ORIGINAL ARTICLE

COMPLETE UTERINE RUPTURE: STILL A DREADFUL OBSTETRICAL EMERGENCY

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ABSTRACT

Background: Rupture of gravid uterus is a devastating life threatening obstetrical emergency which is preventable. It is associated with major maternal and perinatal morbidity and mortality.

Objective: To determine the incidence, demographic characteristics, risk factors, treatment and feto-maternal outcomes of uterine rupture at a tertiary care hospital of Mardan.

Material and Methods: This descriptive cross sectional study was done at Department of Gynaecology & Obstetrics, Mardan Medical Complex, Mardan, Pakistan from February 2017 to July 2017 over a period of six months. All pregnant women of any age, parity, gestational age or booking status with intra-operative diagnosis of complete uterine rupture were included in the study. Those patients with small partial rents in uterus or dehiscence were excluded. Data was entered in predesigned proforma and analyzed.

Results: Frequency of ruptured uterus in our institution was 10/1000 deliveries. Amongst the risk factors, the commonest was history of induction and augmentation by an untrained nonmedical personnel in 25(55%), followed by history of previous cesarean in 9(20%) and obstructed labor in 8(18%) cases. Grand multiparous women comprised 36(80%) cases and most common age group was 30-39 years. Thirty nine(86.6%) women delivered at home and 40(88.8%) were nonbooked. Twenty two(48.8%) underwent uterine repair and subtotal hysterectomy was performed in 13(28.8%) cases. Thirty eight (84%) women recovered well. Fetal deaths were observed in 37(82%) cases and 6(13%) delivered with low APGAR score.

Conclusion: The magnitude and adverse maternal and fetal outcomes of ruptured uterus were high in the study area.

Key Words: Perinatal Mortality, Cesarean Section, Hysterectomy, Polyhydramnios, Gestational Age, Oxytocin.

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INTRODUCTION

Uterine rupture is defined as "an obstetrical emergency in which there is breach in the wall of the uterus leading to loss of its integrity, during pregnancy, delivery or immediately postpartum." It results in devastating consequences to both fetus and mother[1].

Causes of uterine rupture are grand multigravidity, injudicious use of oxytocin and prostaglandins E1 and E2,obstructed labor, previous cesareans and surgeries on the uterus, uterine instrumentation, any kind of manipulation to uterus, congenital anomalies of uterus, uterine over-distension due to any cause, like polyhydramnios, macrosomic fetus and multiple gestation. Thefore mentioned causes are responsible for 8 times increase in the risk of uterine rupture in developing countries[2]. Secondary factors in the developing world are traditional old practices, cultural taboos, absent or low educational status, poverty, fear of surgery, lack of women empowerment and nonutility of health services.[3]

The clinical features of uterine rupture depend on time since rupture, site of rupture and extent of defect[4]. Immediate complications are hypovolemic shock, sepsis and maternal death whereas fetus may develop hypoxia, shock, severe anemia, or fetal death may occur[2].

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Although uterine rupture is a considered as a very unusual event in the developed nations, it happens to be a major public health problem in developing countries, with WHO systematic review regarding maternal morbidity and mortality revealing lower trends with prevalence rates of 0.006% in developed countries[1]. The incidence of uterine rupture in a scarred uterus in 0.3 to 1.7% and in an unscarred uterus it is 0.03 to 0.08%[5].

The main predisposing factors for uterine rupture when different hospitals were considered were past history of cesarean deliveries, <4 antenatal visits, and no formal education.[6-8] Moreover, labor induction by chemical methods, fetal macrosomia, post-term pregnancy, maternal age >35 years, short height of mothers were other factors[9].

Uterine rupture, once diagnosis is made, should be managed actively by giving supportive therapy till the patient is operated, and secondly delivery of fetus must be carried out within 10 -37 minutes of uterine rupture in order to salvage fetus[10]. After fetus is delivered, further management depends on general condition of mother, extent and type of rupture, degree of hemorrhage that has occurred and maternal wishes for further fertility. In young stable cases, repair with or without tubal ligation is done. Where intractable hemorrhage is occurring or ruptured uterine sites are multiple, hysterectomy is the treatment of choice[11].

The rationale of this study is to analyse the magnitude, risk factors involved, surgical treatment received by the patients, maternal and fetal outcome in the form of maternal and perinatal mortality and morbidity associated with uterine rupture and to develop preventive strategies to reduce this devastating complication of labor, which is very rare in the developed countries but still highly prevalent in the developing nations.

MATERIAL AND METHODS

This descriptive cross sectional study was conducted at Gynaecology and Obstetrics Department of Mardan Medical Complex, Mardan from February 2017 to July 2017. Over this time period, 45 patients came with the diagnosis of complete uterine rupture. Inclusion criteria were all women in whom complete uterine rupture was diagnosed intra-operatively. Complete rupture was defined as full thickness uterine wall defect. Cases with small partial rents in uterine wall or uterine dehiscence were excluded from the study.

Approval from hospital ethical committee was taken. Written informed consent was also taken from patients. Detailed history was taken including age, parity, antenatal booking status, place of delivery whether hospital or home, type of delivery whether normal vaginal or instrumental delivery (if postnatal) or attempts to deliver (if antenatal).Record was also made of any injudicious use of oxytocin or prostaglandins used for induction and previous surgeries on uterus. Management was noted in form of hysterectomy whether total or subtotal, repair of uterus with or without tubal ligation, repair of urinary bladder. Maternal outcome was recorded in the form of recovery of woman, damage to the urinary bladder or ureter or death. Fetal outcome was measured in terms of fetal death, early neonatal death and low APGAR score of baby. All patients were kept in High Dependency Unit after surgery for first 24 hours or more if needed. Even after shifting to ward, their vital records were kept and were closely observed. They were discharged on the sixth postoperative day and were asked to come for follow up after two weeks to monitor them for any complication.

All data was entered and analyzed by SPSS 20.0. Mean and standard deviation was measured for numerical variables, and frequencies and percentages were measured for categorical variables. All the data was presented in the form of tables.

RESULTS

During the study period, there were 4498 deliveries in this department and 45 patients presented with the diagnosis of complete uterine rupture, making the incidence of uterine rupture 1% in this institute. Four age groups were created, and it was observed that 4(8.8%) women fell into age group of 15 to 19 years, 16(36%) cases belonged to age group of 20- 29 years, 23(52%) were in 30- 39 years age range and 2(4.4%) were more than 39 years age. Apart from age, other maternal characteristics and risk factors along with the respective frequencies and percentages have been shown in Table 1.

Locating the site of uterine rupture, it was found that it was in lower segment in 24(53%) cases, 9(20%) in upper segment, 5(11%) were left lateral, 4(8.8%) were right lateral and 3(6.6%) were located in posterior wall of uterus. Surgical treatment received by each patient was in form of uterine repair with or without tubal ligation and total or subtotal abdominal hysterectomy. (Table 2) Maternal and fetal outcome has been displayed in Table 3.

DISCUSSION

Uterine rupture being a grave obstetrical complication with very high maternal and perinatal mortality

Table 1: Matrenal characterisrics

Maternal characteristic	Frequency & percentage
Age	
15- 19 years	4(8.8%)
20- 29 years	16(36%)
30- 39 years	23(52%)
≥ 39 years	2(4.4%)
Parity	
P1	1(2.2%)
P2- 4	8(18%)
P5 and above	36(80%)
Place of Delivery	
Home	39(86.6%)
Hospital	6(13.3%)
Antenatal Care	
No	40(88.8%)
Yes	5(11.1%)
Risk Factor	
History of Induction and Augmentation	25(55%)
Previous cesarean	9(20%)
Obstructed Labor	8(18%)
Trial of Instrumental Delivery	2(4.4%)
Injudicious use of misoprostol	1(2%)

Table 2: Surgical treatment received

Surgical treatment received	Frequency& percentage
Repair of uterus	22(48.8%)
Repair of Uterus + Bilateral Tubal Ligation	3(6.6%)
Subtotal Abdominal Hysterectomy	13(28.8%)
Total Abdominal Hysterectomy	6(13%)
Hysterectomy with repair of ruptured urinary bladder	1(2%)
Total	45(100%)

Table 3: Maternal and fetal outcome

Maternal outcome	Frequency& percentage
Recovered	38(84%)
Recovered with Urinary Incontinence	1(2%)
Death	6(14%)
Fetal outcome	
Fetal Death	37(82%)
Low APGAR	6(13%)
Early Neonatal Death	2(4.4%)

and morbidity, especially in underdeveloped and developing countries like Pakistan. Reasons for its high magnitude in our country are lack of women empowerment, financial issues, poor antenatal care, unawareness and non utilization of health services, delay in diagnosis and referrals and the inclination of families and women towards vaginal delivery.

The incidence of uterine rupture in our study is 1% or 10/1000 deliveries. This is a high figure when compared to the figures seen in an Indian study where Gupta A observed 0.17% incidence in his institute and Eguzo KN in a study at Nigeria where 0.4% incidence was found.[12,13] In comparison, local studies from Lady Willington Hospital, Lahore and JPC Karachi have revealed figures of 7.6/1000 and 5.5/1000 deliveries which are quite high.[14,15] The results of Omole-Ohonsi A are very close to ours where they observed 1.2% incidence of Uterine rupture.[16]

We observed in our study that 30-39 years age group is the most vulnerable group for uterine rupture where 52% of our patients fell. This may be due to the fact that mothers in this age group have experienced many pregnancies and childbirths. Dadi TL in his study on 121 cases revealed that 51.2% subjects belonged to this age group.[17] This was confirmed by another international study.[9] Grand multigravidas and great grand multigravidas are considered in one group in our study and we observed that this is the most at risk group for uterine rupture. Our results are consistent with few other national and international studies.[18,19] Total 86.6% deliveries in our study were conducted at home, just like the results of study by Gessessew A et al[20] Total 88.8% cases in our study were unbooked, close to those in the studies of Singh M et al and Abha S et al where 89.5% and 92.5% women were unbooked cases.[21,22]

History of induction and augmentation by untrained person was the most common predisposing factor for uterine rupture in our study in 55% cases. Qazi Q et la in their study at Bannu, Khyber Pakhtunkhwa, Pakistan reported 51.6% women being victims of this malpractice in hands of untrained birth attendants having no knowledge of labor management.[18] In the same study,18.8% patients had previous history of cesarean section, whereas in our analysis 20% patients had previous cesarean. Another study revealed 22.1% cases of uterine rupture with history of previous cesarean section.[12] In our set-up, a woman with previous cesarean section would prefer an attempted vaginal delivery irrespective of all the harms and risks involved.

Uterine repair was done in 48.88% cases, where-

as it was combined with bilateral tubal ligation in 6.6% cases. Singh M did uterine repairs in 59.64% cases of uterine ruptures thus conserving the fertility of patients.[21] Associated BTL was performed in 4.7% cases in another study.[18] We did the subtotal hysterectomy procedure in 28.8% subjects, very close to those performed in an Indian study (29.8%). [21] The difference in health provider's skill and difference in health institution set up may be possible explanation for different surgical treatments of uterine rupture at different places. Ruptured uterus is most common indication for performing hysterectomy.

Our high case fatality rate of 14% was certainly the result of lack of good ICU care and late presentation of patients which is attributed to delayed referral, poor transport, poor ambulance service and poverty. The case fatality rate in international studies is low as compared to ours.[22,23] Fortunately, there was only one case of postoperative urinary incontinence in our study. This complication was seen in higher figures in other studies.[20,23] Coming to the fetal outcome, fetal death was seen in 82% of uterine ruptures. This figure was seen as same in another study and much higher in that of Astatikie G.[17,24] Low APGAR scores were observed in 13% babies, close to the study by Osemwenkha PA where they reported 15.2% neonates having low APGAR scores.

There were several limitations in our study. Firstly, the follow up period of women and neonates was very short. A long term follow up could have come up with more complications and thus strengthened our outcome results. Secondly only Mardan Medical Complex was taken as the study place, inclusion of hospitals from same locality would have given better idea about magnitude of this problem in this area.

CONCLUSION

Uterine rupture is a preventable obstetrical complication, which can give serious risks to the mother and fetus. The woman if survives is at high risk of reduction of or permanently losing her reproductive potential.

RECOMMENDATIONS

There is need for education of women on health related issues, utilization of health facilities and supervision of labor and facilities for emergency obstetric care.

REFERENCES

1. Hofmeyr GJ, Say L, Gulmezoglu AM. WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. Br J Obs Gyn 2005; 112: 1221-28.
2. Latika S. A 10 years analysis of uterine rupture at a teaching institution. J Obstet Gynecol India 2006; 56: 502-06.
3. Esile CO, Umeora OU, Eze JN, Igberase GO. Ruptured uterus: the unabating obstetric catastrophe in South Eastern Nigeria. Arch Gynecol Obstet 2011; 283: 993-97.
4. Mbamara SU, Obiechina N, Eleje GU. An analysis of uterine rupture at the NnamdiAzikiwe University Teaching Hospital Nnewi,Southeast Nigeria. Niger J ClinPrac 2012; 15: 448-52.
5. Sunita K, Indira I, Suguna P. Clinical study of maternal and fetal outcome. IOSR-JDMS 2015; 14: 39-45.
6. Dhifalah I, Santavy I, Fingerova H. Uterine rupture during pregnancy and delivery among women attending the Al Tthawra Hospital in Sana' City Yemen Republic. Biomedical Papers of the Medical Faculty of the University Palacky,Olomouc,Czech Republic 2006; 150: 279-83.
7. Mukasa PK, KabakyengaJ,Senkungu JK, Ngonzi J. Uterine rupture in ateaching hospital in Mbarara,westernUganda,unmatched case control study. Reproductive Health 2013; 10: 29.
8. Ashraf ABR, Ali SSF, Rehman KU. Uterine rupture: an audit to analyze management options,maternal and fetal outcome. Annals 2005; 1: 54-57.
9. Kaczmarczyk M, Sparen P, Terry P. Risk factors for uterine rupture and neonatal consequences of uterine rupture: a population based study of successive pregnancies in Sweden. BJOG 2007: 114: 1208-14.
10. KhankWajdyl D, Sayl L. WHO analysis of causes of maternal death: A systematic review Lancet 2006; 367: 1066-67.
11. Lim AC, Kwee A, Bruinse HW. Pregnancy after uterine rupture: A report of five cases and review of literature. Obstet Gynecol Surv 2005; 90: 16-37.
12. Gupta A, Nanda S. Uterine rupture in pregnanacy: a five year study. Arch Gynecol Obstet 2011; 28: 437-41.
13. Eguzo KN, Umezurike CC. Rupture of unscarred uterus: a multi year cross sectional study from Nigerian Christian Hospital,Nigeria. Int J Reprod Contracep Obstet Gynecol 2013; 2: 657-60.
14. Aslam M. Rupture of pregnant uterus. Pak J Med Sci 1997; 13: 117-20.
15. Fatima N. Rupture of uterus at term. J Coll Phy Surg Pak 1998; 8: 137-39.
16. Omole-Ohonse A, Attah R. Risk factors for ruptured uterus in a developing country. Gynecol Obstet 2011; 11: 2161- 932.
17. Dadi TL, Yarinbab TE. Estimates of uterine rupture bad outcomes using propensity score and determinants oof uterine rupture in Mizan-Te-

pi University Teaching Hospital: Case control study. J Preg 2017; article ID 6517015.https://doi.org/10.1155/2017/6517015.

18. Qazi Q, Akhtar Z, Khan K. Women health,uterine rupture and its complications and management in teaching hospital,Bannu Pakistan. J Clin Med 2012; 7: 49-53.
19. Ibha K, Poonam G, Sehgal A. Rupture of gtavid uterus; experience at an urban medical centre in northern India. J Obstet Gynecol 2003; 53: 558-62.
20. Gessessew A, Melese MM. Ruptured uterus-eight year retrospective analysis of causes and management outcomes in AdigratHospital,Tigrayregion,Ethiopia. Ethio J Health Dev 2002; 16: 241-45.
21. Singh M,Kanti V, Seth S, Gupta V. Maternal and perinatal outcomes of rupture uterus at rural tertiary care institution; a retrospective study. IJRCOG 2016; 5: 2233-38.
22. Abha S, Srivastava S. Uterine rupture still a harsh reality. J Obstet Gynecol India 2015; 65: 158-61.
23. Abasiattai AM, Umoiyoho AJ, Utuk NM. Emergency peripartum hysterectomy in a tertiary hospital in Southern Nigeria. Pan Afr Med J 2013; 15: 1-15.
24. Astatikie G, Limenih MA.Maternal and fetal outcomes of uterine rupture and factors associated with maternal death secondary to uterine rupture. BMC Pregnancy and Childbirth 2017; 17: 117.
25. Osemwenkha PA, Osaikhuwuomwan JA. A 10 year review of uterine rupture and its outcome in the University of Benin Teaching Hospital, Benin City. Nigerian JSurgSci 2016; 26: 1-4.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Qadir M: Main idea, Data Collection,Operating surgeon

Ali M: Operating Surgeon,Data Collection.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.