

RUPTURE OF UTERUS- A FIVE YEAR PROSPECTIVE STUDY IN A TEACHING HOSPITALK. Saritha¹, R. Sowjanya², V. Sireesha³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVE: Uterine rupture is a preventable obstetric complication. The aim of the study is to know the incidence of uterine rupture, find out the predisposing factors, maternal and foetal outcome in a tertiary teaching hospital and suggest measures to decrease the incidence of rupture uterus. **MATERIAL AND METHODS:** All cases referred to the hospital with rupture uterus and cases delivered in the hospital with rupture of uterus between July 2010 to June 2015 were included in the study. Age, parity, gestational age, mode of delivery, type of rupture, surgery done, and foetomaternal outcome were noted. **RESULTS:** The incidence of rupture uterus in the present study was 1.32 per 1,000 deliveries. Most of these patients were young with mean age of 24.23 years, 1st and 2nd gravida. Previous caesarean scar and traumatic instrumental delivery with forceps were common risk factors. Maternal morbidity was high and maternal mortality was 7.89% and foetal loss was high (78.95%). Uterine repair with bilateral tubectomy was the commonest surgery performed. **CONCLUSION:** Causes of rupture uterus are preventable. Proper antenatal care, early referral of patients with risk factors to centres equipped with facilities for surgical intervention and facilities for blood transfusion, careful monitoring of women in labour with partogram, judicious use of oxytocin will go a long way in decreasing the incidence of rupture uterus.

KEYWORDS: Rupture uterus, Fetomaternal outcome, Unbooked, Maternal mortality.

INTRODUCTION: Rupture of gravid uterus is a catastrophic event in the obstetric career of a woman. It is associated with a high rate of maternal and foetal mortality. Rupture uterus is a rare event in the developed world but it is still a significant problem in the developing countries. Rupture incidence varies between 0.5 to 9 per 1000 deliveries. Uterine rupture is seen mostly during labour, but can occur during all trimesters of pregnancy.¹

Previously rupture of unscarred uterus secondary to neglected obstructed labor was more common but with increasing rate of caesarean section rupture of the scarred uterus has become common.

Congenital uterine anomalies, cephalopelvic disproportion, grand multiparity, previous myomectomy and caesarean scar, foetal macrosomia, labour induction and augmentation, neglected labour, abnormal lie and instrumental delivery are all predisposing factors for uterine rupture.

Uterine rupture is associated with high rates of foetal and maternal morbidity and mortality.² In this context the present five year prospective study was undertaken to determine the incidence of uterine rupture, examine the predisposing factors, clinical features, associated morbidities and foetomaternal outcome of patients and to suggest preventive measures.

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MATERIAL AND METHODS: This prospective study was conducted between July 2010 to June 2015 at a tertiary teaching hospital in the government sector, which caters to the population of neighboring four districts. Most of the patients were referred to the hospital from peripheral centers. Rupture of uterus which occurred in the institute and cases which were referred from outside in the above mentioned period were included in the study. The information of age, parity, number of living children, booking status, type of care and mode of delivery were noted. The vital data pulse rate, volume, blood pressure, pallor, temperature recorded. Per abdominal examination was done in all cases. Per speculum examination was done to rule out traumatic causes of PPH. The investigations done included complete blood picture, blood grouping & typing, blood sugar, serum creatinine and coagulation profile. Intravenous access was secured with large bore cannulas and patients were stabilized. Blood and blood components were ordered as per the need. At laparotomy the site of rupture and type of previous scar, amount of hemoperitoneum were noted. The type of surgery done, maternal and foetal morbidity and mortality, postoperative complications were noted. The patients were closely observed till discharge, follow-up done up to 6 weeks.

Inclusion Criteria:

1. Any rupture occurring during antenatal & intrapartum period after 28 weeks of gestation.
2. Any rupture occurring in the institution.
3. Cases delivered outside with rupture of uterus which is referred to institution.

Exclusion Criteria:

1. Any rupture before 28 weeks of gestation.
2. Any rupture occurring as a result of road traffic accident or blunt injury or trauma to abdomen.

OBSERVATIONS AND RESULTS:

Year	No. of Cases	No. of Deliveries	Incidence of rupture uterus (per 1000 deliveries)
July 2010–June 2011	8	5612	1.42
July 2011–June 2012	7	5299	1.32
July 2012–June 2013	7	5528	1.26
July 2013–June 2014	8	6101	1.31
July 2014–June 2015	8	6138	1.30
	38	28,678	1.32

Table I: Year wise distribution of number of cases and incidence of Rupture Uterus

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Incidence of rupture uterus was 1.32 per 1000 deliveries during study period.

Age in Years	No. of patients	Percentage
18-20	5	13.16
21-25	26	68.42
26-30	5	13.16
31-35	2	5.26
Mean age 24.23 years Range 20 -35 years		
Education		
None	10	26.31
Primary Education	14	36.84
Secondary	12	31.58
Degree	2	5.26
Occupation		
Daily wage workers	11	28.95
House wives	13	34.21
Semiskilled	4	10.53
Agriculture Labour	10	26.31
Parity		
Primipara	5	13.16
Para 2	33	86.84
Booking status		
Booked	3	7.89
Unbooked	35	92.11
Gestational Age		
28-32 weeks	4	10.53
33-36 weeks	15	39.47
37-40 weeks	19	50.00
Birth weight of Babies		
	No. of patients	Percentage
1.5-2 kg	8	21.05
2.1-2.5 kg	13	34.21
2.6-3.0 kg	11	28.95
3.1-3.5 kg	4	10.53
3.6-4.0 kg	2	5.26
Mean weight 2.6 kg Range 1.40-3.8 kg		
Foetal outcome		
	No. of patients	Percentage
Live	8	21.05
Dead	30	78.95

Table II: The bio-sociodemographic characteristics of the women

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Etiology	No. of patients	Percentage
Previous LSCS		60.53
One C/s	21	
Two C/s	2	
Inverted T incision	3	7.89
Classical scar	9	23.68
Obstructed labour	6	15.79
Instrumental delivery	7	18.42
Oxytocin	4	10.53

Table III: Etiological factors attributable to uterine rupture

*More than one etiological factor was associated in some cases.

Period	Number of patients	Percentage
Antenatal rupture	11	28.95
Intrapartum	27	71.05

Table IV: Period during which rupture occurred

Presentation	No. of cases	Percentage
Abdominal pain	24	63.16
Vaginal bleeding	13	34.21
Shock	15	39.47
Distorted uterine contour	6	15.79
Palpable foetal parts	5	13.16
Hematuria	3	7.89
Foetal distress	1	2.63

Table V: Clinical presentation of patients with uterine rupture

Type of Surgery	No. of Patients	Percentage
Uterine repair	2	5.26
Uterine repair +Bilateral tubal ligation	29	76.31
Subtotal abdominal hysterectomy	3	7.89
Total abdominal hysterectomy	4	10.53

Table VI: Type of surgery performed at laparotomy for uterine rupture

DISCUSSION: Rupture of gravid uterus is a catastrophic event which affects the reproductive function of the woman. It is a major contributor to the maternal and foetal morbidity and mortality. It is associated with an environment where obstetric care is poor and delivery is either unsupervised or conducted by unskilled birth attendants. During the period between July 2010 to

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June 2015, there were 28,678 deliveries and the number of uterine ruptures in the above period was 38. The incidence of uterine rupture in this study is 1 in 754 deliveries, 1.32 per 1000 deliveries. Incidence of rupture varies widely depending on the quality of care. Some authors reported much higher incidence.^{1,3} The low incidence was reported from western studies with the lowest incidence of 0.4 per 1000 deliveries being recorded.^{4,5,6} Studies in Singapore noted lesser incidence of 1 in 6331 deliveries.⁷

In the present study 92.11 percent of patients were unbooked, it is a reflection of what is obtained in most developing countries as against that in developed countries where most patients had qualitative obstetric care.^{8,9} The socioeconomic status, poverty, literacy level would have an impact on women seeking antenatal care. The age group in which maximum cases are seen is between 21 to 25 years compared to 25 to 29 years in other study.¹⁰ In this study most of the patients had primary education or were illiterate and were financially dependent on either their parents or husband. Lack of financial resources and awareness might have prevented them from seeking better qualitative care.

Grand multiparity had been identified as a high risk factor by some studies.^{11,12} In the present study rupture occurred mostly in women who were para 2. The trend of increased uterine rupture among women of low parity could be a result of increased primary caesarean section rate. Nyengidiki et al reported high incidence of uterine rupture in primipara.¹⁰ The rupture of unscarred uterus had been well documented as common in developing countries.¹³ This study however identified rupture to be more in patients with previously scarred uterus as had been noted in other studies.^{13,14} Scar rupture is commonest cause for uterine rupture that occurs in women attempting vaginal birth after prior caesarean section.^{15,16}

In the present study it was found that among the uterine scars classical scar in the upper segment and inverted T shape scar with the vertical limb extending into the upper segment of uterus are more prone to rupture during antenatal period and lower segment scars during labour.

Disruption of previous caesarean scar is the commonest cause for rupture in the developed world with incidence of LSCS scar rupture in range of 0.5% to 0.9% (AAP and ACOG 2007) and classical scar rupture 4–9%.¹⁷

With the increasing rate of caesarean section, the rate of rupture in scarred uterus is increasing even in developed countries (Zeteroglu et al 2005).¹⁸

Injudicious use of oxytocics was also noted to be contributory to rupture of gravid uterus especially in patients with previous caesarean section.^{19,20} Most unbooked patients presented at maternity homes run by unskilled personnel with little or no knowledge of basic obstetric care and also at private clinics that use oxytocics on patients with previous C-section scar without careful monitoring of these patients in labour.

In our study we also had 18.42 percent of cases who had a forceps delivery outside and were brought to hospital with traumatic postpartum hemorrhage. These were the patients who had a total hysterectomy to control the postpartum hemorrhage. The incidence of iatrogenic rupture has been directly linked to the number of skilled personnel attending to the patients.²¹ The ratio of scarred to unscarred uterus ratio was 1.53:1, whereas Mbamara SU et al. reported 2.1:3 and Chen LH et al reported 3:1.²²

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The classical signs and symptoms of uterine rupture include foetal distress, loss of uterine contour and contraction, abdominal pain and hemorrhage, recession of foetal presenting part and shock. It has been postulated that from the time of diagnosis to delivery only 10-37 minutes are available before clinically significant foetal morbidity becomes inevitable due to catastrophic hemorrhage or foetal anoxia. In the present study most common presenting symptoms were abdominal pain, vaginal bleeding and shock.

Complete uterine rupture in which the foetus was already extruded into the peritoneal cavity was observed in most of the cases in our study as well as in other study.²³ In these cases majority of fetuses were dead (78.95%) reflecting the high perinatal mortality rate.

In most studies anterior uterine wall rupture with various extensions is the commonest site of uterine rupture. The observed involvement of cervix, vaginal vault, urinary bladder and broad ligament are known complications uterine rupture. The rupture of unscarred uterus more commonly involves the cervix and vagina while rupture of scarred uterus usually involves the urinary bladder.²⁴

Majority of patients (76.31%) in the present study had uterine repair with bilateral tubal ligation, very few patients (5.26%) had only uterine repair due to low parity and desire for more children. This is similar to other study.²³ Subtotal and total hysterectomies were performed in 7.89 and 10.53 percent of patients respectively.

Most women with previous uterine rupture with meticulous tertiary level antenatal care may have a favourable outcome in subsequent pregnancies but childbirth after uterine rupture is not to be recommended routinely.²⁵

Maternal deaths in India due to uterine rupture have been reported to range from 3.33% to 9.3%.²⁶ Perinatal mortality remains high and is around 78%.

There were 3 maternal deaths in the present study. The high maternal and perinatal morbidity and mortality recorded is in contrast to the observations in Netherlands where there are no maternal deaths due to uterine rupture and over 90 percent of the fetuses were salvaged.⁴ Late presentation to the hospital is a major cause of this poor prognosis. This could be a result of poverty, illiteracy, delayed referral, poor transport network and non-availability of compatible blood.

CONCLUSION: Uterine rupture constitutes a major obstetric emergency in the study hospital and has potentially catastrophic implications for the mother and baby. A rise in the incidence of uterine rupture is expected as there is an increasing trend of caesarean deliveries. Antenatal care is a must for every pregnant woman as also skilled attendants at delivery. Patients with previous caesarean section should be adequately counseled on the need for hospital delivery in their subsequent pregnancy. Risk factors for uterine rupture should be assessed both during antenatal period and intrapartum. All women in labour should be monitored by skilled birth attendants. Maintenance of partogram will help in early identification of protracted labour and prevent obstructed labour leading to rupture. Early diagnosis of malpresentations and appropriate management is important. High instrumental delivery must be avoided and forceps application is to be done only under supervision. Careful selection of patients for trial of VBAC and adequate training of doctors and midwives to detect early warning symptoms and signs of uterine rupture

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is mandatory. Caution should be exercised regarding use of oxytocics for augmentation of poorly progressing multiparous women and those with prior caesarean sections.

Most of the cases of uterine rupture are preventable. Health care services should be accessible to all and infrastructure should be strengthened to deal with obstetric emergencies. Accurate and timely diagnosis and measures for swift and appropriate interventions would help to save lives of mothers and babies.

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