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Frequency, Risk Factors, Management Options and Fetomaternal Outcome of Uterine Rupture in Pregnancy

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ABSTRACT

OBJECTIVE: To analyze the frequency, risk factors, management options and fetomaternal outcome of uterine rupture in pregnancy.

METHODOLOGY: This observational cohort study was conducted at the department of obstetrics & gynaecology, Unit II Ghulam Muhammad Mahar Medical College Hospital Sukkur, from January 2018 to December 2020. All pregnant women above 24 weeks gestational age admitted with or developed uterine rupture at the hospital were included. Women with less than 24weeks gestational age or who developed uterine rupture after vaginal birth after C-section (VBAC) in a hospital or admitted with this complication were excluded from this study. Data was collected on specially designed Performa after taking informed consent. The student's T-tests have been applied. SPSS Version 16 was used to analyze data.

RESULTS: Total number of uterine rupture cases was 32(0.6%) out of 5204 deliveries for three years. The most typical age group of patients was 26-35, about 43%, grand multiparous in (60.2%) cases. Previous Caesarean Section in 18 (56.2%) was the most commonest risk factor. Repair of the ruptured uterus was the primary management option in 22 (68.75%), followed by Caesarean Hysterectomy in 10(31.2%) cases. Maternal mortality was in 1(3.1%) patient. Perinatal mortality was 26(81.2%), and 6(18.75%) were alive babies.

CONCLUSION: This study concludes that previous cesarean section is the leading cause of rupture uterus, followed by injudicious use of oxytocin. Proper Antenatal care and training programs for healthcare providers and traditional birth attendants (TBA) are needed to prevent this severe but avoidable complication.

KEYWORDS: Rupture uterus, previous caesarean section, Hysterectomy, oxytocin, vaginal birth after C-section(VBAC).

INTRODUCTION

Rupture uterus is a rare Obstetric emergency worldwide (0.07%)1,2. Still, it is a severe life-threatening complication with an adverse outcome[3], and it is responsible for the high incidence of morbidity and mortality of mother and fetus[4].

In the general population incidence of uterine rupture, according to the WHO review, was 5.3/10,000 birth; however, it was 5.9/10,000 births in Neither land[5,6].

Uterine rupture is the disruption of the full thickness of the uterine wall has two types complete and incomplete. A complete uterine rupture is a total disruption of the uterine wall with or without extrusion of its contents into the abdominal cavity. In contrast, in incomplete uterine rupture, there is partial disruption of the uterine wall has an intact serosa or peritoneum[7-9].

The most typical causes or risk factors for uterine rupture are grand multiparity, elder primigravida, teenage pregnancy, poor socioeconomic status, unbooking status, poor antenatal care, and labour trial in previous Caesarean Section scar, unsupervised labour, injudicious use of oxytocin[10-15].

Maternal complications of uterine rupture are Hemorrhage, bladder rupture, vesicovaginal fistula, and maternal death[16,17].

Our study aimed to analyze the frequency, risk factors, management options, and fetomaternal outcome of uterine rupture in pregnancy.

METHODOLOGY

This observational cohort study was conducted at the department of obstetrics & gynaecology, Unit II Ghulam Muhammad Mahar Medical College Hospital Sukkur, and approved by the ERC committee from January 2018 to December 2020. After taking informed consent, all pregnant women with more than 24 weeks gestational age admitted with or developed uterine rupture in the hospital were included in this study. Women with less than 24 weeks gestational age or who developed uterine rupture after vaginal birth after C-section (VBAC) in the hospital or admitted with this complication were excluded from this study. Data were collected using the standard method on specially designed Performa about patient's age, parity, risk factors, management options, and maternal and fetal outcome due to rupture uterus in pregnancy.
The student's T-tests have been applied to all tables. The data were analyzed by using SPSS Version 16.

RESULTS

Five thousand two hundred four deliveries were conducted in GMC Hospital Sukkur from January 2018 to December 2020. Patients with ruptured uterus during pregnancy were found about 32(0.6%). In most cases, 28(87.5%) were non booked. The Age of patients with a ruptured uterus varies from 20 to 40 years majority of patients were between 26 to 35 years in 24(75%) cases. Parity ranged from 1 to 12. Grand multiparity was found in about 20(62.5%) cases. The period of gestation varies from 34 to 40 weeks of pregnancy. Most patients were 37 weeks of gestation 26(81.2%).

In 26(81.2%) cases, the typical clinical presentation was shock and abdominal pain; 6 (18.8%) patients had lower abdominal pain and were vitally stable initially because of their earlier presentation. The associated cause or risk factors in patients with rupture uterus as shown in **Table I**.

Previous caesarean section or previous uterine surgery caused the uterine rupture in 18(56.25%) cases. Rupture uterus without scar(no previous C-section) in 14(43.7%) cases. Excessive use of oxytocin was responsible for rupture uterus in 08(25%)cases. As the previous scar was responsible for causing a uterine rupture in about 18(56.2%) of patients, out of which women with previous one lower segment C-section in about 9(50%), with previous two in 4(22.2%), patients were responsible for causing rupture uterus as Shown in **Table II**.

Regarding the site of uterine rupture, the lower segment was the most typical site of rupture in 8(56.2%) cases, followed by lateral 6(18.75%), as shown in **Table III**.

Management options were according to age, parity and condition of patients, repair of the uterus was the primary management option done in 22(78.75%) patients. Uterine repair with tubal ligation in 16(81.2%)patients; uterine repair was alone in 6(18.75%). Caesarean Hysterectomy was performed in 10 (31.2%) patients due to complete rupture, as shown in **Table IV**. Two(6.25%) patients were found with bladder rupture. Bladder repair was done, along with a hysterectomy. Almost all patients were anaemic, varying in severity from moderate to severe anaemia required three or more blood transfusions. One (3.1%) maternal death in a patient who had a rupture following obstructed labour with sepsis. There were 26(81.2%) stillbirths (Perinatal mortality) regarding fetal outcomes. However, only 6(18.7%) babies were alive.

TABLE I: RISK FACTORS FOR RUPTURE OF UTERUS

Risk factor	No of Patients	Percentage
Previous Scar	18	56.2
Injudicious use of oxytocin	08	25
Obstructed Labour	04	12.5
Malpresentation /Abnormal lie	02	6.25

TABLE II: NUMBER OF PREVIOUS SCARS

Previous Scar	No of Patients	Percentage
One	09	50
Two	04	22.2
Three	03	16.6
Four	02	5.5

TABLE III: SITE OF RUPTURE UTERUS

Site of Rupture	No of Patients	Percentage
Lower Uterine Segment	18	56.2
Lateral Rupture	06	18.75
Posterior Rapture	05	15.2
Fundal Rupture	03	9.3

TABLE IV: MANAGEMENT OPTIONS

Management options	No of patients	Percentage
Uterine repair	22	68.75
With tubal ligation	16	81.2
Repair alone	06	18.75
Cesarean hysterectomy	10	31.2

DISCUSSION

The incidence of our study of uterine rupture was 0.61% which is similar to a study conducted by Islam A et al.[18] in Abbottabad. The incidence reported in other studies (0.8%) in Ghana, 0.76% in Uganda, 0.9% in Nepal, and 2.8% in Ethiopia is higher than our study[19,20], but as compared to the incidence in developed countries (0.023% to 0.086 %) which is lower than our study[21]. The incidence of rupture uterus was mainly found in unbooked cases 28(87.5%). As this institute receives a majority of referral patients from the periphery, the findings are consistent with other studies[22]. The commonest age group of patients with rupture uterus found in our study was 26 to 35 years in 24 (75%) cases, comparable to the study conducted by Aziz N 2015[23] at Isra university and other studies[24]. Grand multiparty was the commonest in our research, with about 19(59.3%) women compared to other studies[19,23]. The gestational age of occurrence of rupture uterus ranged from 34 to 40 weeks of gestation, with the most expected gestational age of about 37 weeks in 26(81.3%) cases which has also been observed in other studies[23].

Our study's major risk factors were previous caesarean section, injudicious use of oxytocin, prolonged obstructed labour, and malpresentation like other studies[25]. The rupture uterus was found to be more in patients with a previous C. Section in about 18(56.2%), followed by injudicious use of oxytocin in 10(31.2%) and obstructed labour in 6(18.7%) which also correlated to other studies and is mainly because of caesarean section rate is rising in Pakistan[26]. Most of the factors resulted from risk factors; oxytocin was injudiciously administered by untrained birth attendants (dai handled) even in patients with classical caesarean section or more than the previous two caesarean and contracted pelvis and in grand multiparity had oxytocin administered to them[25]. Previous C-sections were found in about 10 (55.5%) patients with a ruptured uterus with a history of a previous caesarean section followed by previous two and more C-sections as in other studies[18]. Regarding the site of uterine rupture lower segment was the commonest site of rupture in 18(56.2%) cases, followed by lateral, posterior and fundal rupture as correlated to other studies[27,28], regarding management options in this study which depends upon the kind and severity of the uterine rupture, general condition of mother and parity of patients. Repair of the uterus was the commonest surgical procedure for managing a case of uterine rupture in about 22(68.75%) cases, with tubal ligation in 16(81.25%) followed by caesarean hysterectomy in 10 (31.2%) patients as correlate to other studies[23,25]. Repair bladder in two (6.25%) with hysterectomy in the ruptured uterus with bladder rupture in case of obstructed labour.

Regarding maternal complications with rupture uterus, all women were anaemic as they were already anemic during pregnancy. Due to blood loss in this complication, all women needed three or more blood transfusions, as seen in other studies[23]. Bladder rupture in two women 2(6.25%) in cases of obstructed labour. Later on, the vesicovaginal fistula was also observed study in Nigeria[25]. There was one (3.1%) maternal mortality in our study in case of prolonged obstructed labour with sepsis compared to other studies[18]. Perinatal mortality was 26 (81.2%) of the fetus were stillbirth, and 6(18.75%) were alive, which is similar to a study conducted by Sahu L 2006[29] (83%).

CONCLUSION

This study concludes that previous cesarean section is the leading cause of rupture uterus, followed by injudicious use of oxytocin. Proper Antenatal care and training programs for health care providers and traditional birth attendants are needed to prevent this severe but avoidable complication.

Ethical Permission: Ghulam Muhammad Mahar Medical College Sukkur ERC letter No. GMMMC/ERC/129-21, dated 04-08-2017.

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DATA SHARING STATEMENT: The data supporting this study's findings are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

AUTHOR CONTRIBUTIONS

Hafeez R: Manuscript writing, Data collection, Analysis
Hafeez R: Data collection

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