

***Correspondence:**

Dr. Ogourinde M. Ogoudjobi,

E-mail: mogoudjobi2014@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Uterine rupture is an obstetric disaster and a major concern for the obstetrician in an African environment because of the insufficient technical support. Objective of current study was to study the circumstances of occurrence of uterine ruptures.

Methods: The study was carried out at the university clinic of obstetrics and gynecology of CNHU-HKM in Cotonou. This was a descriptive and cross-sectional study with retrospective collection from January 1, 2015 to December 31, 2019. We made an exhaustive recruitment of all the patients treated in the department for uterine rupture during the study period. The study variables were socio-demographic and clinical characteristics. Data confidentiality and the anonymity of women were respected.

Results: The study involved 85 cases of uterine rupture. Patients were relatively young with a mean age of 30±15.02 years. Women profile was that of populations with unfavorable socio-economic conditions. The circumstances of discovery were multiparity equal to or greater than 4 (43.5%), scarred uterus (32.9%), non-use of partogram (97.6%), osseous dystocia (10.9%) and fetal dystocia with fetal macrosomia (21.2%) and dystocic presentation (15.3%).

Conclusions: This study identified epidemiological and clinical characteristics related to the circumstances of known uterine ruptures occurrence. A preventive and anticipatory oriented approach can reduce the frequency of that obstetric tragedy, the adequate management of which is often uncertain in Benin.

Keywords: Uterine rupture, prevalence, circumstances of occurrence, Cotonou

INTRODUCTION

Uterine rupture is a non-surgical complete or incomplete solution of continuity of a gravid uterus wall involving its body.¹ It is an obstetric complication of extreme severity with a high risk of maternal and fetal mortality. In fact, in sub-Saharan Africa, uterine rupture contributes about 13% of maternal mortality and 74 to 98% of perinatal mortality.² In Benin, uterine rupture represents one of the main maternal death causes at a rate of 7.1%.³ While it is exceptional in industrialized countries, uterine rupture is

a problem of major concern in low- and middle-income countries because of its high frequency and insufficient technical support for optimal management.¹ Under these conditions, it requires an anticipatory attitude, which requires a better knowledge of circumstances of uterine ruptures occurrence through their epidemiological and clinical characteristics.

This work has been carried out at the university clinic of obstetrics and gynecology (CUGO) of Hubert Koutoukou MAGA national university hospital center (CNHU-HKM) in Cotonou with the aim of contributing

to the reduction of maternal morbidity and mortality related to uterine rupture in Benin.

Objectives

An objective of current study was to study the circumstances of occurrence of uterine ruptures treated at university clinic of obstetrics and gynecology of CNHU-HKM in Cotonou from 2015 to 2017.

METHODS

The study was carried out at the university clinic of gynecology and obstetrics (CUGO) of National hospital and university center Hubert Koutougou MAGA (CNHU-HKM), a national reference maternity department located in Cotonou in southern Benin. This was a descriptive and cross-sectional study with retrospective data collection over a 5 year period from 1 January 2015 to 31 December 2019. The sampling was non-probability with exhaustive recruitment of all uterine rupture cases treated in the department during the study period. Patients with incomplete medical records were excluded from the study. The variables studied were socio-demographic and clinical characteristics of patients. Data collection consisted of examining obstetric records using a form developed for this purpose. Data were processed and analyzed using EPI-info 7 software. The anonymity of patients and information confidentiality were respected.

RESULTS

Prevalence of uterine rupture

The study involved 85 cases of uterine ruptures for a total of 16,150 deliveries, or a frequency of 0.5%; which corresponds to one case for 200 deliveries.

Socio-demographic characteristics of patients

The mean age of patients was 30±15.02 years and the majority (58.7%) were between 25 and 34 years old. Housewives (54.3%) were predominant and mostly out-of-school (82.6%).

Conditions of admission

In about 9 out of 10 cases (93.5%), patients were referred from peripheral health facilities and admitted sometimes with a state of shock (37%). The means of transport used were ambulance (58.7%), motorcycle taxi (19.6%), public transport (15.2%) or personal car (6.5%) (Table 1).

Clinical characteristics

Most of patients in our study were multiparous (43.5%) with an average parity of 3.72 deliveries (1 to 6 deliveries). In 3 out of 10 cases, the rupture occurred in a scarred uterus with a short birth interval under 06 months in the majority of cases (60.7%). Cases of uterine rupture

have occurred in the context of mechanical dystocia. The dystocia was either osseous (10.9%) or fetal (21.2%) with a fetal macrosomia (47.8%) or dystocic presentation (15.3%) (Table 2).

Table 1: Distribution of patients treated at CUGO from 2015 to 2019 for uterine rupture according to their socio-demographic characteristics (n=85).

Parameters	N	%
Age (years)		
<25	20	23.9
25-34	50	58.7
35 and more	15	17.4
Profession		
Housewives	47	54.3
Retailers/traders	18	21.7
Artisans	18	21.7
Officials	02	02.3
Level of education		
Out-of-school	70	82.6
Secondary	09	10.9
Higher	06	06.5

Table 2: Distribution of patients treated at CUGO from 2015 to 2019 for uterine rupture according to their clinical characteristics (n=85).

Parameters	N	%
Gestivity		
Primigravida(0)	0	0
Paucigravida (2-3)	30	35.6
Multigravida (4 more)	55	64.4
Parity		
Nulliparous (0)	04	04.3
Primiparous (1)	18	21.7
Pauciparous(2-3)	26	30.4
Multiparous (4 and more)	37	43.5
Scarred uterus	28	32.9
Birth interval (months) (N=28)		
<6	17	60.7
≥6	11	39.3
Gestational age (WA)		
28-37	20	23.5
≥ 37	65	76.5
Absence of partograph	83	97.6
Mechanical dystocia (average)	-	18.5
Fetal dystocia (average)		
Macrosomia	18	21.2
Breech presentation	09	10.9
Transverse presentation	04	4.4
Osseous dystocia	09	10.9
Oxytocin infusion	13	15.3
Cervical ripening with misoprostol	02	02.4

Maternal and fetal prognosis

All the patients underwent a laparotomy under a general anesthesia, supervised by pre and postoperative resuscitation. Treatment included hysterorrhaphy (69.6%) or hemostatic hysterectomy (30.4%). Blood transfusion was performed in most cases (80.4%). Maternal fatality rate was 5% for a stillbirth rate at 87%.

DISCUSSION

Age of patients

In our study conducted in Cotonou in the south of Benin, patients were relatively young with a mean age of 30 ± 15.02 years. The most represented age group was 25-34 years (54.3%). 25-34 age group is the optimal period for genital activity in our country. This result, identical to that found at Parakou in northern Benin in 2015, is consistent with those reported in Ivory Coast, Niger, Senegal and Cameroon. On the other hand, in studies conducted in Tunisia, Italy and United States, uterine rupture occurred in pregnant women of advanced age equal to or greater than 35 years.⁴⁻¹¹

Socio-economic status

Most of the patients in our study were out-of-school (82.6%) with a precarious activity (housewives, retailers, artisans) (97.7%). In Benin, those women have a low socio-economic status, which can limit the use of emergency antenatal and obstetric care. This could constitute a risk factor for uterine ruptures as reported in the literature.^{2, 8, 9, 12, 13} The low socioeconomic level poses a problem of access to quality care in our African countries where health insurance is struggling to be operational.¹

Parity

Multiparity greater than 4 deliveries is found in most studies as a risk factor for uterine rupture.^{2, 8, 9, 14, 15} This is probably due to the weakening of the uterine musculature after several pregnancies by alteration of the elastic tissue, making it fibrous and less toned. In our study, multiparous patients were the most represented with a proportion of 43.5%. This result is similar to that reported at Parakou in northern Benin by Kabibou et al.⁴

Scarred uterus

Uterine rupture on a scarred uterus was observed in our study with a rate of 32.9% against 40.9% found by Adisso in the same department in 2000.¹⁶ The decrease in this rate between 2000 and 2017 would probably be linked to a better management of patients with a scarred uterus in order to anticipate uterine rupture more effectively. In developed countries such as France, United States and Canada, the presence of a uterine scar is the main risk factor for uterine rupture.¹⁶⁻¹⁹ The latter

occurring in 0.2% to 0.8% of vaginal birth attempts after a cesarean section. Moreover, in countries with limited resources, uterine rupture after a cesarean delivery is more and more frequent because women have more and more access to emergency obstetric care through free policies implemented by several governments.¹² In two meta-analysis conducted by Alemu et al (OR 3.23 95% CI 2.12-4.92) and Desta et al (OR 9.95 95% CI 3.09-32.0) relating respectively to 12 and 16 different studies, the history of cesarean section was confirmed as a risk factor for uterine rupture.^{2, 20} This risk increases with a short birth interval.^{2, 21, 22}

Other circumstances

Other parameters, including both osseous and fetal dystocia and the use of uterotonics such as oxytocin and misoprostol are factors associated with uterine rupture reported in several studies. In our study, osseous dystocia accounted for 10.9% of uterine rupture cases.^{2, 7, 12, 20, 23} Fetal dystocia type of fetal macrosomia (21.2%) and dystocic presentation (15.3%) were also found. The use of uterotonics through oxytocin infusion (16.5%), whether or not preceded by cervical ripening with misoprostol (2.4%). Despite national and international recommendations on the partograph in reducing maternal morbidity and mortality, we noted the non-use of that tool in 97.8% of uterine rupture cases.^{24, 25} In a meta-analysis by Alemu et al from 12 studies in Ethiopia, it was reported that the use of the partograph significantly reduced the frequency of uterine rupture (OR 0.12 95% CI 0.09-0.17).^{24, 25} A good monitoring of the labor allows to recognize a pre-rupture of the uterus and an abnormality of the fetal heart rhythm, which associated with unusual pelvic pain, suggests the imminence of a uterine rupture of the type of recurrent late decelerations and are an early sign of impending uterine rupture.¹⁷ The non-use of partograms could be the cause of a delay in the diagnosis among patients who, in our study, were most often referred from peripheral health facilities (93.5%) at the stage of uterine rupture with a state of shock (37%).

CONCLUSION

Uterine rupture remains a frequent obstetric situation at university clinic of obstetrics and gynecology in Cotonou. Most of the circumstances of occurrence reported in the literature were found in this study. Preventive and anticipatory actions can reduce the frequency of uterine ruptures, the adequate management of which is often uncertain in Benin due to a lack of appropriate technical facilities and/or blood products.

ACKNOWLEDGEMENTS

Authors would like to thank the administrative authorities and staff members of university clinic of gynecology and obstetrics of National hospital and university center Hubert Koutougou MAGA at Cotonou.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Amate P, Luton D. Rupture utérine pendant la grossesse. *Encyclopédie Médico-Chirurgicale (EMC) Obstétrique.* EM Consulte. 2014;14:10.
2. Desta M, Amha H, Anteneh Bishaw K, Adane F, Assemie MA. Prevalence and predictors of uterine rupture among Ethiopian women: A systematic review and meta-analysis. *Tessema G, éditeur. PLOS ONE.* 2020;15(11):e0240675.
3. Ministère de la Santé du Bénin. Plan Opérationnel de réduction de la mortalité maternelle néonatale Bénin. PO-RMMN 2018-2022. Available at: <https://www.prb.org/wp-content/uploads/2020/06/Benin-Plan-Operationnel-de-Reduction-de-la-Mortalite-Maternelle-et-Neonatale-au-Benin.pdf>. Accessed on 20 September 2021.
4. Kabibou S, Sambo BT, Tchaou B, Ri S, Ji D, Lokossou A, et al. Les ruptures utérines à l'hôpital de référence de Parakou au Bénin: Aspects épidémiologiques, thérapeutiques et pronostiques. *Eur Sci J.* 11(24):149-60.
5. Akotionga M, Lankoande J, Gue MJ, Koné B. Ruptures utérines à la maternité du CHN-YO: Aspects épidémiologiques et cliniques. *Médecine d'Afrique Noire.* 1998;45(8/9):508-10.
6. Diallo F, Idi N, Vangeenderhuysen C, Baraka D, Hadiza I, Sahabi. La rupture utérine à la maternité centrale de référence de Niamey (Niger): Aspects épidémiologiques et stratégies de prévention. *Médecine d'Afrique Noire.* 1998;45(5):310-5.
7. Diouf A, Guèye M, N'diaye, Thiam O, Mbaye M, Wade M. Predictive factors of Uterine Rupture. *Int J Reprod Med Sex Health.* 2020;2:01-05.
8. Fouedjio JH, Dingom MAN, Ymele FF, Tsuala JF. Les Ruptures Utérines dans Deux Hôpitaux Universitaires de la Ville de Yaoundé: Aspects Cliniques et Thérapeutiques. *Health Sci Dis.* 2016,17(3):36-40.
9. Ahmadi S, Nouira M, Bibi M, Boughuizane S, Saidi H, Chaib A, et al. Rupture utérine sur utérus sain gravide. À propos de 28 cas. *Gynécologie Obstétrique Fertil.* 2003;31(9):713-7.
10. Vercellini P, Parazzini F, Pietropaolo G, Cipriani S, Frattaruolo MP, Fedele L. Pregnancy outcome in women with peritoneal, ovarian and rectovaginal endometriosis: a retrospective cohort study. *BJOG Int J Obstet Gynaecol.* 2012;119(12):1538-43.
11. Shipp TD, Zelop C, Repke JT, Cohen A, Caughey AB, Lieberman E. The association of maternal age and symptomatic uterine rupture during a trial of labor after prior cesarean delivery. *Obstet Gynecol.* avr 2002;99(4):585-8.
12. Berhe Y, Wall LL. Uterine Rupture in Resource-Poor Countries. *Obstet Gynecol Surv.* nov 2014;69(11):695-707.
13. Dadi TL, Yarinbab TE. Estimates of Uterine Rupture Bad Outcomes Using Propensity Score and Determinants of Uterine Rupture in Mizan-Tepi University Teaching Hospital: Case Control Study. *J Pregnancy.* 2017;2017:6517015.
14. Abebe F, Mannekulih E, Megerse A, Idris A, Legese T. Determinants of uterine rupture among cases of Adama city public and private hospitals, Oromia, Ethiopia: a case control study. *Reprod Health.* 2018; 15(1):161.
15. Gabkika Bray Madouea. Uterine ruptures: Epidemiological aspects and prognosis at N'djamena mother and child hospital. *South Sudan Med J.* 2015;8(4):76-9.
16. Adisso S, Takpara I, Komongui DG, Gbedze KD, Perrin R-X, Alihonou E. Aspects actuels de la rupture utérine. *RAMUR.* 2000;5(2):52-63.
17. Parant O. Rupture utérine : prédiction, diagnostic et prise en charge. *J Gyn Obst Biol Reprod.* 2012;41(8):803-16.
18. 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.
19. Ravasia DJ, Wood SL, Pollard JK. Uterine rupture during induced trial of labor among women with previous cesarean delivery. *Am J Obstet Gynecol.* 2000;183(5):1176-9.
20. Alemu AA, Bitew MS, Gelaw KA, Zeleke LB, Kassa GM. Prevalence and determinants of uterine rupture in Ethiopia: a systematic review and meta-analysis. *Sci Rep.* 2020;10(1):17603.
21. Bujold E, Gauthier RJ. Risk of uterine rupture associated with an interdelivery interval between 18 and 24 Months. *Obstet Gynecol.* 2010;115(5):1003-6.
22. Al-Zirqi I, Daltveit AK, Forsén L, Stray-Pedersen B, Vangen S. Risk factors for complete uterine rupture. *Am J Obstet Gynecol.* 2017;216(2):165.e1-165.
23. Wang Y-L, Su T-H. Obstetric Uterine rupture of the unscarred uterus: a twenty-year clinical analysis. *Gynecol Obstet Invest.* 2006;62(3):131-5.
24. Azandegbe N, Testa J, Makoutode M. Évaluation de l'utilisation du partogramme au Bénin. *Sante.* 2004;14(4):251-5.
25. Lansac J, Carbone B, Pierre F. Le partogramme : un outil toujours actuel pour évaluer la qualité des soins en obstétrique. *J Gynécol Obstét Biol Reprod.* 2007; 36(1):2-7.

Cite this article as: Ogoudjobi OM, Dangbemey PD, Obossou AAA, Saleh AS, Hounnouvi FPD, Tshabu-Aguemon C, et al. Circumstances of occurrence of uterine ruptures treated in a national reference maternity department in Benin from 2015 to 2019. *Int J Reprod Contracept Obstet Gynecol* 2022;11:20-3.