

Analysis of Various Types of Rupture Uterus and to Assess Maternal and Perinatal Outcome in Cases of Rupture Uterus over a Period of 5 Years: An Experience from Madhya Pradesh.

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ABSTRACT

Background: Uterine rupture in pregnancy is a deadly obstetrical emergency endangering the life of both mother and fetus. **Methods:** The present prospective study was conducted to analyse the various types of rupture uterus, changing trends of uterine rupture and surgical management along with maternal morbidity, mortality and perinatal outcome in these cases. **Results:** In this study, total cases were 42,205 of deliveries and 179 cases of rupture uterus giving incidence as 0.42 % that is 1 per deliveries. Complete uterine rupture are much common i.e. (77.71 %) than incomplete rupture. Postnatal rupture was found in 11 cases. Uterine / scar repair was done in 53.11 % while obstetric hysterectomy was done in 46.89 % of cases. Most common additional surgical procedure was repair of rupture bladder i.e. 13 cases. Cervical / vaginal / perineal tear repair was performed in cases of rupture uterus from obstructed labour. A total 13 mortality occurred in cases of rupture uterus. Most common cause of maternal mortality is haemorrhagic shock, accounting for 61.23% of total maternal mortality. Majority of babies i.e. 71.9 % were still born and only 21.2 % were born alive and healthy. Neonatal death occurred in 6.7 % of cases. Fetal mortality in cases of uterine rupture is very high. **Conclusion:** It is concluded that due to changing obstetric practices and with liberalization of practices of caesarean section, the incidence of scar rupture is on a rise and will further increase in near future therefore pregnant woman with previous scar should be given trial after proper risk assessment and only in set up where 24 hrs emergency services for caesarean section.

Keywords: rupture uterus, pregnancy, caesarean section, maternal morbidity.

INTRODUCTION

Uterine rupture in pregnancy is a deadly obstetrical emergency endangering the life of both mother and fetus. Several factors are known to increase the risk of uterine rupture, but even in high risk subgroups, the overall incidence of uterine rupture is low, but still it is an alarming common catastrophic complication in developing countries where it remains the major cause of maternal and fetal mortality and morbidity.^[1]

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The initial signs and symptoms of uterine rupture are typically non-specific which makes diagnosis

difficult and delays definitive therapy. From the time of diagnosis to delivery only 10-35 min are available before clinically significant fetal morbidity becomes inevitable. Fetal morbidity occurs as a result of catastrophic haemorrhage, fetal anaemia or both. The inconsistent premonitory signs and the short time for instituting definitive therapeutic action makes uterine rupture a fearful event.^[2]

There is complete and incomplete uterine rupture. In complete uterine rupture separation of preexisting scar that does not disrupt the uterine serosa and fetus, placenta and umbilical cord remain in the uterine cavity.^[3] In complete rupture there is full thickness separation of uterine wall and serosa causing fetal distress, significant uterine bleeding, protrusion of fetus and placenta into abdominal cavity and ultimately need for prompt caesarean delivery and uterine repair or hysterectomy.^[3] Rupture of uterus during labour is more dangerous than during pregnancy as shock and infection is inevitable. Major patient's characteristics for

determine rupture are uterine status (scarred or unscarred), previous myomectomy. Uterine configuration (congenital uterine anomaly) is to be kept in mind. Pregnancy consideration such as grand multipara, placentation (abruption, previa and accrete) is considered history of previous pregnancy, labour status, induction and augmentation with oxytocin and prostaglandins, uterine trauma and obstetrical management such as instrumentation and intrauterine manipulation is taken. The study was conducted to know the incidence, demographic distribution pattern, high risk factors associated with rupture uterus over a period of 5 years.

MATERIALS AND METHODS

The present prospective study was conducted in the Department of obstetrics and gynaecology, Gandhi Medical College, Bhopal. All patients admitted in Sultania Zanana hospital, Department of obstetrics and gynaecology, Gandhi Medical College, Bhopal during the periods from July 2005 to June 2010 were included. The study was conducted to analyse the various types of rupture uterus, changing trends of uterine rupture and surgical management along with maternal morbidity, mortality and perinatal outcome in these cases. Relevant data are extracted using pre-design form. The data was obtained from admission tickets, treatment charts, operative records, delivery records. Each case record is analysed in details.

RESULTS

Table 1: Incidence of Rupture Uterus

S. No.	Statistical data	Number
1	Total number of deliveries during	42,205
2	Total number of cases Rupture Uterus	179
3	Incidence of rupture Uterus/Delivery	0.42 %

In this study, total cases were 42,205 of deliveries and 179 cases of rupture uterus giving incidence as 0.42 % that is 1 per deliveries.

Table 2: Changing Trend in Type of Rupture Uterus over The Period of 5 Years

S. NO.	Year	Scar Rupture	Spontaneous Rupture
1	2005-06	9	19
2	2006-07	17	14
3	2007-08	20	17
4	2008-09	18	20
5	2009-10	29	16

Over the year the cases of scar rupture has increased due to increasing caesarean deliveries whereas there is slight decline in cases of spontaneous rupture from obstructed labour, prolonged labour and malpresentations.

CHANGING TREND IN TYPE OF RUPTURE UTERUS OVER THE PERIOD OF 5 YEARS

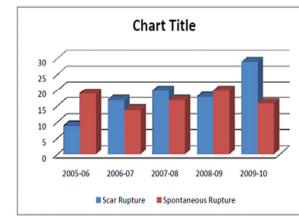


Figure 1: Changing Trend of type of Rupture Uterus over the period of 5 years.

Table 3: Type of rupture uterus

S. No.	Type of Rupture	No. of Cases	Percentage
1	Scar Rupture	93	51.96 %
2	Spontaneous Rupture	86	48.04 %

There is increased incidence of scar rupture i.e. 55.86 % due to increasing rate of caesarean sections over the years.

Table 4: Type of rupture uterus

S. No.	Type of Rupture	No. of Cases	Percentage
1	Complete Rupture	139	77.71 %
2	Incomplete Rupture	40	22.39 %

Complete uterine rupture are much common i.e. (77.71 %) than incomplete rupture.

Table 5: Postnatal rupture

Type of Rupture	No. of Cases
Total Cases of Postnatal Rupture	11
a. Delivered in other hospitals	05
b. Delivered at home	03
c. Delivered at SZH	03

Postnatal rupture was found in 11 cases, of which 5 had delivered in other hospitals, 3 had home deliveries by dai while 3 had delivered at Sultania Zanana Hospital, of which 2 had scar rupture in case of prev 1 LSCS and prev 2 LSCS respectively and one case of spontaneous rupture in prostaglandin (PGF2) induced patient.

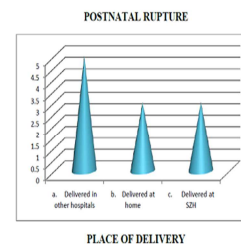
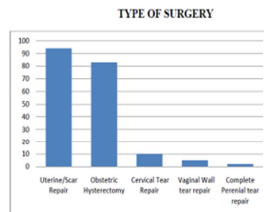


Figure 2: Postnatal Rupture.

Table 6: Type of surgery

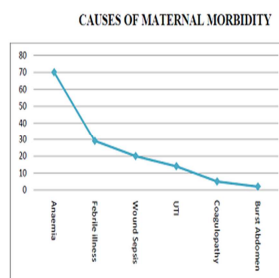
S.No.	Type of Surgery	No. of Cases	Percentage
1	Uterine/Scar Repair	94	53.11 %
2	Obstetric Hysterectomy	83	46.89 %
3.	Other Additional Surgery	30	
	• Bladder Repair	13	
	• Cervical Tear Repair	10	
	• Vaginal Wall tear repair	5	
	• Complete Perineal tear repair	2	

Uterine / scar repair was done in 53.11 % while obstetric hysterectomy was done in 46.89 % of cases, which shows that conservative mode of surgery i.e. repair was done commonly owing to greater incidence of scar rupture in previous caesarean cases. Most common additional surgical procedure was repair of rupture bladder i.e. 13 cases. Cervical / vaginal / perineal tear repair was performed in cases of rupture uterus from obstructed labour.

**Figure 3: Type of Surgery.****Table 7: Causes of maternal morbidity**

S. No.	Causes	No. of Cases
1	Anaemia	70
2	Febrile illness	29
3	Wound Sepsis	20
4	UTI	14
5	Coagulopathy	5
6	Burst Abdomen	2

It was noted that those cases that had complications usually had a combinations of them. For example febrile illness, wound infection and burst abdomen. Important underlying causes of higher maternal morbidity were anaemia and sepsis.

**Figure 4: Causes of Maternal Morbidity.****Table 8: Incidence of maternal mortality**

Total number of cases of rupture uterus	179
Total number of maternal deaths	13
Incidence of maternal mortality	7.26 %

Total 13 mortality occurred in cases of rupture uterus during the study period giving an incidence of 7.26 % of which 12 maternal death were of spontaneous ruptures due to obstructed labour and grand multiparity while only 1 maternal death was due to scar rupture.

Table 9: Causes of maternal mortality

S. No.	Causes	No. of	Percentage
1	Haemorrhagic Shock	09	69.23 %
2	Septicemia	02	15.38 %
3	Disseminated Interavascular	01	7.69 %
4	Pulmonary Embolism	01	7.69 %

Most common cause of maternal mortality is haemorrhagic shock, accounting for 61.23% of total maternal mortality.

Table 10: Perinatal outcome in cases of rupture uterus

S. No.	Perinatal Outcomes	No. of cases	Percentage
1	Still Born	129	71.9 %
2	Alive	38	21.2 %
3	Neodeath	12	6.7 %

Majority of babies i.e. 71.9 % were still born and only 21.2 % were born alive and healthy, Neonatal death occurred in 6.7 % of cases. Fetal mortality in cases of uterine rupture is very high. Hence the importance of early operative interference.

Table 11: Weight of baby

S. No.	Weight of baby	No. of Cases	Percentage
1	≤2 kg	9	5.05 %
2	2.1-2.5 kg	45	25.28 %
3	2.6-3 kg	57	32.02 %
4	≥3 kg	67	37.65 %

Most of the babies i.e. 37.65 % had birth weight ≥3kg hence incidence of rupture was high in patients with babies of high birth weight due to cephalopelvic disproportion.

DISCUSSION

During the study from 1st July 2005 to 30th June 2010, there were 42,205 deliveries out of which there were 179 cases of rupture uterus, accounting for an incidence of 0.42 % i.e. 1 per 236 deliveries.

Comparative incidence of rupture uterus

S.No.	Authours	Incidence
1.	Khanan RA et al. ^[6] (2001)	1.06 %
2.	Aboyeji AP et al. ^[8] (2001)	0.23 %
3.	Khan S. et al. ^[7] (2003)	0.98 %
4.	Adam RM et al. ^[10] (2003)	0.23 %
5.	Mishra SK et al. ^[11] (2006)	0.33 %
6.	Dhaifalah I et al. ^[11] (2006)	0.63 %
7.	Present Study (2010)	0.42%

Incidence of rupture uterus in present study correlates well with incidence in developing countries due to various socio – economic factors like illiteracy, low socioeconomic status, malnutrition, lack of proper antenatal care, unsafe deliveries, weakness of referral service and lack of access to health services.

Types of rupture: With liberalization of caesarean deliveries in present day obstetrics, a changing pattern in the type and cause of uterine rupture has been observed. In present study, the cases of scar rupture per year have increased over a period of 5 years due to increasing rates of caesarean sections, while cases of spontaneous ruptures per year is showing a slight decline. In present study the incidence of scar rupture was 51.9 % as compared to incidence of spontaneous rupture i.e. 48.04 % which is in accordance with study by M.H. AlSalem et al.^[12] who found scar rupture in 56 % cases in contrast to 44 % cases showing unscarred rupture. While M. Al Sakka et al.^[13] (1999) found 10 cases (43.5 %) of rupture uterus in patient with previous caesarean section scar while 13 cases (56.5 %) had spontaneous rupture. While other study proved higher incidence of unscarred rupture like Khan S. et al.^[7], out of 34 cases 29 rupture (85.3 %) occurred in unscarred uterus while 5 rupture (14.7 %) occurred with previous scar. Complete ruptures are more dangerous and have higher rate of maternal and perinatal mortality.

In present study, postnatal Rupture was found 11 cases of which 5 had delivered in other hospitals, 3 had home delivers by dai, while 3 had delivered at Sultania Zanana Hospital, Bhopal, of which 2 had scar rupture in case of previous one LSCS and previous two LSCS respectively and one case of spontaneous rapture in cerviprime (prostgalndin) induced patient.

Management of rupture uterus: In present study uterine / scar repair was performed in 53.11 % cases while obstetric hysterectomy in 46.89 % cases which correlates well with study by Al Sakka M et al.^[12] were hysterectomy was performed in 8 out of 17 cases (47 %) repair with sterilization was done in remaining 11 cases (53%). Thus, conservative surgery like uterine repair is more commonly performed due to greater incidence of scar rupture.

Among additional surgeries bladder repair was most commonly performed 13 cases, while cervical tear repair 10 cases, vaginal wall tear repair 5 cases and complete perineal tear repair in 2 cases.

Maternal outcome: In present study, maternal mortality due to rupture uterus was 7.26 % (13 out of 179 cases). Out of 13 maternal deaths, 12 were of spontaneous ruptures due to obstructed labour and grand multiparity while only 1 maternal death was due to scar rupture. Hence in the present study spontaneous rupture from obstructed labour and grand multiparity are leading cause of maternal death, as compared to scar rupture which coincides with study by Golen et al,^[9] who reported no deaths among 32 mothers who experienced rupture of a scarred uterus compared with 9 deaths among 61 woman with an intact uterus (15 %). Aboyeji AP et al. showed maternal mortality was 13 % (13 death in 100 cases of uterine rupture).^[5] In present study most common cause of maternal mortality was hemorrhagic shock (69.2%) other causes were septicemia (15.3%), DIC (7.6%) pulmonary embolism (7.6 %). In a 53 years review by Eden et al. They observed incidence for hemorrhagic shock was 46% (11 of 24 cases). Maternal death as a consequence of uterine rupture at a rate of 0-1 % in modern developed nations, but the mortality rates in developing countries are 5-10 %.^[4] In present study important underlying causes of higher morbidity were anemia and sepsis. Blood transfusion was required in 85 patients i.e. 45.8%. Keiser and Baskett found 44 % (8 of 18 patients) who had a complete rupture required blood transfusion.^[14]

Perinatal Outcome: In present study majority of babies 71.9 % were still born and only 21.2% Were born alive, while neonatal death occurred in 6.7 % if cases. In studies reported before 1978 the fetal mortality rate associated with uterine rupture was high. In a review of 33 studies by Schrinisky and Benson 960 cases of uterine rupture resulted in 620. Perinatal deaths, yielding a perinatal mortality rate of 65 %.^[14] In study by Sangeeta K. Mishra et al perinatal mortality was as high as 94.2 %.^[1] Isharaq et al found fetal death in 54.3 % and survival in 45 %.^[11] In Present study (37.65 %) of cases had fetal weight ≥ 3 kg. Fetal weight is a risk as it contributes to cephalopelvic disproportion and higher incidence of uterine rupture. High perinatal mortality in present study proves that early timely referral to higher in case of uterine rupture is essential to minimize the risk of fetal loss.

CONCLUSION

In present study, there were a total 42,205 deliveries during the study period and 179 cases of rupture uterus. The incidence of uterine rupture was (0.42 %) i.e. 1 per 236 deliveries. The incidence of scar

rupture was 51.9 % while that of spontaneous rupture was (48.04%) due to increasing rate of cesarean sections. Complete rupture (77.7%) was more common as compared to incomplete rupture (22.3%). Changing trend was observed in type of rupture over the period of 5 years. The cases of scar rupture has increased due to increasing rates of cesarean sections whereas there is slight decline in cases of spontaneous rupture from obstructed labor, grand multiparity and male presentations. Postnatal rupture occurred in 11 cases (6.14 %). Uterine / scar repair was performed in (53.1 %) of cases so as to preserve future fertility in young patients while obstetric hysterectomy was done in (46.87%) of cases. Which shows conservative mode of surgery is more commonly performed due to greater incidence of scar rupture. Important underlying causes of higher maternal morbidity were anemia (70 cases) and sepsis (20 cases). Incidence of maternal mortality was (13 of 179 cases) (7.26 %) 12 deaths among woman who experience rupture of unsacred uterus, compared with only 1 death in woman with scared uterus. Most common cause of maternal mortality is hemorrhagic shock (61.5 %) other cases are septicemia (15.3 %) disseminated intravascular coagulation (7.6 %) pulmonary embolism (7.6 %). Perinatal mortality in cases of uterine rupture was found as high as (71.9 %) only (21.2 %) were born alive while (6.7 %) were neo-death. Incidence of rupture uterus was higher in patients with birth weight ≥ 3 kg (37.65%) due to cephalopelvic disproportion.

It is concluded that due to changing obstetric practices and with liberalization of practices of caesarean section, the incidence of scar rupture is on a rise and will further increase in near future therefore pregnant woman with previous scar should be given trial after proper risk assessment and only in set up where 24 hrs emergency services for caesarean section, laparotomy and blood transfusion are available including competent gynecologist. It has been found in present study that spontaneous rupture due to grand multiparity, obstructed labour and malpresentation are more fatal as compared to scar rupture therefore pregnancies with high risk factors for spontaneous rupture should have an early referral to tertiary care centre, So as to improve maternal and fetal outcome in cases of rupture uterus.

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