Original Article

A retrospective study of causes and outcome of ruptured uterus in a rural medical college hospital of north east Bihar, India

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Abstract

Background: Ruptured uterus is a common cause of maternal and perinatal mortality and morbidity. Further studies may help in the development of preventive strategies. **Objective:** To determine the frequency, cause and management outcome of ruptured uterus at a regional hospital. **Method:** A retrospective study was done to describe the frequency, cause, treatment, complications, and maternal and fetal mortality associated with ruptured uterus. Astructured questionnaire was used to collect information from delivery registration books, operation room records, and patient cards. **Results:** A total of 64 cases of ruptured uterus and 4,180 hospital deliveries were recorded for a ratio of 1:65.Causes of rupture were: cephalo-pelvic disproportion (51.5%), malpresentation and malposition (26.56%),instrumental (3.1%), oxytocin induced (3.1%), uterine scar (14.0%) and placenta percreta (1.56%). Most were multipara and rupture was complete in 92.3%. The most common site of rupture was the lower segment of the uterus in 35 (54.68%) followed by the left lateral 17 (26.5%), posterior 6 (9.35%), upper segment 4 (6.25%) and right lateral 2 (3.12%). There were 10(18.5%) cases with bladder rupture and all had rupture at the lower uterine segment. Vesico-vaginal fistula and wound infection were common post-operative complications. Maternal case fatality rate was 9.2% and fetal case fatality rate was 95.7%. Ruptured uterus contributed 28% of all causes of maternal deaths in the hospital within the study period. **Conclusion:** This calls for an integrated effort to prevent the causes of uterine rupture and ensureprompt management to reduce maternal and perinatal mortality and morbidity.

Key Words: Uterus rupture; maternal mortality; perinatal morbidity.

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INTRODUCTION

Maternal mortality is one of the indices of evaluating healthcare delivery. And it is noteworthy that uterine rupture claims a significant portion of these mortalities in the developing world[1]. India is one of the less developed countries where maternal and perinatal mortality rates are still very high. One of the major causes of maternal and perinatal mortality is rupture of the uterus[2-4]. This obstetrics hazard is also associated with short term maternal morbidities such as vesico-vaginal fistula, recto-vaginal fistula, bladder rupture, foot drop, psychologicaltrauma, anemia and in the icing term because of the surgical intervention, the woman may be sterilized which can lead to divorce and loss of economic support[5]. The occurrence of ruptured uterus varies in different parts of the world. In the developed world the frequency has dropped significantly[6-8]. Nevertheless, it is still a major public health problem in developing countries in general and Africa in particular[9-11]. A hospital-based study in Ethiopia reported that it is a common obstetric cause of maternal and fetal mortalities. The same study reported that uterine rupture occurred one in every 38deliveries[2]. This sudden catastrophic event has different causes. Unlike in the developed world where

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oxytocin stimulation and scarred uterus are the major causes[6,8], in less developed countries feto-pelvic disproportion causing obstructed labor is the major cause of uterine rupture[9-11]. Different modes of management are practiced, namely repair of the uterine tear, total abdominal hysterectomy and subtotalabdominal hysterectomy. The preference of management and outcome varies in different centers. Different modes of management are practiced, namely repair of the uterine tear, total abdominal hysterectomy and subtotal abdominalhysterectomy. The preference of management and outcome varies in different centers[10,12-14]. This retrospective study was done to address the frequency of ruptured uterus and the associated maternal and perinatal morbidities and mortalities. To our knowledge no study was made regarding this obstetric problem from this part of the country. This report may address the issue more and can be important in the development of preventive strategies. The major objective of this retrospective study is to determine the frequency, cause and management outcome of ruptured uterus at a hospital.

MATERIALA AND METHODS

A retrospective study of uterine rupture was made in the M.G.M Medical College & LSK Hospital, Kishanganj, Bihar, India. For data collection, a predesigned, pretested,semi-structured questionaire was made with help from other faculty members and a statistician of the institute. Information collected from delivery regestration books, patient cards and operating room registration books during the study years. The questionnaire was filled by one independent physician working in the hospital and it contained the following main categories of variables: 1. Socio-demography, 2. History and physical examination finding during admission, 3. Causes of ruptured uterus, 4. Intraoperative findings, 5. Type of surgical intervention and 6. Maternal and neonatal outcome. The total number of deliveries in the hospital was retrieved through review of delivery registration books during the study years. Patient cards and operating room registration books were used to review diagnosis of rupture, surgical intervention and treatment outcome. The admission and discharge registration books were reviewed to retrieve the total number of obstetric maternal deaths and their possible causes during the study period.

The following definitions were used to classify diagnosis of cases

1. Spontaneous uterine rupture was defined as rupture without any iatrogenic manipulation, trauma or oxytocic drugs use or without any previous scar on theuterus.
2. Traumatic rupture was defined as rupture following obstetric manipulation, violence/trauma or use of oxytocic drugs.
3. Incomplete uterine rupture was defined as the separation of the uterine wall without extension through the entire thickness and its peritoneal cover.
4. Complete uterine rupture was defined when the whole uterine thickness including the peritoneal cover was involved.
5. Patients were said to have antenatal care if they had visited a health institution at least once during their prenatal period.
6. Grand multipara was defined as five or more pervious deliveries after 28completed weeks of gestation.

Statistical Analysis

Data were entered in MS Excel sheet and checked thoroughly. Data were analyzed using standard statistical techniques by statistical software SPSS version 19.0.

RESULTS

64 cases of uterine rupture were recorded. All the cards were retrieved. During the same period, there were 4,180 hospital deliveries including 489caesarean deliveries. The frequency of uterinerupture was 1:65 hospital deliveries. Age of cases ranged from 18 to 45 years (mean30.06 year) and Mean parity was 4.1 (range 0 to15).Sixty-nine percent of cases were in 25 to35 year age group, 92.3% were multipara, and54.9% of these were grand multipara. There were three nulliparous cases (7.7%), which followed oxytocin use, myomectomy and placenta percreta. Most cases were from rural areas (89.4%) and only 18% had antenatal care. The mean duration of labor for all cases of ruptured uterus was 62.7 hours, and for women who died 79.6hours. Fifty-nine (92.1%) presented with signs of rupture at admission while 5 (7.9%) ruptured after admission in the hospital. Cephalo-pelvic disproportion was the cause in 51.5% of the cases. Malpresentation and malposition were responsible for 26.56% of the cases. Instrumental deliveries and previous history of uterine scar were associated incidents with uterine rupture in 3.1%; 14.0% respectively. Uses of oxytocin and placenta percreta were the causes in 3.1% and 1.56% of cases respectively (Table 1).

Table 1: The causes of obstetric uterinerupture

Causes	No (%)

Spontaneous	
Cephalopelvic disproportion	33(51.5)
Malpresentation and malposition	17(26.56)
Traumatic	
Forceps	2(3.1)
Pitocin induced	2(3.1)
Previous uterine scar	
Classical	2(3.1)
Luscs	5(7.8)
Myomectomy	2(3.1)
Placenta percreta	1(1.56)

Presenting features include: acute abdominal pain in 48 (75%), tachycardia in 38 (59.37%), hypotension in 26 (40.62%),vaginal bleeding in 22 (34.37%), palpable fetal parts in 27 (42.18%), abdominal tenderness in 42 (65.62%), sepsis in 10 (15.62%) and shock in 25 (39.06%) (Table 2). The mean hemoglobin level at admission was9.5 gm/dl. Sixty eight percent of cases had a hemoglobin level of 10 grams/dl or below. Diagnosis was made based on signs and symptoms in 39 (60.93%). In6 (9.3%) cases diagnosis was made by bi-manual exploration of the uterus before laparatomy. In seventeen patients (26.56%) uterine rupture was identified at laparatomy. The indication for laparotomy was ruptured uterus in 47 (73.43%) and obstructed labor in 17 (25.56%).

Table 2: Presenting features of uterinerupture

Presenting features	Frequency (%)
Abdominal pain	48 (75)
Vaginal bleeding	22 (34.37)
Tachycardia	38 (59.37)
Hypotension	26 (40.62)
Palpable fetal parts	27 (42.18)
Sepsis	10 (15.62)
Shock	25 (39.06)

Rupture was complete in 53 (82.8%) and incomplete in 11 (17.2%) of cases. The most common site of rupture was the lower segment of the uterus in 35 (54.68%) followed by the leftlateral 17 (26.5%), posterior 6 (9.35%), uppersegment4 (6.25%) and right latera l2 (3.12%). There were 10 (18.5%) cases with bladder rupture and all had rupture at the lower uterine segment. Three cases with fundal uterine rupture had a history of previous scar(myomectomy and classical caesarean section)and placenta percreta (Table 3).

Table 3: Site of rupture on the uterus

Site of rupture	Number (%)
Lower segment	35(54.68)
Left lateral segment	17 (26.5)
Upper segment	4(6.25)
Posterior segment	6(9.35)
Right lateral segment	2 (3.12)

Twenty nine cases (45.31%) had total abdominal hysterectomy. Blood transfusion was given to 45(70.31%) cases. Most patients (87.95%) were given one or more antibiotics.

DISCUSSION

Ruptured uterus is a common obstetric hazard in under developed countries. Many hospital based studies in developing countries show a very wide variability of rupture among deliveries attended[10-12,14,15]. The ratio difference might be due to differences in delivery service coverage, number of pregnant women near hospitals and other factors affecting health service use. Since most victims are usually women from rural areas, the ratio of rupture to delivery attendance is not a good indicator for comparison of different localities. Similar to other studies from developing countries, in our study the most common causes were cephalopelivic disproportion, malpresentation and malposition. Multiparity, lack of antenatal care and rural residence were common factors found among the cases. The mean duration of labor was by far greater among women who died as compared to those who survived. The study revealed that most uterine rupture cases were as a result of obstructed labor. The problem might be exacerbated by poor access to health care services, delayed referral and poortransportation facilities [9-12,16,17]. The common presenting features of cases at admission in our study were consistent with other studies[7]. However, a quarter of uterine rupture cases were missed and diagnosis was made during laparatomy. This shows that presentation can be vague and diagnosis depending on high degree of suspicion and awareness. One must constantly be considering the total clinical picture, and lack of vaginal bleeding should not make one consider any less the diagnosis of ruptured uterus. The uterus should be explored manually after delivery in cases with a risk of uterine rupture such as uterine surgeries when the endometrial cavity was entered or difficult instrumental deliveries. Similar to other studies, the majority in our study had complete uterine rupture and the commonest sites were the lower and left lateral uterine segments. All the three cases with fundal uterine rupture had either previous scar or placenta percreta. Bladder rupture was exclusively associated with cases with rupture of lower uterine segment[2,11,18-20]. The type of surgical intervention depended on various factors. When the patient was in hypovolemic or septic shock, there was clean lower uterine segment rupture simulating lower uterine segment caesarean section and un-experienced surgeon repair or sub-total hysterectomy was preferred. The availability of blood for transfusion and the wish for the future child bearing capability were also important

factors to determine the decision. Total abdominal hysterectomy was preferred in the hands of experienced surgeon, relatively reassuring maternal condition and when adequate resuscitative measures were taken. Other authors have also reported different modes of management depending on these factors[10,12,15]. Most lost their childbearing capability because of surgical intervention. In the context of Indian culture, a sterilewoman can face long-term social and economicproblems. In our hospital and studies done elsewhere, vesicovaginal fistula, post-operative wound infection and urinary tract infection were the commonest immediate causes of maternal morbidities associated with rupture of the uterus.Ruptured uterus is associated with highmaternal mortality, maternal morbidity, and perinatal mortality[2,8-10,12-16]. Similar to observations from other authors, the maternal case fatality rate was high (11.1%). On the other hand, fetal mortality rate was found to be relatively higher than in previous reports in which fetal mortality rate ranged from 32.2% to86.3%[6,10,12,14-16,21]. The high maternal morbidity, maternal mortality and fetal mortality that follow uterine rupture calls for an integrated effort to prevent its causes. Good ANC, family planningservices, prompt referral of obstructed labor, availability of transportation and obstetric care are the essential factors to prevent uterine rupture and to decrease the maternal mortality, fetal mortality and maternal morbidity associated with it.

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