Rupture of the gravid uterus in a referral hospital in Niger Republic: results of a two year prospective study

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Abstract

Background: Rupture of the gravid uterus is a major cause of maternal and perinatal morbidity and mortality in developing countries.
Methods: A review of the clinical records of all cases of ruptured uterus managed at the Center Hospitalier Regional, Dosso, Niger Republic, between January 2000 and December 2001 were carried out. The records were analyzed for age, parity and aetiological factors, operative findings/type of surgery, complication and outcome
Results: During this period, seventy-seven cases of uterine rupture were managed at the hospital. The total number of hospital deliveries was 3,512 giving an incidence of 1 in 46 deliveries for ruptured uterus. There were 7 maternal deaths as a result of uterine rupture representing 10.6% of the total maternal deaths. The commonest associated factor was obstructed labour. Transverse lower segment was the commonest site. Repair of the rupture site and sterilization was the preferred surgical treatment followed by repair only and then hysterectomy. The commonest maternal complications were anemia, vesico-vaginal fistula, wound sepsis and septicaemia
Conclusion: Provision of emergency obstetric care, qualitative antenatal care, health education for the populace and labour supervision by trained personnel are suggested ways of preventing this obstetric calamity

Key words: Uterine rupture, Obstructed labour, Uterine repair, Hysterectomy,

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Introduction

The uterus enlarges to accommodate the growing fetus by hypertrophy, hyperplasia and stretching of the muscle fibres. With increasing gestation, there is increased stretching of the uterine muscle fibres. This results in the formation of the lower segment in the 3rd trimester (28 – 40 weeks). The lower segment is that part of the uterus and the upper cervix which lies between the attachments of the peritoneum of the utero - vesical pouch superiorly and the internal cervical os inferiorly. It is thinner containing less muscle fibres and prone to rupture. In developed countries, rupture of the gravid uterus is virtually an anachronism mainly due to advancement in health care delivery. [1, 2, 3] The picture is quite different in Dosso – a sub-Saharan region of the Republic of Niger where this condition impacts negatively on maternal and fetal health. In this part of the world, poverty, ignorance and the near absence of infrastructure create the milieu for this catastrophe to occur.

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Center Hospitalier Regional Dosso is the only hospital that provides specialist obstetric care in the entire region of about one and a half million people. The doctor/population ratio in this region is 1:90143[4]. Several investigators have reported the incidence of ruptured uterus in the developing countries but literature is sparse on this serious obstetric complication of labour in the Sahel. We therefore sought to determine the incidence of ruptured uterus, the case fatality rate, identifying the associated aetiological factors and reviewing the surgical management vis-à-vis the maternal outcome in this referral hospital in the Sahel.

Materials and Methods

Study design

This was a prospective observational study conducted at the Center Hospitalier Regional, Dosso between January 2000 and December 2001. In Dosso, antenatal care is provided at the primary health care centers only.

Data collection

All pregnant women that presented to the center for delivery within the study period were recruited and assessed for uterine rupture. Patients who attended the antenatal clinic on three or more occasions were considered to be registered patients. Relevant data with regard to age, parity, aetiological factors, and operative findings/types of surgery, complications and outcome were extracted from the case notes. The total number of deliveries during the study period was also noted. The

administration of the hospital approved the study. Simple descriptive statistics was used to analyse data.

Results

There were 3,512 deliveries and 77 cases of uterine rupture during the study period giving an incidence of 1:46 deliveries. Table 1 shows the age and parity distribution in the 77 cases reviewed. The age of the patients ranged from 18 – 45 years with a mean age of 30 ± 13 years. Uterine rupture occurred in 48 patients (62.3%) who were aged 30 years and above and more common in the multiparous group (93.5%) than the primigravidas (6.5%). fifty three (68.8%) of cases of ruptured uterus were seen in the grand multiparous group.

Ruptured uterus occurred in 97.4% (75) of cases before arrival at the hospital while in the remaining cases, uterine rupture occurred as the patients were being managed in the labour ward. The factors associated with uterine rupture are as shown in Table 1.

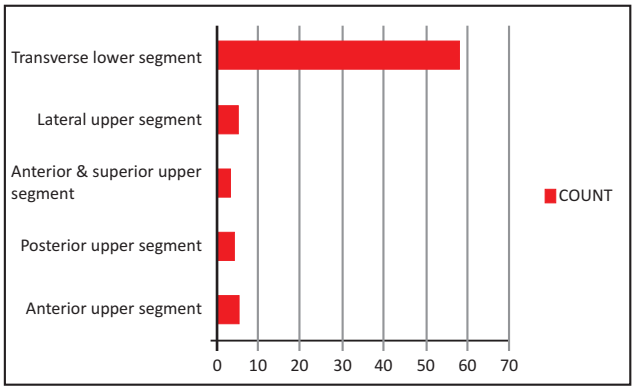
Table 1. Characteristics of paturients with uterine rupture seen at the Center Hospitalier Regional Dosso Niger Republic over a 24 month period

Variable	Frequency	%
Age group (years)		
15-19	5	6.4
20-24	8	10.3
25-29	16	20.7
30-34	23	29.8
≥ 35	25	32.4
Parity		
0	3	3.8
1-4	21	27.2
≥ 5	53	68.8
Booked at ANC	31	40.2
Factors associated with uterine rupture		
Obstructed labour	75	97.4
Oxytocin	1	1.3
Internal version	1	1.3
Complications		
Anaemia	28	36.3
Infection (wound sepsis & septicaemia)	8	10.3
VVF	5	6.4
Surgical procedures performed (n =75)		
Uterine repair with sterilization	35	45.4
Uterine repair alone	20	25.9
Hysterectomy	20	20.8

Thirty one patients (40.2%) were booked while 10% were registered. Spontaneous rupture occurred in 75 cases (97.4%) while traumatic rupture accounted for 2.6% of cases. In the spontaneous group, 69 (92%) cases occurred in the unscarred uterus with obstructed labour. In the traumatic group, one case was due to Oxytocin use while the other was due to internal version.

The commonest site of rupture was the lower segment (75.3%) as shown in Figure 1. Bladder injury occurred in one case while the rupture extended to the vagina in seven cases (9.1%). Six of the ruptures occurred in previous cesarean scars. None of these had previous classical cesarean sections. Repair with sterilization was performed in 35 patients (45.4%). These were followed by repair alone and then sub-total hysterectomy. Two patients died before surgery.

Figure 1. Frequency of uterine rupture among paturients at the Center Hospitalier Regional Dosso Niger Republic over a 24 month period



Many of the patients had more than one complication. Anaemia was the most common, occurring in 37% of patients. Other complications were infection (wound sepsis/septicaemia), and vesico-vaginal fistula.

There were seven maternal deaths, which gave a case fatality rate of 9.1%. Two patients died before blood transfusion and surgery could be arranged. none of the deaths occurred in the previously scarred groups Two babies were delivered alive and survived the perinatal period. The perinatal mortality was 97.4%

Discussion

In this series, the total incidence of ruptured uterus was 1 per 46 deliveries of total deliveries. This figure is considerably higher than the quoted figures in the literature which range from 1 per 425 to 1 per 2500 deliveries[5]. The major factor responsible for this may be poor antenatal care as noted in previous studies. Other factors are low literacy rates, poverty, and poor obstetric management .[3,6]

The age and parity distribution of our patients are similar to reports from other centers.[7,8] The peak incidence of 69% was found in the grand multipara (women who had more than 4 deliveries) as against 4% for the nullipara. It is generally accepted that multipara are prone to uterine rupture while the nullipara have some immunity. With increasing parity, the uterus is weakened by increased proportion of fibrous tissue following each delivery[9]. In this study, it was found that the primigravid uterus can and does rupture when exposed to prolonged obstruction. The primigravid

uterus is protected because the uterus nearly always reacts to obstruction by hypertonus and diminishing activity[10].

In this study, spontaneous rupture occurred in 97.4% of the cases. Significantly, almost 90% occurred in the unscarred uterus due to prolonged, obstructed labour. It has been noted that even slight mechanical difficulties may jeopardize a uterus weakened by aging and repeated childbearing [5]. Measures that can prevent this are proper use of the partograph with early evacuation of women likely to have prolonged labour. They arrived late in hospital having attempted in vain to deliver at home. This scenario underscores the negative cultural attitude to cesarean delivery in this environment.

Trauma contributed marginally to the overall incidence of uterine rupture (2.6%). Oxytocin is not available in the primary health centers where most of the deliveries take place.

The commonest site for rupture of the uterus is the anterior wall especially the lower segment.[9] In this series, 77% of tears occurred in the lower segment . In one case of a scarred uterus, the bladder was involved in the rupture and had to be repaired. In seven cases where extension occurred, the vagina was involved.

Once the diagnosis of uterine rupture is made, surgery is the mainstay of management. Other important measures are blood transfusion to combat haemorrhage and antibiotic therapy. Also, where obstruction occurred in the mid-cavity or outlet, it may be possible to remove the fetus vaginally without difficulty. This should be done especially where there is sepsis and there is likelihood of delay in surgical intervention. The choice of surgical procedure depends on the type, extent, and location of the rupture as well as the patient's condition and her desire to preserve her childbearing capacity. Other important considerations include the ease with the procedure can be performed and the length of time it would take. "Keep it simple and short" should be the guiding principle. In line with this, 73% of the patients in this series had uterine repair with or without tubal ligation. Hysterectomy was performed in less than a third of the patients. Most of the hysterectomies were subtotal because of the poor state of the patients and the non-availability of blood. It has been suggested that total hysterectomy is the procedure of choice in view of the possibility of carcinoma of the cervix developing subsequently. Uterine rupture was associated with significant morbidity in this series. The overall maternal mortality and perinatal mortality of 9.1% and 97.4% respectively were similar to those reported in other studies[5-8]. It is noteworthy that none of the deaths occurred in the previously scarred groups. This is probably because the ruptures were at the site of the scar, with little blood loss. Uterine rupture is an important cause of maternal mortality in tropical obstetric practice. Because of placental separation and subsequent fetal hypoxia, fetal mortality is invariably high.

Conclusion

Uterine rupture is preventable. Patients should present themselves early to the hospital. Concerted efforts are needed on the part of the patients and government in order to reduce the occurrence of uterine rupture.

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