European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 10, Issue 06, 2023

UTERINE RUPTURE – AN OBSTETRICIAN'S NIGHTMARE

Dr.SangeetaShah[1] Dr. Divya Daniel P[2],Dr.Rajala Usha Rani [3], Dr. Ch Udaya rao[4]

1.Professor&HOD,DepartmentofObstetricsandGynaecology,GandhiMedicalCollege,Secunderabad,Telangana.

2.Assistant professor, DepartmentofObstetricsandGynaecology,GandhiMedicalCollege,Secunderabad,Telangana.

3.Post graduate,DepartmentofObstetricsandGynaecology,GandhiMedicalCollege,Secunderabad,Telangana.

4.PostGraduate,DepartmentofObstetricsandGynaecology,GandhiMedicalCollege,Secunderabad,Telangana.

*CorrespondingAuthor:-
Dr.SangeetaShah,Professor&HODofObstetrics&Gynaecology,GandhiMedicalCollege/Hospital,Secunderabad,TelanganaState.

ABSTRACT

INTRODUCTION: Rupture uterus is a rare and often catastrophic condition. It is associated with a high incidence of fetal and maternal morbidity and mortality.

AIM:To identify the incidence, obstetric risk factors, management modalities, and the fetomaternal outcomein Gandhi medical college and hospital, a tertiary carecentre.

MATERIALS AND METHODS:A 3-year retrospective analysis of 32 cases of uterine rupture was donefrom the period of January 2020 to December 2022 admitted at Gandhi medical college and hospital, Secunderabad. Patient'shistory, clinicalfindings, operative findings, maternal and fetal outcome and post-operative complications were taken for analysis.

RESULTS:There were 32 cases of ruptured uterus out of total 28,332 deliveries over a period of 3 years, with a prevalence of 1.1%. The most common age group was 21-30 years. 87.5% of cases were of scarred uterus presenting with ruptured uterus. The clinical presentation of the patients with rupture of the unscarred uterus was more dramatic with extensive tears compared to rupture with scarred uterus. The estimated blood loss ranged from 1,200 to 1,500 cc. Hemoperitoneum was identified in 95.7% of the patients and 68.75% of the patients underwent cesarean hysterectomy. 31.25% underwent uterine rent repair with or without tubal ligation. There were 2(6.25%) maternal deaths. There were 28 cases (87.5%) of intrauterine fetal demise and 2 cases (6.25%) of stillbirths and 2 neonates (6.25%) died at NICU.

CONCLUSION: Pre-conceptional and contraceptive counselling, regular antenatal care, need for institutional delivery can reduce morbidity and mortality due to ruptured uterus.

KEY WORDS: Ruptured uterus, cesarean section, cesarean hysterectomy.

INTRODUCTION

Uterine rupture is an obstetrical emergency endangering the life of both mother and fetus. Uterine rupture during pregnancy is a rare occurrence, where as uterine scar dehiscence is a comparatively common event.In women who undergo a trial of labor after one prior low

transverse cesarean section, the incidence of uterine rupture is estimated to be less than 1% [1] . Although most uterine ruptures occur in women with prior scarred uterus, rupture of the nulliparous unscarred uterus is also possible. Spontaneous uterine rupture is an extremely rare event, estimated to occur in one of 8,000 to one of 15,000 deliveries. [2]

Obstetric causes reported in literature, which are associated with increased risk of uterine ruptureinclude congenital uterine anomaly, grand multiparity, previous uterine surgery, fetal macrosomia, fetal malposition, labor induction, obstructed labor, uterine instrumentation, attempted forceps delivery, external version, uterine trauma and lack of antenatal checkup. [3, 4, 5]

Due to multiple reasons including, lack of health education, ignorance, or poverty; significant proportion of women in our country do not get regular antenatal checkup, preferring home delivery by traditional birth attendant instead of visiting the hospital. They visit the hospital in emergency situation after prolonged dysfunctional labor when traditional birth attendant fails to deliver the baby. The prolonged obstructed labor increases the risk of uterine rupture and rupture of previous cesarean scar.[6] Continuous rising trend of cesarean deliveries has increased the number of women exposed to the risk of a rupture uterus.

Due to potential grave consequences of uterine rupture to both mother and child, the obstetrician should have a high clinical suspicion for uterine rupture in the presence of abdominal pain, vaginal bleeding, hemodynamic instability loss of fetal station, and non-reassuring fetal heart rate patterns.

Fortunately, uterine rupture is a preventable condition. In order to reduce maternal morbidity and mortality in our community and meet the Millennium Development Goals (MDGs) 4 and 5, it is essential to determine the risk factors for ruptured uterus, which is a leading cause of maternal mortality in developing countries despite current knowledge.[7]

The aim of the present retrospective study is to identify the incidence, obstetric risk factors, and causes of uterine rupture and define the associated maternal and perinatal morbidity and mortality in Gandhi medical college and hospital, Secunderabad.

MATERIALS AND METHODS

This retrospective study was conducted over a period of 3 years at Department of Obstetrics and Gynecology, Gandhi hospital, Secunderabad. The data of 32 cases of ruptured uterus were analyzed for demographic characteristics, risk factors, clinical presentation, management, operative findings, fetomaternal outcome, and postoperative complications was studied.

INCLUSION CRITERIA: All antenatal cases with gestational age > 34 weeks with full thickness uterine wall rupture.

EXCLUSION CRITERIA: - Gestational age < 34 weeks

- Uterine scar dehiscence

STATISTICAL ANALYSIS

Data was entered into Microsoft Excel (Windows 7; Version 2007) and analyses were done using the Statistical Package for Social Sciences (SPSS) for Windows software (version 22.0; SPSS Inc, Chicago).Frequencies and percentages for categorical variables were determined.

RESULTS

During the study period, 32 cases of uterine rupture were diagnosed out of total 28,332 deliveries. All patients were unbooked in our hospital.The incidence of rupture was calculated to be one in 886 deliveries. The incidence of rupture was 0.29% in women with history of prior uterine surgery and was 0.04% in women without history of any prior uterine surgery.

AGE(IN YEARS)	N (32)	N(%)
21-25	6	18.75%
26- 30	12	37.5%

31-35	8	25%
>35	6	18.75%

TABLE: 1DISTRIBUTION OF AGE GROUP

Table : 1 Depicts the distribution of age , majority of cases (37.5%) are between age group 26 - 30 years followed by age group between 31- 35 years

TABLE : 2 DISTRIBUTION OF GESTATIONAL AGE

GESTATIONAL AGE (IN WEEKS)	N (32)	N(%)
34- 36	1	3.12%
36^{+1} -38	25	78.15%
$>38^{+1}$	6	18.75%

Table : 2 Depicts the distribution of gestational age , 78.125% of cases presented between gestational age 36^{+1} – 38 weeks , followed by gestational age > 38weeks (18.75%).

TABLE :3 DISTRIBUTION OF GRAVIDA

GRAVIDA	N (32)	N(%)

PRIMI	1	3.12%
GRAVIDA 2	7	21.87%
GRAVIDA 3	18	56.25%
>GRAVIDA 3	6	18.75%

Table : 3 depicts the distribution of gravida , 56.25% of cases were of gravida 3, followed by gravida 2 (21.87%).

TABLE 4: Risk factors associated with uterine rupture in scarred uterus

SCARRED UTERUS	N (28)	PERCENTAGE (%)
Prior 1 LSCS	6	21.4%
Prior 2 LSCS	18	64.2%
Prior 3 LSCS	3	10.7%
Prior H/O Hysterotomy	1	3.57%

TABLE 5: Risk factors associated with uterine rupture in unscarred uterus

UNSCARRED UTERUS	N(4)	PERCENTAGE (%)
Grand multiparity	3	75%
Congenital anomaly	1	25%

Among the cases with history of prior uterine surgery, the vast majority of patients had prior low transverse cesarean section (87.5%). There was only one patient with prior hysterotomy.

TABLE 6: INTRAOPERATIVE FINDINGS

FINDING	N	PERCENTAGE(%)

Hemoperitoneum	29	90.6%
Fetus in abdominal cavity	25	78.1%
Fetus partially in uterus	6	18.75%
Fetus inside uterus	1	3.1%
Broad ligament hematoma	7	21.8%
Bladder injury	5	15.6%

Lower segment scar rupture was found in 44.6% cases, lower segment scar rupture extending to upper segment (17.02%). Only four (8.5%) cases were upper segment rupture. Rupture extended to the bladder in 5 cases, to broad ligament in 7 cases.

The clinical presentation of the patients with rupture of the unscarred uterus was more dramatic with extensive tears, hypotension, and shock. Rupture of scarred uterus, on the other hand, was usually incomplete and transverse. Signs of shock were rarely a presenting feature in this group.

Intraoperatively, the estimated blood loss ranged from 1,200 to 1,500 cc. Hemoperitoneum was identified in 95.7% of the patients. 29 patients received blood transfusion either intraoperatively or postoperatively. Other intraoperative findings are described in Table6. The choice of surgical procedure was based upon the type, location, and extent of tear; patient's hemodynamic status; and desire for future fertility. 31.25% of the patients underwent repair of rent with or without simultaneous tubal ligation. Cesarean hysterectomy was performed in 22 cases (68.75%), where repair was not possible.

TABLE 7: POSTOPERATIVE COMPLICATIONS

COMPLICATIONS	N (32)	PERCENTAGE (%)
Shock	13	40.6%
Urinary tract infection	11	34.3%
Fever	10	31.2%
Wound infection	6	18.75%
Wound dehiscence	5	15.62%
Respiratory tract infection	4	12.5%
Acute kidney injury	4	12.5%

Postoperatively, the most common complication was shock seen in 40.6%% of patients. Second most common complication was urinary tract infection seen in 34.3% of patients. 31.25% of patients developed febrile morbidity. Other less common complications are described in Table 7.

TABLE 8: FETAL OUTCOME

OUTCOME	N(32)	PERCENTAGE (%)

Intrauterine death	28	87.5%
Stillbirths	2	6.25%
NICU deaths	2	6.25%

Despite the presence of grave maternal complications, there were only 2 maternal deaths in our series in both the cases cause of death is hemorrhagic shock. However, the fetal outcome was poor as described in Table 8. There were 28 cases of intrauterine fetal demise and 2 cases of stillbirths. 2 babies had low Apgar scores and died in neonatal intensive care unit (NICU).

DISCUSSION

In modern era due to increasing trends of cesarean section rate, uterine rupture is emerging as a major obstetric challenge. Lack of health information, illiteracy, poor antenatal care, poverty, home delivery by traditional birth attendants and delay in referrals all contributes to uterine rupture [8].The incidence of one in 886 deliveries for uterine rupture in our series is in contrast to the studies conducted by Gardeil.et al [9] incidence is 1 in 4,366 and M.waterstone.et.al [10] incidence is 12 in 1000.In developing countries like in Ethiopia and Nigeria it is 0.03% and 0.83% respectively[11,12]. Studies conducted in developing countries gives strong evidence that uterine rupture is a major health problem in developing countries, with the rate higher in rural areas[8, 11]. The studies also revealed that socioeconomic condition along with poor health services play a major role in determining the incidence of rupture.

Most of the patients in this study 12 (37.5%) were between the age 26- 30 years similar to the study conducted by Malik HS.et.al[8]majority of the women presented with ruptured uterus were aged between 26 – 30yrs.In contrast to the study conducted byBina M. Raval.et.al[13] where most of the women presented between the age group 20-30 years.In the present study increased incidence of the uterine rupture occurred in Gravida 3, whereas Malik HS.et.al [8]study found 42.7% of cases in Gravida (2-4) category .

In the present study most common cause of uterine rupture is previous cesarean section (87.5%) this is similar to the study conducted by Bina M. Raval.et.al[13] (75.5%). This finding is in contrary to the study conducted by Khan.et.al [14]and Geremewastakikie et.al [15] where uterine rupture occurred in unscarred uterus causes being injudicious use of oxytocin (37.5%) and obstructed labor (89.3%) respectively.

In the present study cesarean hysterectomy was performed in 22 cases (68.75%) and uterine rent repair was done in 10 cases (31.25%) similar to the study conducted by Geremewastakikie et.al [15] where cesarean hysterectomy was done in 57% cases and uterine rent repair done in 23.3% cases. In contrast to the study conducted by Malik. HS.et .al[8],cesarean hysterectomy was performed in 24 cases (23.30%) and uterine rent repair was done in 79 cases (76.69%).

The most common postoperative complication in the present study is shock in 13 cases (40.6%) in contrast to the study conducted by Maruti sinha.et.al[16] where most common postoperative complication is urinary tract infection (36.2%). There were 2 maternal deaths (6.25%) in the present study similar to the study conducted by

Geremewastakikie et.al [15]were maternal deaths noted was 6.6%.In contrast to the study conducted by Nawsaba.et .al[17] maternal mortality was 3.33%.

Definitive therapy for the fetus is delivery via emergent surgical intervention, which is helpful in avoiding or reducing major fetal morbidities including fetal hypoxia, anoxia, acidosis, and fetal mortality. Delivery within 30 min after the uterine rupture is suspected clinically is associated with good long-term neonatal outcomes. However, majority of our patients were unbooked and were transferred to the hospital when there is clinical suspicion of uterine rupture. The time delay between onset of rupture and delivery contributed to high neonatal mortality, as demonstrated in our study (100%) similar to the study conducted by Geremewastakikie et.al [15]perinatal mortality was 98.3%.In contrast to the study conducted by Bina M. Raval.et.al[13] is 40%.

CONCLUSION

Ruptured uterus can be preventable cause of maternal and fetal morbidity and mortality. Major easily identifiable risk factors including history of prior cesarean section, grand multiparity, obstructed labor. Identification of these high risk women, prompt diagnosis, immediate transfer, and optimal management needs to be overemphasized to avoid adverse fetomaternal complications. Extreme caution should be taken when managing a patient with a previous uterine scar, attemptingtrial of labor. Preconceptional counselling, contraceptive advice after cesarean section, increased accessibility to good obstetric care and prompt referral system to equipped facilities with availability of transportation services is essential for developing countries to avoid these catastrophic emergencies.

REFERENCES

1. Smith JG, Mertz HL, Merrill DC. Identifying risk factors for uterine rupture. *ClinPerinatol.* 2008;35:85–99.

2. Miller DA, Goodwin TM, Gherman RB, Paul RH. Intrapartum rupture of the unscarred uterus. *Obstet Gynecol.* 1997;89:671–3.

3. Farmer RM, Kirschbaum T, Potter D, Strong TH, Medearis AL. Uterine rupture during trial of labor after previous cesarean section. *Am J Obstet Gynecol.* 1991;165:996–1001.

4. Miller DA, Diaz FG, Paul RH. Vaginal birth after cesarean: A 10-year experience. *Obstet Gynecol.* 1994;84:255–8.

5. Nkemayim DC, Hammadeh ME, Hippach M, Mink D, Schmidt W. Uterine rupture in pregnancy subsequent to previous laparoscopic electromyolysis. Case report and review of the literature. *Arch Gynecol Obstet.* 2000;264:154–6.

6. Mahbuba D, Alam IP. Uterine rupture — Experience of 30 cases at Faridpur medical college hospital. *Faridpur Med Coll J.* 2012;7:79–81.

7. Omole-Ohonsi A, Attah R. Risk factors for ruptured uterus in a developing country. *Gynecol Obstet.* 2011;1:102.

8. Malik HS. Frequency, Predisposing factors and fetomaternal outcome in uterine rupture.J Coll Physicians Surg Pak. 2006; 16:472-5.

9. Gardeil F, Daly S, Turner MJ. Uterine rupture in pregnancy reviewed. *Eur J ObstetGynecolReprod Biol.* 1994;56:107–10.

10. Waterstone M, Bewley S, Wolfe C. Incidence and predictors of severe obstetric morbidity: Case-control study. *BMJ.* 2001;322:1089–93.

11. Ekpo EE. Uterine rupture as seen in the University of Calaber Teaching Hospital, Nigeria: a five -year review. J ObstetGynaecol.2000; 20:154-6.

12. Lynch JC, Pardy JP. Uterine rupture and scar dehiscence. A five year survey.Anaesth Intensive care 1996; 24:699-704.

13.BinaM.Raval,ApoorvaG.patil: Uterine rupture : a preventable obstetric catastrophe,International journal of reproduction,contraception,obs and gyn/ vol.9 No.1 (2020), jan2020.

14. Khan S, Parveen Z, Begum S, Alam I. Uterine rupture: A review of 34 cases at Ayub Teaching Hospital Abottabad. J Ayub Med CollAbottabad 2003; 15:50-2.

15. GeremewAstakikie, MitekuAndulemlimenih : Maternal and fetal outcomes of uterine rupture and factors associated with maternal deaths secondary to uterine rupture ; BMC pregnancy and child birth 7, Article ;117 (2017)

16. Marutisinha, Ridhimagupta:Uterine Rupture: A Seven Year Review at a Tertiary Care Hospital in New Delhi, Indian.J.community.med.2016 jan- mar;41(1);45-49.

17.Rashmi, Radhakrisknan G, Valid NB, Agarwal N. Rupture uterus changing Indian scenario. J Indian Med Assoc. 2001; 99:634-7.