

# Uterine rupture: UCH, Ibadan experience

T. Ogunnowo, O. Olayemi and C. O. Aimakhu

Department of Obstetrics and Gynaecology  
University College Hospital, Ibadan, Nigeria.

## Summary

### Objectives

To determine the incidence, predisposing factors, maternal and fetal outcome of uterine rupture patients at the University College Hospital (U. C. H.), Ibadan.

### Materials and Methods

A 5-year retrospective study of patients with uterine rupture in U. C. H., Ibadan between January 1996 - December, 2000 was done.

### Results

Thirty five cases of uterine rupture out of a total delivery of 4531 were recorded over the 5-year period. An incidence of 7.75/1000 deliveries or 0.72% was obtained and the yearly trend shows it's on the increase. 85.7% of the patients were unbooked. Common modes of presentation were bleeding per vaginam and abdominal pain. Spontaneous cause of rupture predominates.

The interval between diagnosis and surgery was greater than 7 hours in 75% of cases. Uterine repair with or without tubal ligation was commonly employed. Case fatality rate was high at 17.9%. Perinatal mortality was 92.5%. Other maternal morbidities include anaemia, puerperal and wound sepsis, vesico-vaginal fistula and prolonged hospital stay.

### Conclusion

All the indices at the present time are higher than they were 10 years ago. The incidence is still high and is on the increase. Attributable reasons include type I, II, III delays in health care service utilization associated with poor socioeconomic status of patients and lack of essential drugs and compatible blood in the hospitals.

**Keywords:** Uterine rupture, University College Hospital (UCH), Ibadan

## Résumé

### Objectifs

Déterminer l'incidence, des facteurs maternels prédisposant et résultat foetal des patients souffrant de la rupture de l'utérus au collège hospitalo universitaire, UCH, Ibadan.

### Matériels et Methodes

Une étude rétrospective d'une durée de 5 ans chez des patients atteints de l'utérus hernie au UCH, Ibadan entre janvier 1996 et décembre de l'an 2000 a été effectuée.

### Résultats

Trente cinq cas des ruptures entre le grand total de 453 cas des traitements ont été recensés au cours d'une durée de 5 ans. Une incidence de 7,75/1000 traitement soit 0,72% était obtenue et la tendance annuelle montre une augmentation. On n'a pas inscrit 85,7% des patients. Les types des douleurs, les plus fréquentes étaient saignant à travers vaginam et la douleur abdominale. La cause spontanée des ruptures prédominantes qui sont plus nombreuses. L'intervalle entre le diagnostic et la chirurgie était plus de 7 heures dans 75% des cas. La réparation utérine avec ou sans la ligation tubale était le plus souvent utilisé. La proportion des cas de la fatalité était élevée en 17,9%. Le décès prénatal était 92,5%. Autre morbidités maternelles sont anémie, puerperal et blessure de la septicité, fistule vesico-vaginal et durée de l'hospitalization prolongée.

### Conclusion

Tous les indices à l'heure actuelle sont plus élevés plus qu'ils étaient il y a dix ans. L'incidence est toujours élevée et est en

augmentation. Des raisons attribuables compris types I, II, III retard dans l'utilisation des services des soins sanitaire associé avec la mauvaise rang socioéconomique des patients et pénurie des drougues indispensables et du sang compatible dans des hopitaux.

## Introduction

Uterine rupture is an obstetric emergency that could complicate pregnancy or labour.<sup>1,2</sup> It's a catastrophic event that is life threatening to both mother and fetus.<sup>1-4</sup> Maternal case fatality rate of as high as 10.3% and 16% have been reported while fetal mortality rate are even higher at 70%<sup>5</sup> and 90%<sup>6</sup>. Mothers that don't die suffer morbidities such as wound and genital tract sepsis, anaemia, septicaemia and burst abdomen.<sup>2</sup> Some others lose their uterus and as such any chance of future fertility.

The incidence of uterine rupture, while on the decrease in the developed countries, appear to be on the rise in the developing countries where illiteracy, poverty, ignorance and poor utilization of existing health facilities appear to have robbed us of the gains of science and technology.<sup>8,9</sup>

This study aims to determine the incidence, predisposing factors, maternal and fetal outcomes of uterine rupture patients in UCH, Ibadan.

## Methods

This is a retrospective study of cases of uterine rupture in University College Hospital, Ibadan between January 1996 to December 2000. The birth register was reviewed and out of a total number of 4,531 deliveries, 35 cases of uterine rupture were recorded. Only 28 case files (80%) were recovered from medical records. Information on the age, parity, booking status, clinical presentation and risk factors for uterine rupture were extracted. Other information were site of rupture, type of surgery performed, duration of surgery and blood loss, pregnancy and fetal outcome, length of hospital stay, and presentation to operation interval. The data was entered into a computer and analyzed using the EPI-INFO version 5.1 software. Results are presented as percentages, tables and graph. Where applicable chi-square test was used to test the association between more than one variable. Level of statistical significance was set at  $P < 0.05$ .

## Result

Thirty five cases of uterine rupture were managed over the 5-year period out of a total number of 4,531 deliveries. The incidence of uterine rupture was therefore 0.72% or 1 in 129 deliveries or 7.75/1000 deliveries.

Figure 1 shows the yearly incidence from 6.9/1000 deliveries in 1996 to 9.3/1000 in 2000. The lowest incidence of 2.3/1000 was in 1998.

The majority of the patients, 12(42.9%) were in the age group 26-30years, followed by 8 (28.6%) age group 31 - 35, 4(14.3%) 21 - 25 years. The age group 16 - 20 years accounted for 3.6% and above 35 years age group 10.7%.

Fourteen (50%) of the patients had a parity of 2 followed by 3 (14.3%) each para 3 and 4. Nulliparous patients (Parity 0) and grand multiparous (parity > 5) accounted for 1(3.6%) each.

Only 4 (14.3%) of the patients were booked, the majority 24(85.7%) being unbooked.

The most common presentation is bleeding per vaginam, 13(46.4%), followed by abdominal pain 8(28.6%), and fainting episodes 7(25%). Some patients presented with more than one symptoms.

Table 1 shows the associated risk factors for uterine rupture. The most commonly associated risk factors were presence of previous lower segment caesarean section 12 (42.9%), cephalopelvic disproportion 8 (28.6%), and uterine stimulation with oxytocin 7 (25%). Four (14.3%) of the patients had no identifiable risk factor.

**Table 1** Frequency distribution of aetiological risk factors

Aetiological factor	Frequency	Percentage (%)
Oxytocin	7	25
Previous caesarean section	12	42.9
Cephalopelvic disproportion	8	28.6
Malpresentation	1	3.6
Destructive procedure	1	3.6
None Identified	4	14.3

\* Patients may have more than the risk factor

**Table 2** Frequency distribution of site of rupture

Site	Frequency	Percentage (%)
Fundus	7	10.7
Lower segment	15	53.6
Upper segment	1	3.6
Combinations	9	32.1
Total	28	100

Table 2 shows the site of uterine rupture. Lower segment ruptures 15(52.4%) were more commonly seen. Upper segment rupture occurred least 1(3.6%). 9(32.17) had ruptures involving both the upper and lower segments.

The majority 13(46.4%) were operated upon within 7 - 13 hours of presentation, 8(28.6%) over 14 hours after presentation and only 7(25%) within 0-6hours of presentation. Table 3 shows the type of procedure performed. The majority 12(42.9%) had uterine repair and bilateral tubal ligation (BTL), followed by repair only 9(32.1%) and then total abdominal hysterectomy 1(4.8%). Uterine repair was done in three layers and this choice of procedure was favoured in lower parity patients, and where the rupture is linear, clean and not multiple.

**Table 3** Frequency distribution of type of procedure

Type of Procedure	Frequency	Percentage (%)
Subtotal hysterectomy	6	21.4
Repair	9	32.1
Repair + bilateral tubal ligation	12	42.9
Total abdominal hysterectomy	1	3.6
Total	28	100

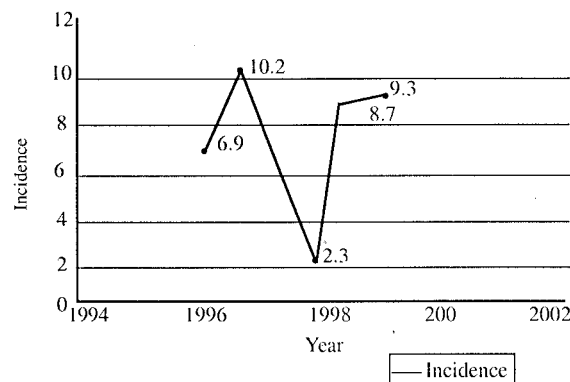
**Table 4** Frequency distribution of maternal complications

Complication	Frequency	Percentage (%)
Mortality	5	17.9
Anaemia	15	53.5
Wound sepsis	9	33.3
Vesicovaginal fistula	1	3.5
Puerperal sepsis	8	28.6
Deep vein thrombosis	1	3.5
None	1	3.5

Table 4 shows the complications recorded in the patients. Maternal mortality occurred in 5 (17.9%), 15(53.5%) had anaemia (packed cell volume <30%) requiring blood transfusion. Wound sepsis occurred in 8(28.6%) and vesicovaginal fistula in 1 (3.5%). 52.3% of the patients had more than one complication. The majority 16(57.1%) spent 8 - 15 days in hospital followed by 7 (25%) greater than 24 days and 4 (14.3%). Only 1(3.5%) was discharged

within 7 days of admission.

Perinatal mortality occurred in 26(92.9%), 52.6% being fresh



**Fig. 1** Trend of yearly incidence of uterine rupture

still birth (FSB) and 39.3% macerated still birth (MSB). Only 2 (17.1%) had live babies and they were booked patients.

Blood loss at surgery ranged between 300-2700ml with a mean of 1676 millilitres. All the patients were transfused with the mean volume transfused being 1150millilitres. In 61.7% the operation lasted between 60-120 minutes, in 39.3% more than 120 minutes. None was completed under 60 minutes.

There was no statistically significant relationship between the type of surgery performed and maternal complication, the  $P > 0.05$  (0.49). Similarly the type of surgery done had no bearing on the duration of the procedure,  $P > 0.05$  (0.63).

**Discussion**

The incidence of uterine rupture of 7.75/1000 deliveries or 1 in 129 deliveries or 0.72% of all deliveries in this study is higher than that reported from various other tertiary centres in the South-west of Nigeria. The incidence reported in Lagos was 5.01/1000 deliveries,<sup>4</sup> while Ogunniyi in Ife recorded 1 in 254 deliveries or 0.4% of total deliveries<sup>5</sup> A much higher incidence of 1 in 74 deliveries was recorded in Sokoto, Northern Nigeria.

Compared to an earlier work on the same subject, 10years ago in UCH, Ibadan, when an incidence of 1: 167 was obtained, it appears as if the incidence is on the rise. Incidences of between 2.4 - 8.9/1000 deliveries have been reported in various parts of Africa<sup>3,5, 8</sup> over the past two decades. Golan in Johannesburg recorded a surprisingly low incidence of 0.73/1000. The lowest incidence is found in the western world, with rates of 0.4/1000 being recorded.

The wide variation in the incidence of uterine rupture worldwide is said to be due to a number of variables which include the obstetrics risk factor operative in a given population, the degree of sophistication of obstetric personnel, the facilities available for the obstetrics care of patients and the utilization of such by the resident population.<sup>3,11</sup> A lot of these factors still unfortunately operate in Nigeria and the downturn in the economy has not helped matters. The available health care facilities are under utilized because of the increasing cost of Medicare, poor communication facilities and inadequate transportation. There is also a trend towards patronage of spiritual home who have no knowledge of maternity service and yet take up care of both high and low risk patients. Patients therefore present late in the hospital after its apparent that vaginal delivery is impossible, and sometime when uterine rupture has actually occurred. This may account partly for the rising incidence of uterine rupture recorded in the study, as is also the changing face of obstetrics as exemplified by trial of vaginal delivery after previous caesarean sections and obstetric manouvers in breech presentation. It's also pertinent to note that 85.7% of the patients in this study were unbooked and had not availed themselves of available obstetric service in the index pregnancy. This figure is similar to that

obtained in similar studies before it in various parts of Nigeria and Africa.<sup>1,3,4,7</sup> This supports the widely held notion that lack of antenatal care is associated with increased maternal and fetal morbidity and mortality.

There was no definite observable trend in the yearly incidence obtained in this study. It's noteworthy however that the incidence has been on the increase since 1998, as was also observed by Ola in Lagos.<sup>4</sup> This could possibly be due to the increasing patronage of spiritual homes and quack doctors by patients so as to escape increasing hospital fees.

The age and parity distributions of patients in this study were similar to that of the one in Lagos.<sup>4</sup> The incidence was highest in the para 2 group and generally high between the para 1 - 4 group. This is similar to the findings in previous studies in Ibadan.<sup>3</sup> Lagos<sup>4</sup> and Ile-Ife,<sup>7</sup> and supports the general opinion that multiparity is one of the vital predisposing factor to uterine rupture. The finding that 3.6% of the patients in this study were nulliparous (7.5%) underscore the need for close supervision of nulliparous women in labour, particularly if they are on oxytocin stimulation. They may not be as 'immunised' to uterine rupture as previously believed.

Uterine rupture can be classified into spontaneous and traumatic.<sup>11</sup> Traumatic causes include those following instrumentation, violence (direct and indirect), and obstetric manoeuvres such as forceps delivery, breech extraction, external cephalic version, relieve of shoulder dystocia, injudicious use of oxytocics and fundal pressure. Traumatic causes have been implicated in up to 73% of cases in the United States.<sup>15</sup> In contract spontaneous rupture account for majority of the causes in the developing countries. They are associated with cephalopelvic disproportion, obstructed labour, high parity, previous uterine surgeries like myomectomy, caesarean section or uterine curettage, placenta percreta and congenital uterine abnormality.<sup>12,13</sup> Spontaneous rupture occurred in 63.6% of the patients in this study, compared to 73.7% in Lagos.<sup>4</sup> Presence of a previous caesarian section constituted 57.1% of patients in this group and only 22.2% of them had booked.

Traumatic rupture accounted for 24.2%(26.3%<sup>4</sup>) of cases in our study and oxytocin stimulation accounted for 87.5% (62.5%) as compared to destructive procedures, 12.5%

As was in Lagos,<sup>4</sup> vaginal bleeding and abdominal pain were the most common mode of presentations. Symptoms may however vary from none to complete collapse. Contractions may cease although this is not invariable<sup>12</sup> and abnormal fetal heart rate pattern on cardiotocography may be seen in 50 - 70% of cases.<sup>14,15</sup> The presentation to operation interval of greater than 7 hours in 75% of patients in this study is much higher than the range of 0 - 4 hours for all patients in a similar study by Konje<sup>3</sup> in UCH Ibadan in 1990. The reason adduced for the delay then, were inadequate facilities for surgery (i.e. anaesthetic drugs, intravenous fluids, and blood), and failure of patients to give consent. Ten years afterward, these reasons still apply but perhaps to an even greater extent. Delays worsen morbidity and increase mortality and Ola<sup>4</sup> noted that although resuscitation is an integral part of management, it should not be allowed to delay surgery.

The surgical procedure employed must be individualised and depends upon the type, location and extent of the rupture, the patients clinical condition, age and number of living children. Speed at surgery is also important since prolonged period of anaesthesia is not safe for such acutely ill patients. Although opinions vary as to the choice of procedure, it is accepted that the easiest and shortest procedure should be attempted. The majority (75%) in this study had uterine repair (with or without bilateral tubal ligation) done. Repair is the most common in this study probably because it was the easiest and fastest procedure to the surgeon (mostly senior registrars) and because of the need to maintain reproductive capability and menstruation for a group of people who place high premium on children and attach sociocultural significance to menstrua-

tion.

Hysterectomy is recommended if the tears are multiple, extensive and infected. The choice between a total or subtotal hysterectomy should depend on whether or not the cervix and vagina are involved, the patients clinical condition and the experience of the surgeon. Subtotal hysterectomy was more commonly seen in this study (21.4%) as compared to 3.6% for total abdominal hysterectomy. Subtotal hysterectomy over total was also more common in.<sup>1,4,7</sup>

The maternal mortality of 17.9% obtained in this study is high and compares with 17.5 in Lagos,<sup>4</sup> 17% in Ife<sup>3</sup>, 38% in Sokoto,<sup>1</sup> 10% in Mulange Malawi<sup>5</sup> and 16% in Conakry, Guinea. Everywhere, uterine rupture is accepted as a very important cause of maternal death in obstetric practice. Mortality rate in western countries are comparatively low.<sup>2,11</sup> Fetal mortality rate are even higher, 92.9% obtained in this study as compared to 85.3%,<sup>3</sup> 62.03%,<sup>3</sup> 98%<sup>1</sup> and 94%.<sup>7</sup>

Other maternal complications identified in this study included anaemia warranting blood transfusion, wound sepsis, puerperal sepsis and vesicovaginal fistula. Ninety-six percent (96%) of patients spent more than 7 days in hospital. The average length of hospital stay in Mulange<sup>5</sup> was 17.9 days. Prolonged admission ties up hospital bed and constitute an economic loss to the patient and government.

## Conclusion

Uterine rupture still constitute a major obstetric problem in UCH, Ibadan. All the indices at the present time are higher than they were 10 years ago. The incidence is high, and on the increase. Spontaneous causes still remain unfortunately largely responsible. Efforts to reduce the magnitude of the problem would include uptake of antenatal care and provision of emergency obstetric care services that is accessible and affordable.

## References

1. Ekele B A, Audu L R, Muyibi S: Uterine rupture in Sokoto, Northern Nigeria - are we winning? *Afr. J. Med. Sc.*, 2000; 29: 191 - 193.
2. Johanson R: Ruptured uterus In: Keith edmonds (ed), Dewhursts textbook of obst and gynae for postgraduates, 6th Edition, Blackwell Scientific pub. pp 323 - 324.
3. Konje J C, Odukoya O A: Ruptured uterus in Ibadan - a twelve year review. *Int. J. Gynec and Obst.* 1990; 32: 207 - 213.
4. Ola R E, Olamijulo J A: Rupture of the uterus at the Lagos University Teaching Hospital, Lagos, Nigeria., *West Afr J. Med.* 1998; Vol. 17 No. 3 pp. 188 - 193.
5. Philips J A: Ruptured uterus in Mulanje CCA Hospital, 1974 - 1982. *Tropical doctor*, 1990; 20, 175.
6. Diallo F B, Idi N: Ruptured uterus and prevention strategy. *Dakar Medical*, 1998; 43(1), pp 74 - 78.
7. Ogunniyi S O, Makinde O O, Faleyemu B L: Rupture of the gravid uterus in Ile - Ife, Nigeria. *Tropical doctor* 1990; 20, pp 188 - 189.
8. Laukoande J, Ouedragoam, Toure B: Eighty cases of uterine rupture at the maternity services of the National Hospital, Ouagadougou, Burkina Faso. *Journal de Gynaecologie Obstetrique et Biologie de la Reproduction*, 1997; 26(7), 715 - 719.
9. Ziadeh S M, EL-Jallad N F, Sunna F L: Obstetric uterine rupture: a four year clinical analysis. *Gynaecologic and Obstetric investigation*. 1999; 48(3): 176 - 178.
10. Fedorkow D M, Nimrod C A, Taylor P J: Ruptured uterus in pregnancy: a Canadian hospital experience. *Canad med assoc J.* 1997; 137, 27 - 29.

11. Scott J R: Uterine rupture: In James R. Scott (ed) *Danforth's Obstetrics and Gynaecology*, 8th edition, Lippincott Williams and Wilkins (pub), 1999; pp 467 - 468.
12. Schrimsky D N, Benson R C: Rupture of the pregnant uterus: A review. *Obstetrical and Gynaecological survey*. 197; vol. 33, no 4 pp 217 - 234.
13. Pernoll M L: Rupture of the uterus, In: Alan H. Decherney (ed), *Current Obstetrics and Gynaecological diagnosis and treatment*, 8th edition. Paramount professional group (pub) pp 407 - 409.
14. Scott J R: Mandatory trial of labour after caesarean delivery: an alternative viewpoint. *Obstetgynaecol*, 1991; 72 - 811.
15. Anulkumarun S, Chua S, Rattman S S: Symptoms and signs with scar rupture, value of uterine activity measurement. *Aust N. Z obstetgynaecol*; 1992; 3; 208.