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ABSTRACT

Objective: To determine the decision-intervention interval in ruptured uterus with a view of overhauling the management strategy thereby improving the maternal and perinatal outcome.

Design: Cross-sectional survey based on secondary data done between 1990-1999.

Setting: Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Nigeria.

Subjects: One hundred and two consecutive women who had uterine rupture.

Results: The decision-surgical intervention interval ranged from 30 minutes to 4.5 hours. The major reason for delay was unavailability of compatible blood (88.2%), followed by lack of electricity (4.9%), unsterile instruments (3.9%), waiting for ambulance to get senior obstetricians (2.9%), delay in arrival of anaesthetist (1.9%) and neonatologists (1.9%). The peri-natal mortality rate (PNMR) was 843 per 1000 total births and maternal mortality rate (MMR) 4902 per 100,000 births.

Conclusion: The maternal and perinatal outcome in uterine rupture would be improved by early diagnosis and avoidance of preoperative delay through availability of essential obstetric services.

INTRODUCTION

Rupture of the gravid uterus remains one of the most disastrous obstetric complications. It is associated with high incidence of maternal and perinatal morbidity and mortality(1-5). While the incidence is reducing in developed countries, it remains high in developing countries where obstetric care is often limited(1,6).

In the prevention of maternal mortality associated with uterine rupture the interval between diagnosis and operation is very significant(2). Sadly the lack of staff and facilities together with inadequate planning to deal with obstetric emergencies on a 24-hour basis contribute to increasing Phase III delay in our environment thereby increasing the maternal morbidity and mortality(7).

This retrospective study was therefore conducted to determine the decision-intervention interval in ruptured uteri, the factors contributing to delays in intervention and the relationship between the delays and the maternal and perinatal outcome and surgical procedure in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria over a 10 year period (1990-1999).

MATERIALS AND METHODS

This retrospective study reviewed case records of 102 ruptured uteri over a 10 year period (1990-1999) at Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife with

a focus on decision-intervention interval. From the case records, the time of diagnosis and surgical intervention were extracted. All the reasons for delays were extracted together with the surgical procedure and maternal and perinatal outcome.

RESULTS

There were 102 ruptured uteri over the study period and 23,905 births giving an incidence of 4.27 per 1000 births. There were 86 perinatal deaths among the cases of uterine rupture (PNMR 843 per 1000 total births) and five maternal deaths (MMR 4902 per 100,000 births). The decision-intervention interval ranged from 30 minutes to 4.5 hours with a mean of 2.8 hours. Eighty six (84.3%) uteri ruptured before presentation while 16(15.7%) uteri ruptured within the hospital.

When surgery commenced within 30 minutes of making diagnosis, there was no maternal or perinatal mortality. When there was one hour delay, perinatal mortality rose to 100% and maternal mortality to 3.6% while for more than two hours delay the maternal mortality rose to 15% (Table 1). When surgery commenced within 30 minutes, about 83.3% had uterine repair while 16.7% had repair with bilateral tubal ligation. With about one hour delay uterine repair was done in 50% and repair with tubal ligation in 50%. With 1-2 hours delay 41.1% had subtotal hysterectomy and 42.9% had total hysterectomy, while with more

than two hours delay 90% had total hysterectomy and two patients died before surgery (Table 2).

The reasons for delay in intervention include unavailability of compatible blood (88.2%), lack of electricity (4.9%), unsterile instruments (3.9%), waiting for an ambulance to get a senior obstetrician (2.9%) delay in arrival of an anaesthetist (1.96%) and a neonatologist (1.9%) (Table 3).

Table 1

Mortality according to interval between time of diagnosis and operation

Delay interval (hrs)	No. of Patients	Perinatal mortality (%)	Maternal mortality (%)
0-0.5	6	0 (0)	0 (0)
0.5-1	20	50 (50)	0 (0)
1-2	56	100 (100)	3.6 (3.6)
>2	20	100 (100)	15 (15)

Table 2

Surgery performed in relation to delay in decision-intervention

Delay (Hours)	No. of patients	Repair alone (%)	Repair+ BTL (%)	Sub TAH (%)	TAH (%)
0-0.5	6	5(83.3)	1(16.7)	-	-
0.5-1	20	10(50)	10(50)	-	-
1-2	56	-	9(16.1)	23(41.1)	24(42.9)
>2	20	-	-	-	18(90)

BTL = Bilateral Tubal Ligation
 Sub TAH = Subtotal Abdominal Hysterectomy
 TAH = Total Abdominal Hysterectomy

Table 3

Reasons for delay in intervention

Reason	No	(%)
1. Unavailability of compatible blood	90	84.9
2. Unavailability of electricity	5	4.7
3. Waiting for ambulance to get a senior Obstetrician	3	2.8
4. Unsterile instruments	4	3.8
5. Delay in arrival of an anaesthetist	2	1.9
6. Delay in arrival of a neonatologist	2	1.9
Total	106	100

DISCUSSION

Uterine rupture in Nigeria continues to threaten both maternal and foetal lives(1,4,5). While various factors contribute directly and indirectly to increase maternal and perinatal mortality in ruptured uterus, the decision-intervention interval is an important factor

which must be considered in the prevention of maternal and perinatal mortality(2).

Eighty six (84.3%) of these uteri ruptured before presentation to the hospital. There are therefore obvious delays on the part of the patients. However, about 15.7% of the uteri ruptured in the hospital for varying reasons ranging from mismanagement to delays in institution of caesarean section for obstructed labour due to logistic reasons. Delay therefore emerges as the pertinent factor contributing to maternal deaths(8). Hospital, based investigators of maternal mortality have long bemoaned patients delay in coming for care(9,10). However many maternal deaths which occur in the hospital results largely from deficiencies in the health care system(7-9).

The decision-intervention interval ranged from 30 minutes to 4.5 hours among our cases. Majority of the patients (74%) were not operated after diagnosis for over one hour. This is alarming considering the fact that blood loss in ruptured uteri could be tremendous. All the reasons given for the delays are preventable. The commonly given reason for the delay is unavailability of blood (84.9%). Difficulty in obtaining blood for transfusion is often identified as an avoidable factor delaying the provision of adequate obstetric care(8,11-13). For example, blood shortages were implicated in 35% of hospital maternal deaths in rural Tanzania(14) and 39% in Malawi(15). In our study two patients died two hours after diagnosis because there was no compatible blood to commence surgery.

About 33 years ago, Lawson(6) suggested that when insufficient blood is available it may be necessary to operate with the circulating failure uncorrected, a forlorn hope which sometimes ends in success. With the abdomen opened and the foetus extracted Lawson suggested that about one or two pints of blood can be transfused under direct pressure into the common iliac artery which usually has dramatic effect(6). For blood to be readily available in Nigeria, the fears and misconceptions concerning donating and receiving blood needs to be addressed. For instance, some people in our environment believe that donating blood reduces strength and libido and that if blood is obtained from a thief or a witch, the persons transfused would end up being a thief or a witch(9). Due to the above misconceptions most people are reluctant to donate blood. Even when blood had been transfused to their relatives, they refuse to replace the used blood.

The next factor implicated is unavailability of electricity (4.7%). The hardship and frustration suffered by doctors and patients alike due to irregularity of electricity supplies in Nigeria is critical. Lack of electricity will lead to delay in estimation of haemoglobin level and grouping and cross-matching of blood (when available) and also delay in commencement of surgery. In a particular maternal death arising from caesarean

section in this hospital, the electricity went off for about 30 minutes during surgery(7).

Other factors implicated in delay include waiting for an ambulance to get a senior obstetrician (2.8%), unsterile instruments (3.8%) delay in arrival of an anaesthetist (1.9%) and a neonatologist (1.9%). These are obviously avoidable factors within the hospital system which can be eliminated by commitment of all health care workers, employment of adequate staff strength, provision of relevant facilities backed by administrative and political goodwill. According to a technical working group formed by the World Health Organisation in 1986, these deficiencies represent a failure on the part of health services to seize the last chance to save a woman(11).

When the decision-intervention interval is related to the maternal and perinatal outcome the tragedy becomes more glaring. When surgical intervention commenced within 30 minutes of making diagnosis of uterine rupture there was no maternal or perinatal mortality. Surgical intervention were also limited to either uterine repair or repair with bilateral tubal ligation. When the interval reached one hour, the perinatal mortality rose to 50% and surgical intervention remained the same. However, within 1-2 hours delay, the perinatal mortality rose sharply to 100% and maternal mortality to 3.6%. With two or more hours delay the maternal mortality rose to 15%.

In conclusion, delays in the delivery of care are contributed by the inadequate care that results from shortage of staff, essential equipment, blood, drugs as well as inadequate management. However, the major delay in surgical intervention in ruptured uteri in this hospital is the unavailability of compatible blood. These contribute universally to high maternal and perinatal mortality and morbidity in developing countries. This study shows that blaming the patient for seeking care late obscures the fact that the health care system in developing countries at times fails the patient(8). The majority of the causes of maternal morbidity and mortality are preventable and what is required is not the invention of new and sophisticated technology, but rather, better access to efficient, reliable and affordable services.

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