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Rupture Uterus – A 2 Years Retrospective Study at RMC Ajmer, a Tertiary Care Hospital (2016-18)

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Abstract:
Objective:
To determine the incidence, risk factors, complications, management modalities and maternal and perinatal outcome of rupture uterus in pregnancy.
Methods:
This retrospective study was carried out at RMC ajmer, for a period of 2 years from January 2016 to October 2018. Clinical records of cases of uterine rupture were reviewed and information on demographic characteristics, clinical presentation, intraoperative findings, surgical intervention and maternal and perinatal outcome was collected.
Results:
Out of 41864 deliveries, 116 cases of rupture uterus were reported with an incidence of rupture uterus 1 in 361. Majority 49 (42.24%) of cases were in age group 20-25 years. Only 2 was primigravida, 24 (20.68%) were of parity ≥ 5 and remaining of parity 1- 4. Majority were unbooked cases. 101 (87.06%) were referred from other health centers and only 15 (12.93%) cases were admitted directly. Repair of rupture site with or without bilateral tubal ligation was done in 52 (44.82%) cases, while subtotal hysterectomy was performed in 56 (48.27%) cases. Hypovolumic shock was the major cause of maternal death.
Conclusion:
Promotion of skilled attendance at birth, identification of high risk women and timely referral, use of oxytocic drugs cautiously , correct use of partograph, preventing unnecessary caesarean sections and education of people about supervised pregnancy and delivery are essential in reducing the occurrences of uterine rupture.
Key words:*Rupture uterus, Maternal mortality, Hysterectomy, Uterine scar.*

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I. Introduction

Uterine rupture is a potential catastrophic obstetric complication. It accounts for major fetal and maternal morbidity and mortality. Incidence of ruptured uterus varies from0.6/1000 to 250/1000 deliveries[1]. The incidence of this major obstetric hazard is increasing due to increase in incidence of cesarean section deliveries. The inadvertent use of uterotonics by unqualified people remains the major cause of rupture uterus. Many studies suggest close monitoring of trial of labor in women with previous cesarean section would be safer in an institution.But in India due to ignorance, illiteracy and poverty, the women do not take regular antenatal checkups. Several risk factors like deliveries conducted by unqualified people or traditional birth attendant, illiteracy, poor socioeconomic status, misuse of oxytocin, contracted pelvis, congenital uterine anomalies, multiparty, previous uterine surgeries like myomectomy, number and type of previous cesarean deliveries, instrumental deliveries, prolonged labor. However, there is a different scenario in developing countries due to increasing incidence of uterine rupture. Therefore, we tried to analyze the various risk factors, complications of maternal and fetal outcome in our institution.

II. Objectives

1. To evaluate the incidence of uterine rupture.
2. To identify the risk factors, complications of uterine rupture.
3. To know the maternal and fetal outcome in uterine rupture.

III. Materials and methods

The study was carried out in Department of Obstetrics and Gynecology, JLN Medical College, Ajmer. The data was analyzed Jan 2016-Oct 2018. All cases of uterine rupture admitted in hospital were included in the study.

Methodology: Patients admitted in the labor ward were assessed clinically. Socio demographic details, gestational period, previous obstetric history, duration of labor were recorded. The site of rupture, surgical treatment strategies, maternal and fetal outcome were analyzed. The surgical procedure was decided by taking following considerations: general condition of the patient, parity and desire for future child bearing, site, severity, extent of rupture. The patients were followed up until their discharge from hospital.

IV. Results

116 cases of uterine rupture were managed during the study period. During the same period there were 41864 deliveries, giving a hospital incidence of ruptured uterus 1 in 361. The yearly incidence of rupture uterus is shown in table 1. There were 12 maternal deaths due to uterine rupture, giving a case fatality rate of 10.34%.

Table-1: Incidence of rupture uterus (RU) from year 2016-18.

Year	Total deliveries	Cases of	Incidence of RU
2016	14126	37	1 in 382
2017	15102	49	1 in 308
2018	12636	30	1 in 421
Total	41864	116	1 in 361

Table 2 shows demographic characteristics of ruptured uterus cases. Majority of cases, 49 (42.24%) were in age group 20-25 years. The lowest incidence of uterine rupture was among women less than 20 years

Table-2: Demographic characteristics.

Characteristic	Number	Percentage
Maternal age in years		
20 – 25	49	42.24
26-30	43	37.07
31-35	16	13.79
36-40	7	6.03
>40	1	0.86
Parity		
0	2	1.72
1	8	6.9
2	19	16.38
3	31	26.72
4	32	27.59
≥5	24	20.69
Locality		
Rural	102	**87.93**
Urban	14	**12.07**
Referral status		
Direct	15	**12.93**
Referred	101	**87.07**
Booking status		
Booked	16	**13.79**
Unbooked	100	**86.21**

Only 2 patient were primigravida, 24 (20.68%) were of parity ≥5 and remaining of parity 1- 4. Total booked cases were 16 (13.79%) and unbooked cases were 100 (86.21%). 101 cases (87.07%) were referred from other health centers and only 15 cases (12.93%) were admitted directly. 102 cases (87.93%), were from rural areas.

The associated causes of rupture uterus are shown in Table 3. 61 (52.59%) women had rupture of scarred uterus, of whom 45 (38.79%) women were with previous one LSCS. One patient had history of perforation of uterus in previous pregnancy. In 53 (45.69%) cases, rupture occurred in unscarred uterus.

Table-3: Aetiological factors.

Causes	Number	Percentage
Spontaneous	53	45.69
CPD	14	12.07
Multiparity	20	17.24
Malpresentation	11	9.48

Obstructed labour	5	4.31
Hydrocephalus	2	1.72
Unknown	1	0.86
Scar rupture	61	52.59
Previous 1 LSCS	45	38.79
Previous 2 LSCS	14	12.07
Previous 3 LSCS	1	0.86
Perforation repair	1	0.86
Traumatic	1	0.86

LTCS – lower transverse caesarean section.

Table 4 demonstrates intraoperative findings. Rupture was complete in 107 (92.24%) cases, while 9 cases (7.76%) had incomplete rupture. Lower uterine segment was involved in 102 cases. Bladder was involved in 5 cases,

Table- 4: Intraoperative findings.

Characteristic of rupture	**Number**	**Percentage**
Type of rupture		
Complete	107	92.24
Incomplete	9	7.76
Segment of uterus involved		
Upper	5	4.31%
Lower	102	87.93%
Both	9	77.58%
Associated complications		
Bladder injury	5	4.3
Broad ligament hematoma	14	12.06%

The various type of surgical treatment offered to patients with rupture uterus are shown in table 5. Repair of rupture site with or without bilateral tubal ligation was done in 52 (44.83%) cases. Hysterectomy was the procedure of choice in 64 (55.17%) cases, out of which subtotal hysterectomy was performed in 56 (48.28%) cases.

Table- 5: Surgical Intervention.

Surgical procedure	**Number**	**Percentage**
Rent Repair	52	44.83
Rent Repair only	16	13.79
Rent Repair with bilateral tubal ligation	36	31.03
Hysterectomy	64	55.17
Subtotal hysterectomy	56	48.28
Total hysterectomy	8	6.90
Bladder repair	5	4.31

Postoperative complications are shown in table 6.

Table-6: Maternal and perinatal outcome.

	Number	**Percentage**
Maternal Mortality	12	10.34
Perinatal outcome		
Still birth	93	80.17
Alive	23	19.83

There were 12 maternal mortalities and 93 fetal mortalities. 1 cases developed ARDS, leading to maternal death. In 6 cases maternal death was attributed to haemorrhagic shock, 1 of maternal deaths were due to septicemia with multiorgan failure, 1 was due to renal failure and 1 was due to DIC.

V. Discussion

Uterine rupture is a serious obstetric complication, with high maternal and perinatal morbidity and mortality.

The incidence of uterine rupture in present study was 1 in 361, lower than the incidence reported in other Indian studies, 1 in 359 by Setu Rathod et al, and 1 in 346 by Sahu Latika[2,3,4].

Majority of ruptures occurred in women with parity 1-3. In a study by Sahu Latika, 75.25% rupture occurred in para 1-3 [4]. In present study 27.59% women were para 4 and only 20.69% women were grandmultiparous. This trend of increased uterine rupture among women of low parity could be as a result of increased rate of primary caesarean section and rejection of subsequent operative delivery by the women. This

fear of and a version for caesarean section drives them away from centres with skilled manpower and facilities for operative delivery.

Spontaneous rupture of the uterus is uncommon in a primigravida, even when labor is obstructed, because a primiparous uterus goes into inertia when faced with an insurmountable obstruction. In present study, there was only two cases of rupture uterus in a primigravida, resulted one from a road traffic accident and in another one cause was unknown. K Sunita et al, also reported a case of rupture uterus in primigravidae [3].

Majority of patients were unbooked. This figure compares favourably with other studies, supporting the notion that lack of antenatal care is associated with increased maternal and foetal morbidity in uterine rupture [3,4]. In modern obstetrics, the single most important risk factor for uterine rupture is the presence of previous scar on uterus. Our study confirmed this, as scarred uterus was the leading cause of rupture in 52.59% of our patients. This is comparable with study by Setu Rathod et al [2]. Our labor room protocol allows trial of labor in cases of previous one caesarean section only. 14 women with uterine rupture were with previous two caesarean section and 1 woman was with previous three LSCS. These women were not given a trial but presented to the hospital after laboring at home.

Abdominal pain and tenderness, absent fetal heart sound, vaginal bleeding, loss of uterine contour and shock were the predominant clinical presentation in this study. Treatment must be individualized and must consider the clinical condition of the patient, her desire to maintain reproductive capability and menstruation, her long term reproductive health and the experience of the surgeon. Abdominal hysterectomy was performed in 55.17% of cases, where repair was not possible. Patients that had more extensive, multiple or infected tears were not suitable for repair. Repair of the uterus without tubal ligation was performed in 13.79% of the young patients in whom uterus was repairable. Repair with tubal ligation was done in 31.03% patients. However repair of ruptured uterus increases the possibility of recurrence of rupture in subsequent pregnancy, therefore, elective caesarean section should be performed at 37 weeks of pregnancy in this group of patients [5]. Anaemia and shock were the commonest complications noted in our patients. This is expected because uterine rupture is a traumatic event and haemorrhage is a part of its pathophysiology. Most patients required between 2-4 units of blood during their hospital stay. This highlights the need to have a good blood transfusion facility.

Maternal case fatality was 10.34%. In an Indian study by Ganesh Shinde et al, maternal death occurred in 16.22% cases [6]. The intensity of initial resuscitative measures plays a major role in determiningmaternal outcome. Late presentation to the hospital was the major cause of poor prognosis. This late presentation could be as a result of poverty, lack of skilled birth attendant, delayed referral, poor transport network and aversion for operative delivery. Most of the patients were referred from remote areas. Our facility being a regional referral, women often come in critical condition resulting in poor outcome. The main reasons for referral were non availability of well equipped operation theaters, adequately trained staff (surgeons and anaesthetists) and blood bank facilities.

In this study perinatal mortality was 80.17%. In a study by Sahu Latika, perinatal moratilty was 94.07%. Foetal prognosis in ruptured uterus is largely dependent on the degree of placental separation and magnitude of maternal haemorrhage and hypovolumia. Majority of our patients were unbooked and were transferred to our hospital in emergency in obstruction or after uterine rupture was suspected. The time delay between onset of rupture and delivery contributed to high neonatal mortality, as observed in our study.

VI. Conclusion

Uterine rupture still remains one of the major causes of maternal and newborn morbidity and mortality in India. Promotion of skilled attendance at birth, use of family planning services among those at high risk, identification of high risk women and timely referral, use of oxytocic drugs cautiously in multiparous women, correct use of partograph, preventing unnecessary caesarean sections and education of people about supervised pregnancy and delivery are essential in reducing the occurrences of uterine rupture. For the best outcome, women with history of caesarean section in previous pregnancies, attempting vaginal delivery need to be looked after in an appropriately staffed and equipped health care facility, where immediate facilities for caesarean delivery and advanced neonatal care are available. Not recommending trial of labor to mothers with higher risk for failed attempts at VBAC might reduce the rate of uterine rupture.

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