Original Article

To Determine the Frequency of Maternal and Fetal Outcomes of Uterine Rupture at a Tertiary Care Hospital

Maternal and Fetal Outcomes of Uterine Rupture

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ABSTRACT

Objective: To determine the frequency of maternal and fetal outcomes of uterine rupture at a tertiary care hospital.
Study Design: Descriptive / cross sectional study
Place and Duration of Study: This study was conducted at the department of Gynae/Obstetrics Unit-I Sandeman Provincial Hospital Quetta for 10 months. January 2020 to October 2020.
Materials and Methods: The total sample size was 126 patients which were consecutively enrolled were having presenting with uterine rupture. Cases of ruptured uterus, who were either admitted with or who will develop this complication in the hospital, were included in the study. Diagnosis was made on history and examination and was confirmed on laparotomy. These cases were analyzed with regard to their clinical presentation, past history complications, management and outcome were noted as maternal mortality and perinatal outcome were still birth, early neonatal death, alive and perinatal mortality. The surgical procedure depended on general condition of the patients, parity, and desire for future child bearing, site, severity and extent of rupture.
Results: A total of 126 women having uterine rupture were enrolled in this study. Mean age was 29.58± 876(SD), Mode was 29, and Median was 28.5 with ranging between (16-45) years. Ranged between 16 to 45 years, the maximum number of cases 76(60.3%) were less than 30 years of age. This shows that according to this study uterine rupture was more common at the age <30 years. Regarding the parity, majority of patients 73[57.9%] in this study were primigravidas, followed by 49[3.9%] in parity group of multigravida, only four cases having follow on multigravida**.** Most of the cases coming in our hospital were un-booked accounted for 81[64.3%]. Regarding the risk factors in current pregnancy in women presenting with uterine rupture was most of the commons was observed Scarred Uterus 22[17.5%] and Scarred uterus with spontaneous labour was 25[19.8%]. Some cases follow Scarred uterus with augmentation with syntocinon was 11[8.7%] Transverse lie was 10[7.9%]. No risk factor could be identified in Scarred uterus with induction with prostaglandin E2. Maternal morbidity in women with uterine rupture was identified as in women having shock was 41[32.5%], 27 [21.4%] were anemic, 22 [17.5%] had Puerperal Sepsis, Whereas DIC was presented in 13[10.3%] respectively. Perinatal mortality was 15 [11.9%]. Regarding neonatal morbidity or alive was 47 [37.3%], fifty patients was still birth respectively.
Conclusion: This study concluded that prolonged neglected obstructed labour is the main cause of ruptured uterus followed by scarred uterus. Proper antenatal care and updated training courses of health care providers should be stressed to prevent this catastrophic but avoidable complications. Regular antenatal care, hospital deliveries and care during labor with quick referral to well-equipped hospitals may reduce the incidence of this condition.

Key Words: Maternal, Fetal Outcomes, Uterine Rupture

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INTRODUCTION

Uterine rupture is defined as breach in the integrity of the myometrial wall with spillage of uterine contents into the peritoneal cavity[1].

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The rupture may occur in a scarred or unscarred uterus, with the unscarred uterine rupture leading to exceptionally immense hemorrhage[2]. Unfortunately, a ruptures uterus has been found to be most common cause of maternal and fetal demise in developing countries[3].

The rate of caesarean delivery has risen from 6.7% in 1990 to 19.1% in 2014 worldwide, despite improvement in obstetrical procedures such as classic caesarean section, internal version, total breech exaction etc. This has also resulted in an increase in the frequency of uterine rupture, since women with previous caesarean sections have a greater possibility of a uterine rupture[4]. Prevalence ofuterine rupture is greater in patients who may have a history of caesarean

section include former classical incision, labour initiation or argumentation, macrosomia, greater maternal age, post-term delivery, short maternal stature, no prior vaginal delivery, and prior periviable caesarian section[5]. The aim of this study is to determine the frequency of maternal and fetal outcome so as to highlight the grey areas where there might be a room for improvement of this avoidable catastrophe.

This study will also help us to educate women about the consequences of poor maternal & parental outcome. Thus the implementation of regular antenatal visits and proper family planning should be emphasized to reduce the morbidity and mortality.

MATERIALS AND METHODS

This study was conducted at Gynae Unit-I SPH Quetta. The total sample size was 126 patients which were consecutively enrolled were having presenting with uterine rupture. Cases of ruptured uterus, who were either admitted with or who will develop this complication in the hospital, were included in the study. Patients having ruptured uterus due to congenital abnormality were excluded from the study. Diagnosis were made on history and examination and were confirmed on laparotomy. These cases were analyzed with regard to their clinical presentation, past history complications, management and outcome were noted as maternal (shock, anemia, puerperal sepsis, wound infection, mortality and perinatal outcome were still birth, early neonatal death, alive and perinatal mortality. The surgical procedure depended on general condition of the patients, parity, and desire for future child bearing, site, severity and extent of rupture.

RESULTS

A total of 126 women having uterine rupture were enrolled in this study. Mean age was 29.58± 876(SD), Mode was 29, and Median was 28.5 with ranging between (16-45) years Table 1. Ranged between 16 to 45 years, the maximum number of cases 76(60.3%) were less than 30 years of age. This shows that according to this study uterine rupture was more common at the age <30 years. Regarding the parity, majority of patients 73[57.9%] in this study were primigravidas, followed by 49[3.9%] in parity group of multigravida, only four cases having follow on multigravida**.** Most of the cases coming in our hospital were un-booked accounted for 81[64.3%]. Regarding the risk factors in current pregnancy in women presenting with uterine rupture was most of the commons was observed Scarred Uterus 22[17.5%] and Scarred uterus with spontaneous labour was 25[19.8%]. Some cases follow Scarred uterus with augmentation with syntocinon was 11[8.7%] Transverse lie was 10[7.9%] Table 2. No risk factor could be identified in Scarred uterus with induction with prostaglandin E2.

Table No.1: Descriptive Statistics of the study characteristics (n=126)

Descriptive Statistics	Mean±SD	Maximum	Minimum
Age	29.58±8.76	45	16
Parity	2.5±1.0	5	1

Table No.2: Classification of different risk factors in women presenting with of uterine rupture(n=126)

Risk Factors	Frequency	Percentage
Scarred Uterus	22	17.50%
Scarred uterus with spontaneous labour	25	19.80%
Scarred uterus with augmentation with syntocinon	11	8.70%
Scarred uterus with induction with prostaglandin E2	0	0%
Grand Multiparity	4	3.20%
Injudicious use of oxytocin in unscarred uterus	2	1.60%
Obstructed labour	17	13.50%
Prostaglandin administration in Un-scarred uterus.	5	4.00%
Transverse lie	10	7.90%
Uterus repair	6	4.80%
Uterus Repair + Bilateral tubal ligation	4	3.20%
Uterus Repair + Bladder Repair	9	7.10%
Hysterectomy	11	8.70%
Total	126	100%

Table No.3: Different categories of Maternal Morbidity in women presenting with uterine rupture

Maternal Morbidity	Yes	No	Total
Shock	41 [32.5%]	85 [67.5%]	126 [100%]
Anemia	27 [21.4%]	99 [78.6%]	126 [100%]
Puerperal Sepsis	22 [17.5%]	104 [82.5%]	126 [100%]
Wound Infection	4 [3.2%]	122 [96.8%]	126 [100%]
DIC	13 [10.3%]	113 [89.7%]	126 [100%]
Vesicovaginalfistula	12 [9.5%]	114 [90.5%]	126 [100%]
Maternal Mortality	7 [5.6%]	119 [94.4%]	126 [100%]

Maternal morbidity in women with uterine rupture was identified as in women having shock was 41[32.5%], 27 [21.4%] were anemic, 22 [17.5%] had Puerperal Sepsis,

Whereas DIC was presented in 13[10.3%] respectively Table 3. Perinatal mortality was 15 [11.9%]. Regarding neonatal morbidity or alive was 47 [37.3%], fifty patients was still birth respectively Table 4.

Table No.4: Classification of perinatal outcome in women presenting with uterine rupture

Perinatal outcome	Yes	No	Total
Still Birth	50 [39.7%]	76 [60.3%]	126 [100%]
Early Neonatal Death	14 [11.1%]	112 [88.9%]	126 [100%]
Alive	47 [37.3%]	79 [62.7%]	126 [100%]
Perinatal Mortality	15 [11.9%]	111 [88.1%]	126 [100%]

DISCUSSION

Uterine rupture occurs extremely rarely - according to one study from France, the incidence of uterine rupture was found to be 6.2/10000 deliveries [6]. Another study shows the incidence to be 32/10000, with mean age of the patients to be 29.6±5.6 years. This was a frightening result since it indicates that the risk is highest in women of young and optimum fertility age[7]. Unscarred uteri have a lower risk of rupture. A study found the incidence rate to be 0.057%. Of those who did have a ruptured uterus, 76.9% were on term while 23.1% were preterm. The study suggests that a gravid woman with hypotension, abdominal pain, fetal distress, and vaginal bleeding, may be suspected of having a ruptured uterus[8]. Uterine rupture during pregnancy is a rare event and frequently results in life-threatening maternal and fetal compromise. It can either occur in women with (1) a native, unscarred uterus or (2) a uterus with a surgical scar from previous surgery. While a scarred uterus has a higher risk of uterine rupture, the blood loss of the mother in either cases of a scarred or unscarred uterus were not found to be significantly different[9].

The normal, unscarred uterus is least susceptible to rupture[10]. Grand multiparity, neglected labor, malpresentation, breech extraction, and uterine instrumentation are all predisposing factors for uterine rupture. Despite the odds being low, if uterine rupture does occur, the morbidity and mortality rate is rather high. A higher awareness of the issue, regular checkups and low threshold for intervention can allow a better management of the case[11].

It is found that 66% of cases occur in women who have had a previous caesarean section. A classical vertical and T-shaped incisions carry a higher risk of later uterine rupture than the standard modern low transverse approach and an inter-delivery interval of less than 18-24 months increases the risk. It is also found that the risk appears to be higher in pregnancies of gestational age greater than 40 weeks, and that prior uterine surgery (including myomectomy, curettage, induced abortion, manual removal of the placenta) also result in the prevalence in the occurrence of a uterine rupture. The aforementioned risk factors were found in about 90% of the cases of a uterine rupture[12].

Trauma is also found to be a known cause of uterine rupture. As a matter of fact, it is the most common non-obstetrical cause of maternal mortality. A case study including seven patients shows that six out of seven patients were unable to survive a uterine rupture caused by trauma[13].

Nearly all cases of a ruptured uterus are reported to occur during the third trimester[14]. Studies suggest that when a planned VBAC is induced, the uterine rupture risk is higher if prostaglandin is used than in a non-prostaglandin-based regimen. When a planned VBAC is augmented, the oxytocin dose should be titrated such that contraction frequency is no more than 4 in 10 minutes. Research supports a maximum oxytocin dose of 20 mU/minute in trials of labour, to avoid an unacceptably high (4 x greater) risk of uterine rupture. Labour induction using oxytocin, antepartum fetal loss, and prior miscarriage also increase the chances of a uterus rupture significantly[15].

The most direct prevention strategy for minimizing the risk of pregnancy-related uterine rupture is to minimize the number of patients who are at highest risk. According to the aforementioned studies, if a gravida falls into the category of having multiple previous cesarean deliveries, previous classic midline cesarean delivery. previous low vertical cesarean delivery, previous low transverse cesarean delivery with a single-layer hysterotomy closure, previous cesarean delivery with an interdelivery interval of less than 2 years, previous low transverse cesarean delivery with a congenitally abnormal uterus, previous cesarean delivery without a previous history of a successful vaginal birth, previous cesarean delivery with either labor induction or augmentation, previous cesarean delivery in a woman carrying a macrosomic fetus weighing >4000 g, or previous uterine myomectomy accomplished by means of laparoscopy or laparotomy, the patient is at a higher risk of uterine rupture. Decreasing the threat factors of extended labor, cervical dilatation, induction of labor, augmentation of labor with oxytocin, diabetes, and blood loss may lessen the prevalence of uterine rupture[16].

The most critical aspects of treatment in the case of uterine rupture are establishing a timely diagnosis and minimizing the time from the onset of signs and symptoms until the start of definitive surgical therapy. Once a diagnosis of uterine rupture is established, the immediate stabilization of the mother and the delivery of the fetus are imperative. A surgery is the primary mode of management for the mother[17]. As a rule, the time available for successful intervention after frank uterine rupture and before the onset of major fetal morbidity is only 10-37 minutes. Therefore, once the diagnosis of uterine rupture is considered, all available resources must quickly and effectively be mobilized to successfully institute a timely surgical treatment that

results in favorable outcomes for both the newborn and the mother[18].

Hysterectomy should be considered the treatment of choice when intractable uterine bleeding occurs or when the uterine rupture sites are multiple, longitudinal, or low lying[19]. Because of the short time available for successful intervention, the following 2 premises should always be kept firmly in mind: (1) Maintain a suitably high level of suspicion regarding a potential diagnosis of uterine rupture, especially in high-risk patients, and (2) when in doubt, act quickly and definitively.

CONCLUSION

This study concluded that prolonged neglected obstructed labour is the main cause of ruptured uterus followed by scarred uterus. Proper antenatal care and updated training courses of health care providers should be stressed to prevent this catastrophic but avoidable complications. Regular antenatal care, hospital deliveries and care during labor with quick referral to well-equipped hospitals may reduce the incidence of this condition.

Author's Contribution:

Concept & Design of Study:	Zubia Bugti
Drafting:	Naila Ahsan
Data Analysis:	Misbah Hayat
Revisiting Critically:	Zubia Bugti, Naila Ahsan
Final Approval of version:	Zubia Bugti

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Ahmed DM, Mengistu TS, Endalamaw AG. Incidence and factors associated with outcomes of uterine rupture among women delivered at Felegehiwot referral hospital, Bahir Dar, Ethiopia: cross sectional study. BMC pregnancy and childbirth 2018;18(1):447.
2. Aliyu SA, Yizengaw TK, Lemma TB. Prevalence and associated factors of uterine rupture during labor among women who delivered in Debre Markos hospital north West Ethiopia. Int Med 2016;6(4):1000222.
3. Astatikie G, Limenih MA, Kebede M. Maternal and fetal outcomes of uterine rupture and factors associated with maternal death secondary to uterine rupture. BMC pregnancy and childbirth 2017; 17(1):1-9.
4. Motomura K, Ganchimeg T, Nagata C, Ota E, Vogel JP, Betran AP, et al. Incidence and outcomes of uterine rupture among women with prior caesarean section: WHO Multicountry Survey on Maternal and Newborn Health. Scientific reports 2017;7(1):1-9.
5. Lannon SM, Guthrie KA, Vanderhoeven JP, Gammill HS. Uterine rupture risk after periviable cesarean delivery. Obstet Gynecol 2015;125(5): 1095.
6. Markou GA, Muray JM, Poncelet C. Risk factors and symptoms associated with maternal and neonatal complications in women with uterine rupture. A 16 years multicentric experience. Eur J Obstet Gynecol and Reproductive Biol 2017; 217:126-30.
7. Abbas AM, A. Shehata M, M. Fathalla M. Maternal and perinatal outcomes of uterine rupture in a tertiary care hospital: a cross-sectional study. J Maternal-Fetal Neonatal Med 2019;32(20):3352-6.
8. Vernekar M, Rajib R. Unscarred uterine rupture: a retrospective analysis. J Obstet Gynecol Ind 2016; 66(1):51-4.
9. You SH, Chang YL, Yen CF. Rupture of the scarred and unscarred gravid uterus: outcomes and risk factors analysis. Taiwanese J Obstet Gynecol 2018;57(2):248-54.
10. Mannini L, Sorbi F, Ghizzoni V, Masini G, Fambrini M, Noci I. Spontaneous unscarred uterine rupture at 15 weeks of pregnancy: A case report. Ochsner J 2016;16(4):545-7.
11. Halassy SD, Eastwood J, Prezzato J. Uterine rupture in a gravid, unscarred uterus: A case report. Case reports in women's health 2019;24:e00154.
12. Sinha M, Gupta R, Gupta P, Rani R, Kaur R, Singh R. Uterine rupture: a seven year review at a tertiary care hospital in New Delhi, India. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Med 2016; 41(1):45.
13. Suchecki G, Tilden H, Roloff K, Chandwani D, Neeki M. Management of Traumatic Uterine Rupture in Blunt Abdominal Trauma: A Case Report and Literature Review. Cureus 2020;12(6).
14. Wu X, Jiang W, Xu H, Ye X, Xu C. Characteristics of uterine rupture after laparoscopic surgery of the uterus: clinical analysis of 10 cases and literature review. J Int Med Res 2018;46(9):3630-9.
15. Al-Zirqi I, Daltveit AK, Forsén L, Stray-Pedersen B, Vangen S. Risk factors for complete uterine rupture. Am J Obstet Gynecol 2017;216(2):165-e1.
16. Tanos V, Toney ZA. Uterine scar rupture-Prediction, prevention, diagnosis, and management. Best Practice & Research Clinical Obstet Gynaecol 2019;59:115-31.
17. Eze JN, Anozie OB, Lawani OL, Ndukwe EO, Agwu UM, Obuna JA. Evaluation of obstetricians' surgical decision making in the management of uterine rupture. BMC pregnancy and childbirth 2017;17(1):179.
18. Egbe TO, Halle-Ekane GE, Tchente CN, Nyemb JE, Belley-Priso E. Management of uterine rupture: a case report and review of the literature. BMC research notes 2016;9(1):1-5.
19. Lee F, Zahn K, Knittel AK, Morse J, Louie M. Laparoscopic hysterectomy to manage uterine rupture due to placenta percreta in the first trimester: A case report. Case Rep Women Health 2019;25:e00165.