

MATERNAL AND PERINATAL OUTCOME FOLLOWING RUPTURE OF GRAVID UTERUS IN CALABAR, NIGERIA

E. I. EKANEM, F. J. UDOMA, E.E.J. ASUQUO and J. E. EKABUA

(Received 26 April. 2005; Revision Accepted 10 May. 2006)

ABSTRACT

A total of 54 patients managed for ruptured gravid uterus in the index pregnancy in the maternity section of the University of Calabar Teaching Hospital Calabar over ten years were studied to assess maternal and perinatal outcome of such pregnancies. They were analysed with respect to parity, predisposing factors to rupture, clinical presentations and type of definitive surgery performed as well as maternal and perinatal outcome.

The incidence of ruptured uterus in this study was 1:188 of total deliveries, with increasing trend over the years from 1:259 in 1990 to 1:103 in 1998. Unbooked patients formed 62.7% of cases. The risk of rupture was highest among para 1 to 4 patients. Previous uterine scars predisposed to rupture in 44.4%, obstructed labour in 29.6% and instrumental vaginal deliveries in 11.1%. Fetal heart rate abnormalities were the most common presentation (88.9%) followed by maternal tachycardia (68.5%) while vaginal bleeding occurred in only 38.9%. Rupture of anterior lower segment was seen in 45.2% while 22.6% had a combination of upper and lower segment ruptures. The most common definitive surgery was repair with sterilization in 43.3%. Maternal Case fatality rate was 9.1% while perinatal mortality rate was 927 per 1000

Maternal and perinatal outcome following rupture gravid uterus at the University of Calabar Teaching Hospital are still very poor.

KEYWORDS: uterine rupture, maternal and perinatal outcome.

INTRODUCTION

Rupture of a pregnant uterus is a devastating and tragic obstetric emergency. Its contribution to high maternal and perinatal morbidity and mortality is well acknowledged universally (Aboyeji 1997; Beazly 1995; Lawson 1997). This is particularly very worrisome in the developing countries of the world where the women are admitted in poor clinical state due to late presentations (Rotimi and Olamijulo 1998). Also poor facilities in most of the hospitals for aggressive, prompt resuscitative measures and immediate definitive surgical intervention by experienced management team mean that very few of those who manage to reach the hospital would be salvaged (Aboyeji and Fakeye 1995; Ijaiyi and Aboyeji 2000). This problem of poor outcome is further compounded by the rising incidence of ruptured uterus in our society despite appreciable increase in technological development over the years. In the developed countries of the world the high standards of obstetric care make rupture of the pregnant uterus a rare event and is only seen as a spontaneous rupture of unknown aetiology (Beazly 1995). In the developing world (especially the sub-Saharan Africa) poor obstetric care, lack of health education, poor transport system,

unfavourable socio-cultural and political system have helped to sustain this highly preventable obstetric complication (Aboyeji and Fakeye 1995; Harrison 1997 Ekpo 2000). Besides, the predisposing factors to rupture have remained unchanged over the years in most developing countries. These factors include prolonged obstructed labour (Ijaiyi and Aboyeji 2000) and grand multiparity (Aboyeji and Fakeye 1995). Also destructive vaginal deliveries and other difficult intra uterine manipulations are still being practiced to avoid caesarean section. Labour and deliveries are supervised at home or church by unskilled personnel even in women with previous uterine scars (Udoma et al 2003 Etuk et al 1999; Adetunji 1992). Our women usually insist on dangerous vaginal delivery because of strong aversion to surgical intervention and to prove the womanhood (Ekpo 2000). With these problems in the developing countries it would be necessary to aim at prevention of uterine rupture while efforts are made to improve in the management of such cases.

Many studies have been conducted on rupture uterus in Nigeria to assess its contribution to maternal and perinatal mortality. None has been carried out in Calabar in recent times despite her socio-cultural, religious and occupational differences. This study was

✉ E. I. Ekanem, Department of Obstetrics/Gynaecology, Faculty of Clinical Sciences, Coll. of Med.Sci., Unical, Nigeria
E. J. Udoma, Department of Obstetrics/Gynaecology, Faculty of Clinical Sciences, Coll. of Med.Sci., Unical, Nigeria
E. E.J. Asuquo, Department of Obstetrics/Gynaecology, Faculty of Clinical Sciences, Coll. of Med.Sci., Unical, Nigeria
J. E. Ekabua, Department of Obstetrics/Gynaecology, Faculty of Clinical Sciences, Coll. of Med.Sci., Unical, Nigeria

therefore carried out in University of Calabar Teaching Hospital with the aims of assessing the incidence of ruptured uterus in the hospital and also the associated maternal and perinatal outcomes. Such information could be used to create awareness as well as formulate policies toward improving the quality of services provided by our hospital with the aim of reducing maternal morbidity and mortality from ruptured uterus.

SUBJECTS AND METHODS

This study was carried out in the Maternity Annex of the University of Calabar Teaching Hospital (UCTH) Calabar over a ten-year period (1st January 1990 to 31st December 1999). All patients who were managed for ruptured uterus in the index pregnancy in the hospital during this period were included in the study. Those excluded from the study were those who had rupture of uterus before 28 weeks of gestation and those who died shortly on arrival before admission to the ward. Patients who died in the ward before surgical intervention with no post mortem examinations and those whose case files did not contain enough information for analysis were also excluded. The case files were retrieved for in-depth analysis. Information was also obtained from records in

labour wards, operation theatre, special care- baby unit and mortuary. Data collected included the date of admission, parity, pattern of clinical presentation and type of definitive surgical intervention. Maternal and perinatal outcome were assessed. Unbooked status in this study referred to patients who did not register for antenatal care at UCTH and only came to UCTH after rupture had occurred. Post mortem examination was ordered on all the patients who died in the hospital. The data obtained were analysed by Epi Info 2002 using absolute numbers and percentages. Where necessary significance was calculated by χ^2 with p value placed at <0.05

RESULTS

A total of 11073 deliveries were conducted at UCTH during the 10-year period of study while a total of 59 cases of ruptured uterus presented giving an incidence of 1:188 total deliveries. Fifty-four case files were available and met the criteria for analysis.

Table 1 shows the yearly trend of incidence. The lowest incidence of 1:400 deliveries was recorded in 1991 with the highest deliveries of 1601 while the highest incidence of 1:103 was obtained in 1998 with a

Table 1: Yearly Trend of the incidence ruptured uterus and parity Distribution

Year	Total Deliveries	Booked	Unbooked No %	Total No of ruptured cases		Yearly Total	Yearly Incidence
				Bkd	unbkd %		
1990	1556	1425	131	2	4	6	1:259
1991	1601	1462	139	1	3	4	1:400
1992	1572	1426	146	3	3	6	1:262
1993	801	732	69	1	3	4	1:200
1994	675	1340	67	1	4	5	1:135
1995	1007	931	76	2	4	6	1:168
1996	697	643	54	2	2	4	1:174
1997	989	888	101	2	4	6	1:164
1998	1025	908	117	4	6	10	1:103
1999	1150	1026	124	3	5	8	1:144
	11073	10195	878 (7.9)	22	37 (62.7)	59	1:188

Bkd = booked Unbkd = unbooked

$$\chi^2 = 4.83$$

$$p\text{-value} = 0.028$$

total delivery of 1025, this was statistically significant with p value of 0.028. The incidences in 1994 and 1999 were 1:135 and 1:168 respectively. Unbooked patient constituted 878 (7.9%) of total deliveries but 37(62.7%) of ruptured cases. The rate of uterine rupture was therefore 1:463 among booked patients and 1:24 amongst the unbooked patients.

Table 2 shows sociodemographic characteristics of patients with rupture uterus. Twenty-seven patients were aged 31 – 40 years old and 5 (9.3%) were teenagers. Majority 38 (70.4%) were married with 39 (72.2%) educated up to primary school level. Assessment of parity shows that ruptured uterus occurred in 3(5.5%) were nulliparous patients, 36(64.8%) were para 1 to 4 and 16(27.6%) were

24 (44.4%) and obstructed labour in 16(29.6%) of the patients. Instrumental vaginal deliveries led to rupture of the uterus in 6(11.1%)of cases while intra uterine manipulations for manual removal of placenta, retained second twins and shoulder dystocia were seen in 9 (16.7%) patients.

In forty-eight (88.9%) of cases there was fetal heart rate abnormality; in 43(79.6%) there was pallor and in 37(68.5%) maternal tachycardia. Twenty-one (38.9%) and 9(16.7%) women had vaginal bleeding and cessation of uterine contractions respectively.

Table 2: Socio-demographic characteristic of 54 patients with uterine rupture in Calabar.

Age (years)	No	(%)
19 and less	5	(9.3)
20-30	19	(35.3)
31-40	27	(50.0)
Above 40	3	(5.6)
Marital status		
Single	12	(22.2)
Married	38	(70.4)
Others	4	(7.4)
Educational qualification.		
None	23	(42.6)
Primary	16	(29.6)
Secondary	9	(16.7)
Above secondary	6	(11.1)
Occupation		
Farmer.	19	(35.3)
Petty Trader	11	(20.4)
House wives	15	(27.8)
Others	9	(16.7)

grandmultiparous patients with corresponding total delivery of 2734, 4750 and 1890 respectively.

Table 3 shows the predisposing factors and clinical findings at presentation of women with ruptured uterus. Previous uterine scars predisposed to rupture in

Table 3: Predisposing factors and pattern of clinical presentations

Predisposing factors	No	%
Previous uterus scar	24	44.4
Obstructed labour	16	29.6
Injudicious use of oxytocics	8	14.8
Forceps delivery	3	5.6
Craniotomy	2	3.7
Vacuum extraction	1	1.9
Manual removal of placenta	4	7.4
Retained second twin	2	3.8
Shoulder dystocia	3	5.6
Clinical findings at presentation		
Fetal heart rate abnormalities	48	88.9
Pallor	43	79.6
Maternal tachycardia	37	68.5
Abdominal tenderness	35	64.8
Fetus easily palpable	33	61.1
Abdominal distension	23	42.6
Vaginal bleeding	21	38.9
Cessation of uterine contractions	9	16.7

Table 4 shows the site of uterine rupture, type of surgical procedure and maternal outcome. Seven (13.2%) women had rupture at the upper segment of the uterus while 34(64.1%), were in the lower segment and 12(22.6%) were mixed. The commonest site was anterior lower segment 24(45.2%). Ten (18.9%) patients had repair of uterine wound only, 23(43.3%) were repaired with sterilization while 9(16.9%) had total hysterectomy performed.

Maternal morbidity included anaemia in 46 (86.6%) patients, urinary tract infection in 13(24.5%) cases, prolonged hospital stay of more than 10 days in

Table 4: Site of rupture, type of surgery and maternal outcome.

Site rupture	No. Cases %	Type surgery repair only No %	Repair with sterilization		Sub total hysterectomy		Total abdominal hysterectomy		Maternal deaths
			No	%	No	%	No	%	
Upper segment									
Anterior	4(7.5)	-	2		1		1		1
Lateral	1(1.9)	-	-		1		-		-
Posterior	2(3.8)	-	-				2		-
Sub-total	7(13.2)	-	2		2		3		1
Lower segment									
Anterior	24(45.2)	8	13		1		2		
Lateral	4(7.5)	-	3				1		
Posterior	6(11.3)	-	3		2		1		
Sub-total	34(64.1)	8	19		3(5.7)		3		
Combination	12(22.6)	2	2		5		3		3
Died before surgery	1								
Grand-total	54	10(18.9)	23 (43.3)		10 (18.9)		9 (16.9)		4

Maternal morbidity (N=54)	No	%
Anaemia	46	86.8
Urinary tract infections	13	24.5
Prolonged hospital stay (More than 10 days)	11	20.7
Genital tract infection	9	16.9
Wound infection/Burst abdomen	7	13.2
Vesico vaginal fistula	2	37.7
Foot drop	4	7.5
No complication	8	15.1

11(20.7%) patients. Seven patients had wound infections/burst abdomen while 2 had vesico-vaginal fistulae and 8(15.1%) no complication

Five patients died; 4 following surgery and one before surgery but had post mortem examination that confirmed ruptured uterus. The maternal case fatality rate was 9.3%.

With respect to perinatal outcome out of a total of 57 babies delivered, 47 were stillbirths (8 were already macerated) 3 died in the immediate neonatal period and 7 were alive. This gave perinatal mortality rate of 927 per 1000

DISCUSSION

Ruptured uterus has long been recognized as a dreaded obstetric complication. Its contribution to maternal and perinatal mortality and morbidity is well acknowledged universally. The overall incidence of uterine rupture in this study is very high even though it is in line with other studies in Nigeria (Aboyeji 1997; Rotimi and Olamijulo 1998; Ekpo 2000; Makinde and Akiyemi 1990). It is much higher than in the developed countries (Lawson 1967; Nagarkatti et al 1991). This study also shows an increasing trend over the years with the highest incidence in 1998 (1:103) and this was statistically significant at p-value of 0.028. Also the unbooked patients had the highest risk of ruptured uterus though they contributed only 7.9% to the total delivery. These findings are similar to those obtained from other studies in the developing countries (Ekpo 2000; Makinde and Akinyemi 1990). These findings of increasing trend coincided with the period when user fees were introduced on consumable items and delivery fees increased in the hospital. Also most services in the hospital including deliveries were commercialized and people were required to pay before services were rendered. So most patients preferred to deliver outside orthodox medical facilities where fees are cheaper and only come to the hospital when rupture had occurred.

The major predisposing factor to the rupture of the uterus in this study was previous uterine scar. For example the ruptures in 2 primiparas were due to previous uterine perforation from unsafe abortions. The fetuses were seen protruding from the uterine fundus. Women who had obstructed labour and intra uterine manipulations at the second and third stages of labour were also shown to be at risk by this study. Reports from Ilorin (Aboyeji 1997) and Lagos (Rotimi and Olamijulo 1998) in Nigeria were similar to this but different from Ibadan (Ayangade 1990) also in Nigeria and other developing countries (Kwame-Aryee 1998; Ghatak 1990; Nagarkatti et al 1991) where obstructed labour, instrumental vaginal deliveries were most common. It is however different from developed countries when spontaneous rupture of unknown cause were seen (Beazley 1995). The findings in this study may be attributed to the fact that in Calabar delivery at home with traditional birth attendants or in spiritual churches are encouraged by the socio-cultural factors, poverty and religious fanaticism (Harrison 1997; Udoma et al 2003; Etuk et al 1999; Adetunji 1992). Also aversion to surgery at delivery is common and womanhood is believed to lie in vaginal delivery (Etuk et al 1999; Ekpo 2000). The woman with previous uterine scars will attempt to deliver outside hospital to avoid repeat operative delivery.

Fetal heart rate abnormalities, pallor and maternal tachycardia were the commonest clinical findings at presentation in this study as reported by other workers (Lawson 1967, Nagarkatti 1991). Vaginal bleeding, cessation uterine contractions and easily palpable fetal were parts however observed by others to be prominent features (Beazley 1995, Gupta and Chitra

1993, Nakata 1997). The mode of presentation in this study may be explained by the fact that most patients had previous caesarean section with scar tissue whose rupture may not be followed by much bleeding. Again the very thin lower uterine segment with poor vascularization and temponade effect resulting from impacted presenting part in the vagina in patients with advanced obstruction may prevent vaginal bleeding when there is rupture (Aboyeji 1997, Lawson 1967, Ayangade 1990).

The most common site of rupture was the lower uterine segment particularly the anterior part and was associated with no maternal mortality. Multiple ruptures were associated with 3 maternal deaths. Other studies in developing countries show similar pattern (Rotimi 1998, Ayngade 1990, Nagarkati et al 1991 Nakata 1997). The findings in this study may be due to the fact that most cases followed previous caesarean sections. Upper segment rupture is said to be rare as in this study. One case was due to rupture of classical caesarean section scar that occurred before labour at 38 weeks of gestation and 3 followed previous uterine perforation from unsafe abortions. Previous induced abortion with possible sub clinical perforations constitutes a risk for possible rupture of uterus in subsequent pregnancy. This is very important, as many patients at the booking clinic may not volunteer this information.

The majority of the patients in this study had repair of uterine wound with sterilization as the definitive surgical procedure while repair without sterilization and subtotal hysterectomy were less often done. These are the methods of surgery favoured by most surgeons in Nigeria (Ayangade 1990, Ekpo 2000, Makinde 1990) and other developing countries (Nakata 1997, Kwame 1998). It is different from that of developed world where total abdominal hysterectomy is performed irrespective of the type of rupture as this prevents rupture in subsequent pregnancies and removes a source of possible future cervical pathology (Beazley 1995). The subtotal hysterectomy in this study became necessary because most of the patients were in hypovolaemic shock. Access to the cervix was impaired by pelvic adhesions and so the fastest surgery that was beneficial to the patient was performed. Also most of these patients came as emergencies during call hours when experienced surgeons were not available or could not be reached.

Maternal case fatality rate and perinatal mortality rate were quite high. This is also reported by many authors in developing countries (Aboyeji and Fakeye 1995; Ayangade 1990; Makinde and Akinyemi 1990) The reasons for these high maternal and perinatal deaths were hospital delay in resuscitation and performing definitive surgery (John 1995; Caffrey 1979). This delay ranges from bureaucratic methods of registration through lack of supply of necessary materials (drugs and blood) to absence of effective protocols for emergency obstetric care. Further study is required to elucidate the problems associated with hospital delays, so as to plan intervention strategies to prevent mortality from uterine rupture.

In conclusion this study has demonstrated that ruptured uterus in Calabar is associated with high maternal and perinatal morbidity and mortality. It is therefore recommended, that free and compulsory antenatal care and deliveries services including caesarean section are put in place by appropriate legislation. The general populace should be educated on the need for antenatal care and supervised labour by trained health personnel.

REFERENCES

- Aboyeji A. B.1, 1997. Ruptured uterus in Ilorin, Nigeria: A five year review: *Nig. Med pract.* 33 (1/2) 5-7
- Aboyeji, A. B., and Fakeye, O. O. 1995. Avoidable Factors in maternal Mortality in Ilorin *Nig. Med. Pract.* 29(1/2): 2-4.
- Adetunji, J. A. 1992. Church based obstetric care in Yoruba community. *Soc. Sci Med.* 35(9): 1171-1178.
- Aikmakhu, V. E. 1969. Ruptured uterus from pitocin induction for intra uterine death. *Nig. Med Journal.* 2(1): 17-18
- Aguero, O. and Kizer, S., 1968. Suture of uterine rupture. *obstet and Gynaecol.* 33:806.
- Ayangade, O., 1990. Rupture of uterus A 10-year Review. *Tropical J. of Obstet and Gynaecol.* 8:25-27.
- Beazley, J. M., 1995. Maternal injuries and complications: in Whitfield C R. (ed). *Dewhurst's Textbook of Obstetrics and Gynaecology for Postgraduates.* 5th Edition. Blackwell Scientific Publication, Oxford. pp377-387.
- Caffrey, K. T., 1979. Maternal mortality. A continuing challenge in tropical practice. A report from Kaduna, Northern Nigeria. *East African med. Journal.* 58(6): 274 – 277.
- Ekpo E E. 2000. Uterine rupture as seen in Calabar Teaching Hospital, Nigeria: a five-year review. *J. Obstet. Gynaecol.* 20(2): 154 - 6.
- Etuk, S J., Asuquo, E. E. J., and Ekanem A. D., 1999. Maternal mortality following Caesarean Section at University of Calabar Teaching Hospital Calabar Nigeria. *Nig. Med. J.* 8(2): 62-65.
- Gupta, U. and Chitra, R., 1993. Destructive operations still has a place in developing countries. *Int. J. Obstet and Gynaecol.* 44:15-19.
- Ghatak, D. P., 1990. Rupture of the uterus. A review of 146 cases. *Trop. J. obstet and Gyneacol.* 8(2): 41-46
- Harrison, K. A. Maternal mortality: the real issue. *Journal of Rep. Health* 1997; 1(1): 7-13.
- Ijaiyi, M. A. and Aboyeji, A., 2000. Obstructed labour A major public health problem in Africa. *Africa Health* 23(1):16-18.
- John, C. T., 1995. Difficult Labour. *Trop. J. of Obstet and Gynaecol.* 12(1): 26-29.
- Kwame Aryee R., 1998. A Normal and abnormal Labour Ruptured uterus. In: Kwame Aryee R. A (ed). *Handbook of Obstet. and Gyneacol.* 1st edition. Bel Team Publication Ghana. pp 25-26.
- Lawson, J. B., 1967. Sequelae of obstructed labour. In: Lawson J. B. Stewart (ed). *Obstetrics and Gynaecology in the Developing countries.* 1st edition. E.Arnold Ltd. London; pp 203-210.
- Makinde, O. O. and Akinyemi, S., 1990. A Review of Ruptured pregnant uterus. *Trop. J. of Obstet and Gynaecol.* 8(2): 52.
- Nagarkatti, T S, Ambiye, V R. and Vaidya, P. R., 1991. Ruptured uterus, changing trends in etiology and management. *J. Postgrad. Med.* 37(3):136 – 139.
- Nakata, M., 1997. Maternal mortality due to obstructed labour. *Int. J. Obstet. and Gynaecol.* 57(1):65 – 66. Rotimi O E, and Olamijulo J A. 1998. Rupture of the Uterus at the Lagos University Teaching Hospital, Lagos, Nigeria. *West Afri. J. Med.* 17(3):188-193.
- Udoma, E. J., John, M. E., Udosen, G. E., and Udo, A. E., 2003. Obstetric practices in Spiritual churches in South Eastern Nigeria. *Mary slessor J. of Med.* 3(2): 51 - 56.