

Uterine Rupture: A Retrospective Analysis

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Abstract

Background: Uterine rupture in pregnancy is a rare and often catastrophic complication. It is associated with a high incidence of foetal and maternal morbidity. Several factors are known to increase the risk of uterine rupture. The present study was undertaken to analyze the frequency, predisposing factors, and maternal and fetal outcomes of uterine rupture.

Methods: A retrospective analysis of cases of uterine rupture was conducted in the Department of Obstetrics and Gynecology, at LTMMC and LTMGH Mumbai over a period of 5 years.

Results: A total of 66,840 deliveries were conducted and 60 cases of rupture uterus were managed during the study period. Thus the incidence of uterine rupture was 0.8/1000 deliveries. Out of 60 cases, 41 (68.3%) were unregistered women. The frequency of uterine rupture was maximum (53.33%) between 37-40 weeks of gestation. Previous scar was the main predisposing factor for uterine rupture. 58.33% cases needed operative hysterectomy while 33.33% needed rent repair alone and were treated successfully. The maternal mortality was 11.66% (7 cases). Out of 60 babies, 11 (18.33%) were live birth and 49 (81.66%) were still births.

Conclusion: Ruptured uterus is a preventable but potentially life threatening conditions, which require prompt diagnosis and treatment. Reducing the primary caesarean section rate and optimizing care for women with previous caesarean section will go a long way in decreasing the incidence of rupture uterus.

Keywords: Uterine rupture, Foetal, Morbidity, Retrospective, Scar, Hysterectomy, Mortality.

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1. Introduction

Uterine rupture although rare, is one of the life-threatening obstetric complication with grave sequelae to both mother and the fetus. In India, in advanced cities the incidence of rupture preceded by obstructed labour is decreasing, but in rural parts where there is inadequate care, lack of communication and transport, illiteracy, home deliveries by untrained dais incidence of rupture uterus is still high. Incidence of rupture uterus varies from 0.3/1000 to 7/1000 deliveries in India accounting for 5% to 10% of all maternal deaths [1]. The incidence in developed and developing countries varies from 1 in 250 to 1 in 5000 deliveries depending upon standard of obstetric care and the population dealt with. In a WHO systematic review of maternal mortality and morbidity, the prevalence of uterine rupture in cases of previous caesarean section was found to be 1% [2].

Uterine rupture refers to complete disruption of all uterine layers, including the serosa. By comparison, uterine dehiscence generally refers to an incomplete, and frequently clinically occult, uterine scar separation where the serosa remains intact. Most common cause of uterine rupture include previous scar giving way. Other causes like obstructed labor, injudicious use of oxytocics, previous myomectomy scar, uterine anomaly, direct trauma to uterus and rarely concealed abruption can also cause uterine rupture [2].

Uterine rupture manifests as fetal distress, fetal death, and maternal tachycardia, bleeding per vagina, haematuria and loss of station of presenting part. The initial signs and symptoms are however, nonspecific, a condition that makes diagnosis difficult and sometimes delays definitive therapy. The best chance of detecting uterine rupture lies in careful and continuous monitoring of uterine

contractions and fetal wellbeing during labor [3]. Fetal morbidity occurs as a result of catastrophic hemorrhage, fetal anoxia, or both. Continuous cardiotocography with intra uterine pressure measurements may help to identify scar rupture early and may be of value especially in those who have an oxytocin infusion. Maternal outcome mainly depends on the integrity of previous scar, cause and site of rupture, interval between rupture and surgery and early detection and prompt referral. High perinatal mortality of 80-95% is seen in these cases [4].

The objective of present study was to evaluate the patients with uterine rupture which occurred during pregnancy. The risk factors, type and site of rupture, maternal and perinatal outcomes, and complications associated with it.

2. Materials and Methods

The study design was a Retrospective Observational study enrolling total 60 known cases of uterine rupture, which were either registered at or were referred to Sion hospital and managed in the Department of Obstetrics and Gynaecology during the last 5 years. Cases with scar dehiscence and cases of direct uterine trauma were excluded from the study. Patient's demographic variables like age, place of residence (rural/urban), socio economic status, parity, gestational age, antenatal care in present pregnancy, clinical presentation, previous detailed obstetric and surgical history including previous cesarean sections, the type and indications for cesarean sections, myomectomy, dilatation and curettage were noted from the case record form.

Detailed physical examination findings including the vital signs, obstetric examination, and details of labor in present pregnancy, blood group, hemoglobin estimation and urine examination findings were noted for all cases. The site and type of the rupture, nature of surgery performed, duration of hospital stay, number of units of blood transfused, maternal and fetal outcome were also noted down from case sheets.

Rupture was labeled as complete when the entire thickness of uterine wall along with visceral peritoneum had given way, irrespective of extrusion of fetal parts. All other types were grouped under incomplete rupture. Incidence of rupture was calculated from total number of deliveries that occurred in the hospital during the study period. Details of all the delivered babies for signs of intrapartum asphyxia and other problems were noted. Any maternal complication throughout the post-operative period in the hospital was also noted.

2.1 Statistical analysis

All the data were noted down in a pre-designed study proforma. Qualitative data was represented in the form of frequency and percentage and quantitative data was presented in the form of means and percentage. Results

were graphically represented where deemed necessary. SPSS Version 21 was used for most analysis and Microsoft Excel 2013 for graphical representation.

3. Observations and Results

A total of 66,840 deliveries were conducted and 60 cases of rupture uterus were managed in the study period of 5 years from June 2013- May 2018 at Lokmanya Tilak Municipal Medical College and Hospital. Thus the incidence of uterine rupture was 0.8/1000 deliveries. The majority of cases belonged to gravida second, (Table 1).

Table 1: Parity distribution

Parity	0	1	2-4	Above 4
Frequency	1	27	24	8
Percentage	1.6%	45%	40%	13.4%

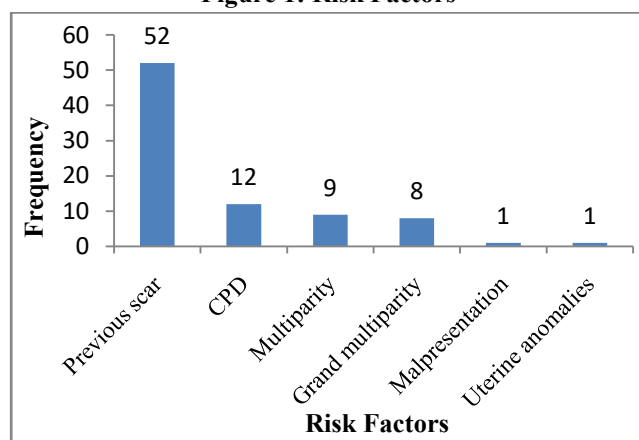
The frequency of uterine rupture was maximum between 37-40 weeks of gestation, (Table 2). Only 2 cases were found less than 28 weeks of gestation out of which one was with previous 2 sections and one was with previous one section. In between 33-36 weeks, 3 cases had previous classical uterine scar and one classical uterine scar was observed between 28-32 weeks.

Table 2: Gestational age of uterine rupture

Period of gestation	Frequency	Percentage
<28 weeks	2	3.33%
28-32 weeks	2	3.33%
33-36 weeks	24	40%
37-40 weeks	32	53.33%

Nineteen were registered women and 41 (68.3%) were unregistered women. Out of unregistered women 25 had no antenatal checkup. The risk factors in these cases were shown in figure 1. In majority (52) of cases uterine rupture were with previous scar.

Figure 1: Risk Factors



*More than one factor were responsible in some cases

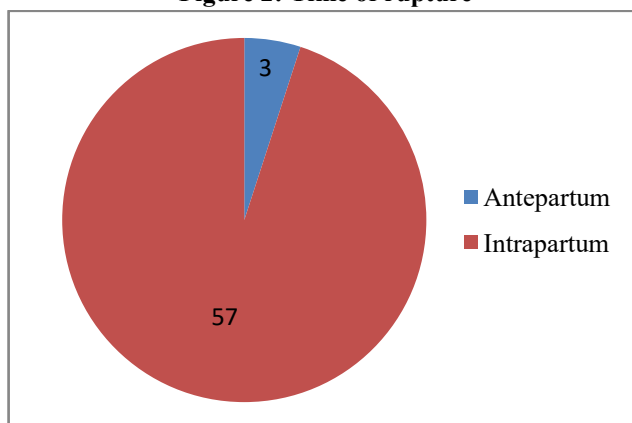
When we analyzed the scar rupture among the women with previous section, 3 out of 52 had scar rupture during antepartum period and the rest 49 during labour, (Table 3).

Table 3: Analysis of scar rupture among pre-LSCS

During pregnancy	Frequency	During labour	Frequency
Classical scar	2	Classical scar	2
Pre 2 scar	1	Pre 1 LSCS	41
-	-	Pre 2 LSCS	6

In the study group, 3 women had uterine rupture during antepartum period, (Figure 2). Out of which 2 were between 33-36 weeks with previous classical scar and 1 was with previous 2 LSCS.

Figure 2: Time of rupture



The clinical features were quite variable and most of the women presented with more than one feature. The clinical presentation is tabulated in table 4.

Table 4: Clinical features

Clinical features	No. of Cases
Pain abdomen/ uterine tenderness	52
Absent FHS	45
Superficial palpable fetal parts	40
Alteration in shape of abdominal wall	15
Fetal distress	18
Signs of shock	10
BPV	10
Haematuria	8

Most of the women had rupture at previous scar site and two women had bladder extension. The following table 5 shows the site of uterine rupture:

Table 5: Site of Rupture

Site of Rupture	No. of Cases
Fundal	2
Previous scar	52
1. Extension to lateral wall with lower segment.	3
2. Extension to cervix and vagina.	3
3. Extension to bladder.	2

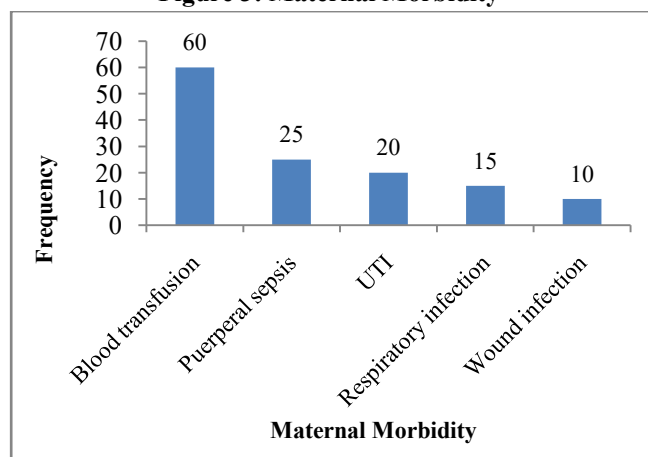
All women underwent surgical exploration after initial resuscitation. The surgical management depends upon the parity, extent of uterine rupture and general condition of the women. The details of the surgical procedures are as followed in the table 6.

Table 6: Surgical Management

Surgical Management	Frequency	Percentage
Repair alone	20	33.33%
Repair with tubal ligation	5	8.33%
Hysterectomy	35	58.33%

All women required blood transfusion. Maternal outcome is shown in figure 3. The maternal mortality in our study was 11.66% (7 cases). 5 (71.42%) out of which was due to haemorrhagic shock and rest 2 (28.57%) due to DIC. Out of 60 babies, 11 (18.33%) were live birth and 49 (81.66%) were still births.

Figure 3: Maternal Morbidity



4. Discussion

In the present study, the incidence of uterine rupture was 0.8 / 1000 deliveries similar to study done by Arora *et al* [5] and unlike the incidence observed in study conducted by Sinha (0.31%) [6]. The rupture from scarred uterus occurred in 52 (86.66%) women out of 60, which is consistent with those of Arora *et al* (71.4%) [5] and Gaikwad *et al* (71.74%) [7]. Higher parity is another risk factor for uterine rupture particularly in spontaneous rupture and induction cases. In current study 8 (13.4%) of the total cases were grand multipara. 6 Most of the women were inmultipara in comparison to Kamal *et al* [8] and Rizwan *et al* [9]. Majority of the women i.e. 68.3% were unbooked / unregistered, compared to a study done by Rashmi *et al* [10] figured as 80% and Sinha *et al* (76.6%) [6]. Most of the rupture uterus were observed above 37 weeks GA i.e. 53.33% as compared to the study done by Kamal *et al* figured 53.75% [8].

Total 3 cases were observed during antepartum period out of which one was with previous classical scar site rupture < 28 weeks, one with previous 2 LSCS < 28 weeks and one with previous classical site rupture between 28-32 weeks. The incidence of traumatic vaginal delivery as a cause has considerably declined from 17.1 to 7.8% while that of previous caesarean scar rupture has doubled from 11.4 to 23.4% [7]. In present study, majority of the cases occurred in women with previous caesarean section and our observation was similar to Sheikh *et al* [11]. Out of

52 women with previous scar site rupture, 4 were with previous classical scar site rupture. This is a matter of great concern and emphasis should be focused on reducing the primary caesarean section rates in rural as well as urban areas by promoting the normal deliveries at Institutional and Hospital levels and there must be a strict indication for first caesarean section.

Grandmultiparity, CPD, Malpresentation, Uterine anomalies were found to be the most common risk factors like reported in Gaikwad *et al* [7] Most of the rupture occurred in labour i.e. 95% and 5% occurred in antepartum period which was comparable with the study done by Kamal *et al* [8] (94.12%) and Rizwan *et al* [9] (80%). Obstetric hysterectomy (58.33%) followed by scar repair were major treatment modalities used in present study as well as in study conducted by Kamal *et al* [8] and Rizwan *et al* [9]. Associated operative measures like ligation of anterior division of internal iliac artery, repair of associated bladder tear was done when required.

Seven women were died out of 60. Thus the mortality rate was 11.66% which was comparable to the study done by Gaikwad *et al* [7]. For which haemorrhagic shock was the commonest cause. The perinatal mortality was 81.66% in our study which was comparable to Gaikwad *et al* [7], Rashmi *et al* [10], and Vidyarthi *et al* [12].

5. Conclusion

Ruptured uterus is a preventable but potentially life threatening conditions, which require prompt diagnosis and treatment. Lack of health information, illiteracy, poor antenatal care, unawareness about contraception, inappropriate counseling of patients with history of previous caesarean section for hospital delivery and mode of delivery and delay in referrals all contributes to uterine rupture. Reducing the primary caesarean section rate and optimizing care for women with previous caesarean section will go a long way in decreasing the incidence of rupture uterus. A more vigilant approach to prevent prolonged and obstructed labour, training of health workers in use of partograph, along with high index of suspicion and quick referral to a well-equipped centre with 24 hour blood bank facility, availability of experienced obstetricians, anaesthesiologist and neonatologists will reduce the incidence of uterine rupture.

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