

Uterine Rupture and its Fetomaternal Outcome: A Tertiary Care Hospital Study

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ABSTRACT

Objective: To analyse the frequency, predisposing factors, site of rupture management and fetomaternal outcome in uterine rupture.

Study design: prospective observational study

Methods: This study was conducted at the Department of obstetrics and gynecology in Lalla Ded hospital, from august 2020 to august 2022. All cases of ruptured uterus, who were either admitted with this complication or who developed it in the hospital, were included in the study. Patients having ruptured uterus due to congenital abnormality were excluded from the study. Patient's parity, age, details of predisposing factors, type of rupture, the management, maternal and fetal outcome were taken into consideration for analysis. Data was analyzed using SPSS version 20.0.(SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean \pm SD and categorical variables were summarized as frequencies and percentages. Graphically the data was presented by bar and pie diagrams.

Results: The total number of deliveries during the course of 2 years from august 2020 to august 2022 were 44236. There were 15 cases (0.034%) of uterine rupture. Out of these only three (20%) were booked. Most of the patients (53.3%) presented between the ages 30-35. Majority of uterine rupture occurred in para 3 (46.7%) followed by para 2 (33.3%). Common cause of uterine rupture was prolonged neglected obstructed labour (60%). Rupture of Previous caesarean section scar was found in 40%. Anterior uterine wall was involved in 46.7% of cases. Posterior wall rupture in 33.3%

and posterior along with lateral wall in 20%. Hysterectomy was performed in 40%. There were two maternal (13.3%) and 8 intrauterine deaths (53.3%). Live birth rate was 46.6%.

Conclusion: This study showed that prolonged neglected obstructed labour is the main cause of uterine rupture followed by scarred uterus in our setting. Proper antenatal care and timely intervention with prompt referral to higher center and updated training programs for health care providers is the need of time to prevent this catastrophic but avoidable complication.

Keywords: uterine rupture, scarred uterus, obstructed labour (cephalopelvic disproportion)

INTRODUCTION

Uterine rupture in pregnancy is a rare but often catastrophic complication with a high incidence of fetal and maternal morbidity.¹ The premonitory signs and symptoms of uterine rupture are inconsistent, and the short time for instituting definitive therapeutic action makes uterine rupture in pregnancy a much feared event for medical practitioners¹

Numerous factors are known to increase the risk of uterine rupture.¹ Most cases of uterine rupture that occur in most developing countries are due to ignorance, quackery, and maldistribution, maladministration or unavailability of essential medical supplies.² Even where the patients survive, their reproductive function is abruptly terminated, and recovery is often prolonged and turbulent.²

In developed countries and countries in transition, this complication is due to iatrogenic causes of poorly-supervised labour in the scarred uterus, and the use of prostaglandins and its analogues in induction of labour.²

Several studies suggest that for adequately screened women with prior caesarean section, a trial of labour is safer than elective repeat caesarean section in hospital environment.³

Early diagnosis and treatment results in better chances of maternal and foetal outcome.⁴

The objective of the study was to identify the risk factors for uterine rupture in labour, to report maternal and fetal outcome and to identify preventive measures.

Aims and Objectives:

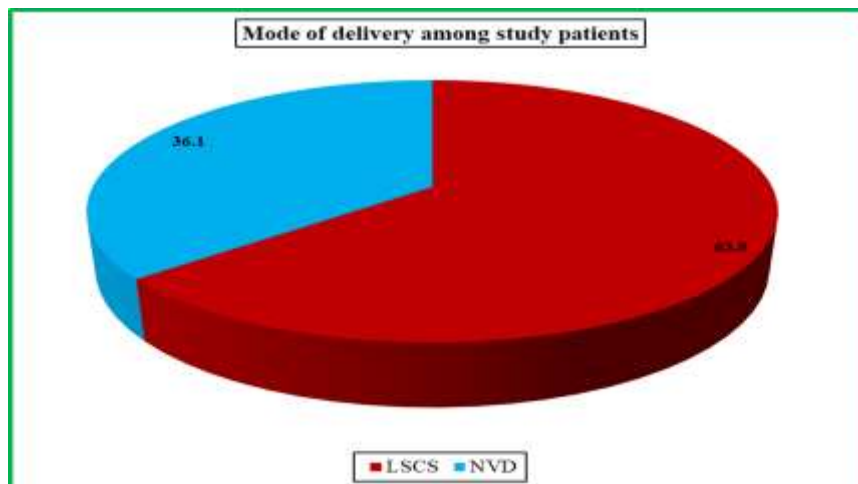
1. To analyse the, frequency, predisposing factors, site and management of uterine rupture.
2. To analyse the fetomaternal outcome in uterine rupture.

METHODOLOGY

This study was conducted over a period of two years from August 2020 to August 2022, in the department of Gynecology and Obstetrics Lalla Ded hospital. Total number of deliveries conducted during this period was 44236 out of which 28269 were delivered via cesarean and 15967 via vaginal delivery. All cases of ruptured uterus, who were either admitted with or who developed this complication in the

hospital, were included in the study. Patients having ruptured uterus due to congenital abnormality were excluded from the study. Diagnosis was made by a detailed thorough investigations, history, examination and was confirmed on laparotomy. These cases were analyzed with regard to their clinical presentation, past history complications, management and outcome. Information on the booking status, age, parity, risk factors, maternal and perinatal morbidity and mortality, and other relevant information were extracted. The surgical procedure depended on general condition of the patients, parity, and desire for future child bearing, site, and extent of rupture. The surgical management comprised one of the three methods: repair of uterus without tubal ligation, repair with tubal ligation or hysterectomy. All patients and their newborns were followed up until their discharge from the hospital. The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean \pm SD and categorical variables were summarized as frequencies and percentages. Graphically the data was presented by bar and pie diagrams.

Mode of delivery	Number	Percentage
LSCS	28269	63.9
NVD	15967	36.1
Total	44236	100



RESULTS

Total number of deliveries during the period of two years were 44236 out of which 15 were cases of uterine rupture with a frequency of 0.034% (table 2). Most of the patients (53.3%) presented between the ages of 30-35 followed by age group of 25-30years (26.7%)(table 3). The Parity ranged from 1-6.(table 4)However, uterine rupture was more common (46.7%) in para 3 followed by para 3 (33.3%)(table 4).Only one women (6.7%) was para one. There were twelve (80%) un-booked while three (20%) booked cases.

Prolonged obstructed labour was the main cause of ruptured uterus in 9 (60%) cases. Rupture of previous caesarean scar was the second most common cause (40%).(table 5) Lower uterine segment was the most common site of rupture.

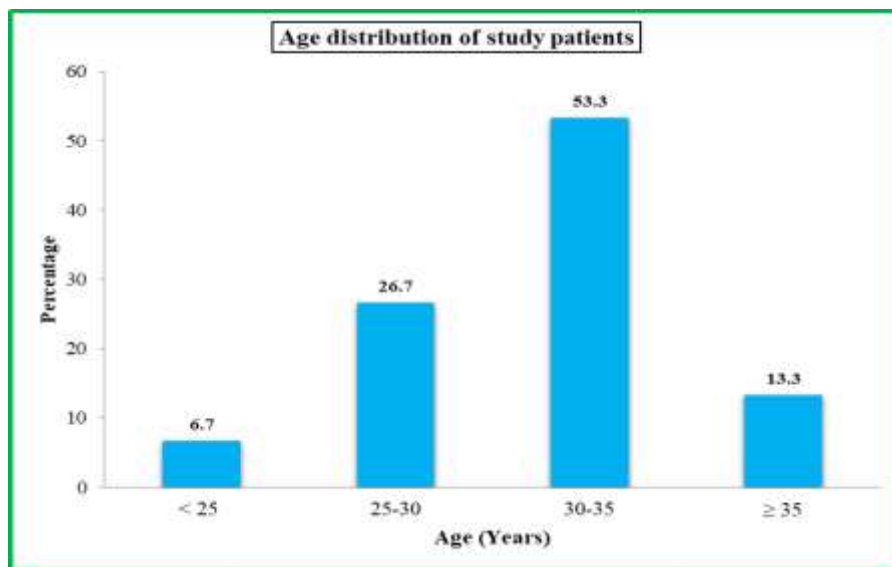
Anterior uterine wall was involved in 7 (46.7%) cases and posterior uterine wall in 5 (33.3%) cases, posterior and lateral uterine wall was involved in 3 (20%).(table 6).

Rupture was transverse in 12 (80%) cases, it was longitudinal in 3 (20%) cases.(table 7).

Majority of women arrived in state of shock and required urgent resuscitation measures followed by surgery. Repair of uterus without tubal ligation was performed in 5 (33.3%) young patients, repair with tubal ligation was done in four (26.7%) patients and hysterectomy was performed in 6 (40%) cases.(table 8) Maternal death occurred in 2 (13.3%) cases.(table 9) Perinatal mortality was 8 (53.3%), live birth rate was 7 (46.7%).(table 10)

Uterine Rupture	Number	Percentage
Yes	15	0.034
No	44221	99.97
Total	44236	100

Age (Years)	Number	Percentage
< 25	1	6.7
25-30	4	26.7
30-35	8	53.3
≥ 35	2	13.3
Total	15	100
Mean±SD (Range)= (23-40 Years)		



Parity	Number	Percentage
Para 1	1	6.7
Para 2	5	33.3
Para 3	7	46.7
≥ Para 4	2	13.3
Total	15	100

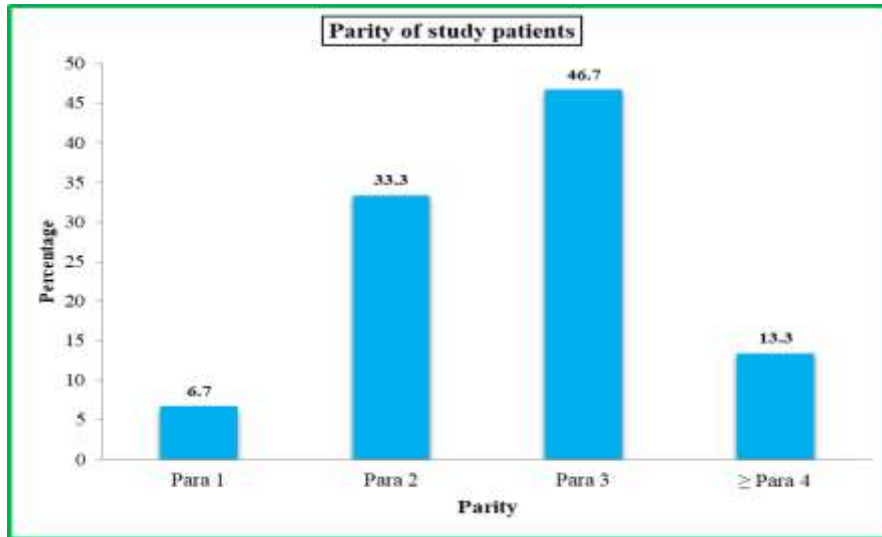


Table 5: Cause of uterine rupture in study patients

Cause of uterine rupture	Number	Percentage
Prolonged obstructed labour	9	60.0
Rupture of previous caesarean scar	6	40.0
Total	15	100

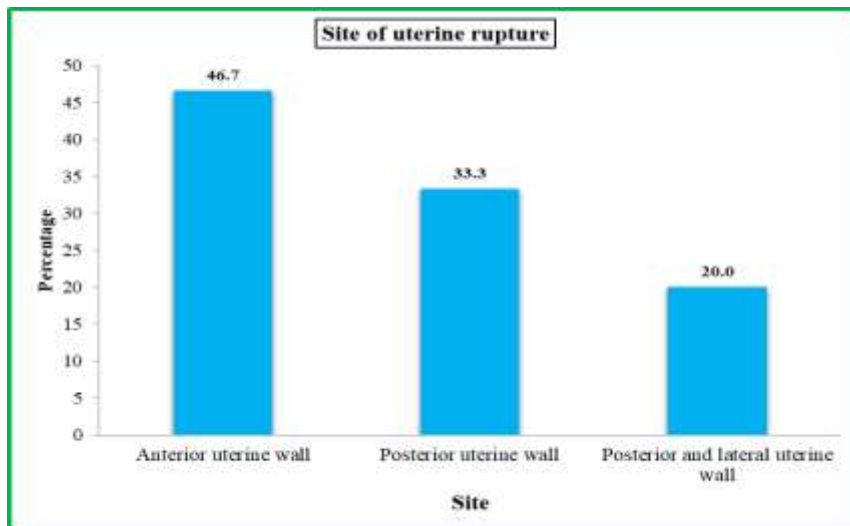
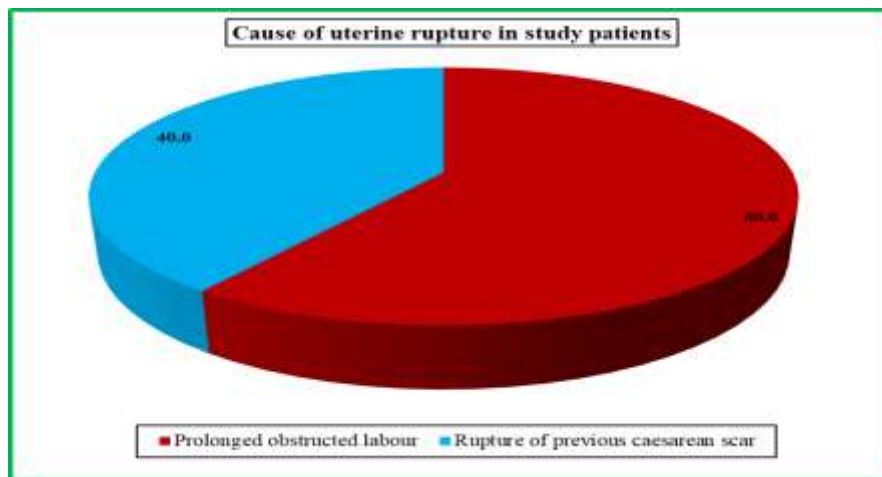


Table 6: Site of uterine rupture

Site	Number	Percentage
Anterior uterine wall	7	46.7
Posterior uterine wall	5	33.3
Posterior and lateral uterine wall	3	20.0
Total	15	100

Table 7: nature of rupture

	Number	Percentage
Transverse	12	80.0
Longitudinal	3	20.0
Total	15	100

Table 8: Management of study patients

Management	Number	Percentage
Repair of uterus without tubal ligation	5	33.3
Repair of uterus with tubal ligation	4	26.7
Hysterectomy	6	40.0
Total	15	100

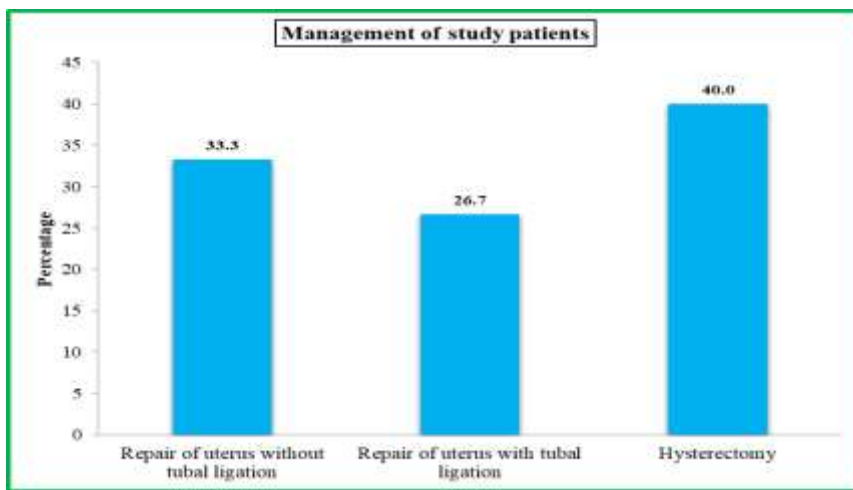
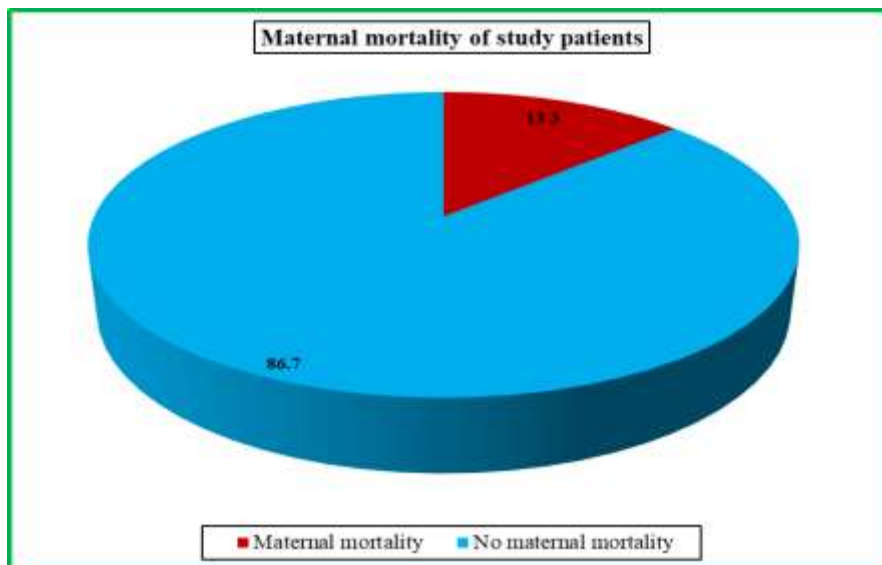


Table 9: Maternal mortality of study patients

Maternal mortality	Number	Percentage
Yes	2	13.3
No	13	86.7
Total	15	100



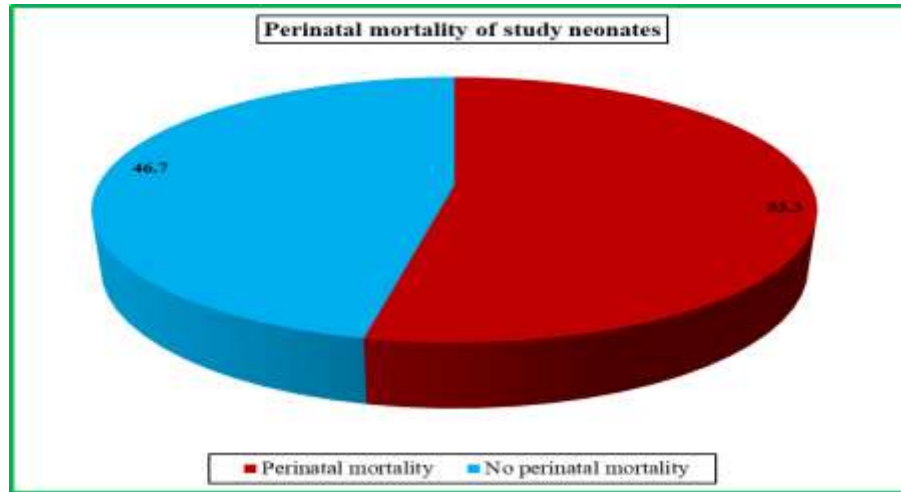


Table 10: Perinatal mortality of study patients

Perinatal mortality	Number	Percentage
Yes	8	53.3
No	7	46.7
Total	15	100

DISCUSSION

This study was done in LD Hospital Srinagar from August 2020 to August 2022. During this period, 44,236 deliveries were conducted, 63.9% (28,269/44,236) by LSCS and 36.1% (17,967/44,236) by vaginal delivery. A total of 15 cases of rupture uterus were encountered which gave the incidence of 1 in 2949 (0.034%). This is comparable to incidence recorded in developed countries of 0.035¹⁶⁻²¹. This finding is lower as compared to the studies from Nigeria (0.4%)⁶ or Ghana (1 in 124)⁷ and Turkey (1 in 287)¹⁰. In addition, it is lower than the WHO systematic review for the cause of maternal mortality secondary to uterine rupture (0.053)¹¹. This might be due to the reduced trial of labour given after previous caesarean deliveries on patient request.

In our study, most of the cases of rupture (8/15, 53.3%) occurred in the age group of 30-35 years followed by 25-30 years (4/15, 26.7%). In a study done by Khan et al¹², most women with ruptured uterus belonged to the age group of 31-35 years (47%) followed by the age group of 26-30 years (33.27%). This was similar to the study done by Malik HS in which majority of women belonged to the age group 26-30 years.

In our study, most cases of rupture (7/15, 46.7%) occurred in para 3 followed by para 2 (5/15, 33.3%) patients. In a study done by Malik HS⁵, 42.71% of women with rupture were para 2-4.

As per our study, 60% (9/15) cases of rupture uterus were caused by prolonged obstructed labour, whereas 40% (6/15) cases were due to rupture of previous caesarean scar. In a study done in Nigeria, 47.3% of rupture was associated with obstructed labour and 22.1% associated with previous scar rupture, whereas it was 79.6% in Ethiopia (scar = 11.20%) and Pakistan 12.5% (scar = 12.5%)^{8,13,14}. Most cases of obstructed labour were received as referrals from other hospitals in periphery. The result might be due to lack of proper antenatal care, lack of screening of high-risk pregnancies and unsupervised labour conducted in poorly equipped centres. It might also be due to failure to diagnose cephalopelvic disproportion and lack of emergency caesarean in periphery.

In our study, 46.7% (7/15) cases had rupture on the anterior uterine wall, 33.3% (5/15) had posterior uterine rupture, whereas 20% (3/15) had posterior and lateral wall rupture. Also, 80% (12/15) tears had transverse uterine rupture, whereas 20% (3/15) had longitudinal uterine rupture. In a study done

by Naushaba (2011) anterior wall was involved in 9 (60%) cases, posterior wall in 4% (26.66%) cases and both anterior and posterior uterine walls were involved in 2 (13.33%) cases. Rupture was transverse in 8(53.3%) and longitudinal in 7 cases (46.66%).

In our study, 33.3% (5/15) cases were managed with repair of uterus without tubal ligation ,26.7%(4/15) cases were managed with repair of uterus with tubal ligation.40% (6/15) cases were managed with hysterectomy. Jain et al (2018) did a study in which uterine repair was done in 36%(78.26) patients, subtotal hysterectomy in 8 (17.39) and total hysterectomy was done in 2 (4.34%)patients. Hysterectomy has a significant emotional impact on women and they are lost to follow up due to sheer embarrassment and psychosocial stigma inflicted by societal norms. Uterine repair with tubal ligation is done wherein rupture is at multiple sites and future pregnancies may endanger life of the women.

In this study,2 women (2/15,13.3%) died, one from sepsis and one from hypovolemic shock. Minor complications like febrile morbidity, urinary and respiratory infections, paralytic ileus were also found. Maternal mortality was 7.76% in a study done by Malik HS whereas it was 20% in a study by Naushaba et al (2011)^{13,14,15}

The perinatal mortality (7/15) was found to be 46.7%. Most of the infants were born with low APGAR score necessitating intubation and NICU admission and couldn't survive. The perinatal mortality was 77.78% in a study done by Rahila at el (2021) and 73.33% in a study done by Naushaba et al.

CONCLUSION

Since prolonged obstructed labour stands the leading cause of rupture, timely diagnosis of CPD and timely referral to appropriate center is crucial in decreasing the cases of uterine rupture. Also, trial of labour in women with previous caesarean scar must be given with caution after

complicating factors like CPD, macrosomia, short interpregnancy interval are ruled out. Proper maternal and fetal monitoring in such patients is demanded to reduce fetomaternal morbidity and mortality.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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