

Ruptured uterus in rural Uganda: prevalence, predisposing factors and outcomes

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ABSTRACT

Introduction: A ruptured uterus is a life-threatening obstetric complication that remains a major public health concern in low-income countries, particularly in Africa. It is a significant cause of maternal and perinatal morbidity and mortality. In Uganda, the prevalence remains high largely because most women do not deliver in health facilities. Further review of this problem may be helpful in the development of appropriate preventive strategies.

Methods: A five-year retrospective review of all cases of ruptured uterus admitted to Mityana Hospital, Uganda from January 1, 2003 to December 31, 2007 was conducted.

Results: Out of 14,656 deliveries, 73 cases of ruptured uterus were recorded, resulting in a ratio of 1 in 200. The highest incidence was in patients aged 20–24 years old, of parity 1–4 and residing in the Kassanda sub-county. Other predisposing factors included not attending antenatal care (67.1 percent), which was associated with rupture at home or with traditional birth attendants (TBAs) (Odds Ratio [OR] 6.29; 95 percent confidence interval [CI] 2.01–19.67), obstructed or prolonged labour (68.5 percent), which increased the likelihood of rupture before admission (OR 3.28; 95 percent CI 1.05–10.26), residing more than 10 kilometres from the hospital (64.4 percent), which increased the likelihood of rupture before admission (OR 3.62; 95 percent CI 1.16–11.32) and the existence of previous scars (19.2 percent), which decreased the likelihood of rupture before admission (OR 0.24; 95 percent CI 0.07–0.81). All the women had surgery, of which 14 percent had a total hysterectomy, 22 percent had a subtotal hysterectomy, 25 percent had a repair and bilateral tubal ligation, and 39 percent had a repair only. Eight percent of the women died, while seven percent of the babies were born alive.

Conclusions: Uterine rupture is a disturbing problem in Uganda. There is a need to put in place a functional referral system for pregnant women that links the community and TBAs to the hospital, and a need to intensify information, education and communication programmes to encourage women and their partners to use the reproductive health services that are available to them. In addition, greater accessibility to equipped health facilities, the use of a partogram to monitor labour and timely interventions will go a long way to reducing uterine rupture.

Keywords: ruptured uterus, Kassanda, traditional birth attendants, previous scar, parity 1–4, prolonged labour

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INTRODUCTION

A ruptured uterus is a life-threatening obstetric complication of labour that contributes significantly to maternal and perinatal mortality.⁽¹⁻³⁾ It is usually a result of poorly managed labour. It is associated with immediate complications, such as severe anaemia, shock and a ruptured bladder. Those who survive may experience long-term complications, such as vesicovaginal fistula, foot drop and a subsequent inability to deliver children.⁽⁴⁻⁶⁾

The prevalence of uterine rupture varies from country to country. While it is rare in high-income countries,⁽⁶⁻⁸⁾ it remains a common occurrence in low-income countries, particularly in Africa.⁽⁹⁻¹¹⁾ Most cases of uterine rupture that occur in developing countries are preventable. The underlying factors for rupture include delays in seeking appropriate care at the onset of labour, a poor or non-existent referral system, non-attendance of antenatal care, and delayed interventions due to a combination of factors, especially the lack of skilled human resources and medical consumables.⁽¹¹⁻¹³⁾

Uganda is a country that continues to grapple with the challenges of a ruptured uterus.⁽¹⁰⁻¹⁴⁾ Some of the risk factors that have been identified include low

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socioeconomic status, the delivery of babies weighing more than 3.5 kg, being HIV-positive and previous caesarian section.⁽¹⁴⁾ While oxytocin stimulation and previous uterine scars have been found to be the main direct causes in high-income countries,⁽¹⁵⁻¹⁷⁾ obstructed labour is the main culprit in low-income and developing countries such as Uganda.^(18,19) The type of intervention and care provided varies in different countries, depending on the availability of expertise and facilities, and hence resulting in the varying materno-foetal outcomes.⁽²⁰⁾

This study aimed to determine the incidence, predisposing factors, interventions and materno-foetal outcomes of ruptured uterus seen at the Mityana Hospital, Uganda. To the best of the author's knowledge, no such study has ever been conducted in this part of the country.

METHODS

This was a cross-sectional study. A five-year retrospective review of all cases of ruptured uterus admitted to Mityana Hospital between January 1, 2003 and December 31, 2007, was conducted. The data was abstracted from the maternity ward and operating theatre registers as well as from the patients' case files at the hospital medical records office. Information on the patients' age, tribe, address by sub-county, occupation, religion, parity, previous caesarian section, antenatal care attendance, estimated distance of residence from the hospital, place of intrapartum care, subsequent rupture, type of surgical intervention (total or sub-total hysterectomy, repair without bilateral tubal ligation [BTL] or repair with BTL), maternal and foetal outcomes, length of postoperative hospital stay and other relevant information were collected. The total number of cases of ruptured uterus and deliveries from the maternity ward admission register was validated with the annual Health Management Information System (HMIS) reports as summarised by the records officer and stored in the hospital records office. The data obtained was entered and analysed using the Statistical Package for Social Sciences version 12.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

During the five-year study period, there were 14,656 deliveries in the hospital and 73 cases of ruptured uterus were admitted and managed, resulting in an overall incidence rate of 0.5% or one in 200 deliveries. The patients were aged 16–43 years (mean 26 ± standard deviation [SD] 6.0). The highest incidence of ruptured uterus (27 out of 73 patients) was in the 20–24 year

Table I. Sociodemographic characteristics of gravid women admitted with a ruptured uterus to the Mityana Hospital, Uganda.

Variable	No. (%)
Age	
15–19	5 (7.0)
20–24	27 (37.0)
25–29	19 (26.0)
30–34	13 (18.0)
35–39	7 (10.0)
40–44	2 (3.0)
Tribe	
Baganda	53 (72.6)
Non-Baganda	20 (27.4)
Sub-county	
Kassanda	31 (42.5)
Kakindu	9 (12.3)
Manyi	11 (15.1)
Bulera	7 (9.6)
Malangala	5 (6.8)
Busimbi	6 (8.2)
Mityana town	4 (5.5)
Occupation	
Housewife	69 (95.0)
Employed outside the home	4 (5.0)
Religion	
Muslim	11 (15.0)
Catholic	29 (40.0)
Anglican	20 (27.0)
Not indicated	13 (18.0)
Parity	
0	3 (4.1)
1–2	27 (37.0)
3–4	19 (26.0)
5–6	13 (17.8)
7–8	6 (8.2)
9–10	4 (5.5)
11–12	1 (1.4)

age group, and the lowest incidence (2 out of 73 patients) was in the 40–44 year old age group. 72.6% of the women were Baganda by tribe and 95% were housewives. Most (42.5%) of the cases came from the Kassanda sub-county. 49 (82%) women were Christians and the rest were Muslims. The parity of the women ranged from 0–11 (4 ± 2.5) (Table I).

Table II shows that the majority (67.1%) of the women did not attend antenatal care. Non-attendance of antenatal care was associated with a rupture of the uterus at home, with traditional birth attendants (TBAs) or at lower level health centres (odds ratio [OR] 6.29, 95% confidence interval [CI] 2.01–19.67). Labour was obstructed or prolonged for 50 (68.5%) women, and these were more likely to encounter a ruptured uterus before admission to the hospital (OR 3.28, 95% CI 1.05–10.26).

Parity 1–4 were the most affected (63.0%), and were most likely to have a ruptured uterus before admission (OR 4.82, 95% CI 1.52–15.29). In addition, 64.4% of the women lived more than 10 kilometres away from the

Table II. Relationship between the identified predisposing factors and place of intrapartum care/rupture.

Predisposing factor	No. of patients		Total no. (%)	OR (95% CI)
	Ruptured before admission [†]	Ruptured in hospital		
Attended antenatal care				
Yes	44	5	49 (67.1)	6.29 (2.01–19.67)*
No	14	10	24 (32.9)	
Obstructed/prolonged labour				
Yes	43	7	50 (68.5)	3.28 (1.05–10.26)*
No	15	8	23 (31.5)	
Para 1–4				
Yes	41	5	46 (63.0)	4.82 (1.52–15.29)*
No	17	10	27 (37.0)	
Resides more than 10 km from hospital				
Yes	41	6	47 (64.4)	3.62 (1.16–11.32)*
No	17	9	26 (35.6)	
Previous uterine scar				
Yes	8	6	14 (19.2)	0.24 (0.07–0.81)*
No	50	9	59 (80.8)	

* Statistically significant

[†] Intrapartum care at home, traditional birth attendants or health centres

hospital and were more likely to rupture at home, with TBAs or at lower level health centres (OR 3.62, 95% CI 1.16–11.32). 14 (19.2%) women had a previous uterine scar. Those women who had delivered by caesarian section in previous pregnancies were less likely to have a ruptured uterus before admission to the hospital (OR 0.24, 95% CI 0.07–0.81).

Total abdominal hysterectomy was done in 10 (14%) women, subtotal hysterectomy in 16 (22%), uterine repair with BTL in 18 (25%) and uterine repair without BTL in 29 (39%) women. 67 (92%) women improved, while 6 died, giving a case fatality rate of 8%. The average length of postoperative stay was 14 days in 93% of the cases. Other complications included severe anaemia (n = 59, 81%), sepsis (n = 25, 34%), obturator nerve palsy/foot drop (n = 8, 11%) and vesico-vaginal fistula (VVF) (n = 2, 3%). 58 (79%) babies were fresh stillbirths (FSB), 10 (14%) were macerated stillbirths (MSB), and only 5 (7%) were delivered alive.

DISCUSSION

One limitation of this study was that secondary data from the patients' records were used. However, the use of three sources of data for each case: maternity ward registers, operating theatre records and patients' case notes, minimised the possibility of information bias that could arise as a result of incomplete data. Despite this limitation, useful information regarding uterine rupture was generated by this report.

This study showed that the incidence of ruptured uterus in this part of Uganda was 1:200 deliveries, much lower than in some studies,^(2–10) but higher than the 1:6331 deliveries reported from Singapore.⁽¹⁶⁾ This

clearly shows that ruptured uterus is still a significant contributor to maternal morbidity and mortality in Uganda. Moreover, those who were most affected were young women between 20 and 24 years of age and of parity one to four. This finding is surprising, as most other studies have found that grand multipara (five or more previous deliveries) women are more prone to ruptured uterus.^(5–10) This may be an indicator of the unique socio-cultural barriers faced by these young women in accessing skilled care. It also suggests how prolonged the labour had been, since some of the babies were already macerated by the time of surgery. It seems that these patients would try as far as possible to deliver at home or at TBAs. As such, they experienced severely obstructed and mismanaged labour. This may also be a reflection of the overall utilisation of reproductive health services. Only 32% of women in Uganda deliver in health units under skilled health workers.⁽²¹⁾

The majority of patients did not receive antenatal care, and as such, were more likely to attempt delivery under unskilled hands either at home or TBAs. Antenatal care coverage in Uganda is generally still quite low. While 92% of the women attended at least one visit during their pregnancy, only 40% attended the complete recommended four visits.⁽²²⁾ Under such circumstances, it was not possible to detect any recognisable risk factors during the antenatal period. As a result, most of the women experienced obstructed and prolonged labour which was unrecognised by unskilled people, and subsequently progressed to rupture.

Almost half of the patients came from the sub-county of Kassanda. This area is about 38 kilometres from the hospital, which is the only health facility

where surgical care is provided. The only health centre in the area is largely non-functional (Health Centre Four is supposed to have a doctor and an operating theatre). The sub-county also has a poor transport system and road network, making quick referral difficult. Indeed, this study found that residing more than 10 kilometres away from a hospital is a risk factor for uterine rupture, and this is similar to the findings of Wandabwa et al.⁽¹⁴⁾

The majority of patients in this study had rupture of the unscarred uterus at home or at TBAs, in contrast to a report from Singapore by Chen et al, in which over two-thirds of the cases occurred in women with a scarred uterus.⁽¹⁶⁾ This shows the severity of the obstruction and the delay in accessing qualified care faced by the women in this series. On the other hand, patients who had a previous uterine scar were more likely to rupture in the hospital as a result of attempted trial of scar and the poor monitoring of labour. Ruptured uterus is associated with high maternal and perinatal mortality. The maternal fatality rate was 8% in this study, which is lower than the rate of 11.1% reported in an Ethiopian study,⁽²⁾ while the foetal mortality rate of 93% in this series is higher than those found in previous reports.⁽¹²⁻²⁰⁾

Uterine rupture remains a common problem in this country and is associated with severe maternal morbidity and mortality. There is a need to put in place a functional referral system for pregnant women, and to intensify information, education and communication programmes so as to encourage women to use maternity services during their pregnancy and delivery, as well as to improve accessibility to properly-equipped health facilities, to monitor labour using a partogram and to ensure the timely intervention of delivery in order to prevent uterine rupture.

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