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Original Article

Foeto-maternal Outcome in Scarred and Unscarred Rupture Uterus of North Indian Population

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ABSTRACT

Background: Uterine rupture is a rare devastating obstetrical complication that endanger the women life. **Objective:** To compare the risk factors, complications, foetal and maternal outcome in cases of uterine rupture either unscarred or scarred uterus. **Material and Methods:** Retrospective study was carried out in Department of Obstetrics and Gynaecology at tertiary teaching hospital, Records of all pregnant women who were admitted for delivery during a follow up period of January 2015 to June 2016, data were collected from hospitals records and analyzed. A total of 96 patients were identified with rupture uterus and only 92 women records were analyzed because 4 women died before any intervention. On the basis of records these 92 cases of rupture uterus further categorized into two groups, group one consisted of unscarred rupture uterus and group two were comprised of scarred uterus with dehiscence. **Results:** Rupture uterus was found in 0.74% pregnant women in our study. 52.2% (48) rupture uterus was found in unscarred uterus and 47.8% (44) in scarred uterus. 70.8% (34) rupture was found at term pregnancy in unscarred uterus and 63.6% (28) in scarred uterus. Complete rupture was more common in unscarred uterus 95.8% (46) as compared to scarred uterus 36 (81.8%). Incomplete rupture was found more in scarred uterus 8 (18.1%) in comparison to unscarred uterus 2 (4.1%) (p<0.044). Uterus repair with bilateral tubal ligation was performed more in scarred 25% (11) as compared to unscarred uterus 4 (8.3%) (p<0.047). Total maternal deaths were 9.37% (9) but 4 died un investigated. Perinatal deaths were 91.30% (84). **Conclusion:** Morbidity is high with unscarred rupture as compared to rupture of scarred uterus, more hysterectomies performed in unscarred rupture due to involvement of both segment of uterus.

Key words: Uterine rupture, Caesarean section, Hysterectomy, Hemorrhagic shock.

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INTRODUCTION

Uterine rupture is defined as a full-thickness separation of all the layers of uterine wall including overlying serosa. The tear could be present on anterior, posterior, or lateral wall of uterus or combination of these. Uterine rupture is typically classified as either complete or incomplete.

Complete uterine rupture, when all layers of the uterine wall are separated and incomplete rupture or scar dehiscence means uterine wall is separated but the visceral peritoneum is intact.

Risk factors for uterine rupture included grand multiparty, malpresentation, prolonged labour, obstructed labour, uterine anomaly, instrumental deliveries, delivery by unskilled personnel, use of over doses of oxytocin and prostaglandins for induction of labour, Previous uterine surgery (Myomectomy and caesarean section), foetal macrosomia.[1] Nowadays caesarean section is an important risk factor responsible for rupture uterus all over the world.[2,3]Uterine rupture is a clinical diagnosis and there must be a high index of suspicion by clinician because of variable presentation. Most Women presented with maternal tachycardia, hypovolemic shock, history of constant abdominal pain followed by cessation of uterine contractions, loss of foetal station, uterine tenderness and change in uterine contour and slight vaginal bleeding. The most consistent early indicator of uterine rupture is the onset of a prolonged, persistent foetal bradycardia but there is no foetal heart rate pattern pathognomonic of rupture.[4-6]

Aim of this study was to compare the risk factors, complications, foetal and maternal outcome in cases of uterine rupture either unscarred or scarred uterus.

MATERIAL AND METHODS

This retrospective study was carried out in the Department of Obstetrics and Gynaecology, at tertiary care hospital, North India. After ethical clearance records of all pregnant women who were admitted for delivery during a period of January 2015 to June 2016, data were collected from hospitals records and analyzed. A total of 96 patient's records had been identified with rupture uterus and we had analyzed in detail only 92 women records because 4 women died before any interventions.

As per records these patients who had rupture of uterus either in our hospital or referred from other hospi-

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tals were divided into two groups on the basis of previous surgeries over the uterus : Group A included unscarred 'uterus without any previous history of uterine surgery while Group B consist of scarred uterus with history of one or more previous caesarean section, uterine curettage, previous myomectomy or uterine rupture repair. Both groups were compared for parameters like maternal age, parity, risk factor, site of rupture, operative procedures, foetal outcome, maternal morbidity and mortality.

Every women with rupture uterus received emergency obstetric care first then planned for surgery. Surgical management was performed as repair of uterus with bilateral tubal ligation, repair of uterus without tubal ligation and hysterectomy either total or subtotal.

Statistical Analysis

The data was collected on predetermined questionnaire from hospital records and analysis was done by using descriptive statistics and frequency with percentages. For group comparison student t-test and chi- square test was used. *p*-value <0.5 considered significant.

RESULTS

Rupture uterus were identified in 96 cases out of 12,960 admission of pregnant women for delivery during a follow up, thus the rupture of uterus was reported 0.74% in this study.

In present study out of 92 cases of rupture uterus, 52.2% (48) unscarred uterus underwent rupture and 47.8% (44) had rupture of scarred uterus. Here maximum rupture were reported within age group of 26 to 30 year, unscarred uterus rupture found in 54.2% (26) and scarred uterus rupture in 52.2% (23) at this age group. Overall maximum rupture uterus was observed at term gestation age. Uterine rupture at >37 weeks of gestation, present in 70.8% (34) cases of unscarred uterus and 63.6% (28) in scarred uterus. Both groups did not differ significantly in the terms of age, antenatal booking status, history of curettage. There were significant difference in terms of parity and it was also observed that rupture of uterus mainly happened in unbooked and unsupervised deliveries. Rupture of unscarred uterus more common in grand multiparous women (parity > 5) whereas scarred uterine rupture commonly found with parity 1 to 2 (p<0.001). (Table 1).

In present study common causes of uterine rupture in unscarred uterus were obstructed labour 31.5% (29) and multiparity 16.3% (16) whereas previous caesarean section was the most common risk factor 45.6% (42) for dehiscence of scarred uterus. (Figure 1)

Complete uterine rupture was more common in unscarred uterus 46 (95.8%) as compared to scarred uterus 36 (81.8%) while incomplete uterine rupture was detected more in scarred uterus 8 (18.1%) as compared to unscarred uterus 2 (4.1%) and results were statistically significant (p<0.044). Lower segment rupture was found more in scarred uterus 22 (50%) as compared to unscarred uterus 15 (31.2%). After laparatomy records, evaluation both upper and lower segment involvement was observed in 58.3% of unscarred uterus and in 31.8% of scarred uterus (p<0.011) Vagina and broad ligament involvement was found more in unscarred uterus rupture as compared to involvement of bladder this might be because of high intrauterine pressure. While cervix and bladder involvement was more commonly found in scarred uterus might be because of passive dehiscence of previous scar. (Table 2)

Total and subtotal abdominal hysterectomies were performed more in unscarred uterus as compared to scarred uterus, this might be because of complete rupture often involve cervix and vagina or extension in broad ligament, making difficult to repair. Uterus repair with ligation was performed more in scarred uterus 11(25%) as compared to unscarred uterus 4 (8.3%) and this difference was statistically significant (p<0.047). Requirement of bladder repair was more with scarred uterus 4 (9%) along with hysterectomy while with unscarred rupture uterus repair in less cases, only 4.1% (2) required bladder repair. Out of 96 women with rupture uterus total 9 (9.37%) maternal deaths were reported in both the groups. Out of 9 deceased, 4 women expired uninvestigated and 5 (5.43%) women expired after surgery. These 5 (5.4%) deaths were mainly due to hemorrhagic shock and septicaemia. Blood was transfused in each and every women either during intra-operative or postoperative period. Maximum women required three to four-unit packed red cells in both the group, group 1 and 2, in 70.8% and 59.1% respectively. Requirement of Fresh frozen plasma transfusion was 54.2% and 22 (50%) in women with rupture of unscarred and scarred uterus respectively.

Maximum women were discharged in satisfactory condition after this catastrophic event within eight to ten days, 58.3% (28) and 86.4% (38)

Table 1: Demographic Profile of Women with Rupture Uterus.

Sl.No	Clinical feature	Unscarred uterus (48)	Scarred uterus (44)	*p* Values
1-	AGE			
	20-25 yr	6(12.5%)	10(22.7%)	0.196
	26-30 yr	26(54.2%)	23(52.2%)	0.856
	31-40 yr	16(33.3%)	11(25%)	0.381
2-	Parity			
	1-2	4(8.3%)	20(45.4%)	<0.001**
	3-4	24(50%)	19(43.1%)	0.513
	>5	20(41.66%)	5(11.4%)	0.001**
3-	H/o of curettage	6(12.5%)	10(22.72%)	0.196
4-	Period of gestation			
	20-28 week	6(12.5%)	0 (0%)	0.027*
	29-37 week	8(16.6%)	16(36.4%)	0.032*
	>37week	34(70.8%)	28(63.6%)	0.462
5-	Booked	0 (0%)	2(4.5%)	0.226
	Unbooked	48(100%)	42(95.4%)	0.226

Table 2: Distribution According to Site of Rupture Uterus.

Sl. No	Site	Unscarred uterus (48)	Scarred uterus (44)	*p* value
1-	**Type of rupture**			
	Complete rupture	46(95.8%)	36(81.8%)	
	Incomplete rupture	2(4.1%)	8(18.1%)	0.044*
2-	**Site of rupture**			
	upper segment rupture	5(10.4%)	8(18.1%)	0.286
	lower segment rupture	15(31.2%)	22(50%)	0.067
	Both US+LS rupture	28(58.3%)	14(31.8%)	0.011*
3-	**Involvement of nearest organ**			
	No injury	32(66.8 %)	29(65.9 %)	0.002**
	Cervix	2(4.1%)	3(6.8%)	0.667
	Vagina	5(10.4%)	4(9%)	1.000
	Broad ligament	5(10.4%)	3(6.8%)	0.716
	Bladder involvement	4(8.3%)	5(11.4%)	0.732

Table 3: Management and Intra-Operative complications.

Clinical Feature	Unscarred uterus (48)	Scarred uterus (44)	*p* value
Uterus Repair	16(33.3%)	13(29.5%)	0.696
Uterus repair with ligation	4(8.3%)	11(25%)	0.047*
Hysterectomy			
Total abdominal hysterectomy	23(47.9%)	17(38.6%)	0.370
Subtotal hysterectomy	5(10.4%)	3(6.8%)	0.716
Other structure involvement			
Bladder repair	2(4.1%)	4(9%)	0.421
Iontropic support	12 (25%)	10(22.7%)	0.799
Ventillatory support	18(37.5%)	12(27.3%)	0.296
Mortality	3(6.8%)	2(4.7%)	1.000
Duration in ventilatory unit. (days)	14(29.2%)	10(22.7%)	0.482
Total hospital stay	28(58.3%)	38(86.4%)	
8-10	20(41.7%)	6(13.4%)	0.003**
>14 days			
Blood transfusion	48	44	
One-unit PRBC	3(6.3%)	4(9.1%)	0.706
Two-unit PRBC	11(22.9%)	14(31.8%)	0.338
Three to four-unit PRBC	34(70.8%)	26(59.1%)	0.238
Fresh frozen plasma	26(54.2%)	22(50%)	0.689

Table 4: Foetal Outcome.

Sl.No	Clinical feature	Unscarred uterus (48)	Scarred uterus (44)	*p* value
1-	Live	0 (0%)	8(18.1%)	0.002**
2-	Still birth	48(100%)	36(81.8%)	0.310
3-	Neonatal intensive unit	0 (0%)	3(6.8%)	0.106
4-	Neonatal death	0 (0%)	2(4.5%)	0.226
5-	Birth weight of baby			
	<2.5 kg	6(12.5%)	8(18.1%)	0.449*
	2.5 to 3.5kg	25(52%)	18(40.9%)	0.283
	>3.5	17(35.4%)	22(50%)	0.157

Table 5: Post-Operative Morbidity.

Maternal morbidity/ morbidity	Unscarred uterus (48)	Scarred uterus (44)	*p* value
Anaemia	38(79.1%)	31(70.5%)	0.335
Paralytic ileus	3(6.3%)	4(9.1%)	0.706
Surgical site infection	2(4.1%)	3(6.8%)	0.667
Fever	5(10.41%)	6(13.6%)	0.635

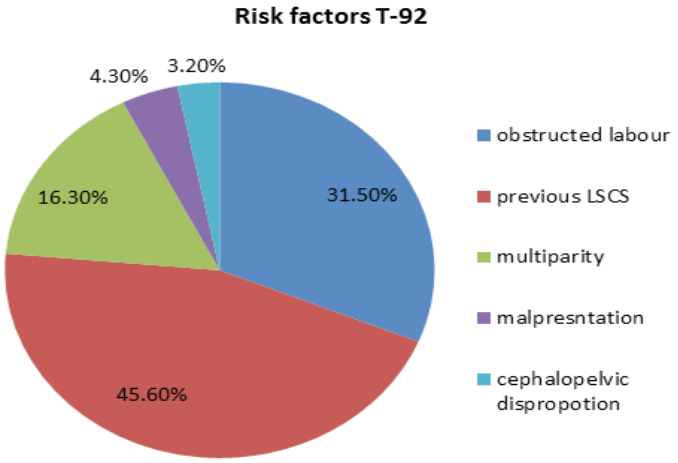

Figure 1: Risk Factors Responsible for Rupture Uterus.

in unscarred and scarred rupture group respectively. Requirement of Prolonged hospital stay more in unscarred uterus rupture 20 (41.7%) as compared to scarred uterus rupture 6(13.4%) and this difference was statistically significant (p<0.003). (Table 3) Perinatal mortality was 91.30% in present study. Total Perinatal deaths 84 out of total92 cases of rupture uterus. Almost half of the foetus died within the uterus, only 8 live babies were born from scarred uterus group whom incomplete scar dehiscence was detected during emergency caesarean section. These 8 women were admitted in emergency with acute foetal distress and scar tenderness thus suspicion of impending rupture arose. Live birth in scarred uterus rupture was high as compared to unscarred rupture (p<0.002). Out of 8 live born babies three neonates required neonatal intensive care and out of these two neonates died. (Table 4)

Anaemia was the common complication in women of both groups but it was more in unscarred rupture uterus (79.1%) versus 70.5% in scarred uterine rupture, followed by paralytic ileum 3 (6.3%) in unscarred versus 4 (9.1%) in scarred rupture uterus. Surgical site infection found in 4.1% (2) and 3 (6.8%) cases of unscarred versus scarred rupture uterus. No statistically significant difference was observed between both two groups in the terms of complication. (Table 5)

DISCUSSION

Uterine rupture is an uncommon devastating obstetrical emergency associated with significant maternal and perinatal morbidity and mortality.[7] Usually it is more frequently associated with scarred uterus as compared to unscarred uterus. Maternal mortality is the worst complication of uterine rupture, it occurs in approximately1 in 500 uterine ruptures.[8]According to WHO the incidence of rupture uterus in general population is 5.3/10,000 birth.[9] In developing countries incidence of uterine rupture is far higher (1 in 106)[10] as compared to the developed countries where it is approximately 74 in 10,000.[11] Rupture of an unscarred uterus is a rare event involving 1:17,000–20,000 deliveries.[12]In present study incidence of uterine rupture was 0.74%, while study done by other authors reported incidence of rupture, 0.038% and 0.057%.[13,14] This high incidence might be due to increased caesarean section and our institute is largest referral centre of northern India. In our study all women were unbooked (100%) and had not received any antenatal care during pregnancy similarly other studies reported 80% and 78.68% women were unbooked in their study.[15,7]

Here rupture commonly found in 26 to 30 years of age group and next common age group was 31 to 40 year similarly another study reported

increasing maternal age has detrimental effect on uterine rupture.[16] In present study among unscarred group 50% rupture were found within parity of 3 to 4 followed by 41.66% with parity >5, whereas maximum cases 43.1% rupture in scarred uterus group found within the parity of 3 to 4, similarly another studies also reported multiparity is a very important predisposing factor which was found in 97.9% of cases.[17] One study reported 32% unscarred uterine rupture had a parity of 4 and more.[18]

In present study common causes of unscarred uterine rupture were obstructed labour in 31.5% and multiparity in 16.3%, cephalopelvic disproportion 3.20% whereas previous caesarean section was the most common risk factor in 45.6% for scarred uterine rupture. In contrast study done by other author common causes of rupture uterus were Pitocin induced labour in 51.6%, great multiparty in 42.2%, Previous uterine scar in 18.8% and obstructed labour in12.5%.[19] Another studies reported common causes of rupture uterus were great multiparty in 41.5%, Pitocin induced labour in 58.5%, malpresentation and malposition in 12.1% and CPD 9.8%.[20,21]

One study reported 19.2 % association of previous caesarean section with rupture uterus.[22] In present study 52.2% in unscarred group and 47.8% in scarred group had uterine rupture similarly one study reported higher incidence 85.3% unscarred rupture while rupture in scarred uterus 14.7% were found with previous scar.[23] Hysterectomy performed in present study, in 47.9% cases of unscarred rupture while in 38.6% scarred rupture uterus and study done by another authors reported hysterectomies in 34.86% unscarred rupture and in 35% scarred rupture uterus.[24,25] In present study lower uterine segment rupture commonly observed in both scarred and unscarred uterus in contrast one author reported lower segment rupture in 80% of cases.[26] Total maternal mortality was 9.3% in our study while another study reported 11.43%.[27] In our study perinatal mortality was 91.30%% while other study reported 78.66%.[15] Subtotal hysterectomy done in 10.4% and 6.8% cases of unscarred and scarred rupture respectively while another study reported subtotal hysterectomy in 32.1% cases.[13]

CONCLUSION

In our study morbidity is high with unscarred rupture as compared to rupture of scarred uterus, more hysterectomies performed in unscarred rupture due to involvement of both segment of uterus and extension of tear to the vaginal fornices. Thus, suggested primary focus is to increase institutional deliveries, proper antenatal care and to avoid unnecessary caesarean section. Early surgical intervention is the main key to achieve good results. In present study perinatal mortality 91.30% and maternal deaths were 9.37%. Thus, reduction of maternal morbidity, mortality and perinatal mortality possible by preventing rupture of uterus.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

US+LS: Upper segment + Lower segment; **H/O**-History of, **PRBC:** Packed Red Blood Cells.

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