

Three Years Experience in the Management of Uterine Rupture at Al-Battool Teaching Hospital Mosul-Iraq

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Abstract

Background: Ruptured uterus is a catastrophic event to both mother and her fetus. Apart from maternal and fetal mortality rates, the incidence of rupture of uterus is often taken as an index of the standard of obstetric care.

Objective: To determine the frequency, causes, management outcome of ruptured uterus at Al Batool maternity hospital.

Method: The study was conducted in the department of obstetrics and gynecology at Al Batool maternity hospital Mosul-Iraq over a period of three years from October 1st 2002 to August 30th 2005. All the cases of uterine rupture presented during the study period were recorded and managed in the department. Data was recorded on designed forms.

Results: Thirty nine cases of ruptured uterus out of 44539 deliveries were registered, the incidence was 0.087%. Age ranged from 15 to 45 years. The majority of the patients were grandmultipara (Para 5 and above), but 7 of the patients were nulliparous women (17.94%). 26 ruptures (66.66%) occurred

in unscarred uterus and 13 ruptures (33.33%) occurred in scarred uterus, cephalopelvic disproportion and obstructed labor were the cause of rupture in 11 cases (28.2%), in addition to the mentioned causes 11 cases of the uterine ruptures we registered in our study (28.2%) were mishandled by the traditional birth attendants, and in 14 cases (35.89%) there was injudicious use of oxytocin. We had three maternal deaths (7.69%) out of 39 patients, and only 10 fetuses out of 39 (25.64%) were alive.

Conclusion: Rupture uterus is still an important cause of maternal and perinatal mortality and morbidity in Iraq, it is not always suspected, and hence increased vigilance is vital. Further studies may help in the development of preventive strategies and ensure prompt management to reduce maternal and perinatal mortality and morbidity.

Keywords: uterine rupture, previous cesarean section, traditional birth attendants.

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Introduction

Rupture uterus is common obstetric problem in under developed countries. Obstetrical care in the western world is at its peak, but in the developing countries, it is still at the docks, due to illiteracy, male dominant society and untrained birth attendants. Majority of population living in rural areas do not have an easy accessibility to maternity and obstetric care.

The incidence of uterine rupture may vary appreciably among institutions; it complicates 0.05% of all pregnancies⁽¹⁾. A reported incidence with no appreciable change since 1930⁽²⁾.

This study was conducted in a tertiary level maternity hospital in Mosul city which is the second largest city in Iraq. The number of deliveries in this center is "between" 15000-17000 per year. This study can reflect the incidence and causes of rupture uterus in Iraq. The etiology of uterine rupture has been affected by the changing trends of obstetric practice. Today, the most common cause of rupture is separation of a previous cesarean scar⁽³⁾. Rupture of the unscarred uterus is rare and potentially catastrophic event. Grand multiparty, neglected labor, malpresentation, breech extraction, and uterine instrumentation are all predisposing factors for uterine rupture. Other predisposing factors include congenital anomaly, abnormal placentation, and inappropriate oxytocin administration⁽⁴⁾. Maternal death is a rare complication of rupture, though it is more common in ruptures occurring outside the hospital and in women with unscarred uterus. Indeed,

20% of maternal deaths from hemorrhage were due to ruptured uterus⁽⁵⁾. Overall, uterine rupture accounts for approximately 5% percent of all maternal deaths each year⁽⁶⁾.

The initial signs and symptoms of uterine rupture are typically nonspecific, a condition which makes diagnosis difficult and sometimes delays definitive therapy. Physicians must maintain a high index of suspicion for possible rupture, especially in the presence of fetal bradycardia or other evidence of fetal distress⁽⁷⁾.

Neonatal outcome after uterine rupture depends largely on the speed with which surgical rescue is carried out⁽⁸⁾. As a rule, the time available for successful intervention after frank uterine rupture and before the onset of major fetal morbidity is only 10-37 minutes⁽⁹⁾.

Because of the short time available for successful intervention, the following 2 premises should always be kept firmly in mind: (a) Maintain a suitably high level of suspicion regarding a potential diagnosis of uterine rupture, especially in high-risk patients. (b) When in doubt, act quickly and definitively.

Methods

Our study was held in AL-Battool maternity hospital in Mosul, it is a tertiary level hospital. The study was started from Oct. 1st, 2002 till August 30th, 2005. All cases of uterine rupture which were received during this period were included in the study, 44539 deliveries occurred in this period of time. The author of this paper was involved in almost all the cases, data on age, place of residence, parity, previous obstetric history, period of gestation,

duration of labor pain and history of mishandling by midwives and traditional birth attendants were recorded. The site and type of rupture, the type of surgery performed, units of blood transfused and maternal and fetal outcomes were recorded in designed forms. All the cases were diagnosed and properly managed regarding history, physical and obstetrical examination, investigations, preparation of blood, preparation for examination under general anesthesia and laparotomy, the needed operation, the postoperative care for the mother and the living infant.

Analysis was done by manual method; the incidence was calculated from the total number of deliveries that occurred in the hospital during the same period.

Results

A total of 39 cases of ruptured uterus were registered from October 1st, 2002 till August 30th, 2005 among 44539 total deliveries with an incidence of 0.087%. All the ruptures were outside the hospital apart from 3 cases which occurred in the hospital. The age of our patients ranged from 15 to 45 years, 22 cases (56.41%) were at the age of 20 to 30 years, 11(28.2%) between 30 to 40, 5 (12.82%) less than 20 years and one patient was 45 years old.

Eighteen(46.15%) of the cases were grandmultiparous women (Para 5 and above), 14 were multiparous (35.89%) and 7(17.94%) were nulliparous.

The rupture occurred after 36 weeks in 25 cases (64.102%), in 4 patients (10.25%) it occurred between 33 and 36 weeks, in 3 cases (7.69%) between 24 and 32 weeks and in 7 cases (17.94%) the gestational age was less than 24 weeks.

Twelve of the ruptures (30.76%) occurred during pregnancy and 27 (69.23%) during labor.

Table-1 presents the causes of uterine rupture in our patients. 26 of the ruptures (66.66%) were in unscarred uterus and 13 (33.33%) of in scarred uterus of these, silent scar dehiscence was the cause of rupture in 5 cases (38.46%), in the other 7 (53.84%) the rupture was after spontaneous labor in scarred uterus.

Cephalopelvic disproportion and obstructed labor were the cause of rupture in 11 cases (28.2%). In addition to the mentioned causes 11 (28.2%) of the registered ruptures were mishandled by the traditional birth attendants, and in 14 cases (35.89%) there was injudicious use of oxytocin.

The diagnosis was suspected in 22 cases (56.4%) and not suspected in 17 (43.58%). Thirty three patients (84.61%) had symptoms while in 6 cases (15.38%) there was no symptom of rupture uterus. The symptoms are plotted in **(Table-2)**.

(Table-1)

Causes of Obstetric Uterine Rupture in Mosul

Causes	No.	Frequency (%)
Cephalopelvic disproportion & obstructed labor	11	28.2
Malpresentation	3	7.69
Previous uterine scar	13	33.33
Spontaneous rupture in rudimentary horn	3	7.69
Previous uterine perforation	4	10.25
Abnormal fetus, hydrocephalic fetus	1	2.56
Manipulation of the second twin	1	2.56
Ante partum hemorrhage	2	5.12
No cause	1	2.56

(Table-2)

Presenting Features of Uterine Rupture Cases Studied

Presentation	No.	Frequency
Abdominal pain	30	76.92
Vaginal bleeding	19	48.71
Tachycardia	29	74.35
Hypotension	22	56.41
Shock	10	25.64
Fetal distress	15	38.46
postpartum hemorrhage	4	10.25
Huge vulval edema	2	5.12

During laparotomy the type of rupture was complete in 32 patients (82.05%) and incomplete in 7(17.94%). Left lateral wall was the commonest site of rupture as appears in **(Table-3)**.

(Table-3)

Site of Uterine Rupture

Site of rupture	No.	Frequency
Upper segment	4	10.25
Left lateral wall	13	33.33
Right lateral wall	7	17.94
Lower segment	8	20.51
Posterior wall	7	17.94

Treatment options as in **(Table-4)** were hysterectomy in 12 patients (30.76%), repair with sterilization in 7 cases (17.94%), and repair without sterilization in 20 patients (51.28%), we needed associated surgery in 7 (17.94%) cases of these; bladder repairs in 3 (7.69%) patients and ureteric implantation in 2 patients (5.12%) and in 2 (5.12%) cases we needed ligation of the internal iliac artery.

(Table-4)

Management of Rupture Uterus

Treatment	No.	Frequency
Hysterectomy	12	30.76
Repair and sterilization	7	17.94
Repair without sterilization	20	51.28
Associated surgery	7	17.94

Three of the patients died (7.69%), one due to pulmonary embolism, two irreversible shock one died on the table and one 48 hours later. The other thirty six patients were alive (92.3%). Of these, two (5.12%) had ureteric injury, three (7.69%) had bladder injury one of them (2.56%) developed vesicovaginal fistula after bladder repair. Other maternal complications were demonstrated in (Table-5).

(Table-5)
Maternal post-operative complications

Post operative complications	No.	Frequency
Pulmonary embolism	2	5.12
Shock status and needed intensive care unit	9	23.07
Renal failure	1	2.56
DIC	1	2.56
Ureteric injury and bladder injury	5	12.8
Patients needed blood transfusion	25	64.1
Paralytic ileus	1	2.56
Developed pyrexia	9	23.07
Wound infection	4	10.25
Anemia	20	51.28

Fetal survivals were 10 out of 39 fetuses (25.64%), 26 intra-partum fetal deaths (66.66%) and 3 neonatal deaths (7.69%).

Discussion

The incidence in our study was expected in large maternity hospital at a tertiary level because of the concentration of abnormal cases and referred cases. Comparing this with a study from United Kingdom⁽¹⁰⁾ which showed an incidence of 0.06%, and study from Pakistan⁽¹¹⁾ and from Kingdom of Saudi Arabia⁽¹²⁾ showed an incidence of 0.98% and 0.09% respectively. This confirms that the incidence of uterine rupture may vary appreciably among institutions, due to quality of medical care.

All the studied ruptures were outside the hospital apart from three ruptures which occurred inside the hospital, in two patients the rupture was due to spontaneous labor in previous cesarean section, the third rupture was in 45 years old grandmultiparous woman admitted with early labor, after two hours she started to have tearing abdominal pain, mild vaginal bleeding, tachycardia and hypotension. She was immediately taken to the theater for laparotomy there was massive hemoperitonium due to bleeding at the rupture site which was longitudinal irregular tear at the left lateral wall, total abdominal hysterectomy was done the patient needed 24 units of blood but we

lost the patient due to irreversible shock, no cause was found apart from grandmultiparity.

Seven ruptures (17.94%) occurred in nulliparous women, three of them were due to pregnancy in rudimentary horn and the other four were referred to us from the rural areas, one of them the rupture was due to manipulation of the second twin which was in transverse lie, the second was due to obstructed labor not discovered by the local traditional birth attendants, the last two presented to us with huge vulval edema and obstructed labor due to mismanagement of the traditional birth attendants and the injudicious use of oxytocin, we managed to do repair of the ruptures in all these cases and they were all in good condition after the repair. A study from Ethiopia⁽¹³⁾ showed three nulliparous women (5.6%), while a 10-year Irish study by Gardeil et al⁽¹⁴⁾ showed no case of uterine rupture among primigravidas. The high number of nulliparous women in our study was due to poor access to health care services, delayed referral and poor transportation facilities.

The majority of the studied ruptures in our centre occurred in unscarred uterus, this goes with the results from Pakistan⁽¹¹⁾, but it is on the contrary to studies from United Kingdom⁽¹⁰⁾ & Taiwan⁽¹⁵⁾.

Ruptures during pregnancy were due to rupture in missed abortion not responding to oxytocin, pregnancy with previous 2 and 3 scars, placenta accrete, one rupture in grandmultiparous woman with severe polyhydramniotic at 32 weeks gestation, we found no other cause for rupture apart from the hugely distended abdomen, the last case was in 32 weeks pregnant lady, admitted as a case of intrauterine death complicated with abruptio placenta.

Cephalopelvic disproportion and obstructed labor in addition to labor in previous cesarean section were the main causes as shown in table-1, this is similar to the results from Pakistan at Ayub teaching hospital⁽¹¹⁾, while a series of uterine rupture studied in the United Kingdom⁽¹⁰⁾, showed that the major cause was labor in previous cesarean section. Lynch JC and Pardy JP⁽¹⁾, reported that oxytocin stimulation of labor has been associated with uterine rupture, especially in women of high parity, today uterine rupture due to oxytocin stimulation is rare even among parous women, but uterine rupture rates are increased if the uterus is scarred. The problem might be exacerbated by poor access to health care services. The presenting features as shown in table-2 agree with those from United Kingdom study⁽¹⁰⁾ While Bujold and Gauthier⁽⁹⁾ and Leung et al⁽¹⁶⁾ showed that abnormal patterns in fetal heart rate were the

most common finding associated with uterine rupture.

The commonest site of rupture was the left lateral wall of the uterus as shown in table-3, this goes with study from Ethiopia⁽¹³⁾, but does not agree with the results from United Kingdom⁽¹⁰⁾. The majority of ruptures were in the lower segment; this difference may be related to the incidence of uterine rupture in scarred and unscarred uterus which differs between institutions.

The type of surgical intervention depends on various factors, patients' condition, and surgeon experience, facilities available and future child bearing capability. The surgical management was shown in table-4, Leung et al⁽¹⁶⁾ a study from Ayub teaching hospital⁽¹¹⁾ showed similar results to ours. While Kieser and Baskett⁽¹⁷⁾ found that (6%) of patients who developed complete uterine rupture required hysterectomy and also found that (17%) of patients who developed uterine rupture had a cystotomy. Maternal consequences of uterine rupture in our study as plotted in table-5 were in agreement with the results reached by Cowan et al⁽¹⁸⁾ and Kieser and Baskett⁽¹⁷⁾ and also agree with a study from Ethiopia⁽¹³⁾.

Maternal death as a consequence of uterine rupture occurs at a rate of 0-1% in modern developed nations, but the mortality rates in developing countries are 5-10%⁽¹⁹⁾ which goes with our results as we had 3 dead mothers (7.69%). The availability of modern medical facilities in developed nations is likely to account for this difference in maternal outcomes.

We had only 10 babies alive (25.64%) as in a study from Ethiopia⁽¹³⁾, but Landon *et al*⁽²⁰⁾ reported a perinatal death rate from uterine rupture of (2%) among 19 academic centers in the United States. These studies indicate that the incidence of perinatal death associated with uterine rupture is decreasing in the modern era.

Conclusion

From our results, rupture uterus is still an important cause of maternal and perinatal mortality and morbidity in Iraq. Further studies may help in the development of preventive strategies and ensure prompt management to reduce maternal and perinatal mortality and morbidity. Good antenatal care, family planning services, prompt referral of obstructed labor, availability of transportation and obstetric care are the essential factors to prevent uterine rupture and to decrease maternal and fetal mortality associated with it.

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Al- Kindy Col Med J 2008; Vol .4 (2): P-34

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