

# Uterine Rupture: Maternal and Perinatal Outcome

Nasreen Fatima <sup>1\*</sup> Yusra Ali <sup>1</sup>

## ABSTRACT

**Objective** To evaluate maternal and perinatal outcome in patients with uterine rupture.

**Study design** Cross-sectional study.

**Place & Duration of study** Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Center (JPMC) Karachi, from January 2018 to December 2018.

**Methodology** All cases of ruptured uterus that occurred during pregnancy in patients admitted either through emergency or developed this complication at hospital, were enrolled in the study after informed consent. History and physical examination findings were noted and maternal and perinatal outcome was analyzed. Patients were followed up to one month after surgery for the development of complications. Data compilation and analysis were done by using SPSS version 25.

**Results** A total of 63 patients were managed. Mean age of study subjects was 30.78±4.75 year. Forty-eight (76.1%) women were between 26 – 35 years of age and 49 (77.7%) were mothers of 2 -4 children. Forty-three (68.3%) had gestational age more than 35 weeks. Majority (n=56 - 88.9%) were un-booked cases. Forty-eight (76.2%) patients had rupture in previously scarred uterus; however 15 (23.8%) patients had uterine rupture in previously un scarred uterus. Eleven (17.5%) patients underwent obstetrical hysterectomy, four (6.3%) had uterine and bladder repair, while 48 (76%) had only uterine repair. Bladder injury found in 3 (4.8%) and disseminated intravascular coagulation observed in 7 (11.1%) patients. Fifty-four (85.7%) patients had fresh still birth and 7 (11.1%) babies were delivered alive.

**Conclusion** High maternal morbidity and perinatal mortality is attributed to uterine rupture as noted in this study.

**Key words** Uterine rupture, Maternal morbidity, Perinatal mortality, Obstetrical hysterectomy, Uterine repair.

## INTRODUCTION:

Rupture of gravid uterus is predominant cause of massive obstetric hemorrhage resulting in high maternal morbidity, mortality as well as significant perinatal mortality.<sup>1</sup> This obstetric catastrophe is more prevalent in developing countries.<sup>2</sup> The incidence of this condition varies from 1:200 to 1:3000 deliveries.<sup>3,4</sup> In Pakistan about 7.76% maternal deaths

are attributed to the uterine rupture.<sup>5</sup> Cesarean section, myomectomy, hysterotomy, previous difficult uterine curettage that led to uterine perforation, grand-multiparity, obstructed labor, injudicious use of oxytocin and instrumental delivery are enlisted as risk factors for uterine rupture.<sup>6-10</sup>

Uterine rupture results in complications like hypovolemic shock, acute renal failure, disseminated intravascular coagulation, obstetrical hysterectomy, urinary bladder injury, even maternal and perinatal deaths.<sup>11</sup> Poverty, illiteracy, lack of medical facilities and aversion from cesarean section after previous cesarean delivery are the predominant reasons resulting in the high prevalence of this condition in developing countries.<sup>12-14</sup> This study aimed to evaluate

<sup>1</sup> Department of Obstetrics and Gynaecology Ward-9 JPMC Karachi

## Correspondence:

Dr. Nasreen Fatima <sup>1\*</sup>

Department of Obstetrics and Gynaecology Ward-9 JPMC Karachi

E mail: drnasreenf@gmail.com

the maternal and perinatal outcome associated with ruptured uterus at the study centre.

**METHODOLOGY:**

This cross sectional study was conducted at Department of Obstetrics & Gynecology, Jinnah Postgraduate Medical Center Karachi. Consecutive cases with suspected uterine rupture during pregnancy admitted through emergency or already in hospital were enrolled. Data spanned over one year from January 2018 to December, 2018. Institutional review board permission was taken and informed consent obtained.

Patients with singleton pregnancy, cephalic presentation and age 20 to 45 years were included. Cases of preeclampsia, HELLP syndrome, diabetes mellitus, history of recent infection and platelet disorders were excluded. Brief history was taken, and examination performed. Uterine rupture was diagnosed/suspected on the basis of history and clinical examination. Emergency management done, and operative findings noted. Patients were followed for one month after surgery. Data compilation and analysis was done using SPSS (statistical packages of social sciences) version 25. Quantitative variables were presented as mean± SD. Qualitative variables were presented with frequencies and percentages.

**RESULTS:**

Total of 63 patients were enrolled in this study. The mean age of patients was 30.78±4.75 year (from 22 to 45 years). Most (n=28 – 44.4%) of the patients were between 26-30 years. Forty-nine (77.7%) patients were mothers of 2-4 children. Fifteen (23.8%) patients had spontaneous vertex deliveries previously and 19 (30.2%) had cesarean section. Most (n=56 – 88.9%) of the cases were unbooked. Thirty-nine (61.9%) women had scar dehiscence. Still birth occurred in 54 (85.7%) patients. Mean blood loss was 1003.17±471.77 ml. Mean transfusions of packed cells, fresh frozen plasma and platelet were 2.95 ±1.00, 2.65 ± 1.75 and .29 ±1.06 respectively. Mean duration of hospital stay was 6.75±2.70 days. Eleven (17.5%) patients had obstetrical hysterectomy, 4 (6.3%) underwent uterine with bladder repair and 48 (76%) had uterine repair. The details of frequency distribution of patients' characteristics and management outcome are presented in table I.

**DISCUSSION:**

Rupture of gravid uterus commonly occurs in developing countries and is still a major cause of maternal and perinatal morbidity and mortality.<sup>15,16</sup> Majority of uterine ruptures occur in patients of very

<b>Table I: Patients' Characteristics</b>	
<b>Characteristics (n=63)</b>	<b>n (%)</b>
<b>Age (years)</b>	
Up to 25	6 (9.5)
26-30	20 (31.7)
31-35	28 (44.4)
>35	9 (14.3)
<b>Gravidity (n)</b>	
2-4'	34 (54)
> 4	29 (46)
<b>Parity (n)</b>	
2-4'	49 (77.7)
> 4	14 (22.2)
<b>Gestational Age (weeks)</b>	
<35	20 (31.7)
>35	43 (68.3)
<b>Previous Mode of Delivery</b>	
SVD	15 (23.8)
C/Section	19 (30.2)
SVD+C/Section	29 (46)
<b>Booked Patients</b>	
Yes	7 (11.1)
No	56 (88.9)
<b>Urea / Creatinine</b>	
Normal	62 (98.4)
Raised	1 (1.6)
<b>Fetal Outcome</b>	
Alive	7 (11.1)
FSB	54 (85.7)
Others	2 (3.2)
<b>Sepsis</b>	
Yes	8 (12.7)
No	55 (87.3)
<b>Wound Infection</b>	
Yes	8 (12.7)
No	55 (87.3)
<b>Anemia</b>	
Yes	14 (22.2)
No	49 (77.8)
<b>Bladder Injury</b>	
Yes	3 (4.8)
No	60 (95.2)
<b>DIC</b>	
Yes	7 (11.1)
No	56 (88.9)

young age group (26-35 years), and same age distribution was observed in another study.<sup>17</sup> In our study 49 (77.7%) patients had parity of 2-4 whereas only 14 (22.2%) patients were grandmultipara which is comparable to that reported in literature.<sup>2</sup> Scarred uterus was the major risk factor for uterine rupture as documented in the index study. Same is observed in other studies.<sup>2,18,19</sup>

Rising cesarean section rate worldwide, inadequate monitoring during labor, missed diagnosis, lack of medical facilities and injudicious use of oxytocin are mainly responsible for uterine rupture during pregnancy. In our study 15 (23.8%) patients had uterine rupture in previously unscarred uterus mainly because of neglected obstructed labor, grandmultiparity and injudicious use of oxytocin which is also reported by others.<sup>2</sup> Majority of the patients in our study were unbooked. They did not receive antenatal care as reported in other series.<sup>20-22</sup>

In 48 (76%) patients we performed uterine repair successfully. However obstetrical hysterectomy was performed in 11 patients while 4 had uterine and bladder repair which is in contrast to the study in which 63.5% patients had hysterectomy as most of the patients in that study had ruptured an unscarred uterus and was found irreparable.<sup>1</sup> Rupture in previously scarred uterus has got more favorable outcome than unscarred uterus in terms of less blood loss, easy repair and eventually less postoperative complications.

Uterine rupture is associated with very high perinatal mortality as only 7 (11.1%) babies were delivered alive and 54 (85.7%) were fresh still births as seen in index study. Anemia, sepsis and wound infections were the commonest complications noted in our patients and same findings observed in another study.<sup>3</sup> Only 1(1.6%) patient had acute renal failure in index study. This obstetric catastrophe is associated with heavy blood loss requiring multiple transfusion. The mean pack cell volume, fresh frozen plasma and platelet transfusion used in our study was  $2.95 \pm 1.00$ ,  $2.65 \pm 1.75$  and  $0.29 \pm 1.96$  respectively. Total hospital stay was  $6.75 \pm 2.70$  days. Patients who had uterine and bladder repair needed prolonged hospitalization than those who underwent obstetrical hysterectomy and uterine repair. Fortunately no maternal death was observed in our study mainly because of timely diagnosis as well as appropriate management, with availability of blood and blood products.

#### CONCLUSION:

Ruptured uterus is an important obstetric complication which is associated with high perinatal

mortality and maternal morbidity and mortality.

#### REFERENCES:

1. Neena C. Analysis of uterine rupture in tertiary center in Eastern Nepal: Lessons for obstetric care. *J Obstet Gynaecol.* 2006;32:574-579 doi: 10.1111/j.1447-0756.2006.00461.
2. Sadia S, Tahir S. Uterine rupture in pregnancy- One year experience. *Ann Punjab Med Coll.* 2012;6:47-50.
3. Anklesaria BS, Savaliya MV. Rupture Uterus. In: Krishna U, Tank DK, Jaypee Brothers (P) Ltd. 2001:468-71.
4. Ofir K, Sheiner E, Levy A, Katz M, Mazor M. Uterine rupture: risk factors and pregnancy outcome. *Am J Obstet Gynecol.* 2003;189:1042-1046. doi:10.1067/s0002-9378(03)01052-4.
5. Malik HS. Frequency predisposing factors and feto-maternal outcome in uterine rupture. *J Coll Physician Surg Pak.* 2006;16:472-5.
6. Belfor MA, Dildy GA. Postpartum hemorrhage and other problems of third stage. In: James DK, et al eds. *High risk pregnancy management options*, 4<sup>th</sup> ed. London: WB Saunders. 2011:1283-311.
7. Parker WH, Lacampo K, Log T. Uterine ruptures after laparoscopic removal of a pedunculated myoma. *J Minim Invasive Gynecol.* 2007;14:362-4.
8. Le Maire WJ, Louisy C, Dalassendri K, Muschenheim F. Placenta percreta with spontaneous rupture of an unscarred uterus in second trimester. *Obstet Gynecol.* 2001; 98:927-9.
9. Reed WC. Large uterine defect found at caesarean section. A case report. *J Reprod Med.* 2003;46:39-40.
10. Mishra N, Chandraharan E. Rupture of uterus. In: Warren R et al eds. *Best practice in labor and delivery*. 1s ted. New York Cambridge. 2009:252-61.

11. Kwee A, Bots ML, Visser GH, Bruinse HW. Uterine rupture and its complications in Netherlands: a prospective study. *Eur J Obstet Gynecol Reprod Biol.* 2006;16:472-5.
12. Ezechi OC, Mabayoje P, Obiesie LO. Rupture uterus in Southern Western Nigeria: a reappraisal. *Singapore Med J.* 2004; 45:113-6.
13. Gessesew A, Melese MM. Rupture uterus - eight year retrospective analysis of causes and management outcome in Adigrat Hospital, Tigray Region, Ethiopia. *Ethiop. J Health Dev.* 2002;16:241-5.
14. Chen LH, Tan KH, Yeo GS. A ten year review of uterine rupture in modern obstetric practice. *Ann Acad Med Singapore.* 1995;24:830-5.
15. Ezegwui HU, Nwogu-Ikojo EE. Trends in uterine rupture in Enugu, Nigeria. *J Obstet Gynecol.* 2005;25:260-2.
16. Ebeigbe PN, Enabudoso E, Ande BA. Ruptured uterus in a Nigerian community: A study of socio-demographic and obstetric risk factors. *Acta Obstet Gynaecol Scand.* 2005; 84:1172-4.
17. Mbamara SU, Obiechina NSA, Eleje GU. An analysis of uterine rupture at the Namdi Azikiwe University Teaching Hospital Newi, Southeast Nigeria. *Niger J Clin Pract.* 2012; 15:448-52.
18. Yilmaz M, Isaoglu U, Kadanali S. The Evaluation of uterine rupture in 61 Turkish pregnant women. *Eur J Gen Med.* 2011;8:194-9.
19. Zwart JJ, Richters JM, Ory F, de Vries JI, Bloemenkamp KW, van Roosmalen J. Uterine rupture in The Netherlands: a nationwide population-based cohort study. *BJOG.* 2009;116:1069-80. doi:10.1111/j.1471-0528.2009.02136.x
20. Elkins TE, Onwuka N, Stovall G, Habgood J, Osborn T. Uterine rupture in Nigeria. *J Reprod Med.* 1985;30:195-9.
21. Sahin HG, Kulusari A, Yildizhan R, Kurdoglu M, Adali E, Kamaci M. Uterine rupture: A tvele-year analysis. *J Matern Fetal Neonatal Med.* 2008;21:164-7.
22. Ezechi OC, Fasuba OB, Kalu BE, Nwakoro CA, Obiesie L. Caesarean section: Why aversion. *Trop J Obstet Gynecol.* 2004;21:164-7.

Received for publication: 25-03-2020

Accepted after revision: 20-05-2020

Author's Contributions:

Nasreen Fatima: Manuscript writing, final approval of draft  
Yusra Ali: Data Collection and analysis, final approval of draft

Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding: None

How to cite this article:

Fatima N, Ali Y. Uterine rupture: Maternal and perinatal outcome  
*J Surg Pakistan.* 2020;25 (2):69-72. Doi:10.21699/jsp.25.2.5.