



### Original Research Article

## Study of Prevalence and Outcomes of Rupture Uterus in- A Tertiary Care Centre of Muzaffarpur, Bihar: A three years Retrospective Study

Authors

**Amrita Pritam<sup>1</sup>, Pallawi Singh<sup>2</sup>, Sanjeev Kumar<sup>3</sup>**

<sup>1</sup>Senior Resident, Dept of Obs & Gynae, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar

<sup>2</sup>Associate Professor, Dept of Obs & Gynae, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar

<sup>3</sup>Tutor, Department of Community Medicine, Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar

### **Abstract**

**Objective:** *Uterine rupture is associated with both fetal and maternal clinical manifestations. Uterine rupture is one of the most dreaded complications of childbirth with potentially grave consequences to the mother and the fetus. Most of the complications and mortalities due to this can be prevented through measures like universal access to antenatal care, institutional deliveries and an effective system of referral. The aim of present study was to calculate prevalence of rupture uterus, to study the associated demographic factors and to analyze the various aspects of rupture uterus at our hospital.*

**Materials and Methods:** *A retrospective study was carried out to calculate the prevalence, to study the associated demographic factors and outcomes of rupture uterus. Analysis of cases of rupture uterus was done regarding relevant history, intra-operative findings and post operative morbidities and overall mortalities due to rupture uterus. The study was done in Department of Obstetrics & Gynaecology at S. K. Medical College, Muzaffarpur, Bihar for study period of three years from January 2015 to December 2017. Data regarding cases of rupture uterus was collected, analyzed and interpreted.*

**Results:** *In our study, for the period of three years from January 2015 to December 2017, total of 27,034 deliveries were conducted. Amongst them 4,732 caesarean sections were performed. Total 35 cases diagnosed as rupture uterus. The prevalence of rupture uterus in our study is 2.5 in 2000 deliveries. Most of the cases were in the age group of 20-30 years (60%). 27 cases (77.14%) were unbooked cases. Most of the cases were of scar rupture (48.57%).*

**Conclusion:** *This study has shown higher value of prevalence of rupture uterus as most cases referred were in very critical situation and terminal status of illness. Early detection of high risk pregnancies can save a lot of maternal lives. Referral system should be sound and available round the clock at every level of health care delivery system.*

**Keywords:** *Hysterectomy, Referral system, Rupture uterus, Scar rupture.*

### **Introduction**

Uterine rupture is horrible medical event with significant associated maternal and fetal morbidity and mortality. It most commonly occurs in women

previously delivered by caesarean section. Rupture of uterus is almost entirely a complication of pregnancy and labor. It is common in multiparae, usually following a neglected,

obstructed labor. Misuse of oxytocics, or dehiscence of a previous uterine scar (caesarean section), may rupture spontaneously as a result of distension and thinning of the atrophic myometrium.<sup>1</sup> With rupture, the only chance of fetal survival is afforded by immediate delivery—most often by laparotomy – otherwise, hypoxia is inevitable.<sup>2</sup> In the most recent maternal mortality statistics from the Centers for Disease Control and Prevention, uterine rupture accounted for the 14% of deaths caused by hemorrhage.<sup>3</sup> In the Network study, seven of the 114 uterine ruptures—6% associated with a trial of labor were complicated by the development of neonatal hypoxic ischemic encephalopathy.<sup>4</sup> In a report from rural India, the maternal mortality rate associated with uterine rupture was 30%.<sup>5</sup> At present, maternal death as a consequence of uterine rupture occurs at a rate of 0-1% in developed nations and 5-10% in developing countries.<sup>6</sup> Incidence of rupture uterus varies from 0.3/1000 to 7/1000 deliveries in India accounting for 5% to 10% of all maternal deaths.<sup>7</sup> In a WHO systemic review of maternal mortality and morbidity, the prevalence of uterine rupture in case of previous caesarean section was found to be 1%.<sup>8</sup> The prevalence widely varies from 1 in 2000 to 1 in 200 deliveries.<sup>9</sup> Maternal outcome mainly depends on the integrity of previous scar, cause and site of rupture, time interval between rupture and management or prompt referral. High perinatal mortality of 80-95% is seen in these cases.<sup>10</sup> There is also considerably increased perinatal morbidity and mortality associated with uterine rupture. A major concern is that surviving infants develop severe neurological impairment.<sup>11</sup> A non-reassuring fetal heart rate pattern is the most common fetal finding, including variable and late decelerations, followed by bradycardia. Maternal manifestations are vaginal bleeding, sharp pain between contractions, contractions that slow down or become less intense, unusual abdominal pain or tenderness, recession of the fetal head, maternal tachycardia and hypotension.<sup>12</sup> Lack of health information, illiteracy, poor antenatal care follow-up, poverty,

home deliveries and delay in referrals all contribute to uterine rupture.<sup>13</sup> Good ANC, family planning services, early detection and referral of obstructed labor, availability of transportation and obstetric care are the essential factors to prevent uterine rupture and to decrease the maternal and fetal morbidity and mortality.<sup>14</sup> However there is a less knowledge about the prevalence and management outcomes of uterine rupture. The aim of present study was to examine the prevalence and management outcomes of uterine rupture.

### Material and Methods

A retrospective study was carried out over a period of three years from January 2015 to December 2017 in the department of Obstetrics and Gynaecology at S. K. Medical College, Muzaffarpur, Bihar. All women who were admitted at our hospital and diagnosed as rupture uterus were included in study as study subjects. Those cases whose all relevant information were not available, excluded from the study. All selected cases of rupture uterus during study period were analyzed in terms of age, residence, parity, status of ANC, types and causes of rupture uterus, complications found, mode of management given and outcomes. All the relevant data were collected from hospital records and registers. Collected data were computed and analyzed statistically.

### Result

A total of 35 cases of rupture uterus were recorded for the period of three years. During the period, the total number of deliveries was 27,034. Out of 27,034 deliveries, 4,732 underwent caesarean section. The rate of caesarean section remained 17.5% during the study period of these three years. 35 cases of rupture uterus and 146 cases of scar dehiscence were seen. Hence the prevalence of rupture uterus and scar dehiscence in our study is 2.5 in 2000 deliveries and 10.8 in 2000 deliveries respectively.

**Table – I**

Demographic profile	Number of cases (35)	Percentage
Age in years		
<20 years	3	8.57%
20 – 30 years	21	60%
>30 years	11	31.43%
Residence		
Rural	28	80%
Urban	7	20%
Gravida/Parity		
Primigravida	2	5.71%
Multigravida	25	71.43%
Grand multiparae	8	22.86%
Antenatal Care		
Booked	8	22.86%
Unbooked	27	77.14%

Most of the women were in the age group of 20-30 years (60%). 11 cases (31.43%) were of age greater than 30 years. 28 cases (80%) belonged to rural area. Majority of cases (25;71.43%) were

multigravidae. 27 cases (77.14%) were unbooked cases.[Table 1]

**Table – II**

Type of cesarean section	No of cases of scar rupture (17)	Percentage
Classical	7	41.17%
LSCS	10	58.82%

Out of 17 cases of scar rupture, 7 cases (41.17%) had previous classical cesarean section. Among 17 cases of scar rupture, LSCS was done in 10 cases. Among LSCS cases, mostly had more than two scars and complications as big baby or malpresentation. Interval between pregnancies was even less than one year. [Table2]

**Table - III**

Types of Rupture Uterus	Number of cases (35)	Percentage
Spontaneous	12	34.28%
During pregnancy	1	8.33%
During labor	11	91.66%
Scar Rupture	17	48.57%
During pregnancy	4	23.53%
During labor	13	76.47%
Iatrogenic/Traumatic	6	17.14%
During pregnancy	4	66.66%
During labor	2	33.33%
Cause of Rupture Uterus	Number of cases (35)	Percentage
Scar rupture	17	48.57%
Scarred uterus	17	
Spontaneous	12	34.28%
Obstructed labor/CPD	10	83.33%
Grand multiparae	2	16.66%
Iatrogenic/Traumatic	6	17.14%
Induction/Augmentation(Oxytocin, PGE2)	4	66.66%
Obstetric maneuver(Internal cephalic version, Forcep deliveries, etc)	2	33.33%
Site of rupture	Number of cases (35)	Percentage
Lower uterine segment	14	40%
Combined sites	5	14.28%
Lateral(right or left)	9	25.71%
Posterior	3	8.57%
Fundal	4	11.43%

Among 12 cases of spontaneous rupture, 1 (8.33%) occurred during pregnancy and 11 cases (91.66%) ruptured during labor. 17 cases (48.57%) were scar rupture, out of which 4cases

(23.53%) ruptured during pregnancy and 13 cases (76.47%) ruptured during labor. 6 cases (17.14%) of rupture uterus were iatrogenic or traumatic, among them 4 cases (66.66%) ruptured during

pregnancy and 2(33.33%) cases ruptured during labor. Among 12 cases of spontaneous rupture, 10 cases (83.33%) ruptured due to obstructed labor and underneath cause of 2 cases of spontaneous rupture was grand multiparae. 4 cases (66.66%) of iatrogenic rupture were due to induction or augmentation by oxytocin and PGE2. 2 cases ruptured due to obstetric maneuvers. In 14 cases (40%) of rupture uterus there were rupture at lower uterine segment. In 9 cases (25.71%), site of rupture was lateral.[Table3].

**Table –IV**

Complication/morbidities	Number of cases (35)	Percentage
Emergency hysterectomy	16	45.71%
Bladder injury	5	14.28%
Sepsis	4	11.42%
Ileus	4	11.42%
B/L Uterine artery ligation	3	8.57%
Shock	2	5.71%
Bowel injury	1	2.85%
DVT	1	2.85%
DIC	1	2.85%
Management	Number of cases (35)	Percentage
Repair of uterus	19	54.28%
Subtotal Hysterectomy	7	20%
Total Hysterectomy	9	25.71%
Bladder/Bowel repair	6	17.14%
Internal iliac artery ligation	3	8.57%
Mortality	Number of cases (35)	Percentage
Maternal	4	11.42%
Fetal	30	85.71%

Complications/morbidities included emergency hysterectomy in 16 cases, bladder injury in 5 cases, sepsis in 4 cases, ileus in 4 cases. 2 patients were in shock and 1 case had complication as DIC, all these three patient lost their lives. In 19 cases, repair of uterus were done. 9 patients underwent total hysterectomy and in 7 patients, subtotal hysterectomy was done. Internal iliac artery ligation was done as part of management in 3 cases and bladder/bowel repair done in 6 cases. Out of 35 cases of rupture uterus, there were 4 maternal deaths and 30 fetal deaths.[Table4]

## Discussion

Rupture of uterus is almost entirely a complication of pregnancy and labor. The initial sign and

symptoms are however, non-specific, a condition that left its diagnosis difficult resulting in often the late diagnosis. The best chances of detecting uterine rupture lies in careful and continuous monitoring of uterine contractions and assessment of fetal well being during labor. Few steps can be taken for its prevention i.e. to reduce the rate of primary caesarean section, to avoid vaginal delivery in women with previous myomectomies in which the endometrial cavity has been breached. It is necessary to act with caution when inducing women with previous caesarean sections. An urgent laparotomy is required once uterine rupture is diagnosed, Vaginal examination should be performed and the fetus delivered by the quickest route possible. Assisted vaginal delivery is reasonable if the women is fully dilated and safe vaginal delivery is possible. Regardless, an urgent laparotomy is then required to examine and repair the uterine rupture. Most of the cases were in the age group of 20-30 years (60%). In study by Sahu et al 73.12% cases were of age group 20-30 years.<sup>7</sup> In our study, 28 cases (80%) belonged to rural area. Majority of cases of rupture uterus (25;71.43%) were multigravidae. In our study, 27 cases (77.14%) were unbooked cases, similar finding been observed by Rashmi et al.<sup>15</sup> Most of the cases in our study were of scar rupture (48.57%). Traumatic rupture accounted for 17.14% in our study. As our study place is a tertiary care centre, most cases were referred from peripheries. In a study by Rashmi et al, 10% cases were traumatic rupture.<sup>15</sup> Obstructed labor and induction with oxytocics remained the most common cause of spontaneous rupture. Big family size, obstructed labor due to multi parity and malpresentation were the leading cause of rupture uterus in other studies like Yamen and Nigeria.<sup>16,17</sup> In our study, most common site of rupture as observed was lower uterine segment. 54.28% cases underwent repair of uterus in our study which is comparable to study by Sahu et al.<sup>7</sup> Subtotal hysterectomy was done in 20% cases which is similar to study by Sunanda N et al.<sup>18</sup> where they found it as 25%. In our study 4

maternal deaths and 30 (85.71%) fetal deaths has been observed. Perinatal mortality was 94% in study by Sahu et al.<sup>7</sup>

### Conclusion

There should be proper antenatal care so that early detection of high risk pregnancies and their prompt management and referral can be ensured. This can save a lot of maternal lives. Referral system should be sound and available round the clock at every level of health care delivery system. The referral card must have all the important and adequate information. Multiple referrals should be avoided. Basically there is need to strengthen the already existing health care delivery system with few little modification and regular periodic audit and evaluation of works of all health care provider staff at every level. Information is the basic part of education and better health education increases awareness and motivation which results in better utilization of health resources. Most of maternal deaths occurred within minutes and initial hours of admission which is directly linked to late and multiple referrals from periphery. This needs attention to be paid regarding appropriate antenatal care, early identification of high risk, prompt referral facilities and increased institutional deliveries.

### References

1. Howkins & Bourne Shaws Textbook of Gynaecology.16th edn. New Delhi:Reed Elsevier India Private Ltd 2015:p.203.
2. Williams OBSTERTRICS. 24th edn. USA: McGraw-Hill Education 2014;p.617
3. Berg CJ, Callaghan WM, Syverson C, et al: Pregnancy-related mortality in the United States, 1998-2005. *Obstet Gynecol* 116(6):1302,2010
4. Spong CY, Landon MB, Gilbert S, et al: Risk of uterine rupture and adverse perinatal outcome at term after cesarean delivery. *Obstet Gynecol* 110:801, 2007
5. Chatterjee SR, Bhaduri S: Clinical analysis of 40 cases of uterine rupture at Durgapur Subdivisional Hospital: an observational study. *J Indian Med Assoc* 105:510, 2007
6. G.G. Nahum, Pham krystle Quynh. Uterine rupture in pregnancy, e medicine obstetrics and Gynecology. <http://emedicine.Medscape.com/article/275854-overview>
7. Sahu LA. 10 year analysis of uterine rupture at a teaching institution. *J Obstet Gynecol India*.2006;56(6):502-6.
8. G.Justus Hoffmeyr, L. Say and Metin Gülmezoglu. A. Systematic review: WHO systematic review of Maternal mortality and morbidity: the prevalence of uterine rupture. *BJOG: An International Journal of Obstetrics & Gynaecology*. 112, 2005, 1221–1228.
9. D. C. Dutta's Textbook of OBSTETRICS.7TH edn. Kolkata: New Central Book Agency (P) Ltd:p.426
10. Mahbuba, Alam IP. Uterine rupture - experience of 30 cases at Faridpur Medical college Hospital. *Faridpur Med Coll J*. 2012;7(2):79-81.
11. Porreco RP, Clark SL, Belfort MA, et al: The changing specter of uterine rupture. *Am J Obstet Gynecol* 200(3):269.e1,2009
12. Staven G, Gabba MD. *Obstetrics normal and problem solving*. 5th edn. England; McGraw-Hill Company. 2005.
13. Malik HS. Frequency, predisposing factors and fetomaternal outcome in uterine rupture. *J Coll Physicians Surg Pak*. 2006; 16: 472-475.
14. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Prior cesarean delivery. In: Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY, editors. *New York: McGraw-Hill*. 2010.
15. Rashmi, .G Radhakrishnan, N.B. Vaid, N. Agarwal. Rupture uterus--changing

- Indian scenario., J Indian Med Assoc. 99(11), 2001,634 – 7
16. Diab AE. Uterine rupture in Yemen. Saudi Medical Journal. 2005;26(2):264-9.
17. Ezechi OC, Mabayoje P, Obsiesie LO. Rupture uterus in South Western Nigeria: a reappraisal. Singapore Med J. 2004;45:113-6.
18. Sunanda N et al. Int J Reprod Contracept Obstet Gynecol. 2016 Nov;5(11):3983-3986.