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Original Research Article

Rupture uterus in a tertiary care centre

Gautami Dhar*, Hem Kanta Dev Sarma

Department of Obstetrics and Gynecology, Fakhruddin Ali Ahmed Medical College, Barpeta, Assam, India

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***Correspondence:**
Dr. Gautami Dhar,
E-mail: gautamidhar23@gmail.com

ABSTRACT

Background: Rupture uterus is an obstetric life-threatening complication with poor maternal and fetal outcome. The most common risk factor is previous uterine surgeries. Incidence is 0.3/1000 to 7/1000 deliveries in developing countries like India. According to WHO, incidence is 5.35 per 10000 live births. It accounts for 5-10% of maternal deaths. Uterine rupture is associated with significant uterine bleeding, fetal distress and demise, expulsion or protrusion of fetus, placenta or both into the abdominal cavity and need for laparotomy and prompt delivery of the baby, uterine rent repair, or hysterectomy. The objective of this study was to find out the incidence of uterine rupture in Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta and to evaluate its causes.
Methods: This hospital based descriptive study of rupture uterus was conducted over a period of 1 year from January 2021 to December 2021, in the department of obstetrics and gynaecology, Fakhruddin Ali Ahmed Medical College, Barpeta, Assam. All cases of rupture uterus, who were referred from periphery and admitted in our hospital or who developed this complication during hospital stay, were included in the study.
Results: Uterine rupture is one of the most catastrophic complications in obstetrics. The incidence of uterine rupture in our centre was 0.43%. Previous caesarean section accounted for 38.46% of uterine rupture, that too in the lower segment (94.73%). Subtotal/total hysterectomy was done in 30.76% cases and 69.23% cases were repaired. Perinatal mortality was 92.30%, 7.69% of cases were live birth, as these cases were rightly diagnosed, and prompt and timely management was done.
Conclusions: Rupture uterus most commonly occurred in scarred uterus. Identification of high-risk pregnancy, judicious caesarean section, proper labour monitoring with the use of partograph, early diagnosis and prompt management are essential in reducing its occurrences.

Keywords: Uterine rupture, Previous caesarean section, Perinatal mortality

INTRODUCTION

Rupture of uterus means disruption in the continuity of uterine layers any time beyond 28 weeks of pregnancy. It was Bandl who first described the condition in 1875. Rupture uterus is an obstetric complication with serious maternal and fetal outcome. A systematic review documented the median incidence of uterine rupture of 0.05% in all pregnancies, and of 1% in women with a previous caesarean section.[1] Most uterine ruptures occur during labour, but it has also been described in the pre- and postpartum period. Uterine rupture is associated with a 3% rate of maternal mortality and 34% rate of major morbidity.[1] It is an infrequent, life-threatening obstetric complication often related to previous caesarean delivery[3,4], other causes being obstructed labour (due to ccephalopelvic disproportion, malpresentation or malposition), injudicious use of oxytocics in multiparas, previous myomectomy scar, uterine anomaly. Direct trauma to the uterus, and rarely concealed abruption can also cause uterine rupture. Uterine rupture is associated with clinically significant uterine bleeding leading to shock, fetal distress, expulsion or protrusion of fetus, placenta or both into abdominal cavity and the need for

laparotomy and prompt delivery of the baby, uterine rent repair, or hysterectomy. Typically, uterine rupture occurs suddenly and requires immediate critical emergency care for mother, fetus or neonate. The strategies for prevention and management, as well as the quality of affordable care for women at risk of or experiencing uterine rupture, are likely to vary across settings depending on their diagnostic capacity, availability of obstetric interventions, and human and facility resources.[1] Identifying the high risk pregnancies for rupture uterus and their timely referral from grass root level is an important step in the secondary prevention, thereby improving the maternal and perinatal outcome. As rupture uterus is one of the preventable obstetrical complications, thus study was carried out for analysing the incidence of rupture uterus along with the various etiological factors, clinical aspects, maternal and foetal morbidity and mortality.

METHODS

This descriptive study of rupture uterus was conducted over a period of 1 year from January 2021 to December 2021, in the department of Obstetrics and Gynaecology, Fakhruddin Ali Ahmed Medical College (FAAMCH), Barpeta, Assam. All cases of rupture uterus, who were referred from periphery or who developed this complication in this hospital, were included in the study. Clinical records of 39 cases of rupture uterus out of 8,960 deliveries during the study period were observed and studied. Diagnosis were made by history and clinical examination and confirmed by laparotomy. The cases were analysed based on clinical presentation, complications, management and their outcome. All patients and their babies were followed up till discharge from FAAMCH, Barpeta.

RESULTS

During the study a total of 8960 deliveries were conducted in the year 2021 in FAAMCH and there was a total of 39 cases of ruptured uterus giving the incidence of 1 in 230 deliveries (0.43%). This incidence is lower compared to regions like Odisha, where the incidence is 1 in 173 and is higher in comparison to regions like JIPMER, Pondicherry where the incidence is 1 in 346.[5,6] Earlier study in Assam, done in Silchar Medical College shows an incidence of 1 in 267 deliveries.[7] Previous caesarean section accounted for 38.46% of uterine rupture, that too in the lower segment (94.73%). Subtotal/total hysterectomy was done in 30.76% cases and 69.23% cases were repaired. Perinatal mortality was 92.30%, 7.69% of cases were live birth, as these cases were rightly diagnosed, and prompt and timely management was done. It was observed that incidence of rupture uterus is more in the age group of >30 years. Only 7.69% cases were in age group of <20 years. Incidence of uterine rupture is maximum in grand multipara i. e.; in >4 gravida. As in the Table 2, the risk of uterine rupture increases with increasing parity. It was observed that previous caesarean section was the leading cause for rupture uterus (38.46%), next common cause being prolonged or obstructed labour (30.76%), followed by the injudicious use of oxytocics (17.94%), rare incidences of malpresentation/malposition and uterine anomalies (bicornuate uterus) were noted. Majority of the cases recorded were referred to our hospital, with diagnosis or diagnosed from here after admission (89.74%) to labour room. 4 cases out of 39, incidence (10.25%), were booked cases of FAAMCH, coming for antenatal visits here, who developed rupture. It is evident that majority of cases of uterine rupture were of complete type (89.74%) than incomplete type (10.25%), mostly in the intrapartum period, incidence being (92.30%). 3 cases developed rupture uterus in the antepartum period, out of which 2 had uterine anomaly (bicornuate uterus) and 1 was grand multipara. The most common site of rupture of uterus noted was in the anterior wall (79.48%). The anterolateral wall was involved in 17.94%, and posterior wall in 7.69% of cases. Lower segment of uterus was involved in majority of cases, incidence being (82.05%). Both upper and lower segment was involved in 17.94% of cases, where one was a case of malpresentation (transverse lie), two cases of uterine anomaly and four were cases of induction by oxytocic. 27 out of 39 cases of uterine rupture was managed by repair of the uterus followed by bilateral tubal ligation accounting for 69.23% cases while only 12 cases went for subtotal hysterectomy i. e.; 30.77%.

Table 1: Age wise distribution of cases.

Age (years)	N	%
<20	3	7.69
20-24	10	25.64
25-29	14	35.89
30-34	7	17.94
>35	5	12.82

Table 2: Incidence of rupture according to parity.

Gravida	Number of patients	Number of rupture uterus
Primi	3896	1
2nd	2799	17
3rd	1307	11
≥4th	958	10

Table 3: Following complications were noted in the cases of uterine rupture post-operatively.

Complications	N	%
Blood transfusion>1	31	79.48
Sepsis	14	35.49
Acute renal failure	3	7.69
Vesicovaginal fistula	1	2.56
Paralytic ileus	4	10.25
Surgical site infection	5	12.82
Need for ICU admission	5	12.82
Prolonged hospital stay>7 day	6	15.35

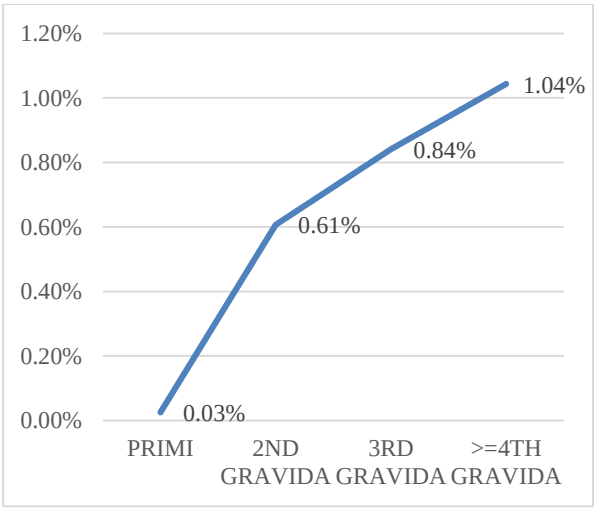

Figure 1: Incidence of rupture uterus according to parity.

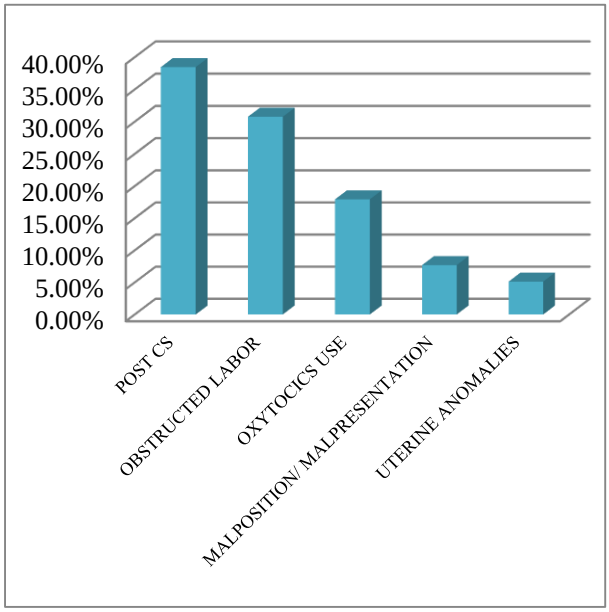

Figure 2: Causes of rupture uterus.

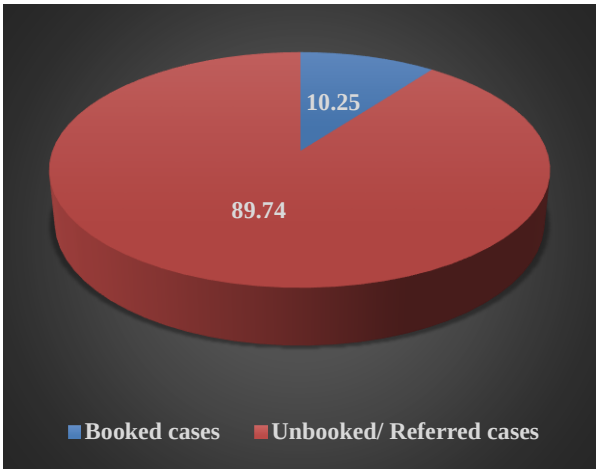

Figure 3: Percentage of booked and unbooked cases.

Figure 4: Post caesarean scar rupture.

Figure 5: Spontaneos rupture in G4P3 with obstructed labour.

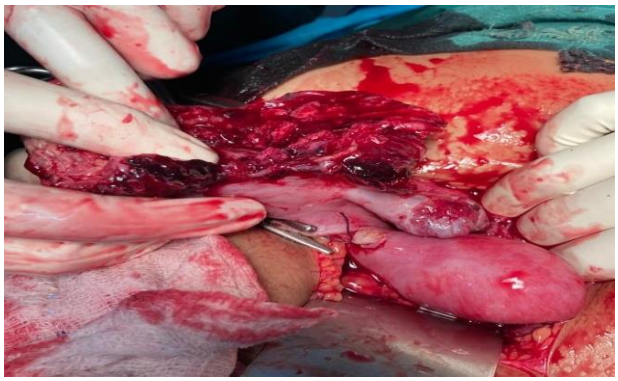

Figure 6: Rupture in a bicornuate uterus.

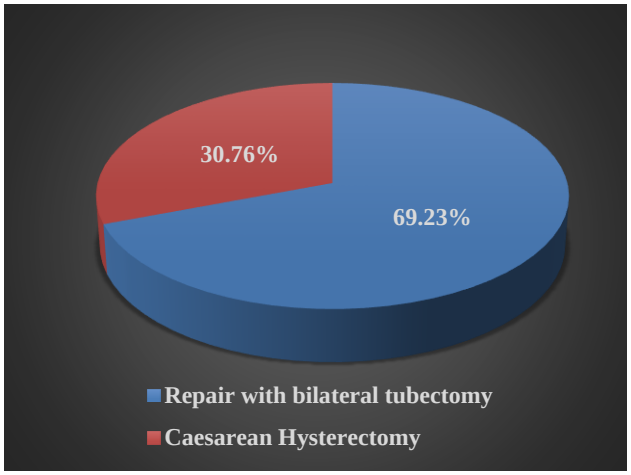

Figure 7: Management of cases of rupture uterus.

DISCUSSION

Uterine rupture is one of the most catastrophic complications in obstetrics. Rupture of the gravid uterus lead to grave complications endangering the life of both the mother and baby. Despite its rarity, it still contributes to significant maternal and perinatal morbidity and mortality especially in the setting of developing countries like India. Its incidence varies from 0.1% to 2.5% in different countries.[1] The incidence of uterine rupture in our centre was 0.43%. The delay in timely referral, transportation difficulties from the remote areas, illiteracy, low socioeconomic status are some of the factors that contribute to the incidence of rupture uterus. Most of the cases occurred at the age group 25-29 years (35.89%), all of them were multipara (100%), similar to the study by Sunanda et al.[8] The pathophysiological explanation of this may be the degree of myometrial fragility which is acquired with successive pregnancies.[9] Most of the cases were referred (89.74%), with minimal and irregular antenatal check-ups. Uterine rupture occurred in 32 (82.05%) in gravida 2-4 with only 6 patients being grand multipara. The age and parity distribution of our study were concomitant with the findings of other studies.[10,11] It was seen that the risk of rupture uterus increases with increasing parity, with lowest being in primi gravida (0.025%) and highest being in grand multipara (1.04%).

Uterine rupture occurs most frequently during labour, in our study incidence being 92.30%. A tetrad of signs exist in theory in which acute abdominal pain, signs of shock, vaginal bleeding and deterioration of fetal heart rate are found in association.[9] However all four aspects are only irregularly found together, and no women displayed all these clinical signs concurrently in this study. Many high-risk cases for rupture like previous caesarean section, grand-multipara women are given a trial of labor at home by untrained dais even with oxytocics injudiciously with no proper diagnosis of rupture and there is delayed referral with most women landing up in severe shock or moribund situation. In our study, previous caesarean section accounted for 38.46% of uterine rupture, that too in the lower segment (94.73%). This was similar to the studies conducted by Malik HS and others.[12,13] Most of the cases were complete type (89.74%), most frequent site is in the anterior wall of lower segment (82.05%).

Sunanda et al. also concluded that separation of previous caesarean section scar was the commonest cause of rupture in their two-year analysis of uterine rupture in pregnancy in Mysore, India.[14] This is due to the increasing trend of caesarean section in modern obstetrics. Lack of counselling for contraception, short inter-delivery interval, poor acknowledgement of the scarred uterus mostly due to previous emergency caesarean section acts as major risk factor, delay in diagnosis of cephalopelvic disproportion and rupture and delayed referral often contributes to scar rupture. Management of scarred uterus by skilled manpower in an appropriately equipped health care facilities with meticulous supervision for cases undergoing a trial of labor is strongly advocated to reduce this disastrous complication.

Even when there is suspicion of uterine rupture, prompt surgical intervention should be taken to avoid the dreadful consequences of severe maternal and perinatal morbidity and mortality. The choice between repair of rupture or hysterectomy depends upon the type, site, extent of rupture as well as the clinical condition of the patient. 69.23% cases were repaired with bilateral tubal ligation and subtotal hysterectomy was done in 30.76% cases. The decision for hysterectomy was taken on the basis of general condition of the patient's age, parity, number of living children and the extent of rupture.[15] Similarly, repair of rupture site was considered main and safer modality of treatment in other studies.[11,16] This might have the advantage of maintaining reproductive capability and menstruation but with increased risk of recurrent rupture uterus in subsequent pregnancy as well as post-operative sepsis.[17]

Perinatal mortality was 92.30%, which is similar to the study by Sahu et al.[18] 7.69% of babies were delivered alive, as they were admitted to hospital on time and those with incomplete rupture or rupture occuring during their hospital stay as these cases were accurately diagnosed and prompt and timely management were taken. The high incidence of maternal and perinatal mortality is due to the high incidence of late referral to our hospitals, compared to other studies. This may be attributed to the fact that FAAMCH is the only tertiary care hospital in this region comprising of 8 districts of lower Assam with char areas mostly. The blood transfusion rate was 100%, similar to study by Turgut et al.[14]

Life threatening obstetric haemorrhage can occur following uterine rupture with need of blood transfusion which was done in all cases in our study. Requirement of blood transfusion in most of the cases of uterine rupture has been noted in other studies as well.[17,20,21] These results emphasizes the utmost importance of effective blood banking services and availability of blood and blood products round the clock especially during the peri-operative period for better outcome of the patient.

Surgical site infection 12.82%, sepsis 35.49%, and paralytic ileus 10.25% were the complications following rupture in our study. One patient developed vesicovaginal fistula. Ahmed et al. found similar morbidities like rectovaginal fistula, ICU admission, wound dehiscence and sepsis in their study.[22]

CONCLUSION

Uterine rupture is a dreadful but preventable complication. These cases should be properly assessed, and aggressive management should be initiated to save both mother and the baby. Over the years, there is decrease in the number of cases resulting from obstructed labour and unattended labours, but there is significant increase in previous

caesarean section scar rupture. The time since rupture till laparotomy is very crucial and is directly proportional to the severity of the outcome. Reducing the primary caesarean section rate and optimising care for women with previous caesarean section will definitely decrease the incidence of rupture uterus. Emphasis should be given to educate the pregnant women and the relatives about the need for a carefully supervised and planned delivery in a welle quipped hospital during her subsequent pregnancies. More vigilant approach, use of partograph, high index of suspicion and quick referral to a well-equipped centre are some of the factors that can help in reducing the incidence of rupture uterus.

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