



A RETROSPECTIVE STUDY OF RUPTURE UTERUS IN A TERTIARY CARE CENTRE OF NORTH INDIA : A CATASTROPHE IN THE 21ST CENTURY INDICATING FAILURE OF HEALTHCARE SYSTEM

Obstetrics & Gynaecology

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ABSTRACT

Introduction: A full-thickness rupture of the uterine wall that also affects the visceral peritoneum on top is known as a rupture uterus. The most common cause of rupture in developing nations is cephalo-pelvic disproportion with obstructed labour. **Material And Methods:** A retrospective study of 14 cases of uterine rupture was carried out between March 2022 to March 2023. Detailed history, examination, risk factor identification was done. Diagnosis made clinically or during surgery. Maternal and fetal complications were studied. **Results:** Incidence of uterine rupture as 0.14 % in our study. Obstructed labour was the cause of rupture of uterus in 57.1% of women. The common presenting symptoms were acute abdominal pain, reduced or absent of foetal movements, prolonged labour, and bleeding per vaginum. Almost half of the uterine ruptures were irregular in 6 patients. Complications noted in the postoperative period were PPH (42.9%), acute renal failure (14.3%), DIC in one patient. There was one maternal and 6 fetal mortalities in our study. **Discussion :** Second or third gravida with previous caesarean section were the most vulnerable group followed by multiparas with prolonged labour and the use of oxytocics for the induction or augmentation of labour and mismanaged third stage of labour by dais (traditional birth attendants). Ruptures of the uterus related to injudicious use of oxytocics, Oxytocin or Prostaglandins, was noted in 57.1%. Diagnosis was on the basis of clinical presentation; symptoms of pain abdomen, vaginal bleeding, prolonged labour; signs like poorly defined uterine contour, superficially felt foetal parts, absent foetal heart sounds, severe anaemia, sudden collapse or those presenting with shock. In 57%, the tear involved the previous uterine scar or the anterior wall. **Conclusion:** Rupture of the pregnant uterus causing severe acute maternal morbidity and high foetal mortalities constitutes a preventable entity.

KEYWORDS

Rupture, Obstructed Labour, Injudicious, Laparotomy

INTRODUCTION

A full-thickness rupture of the uterine wall that also affects the visceral peritoneum on top is known as a rupture uterus. 1 Pregnancy uterine rupture is an uncommon and frequently fatal event that frequently results in severe acute maternal morbidity or mortality as well as high rates of morbidity and mortality for the foetus. According to RCOG, uterine rupture occurs once every 200 women.

Initial uterine rupture symptoms and indicators are frequently nonspecific, which makes identification challenging and occasionally postpones start of definitive therapy. The history and examination of the patient are crucial.

The two main causes of uterine rupture in affluent nations are oxytocin-induced labour and patients with damaged uteruses.

3,4,5 The most common cause of rupture in developing nations is cephalo-pelvic disproportion with obstructed labour. 6,7,8 A very high perinatal mortality is the hallmark of rupture uterus, the incidence ranging from 75% to 93%.^{13,14} The different modes of management in such emergency situation are repair of uterine scar or total and subtotal hysterectomy.

The main objective of this study was to find out the changing incidence, cause, management and outcome of rupture uterus in a rural medical college and hospital scope of improving the result in future. Presently maternal mortality due to rupture uterus ranges from 0-1% in developed countries and 5-10% in developing countries.^{1,6}

MATERIAL AND METHODS

A retrospective study of 14 cases of uterine rupture was carried out between MARCH 2022 to MARCH 2023, in the Department of Obstetrics and Gynaecology, muzaffarnagar medical college, muzaffarnagar, India. serving as a tertiary care hospital and a major referral centre for both urban and rural areas. All the cases of rupture uterus diagnosed clinically or during surgery, either referred from primary care centres or developed in MMCH were included. Detailed history was taken regarding demographic data, past obstetric events like previous surgeries on the uterus like caesarean section, myomectomy, dilatation and curettage, previous rupture uterus and details of events preceding the rupture. In the present pregnancy

predisposing factors for rupture uterus such as prolonged or obstructed labour, induction and augmentation of labour and use of prostaglandins along with previous caesarean scar and any mismanagement by dais were noted. Coexisting medical conditions like anaemia, pre-eclampsia, diabetes mellitus, renal or liver disorders were also noted. Mode of clinical presentation, type of rupture, the management, maternal and foetal outcome were analysed in detail. Management included either primary repair of uterus or its conservation with or without tubal ligation or hysterectomy depending upon the condition of the patient at the time of presentation, type, severity and extent of rupture and future desirability of fertility. Maternal and fetal complications were analysed.

OBSERVATIONS

Table 1: Antenatal patient profile.

Parameter	Number (N=14)	Percentage%
Age		
20-25	4	28.5
25-30	8	57.1
>30	2	14.3
Duration Of Gestation		
Preterm	0	0
Term	14	100
Post Term	0	0
Antenatal Care		
Booked	0	28.5
Unbooked	5	35.7
Referred	9	64.3
Gravida		
Gravida 1	4	28.5
Gravida 2	4	28.5
Gravida 3	6	42.9
Maternal Risk Factors (More Than One Present In A Single Case)		
Previous Lscs	4	28.5
Obstructed Labour	8	57.1
Mismanaged Third Stage Of Labour	2	14.3
Induction/ Augmentation Of Labour	8	57.1

There were 14 cases of rupture of the pregnant uterus. There were total of 10,037 deliveries in the same period of time. Thus the incidence of

uterine rupture as 0.14 % in our study. The median age of the women was 27 (25-30) years. Most of the women were gravida 3 (42.9%) No grand-multipara was seen in our study. All women were presenting at term gestations. 2 women had antenatal follow up in our hospital. 9 (64.3%) were referred from various centres and hospitals. Five (35.7%) women had not received any antenatal care and came directly to our hospital with rupture uterus. obstructed labour was the cause of rupture of uterus in 57.1% of women. Prostaglandin use for induction and oxytocin for augmentation of labour was associated in 57.1% of the women. (Table 1).

Table 2: Frequency of clinical features and intra operative findings of patients with rupture uterus.

Parameter	Number (14)	Percentage %
Clinical Finding(More Than One Present In A Single Case)		
Severe Abdominal Pain	8	57.1
Fetal Distress	2	14.3
Tachycardia	8	57.1
Hypotension	8	57.1
Vaginal Bleeding	2	14.3
Haematuria	0	0
Fetus Palpable In Abdomen	6	42.9
Direction Of Tear		
Transverse	4	28.5
Longitudinal	4	28.5
Irregular	6	42.9
Site Or Rupture		
Scar	4	28.5
Anterior Wall	4	28.5
Lateral Wall	4	28.5
Posterior Wall	2	14.3
Operative Intervention		
Primary Repair	12	85.7
Hysterectomy	2	14.3

The common presenting symptoms were acute abdominal pain, reduced or absent of foetal movements, prolonged labour, and bleeding per vaginum.

Almost half of the uterine ruptures were irregular in 6 patients. Scar, anterior and lateral wall were the most common sites of rupture. Sub-total hysterectomy was carried out in 2 patients and primary repair was done in 12 women. .

Table 3: Maternal and perinatal complications.

Complications	Number (n=14)	Percentage %
Maternal Complications(more than one present in a single case)		
PPH	6	42.9
Acute renal failure	2	14.3
ICU admission	12	85.7
Disseminated intravascular coagulation	1	7.14
Deep vein thrombosis	0	0
Vesico-vaginal fistula	2	14.3
Bladder injury	2	14.3
Wound infection	4	28.6
Febrile morbidity	6	42.9
Paralytic ileus	1	7.14
Maternal mortality	1	7.14
Neonatal Complications(more than one present in a single case)		
Mortality	6	42.9
Neonatal sepsis	1	14.3
NICU admission	12	85.7

Complications (Table 3) noted in the postoperative period were PPH (42.9%), acute renal failure (14.3%), DIC in one patient. There was one maternal and 6 fetal mortalities in our study. The mean duration of stay in our hospital was 8.2(±3.8) days.

DISCUSSION

In our study, the incidence of rupture uterus was 0.14%, which was comparable to the incidence reported from other developing countries¹⁵⁻²⁰ Studies from developed countries showed incidences as low as 0.035%.²¹ Majority of our subjects were in the age group of 25-30 years, mean age being 28 years, similar findings by Sahu L and Sunitha K et al. 6

Second or third gravida with previous caesarean section were the most vulnerable group followed by multiparas with prolonged labour and the use of oxytocics for the induction or augmentation of labour. Two of the women were primigravidae with an unscarred uterus, the cause of rupture being obstructed labour in one and misoprostol induction in the other. This is also the pattern seen in other recent Indian studies.^{5,6,8}

Out of 14 women, 64.3% were referred to us, 35.7% did not have any antenatal follow up anywhere. This reflects an aversion in some rural populations to the institutional delivery and they come to a hospital only after failure of efforts to vaginal delivery at home (usually attended by traditional birth attendants).

In our studies, like in the Nigerian study and the Yemen study, the proportion of obstructed labours leading to ruptures was very high. 19,20 Ruptures of the uterus related to injudicious use of oxytocics, Oxytocin or Prostaglandins, was noted in 57.1% of our subjects. The same was comparable from Yemen (41.7%).²⁰

Diagnosis was on the basis of clinical presentation; symptoms of pain abdomen, vaginal bleeding, prolonged labour; signs like poorly defined uterine contour, superficially felt foetal parts, absent foetal heart sounds, severe anaemia, sudden collapse or those presenting with shock. Revicky et al in a review of 12 cases of rupture uterus, concluded that prolonged, persistent and profound bradycardia as the most consistent early indicator of uterine rupture.¹² But in developing countries late symptoms and signs are the ones that clinch the diagnosis.¹⁵

In 57%, the tear involved the previous uterine scar or the anterior wall, expected considering that scar ruptures are the commonest aetiology seen. Lower uterine scar rupture was seen in 89.72% of rupture cases by Sahu L et al.⁸

The most common mode of management in our institution was repair of the uterine rent (85.7%). In a study done in Pakistan, Rizwan N reported a hysterectomy rate of 53.3%, whereas hysterectomy was performed only in 20% of the cases in the study from Yemen.^{17,20} In other Indian studies also the hysterectomy rate varied 8,6,7,5

Intensive care unit in admission was needed in 12 women. Complications that were seen in our patients are comparable to other studies on uterine rupture. These include bladder injury, shock, loss of fertility consequent to tubal ligation or hysterectomy, febrile morbidity, cervical laceration, wound infection, urinary tract infection, respiratory tract infection, paralytic ileus, pulmonary embolism, septicemia, acute renal failure, vesico-vaginal fistula, disseminated intravascular coagulopathy, multi-organ failure. Maternal outcome depends upon the coexisting medical or obstetric conditions, type of rupture, time interval between rupture and treatment, operative procedure, associated complications and other supportive measures.

The perinatal mortality in our institute was 42.9%. Previous studies have shown that prompt delivery of the infant has no effect on the outcome, unless rupture occurring in the same institute may help to salvage some babies. Morbidity of surviving neonates also is very high. Morbidity is mainly in the form of severe metabolic acidosis and hypoxic ischemic encephalopathy, which may not be preventable even with the promptest intervention.¹⁴

A WHO systematic review of maternal morbidity and mortality showed that the prevalence of ruptured uterus ranged between 0.006% for women without previous caesarean section from a developed country and 25% for women with obstructed labour in a least developed country.²³ Most studies show foetal mortality varying between 56.8 to 94.74% and maternal death in the range of 0 to 5.9%.^{7,13}. We had one maternal death in this study.

CONCLUSION

Rupture of the pregnant uterus causing severe acute maternal morbidity and high foetal mortalities constitutes a preventable entity. Unscarred uterine rupture demands high index of suspicion and stresses upon the need for qualified, trained medics and paramedics in the background of good obstetric practice, with an exhaustive experience in dealing such precarious labour complications. Four paramount identifiable risk factors including history of prior caesarean section, grand multiparity, obstructed labour, and foetal

malpresentations account for most cases of uterine rupture. Recognition of these high-risk women, timely diagnosis, expedited transfer, and favourable management needs to be overemphasized to avoid adverse feto-maternal complications. Utmost caution should be taken when managing patient with an earlier uterine scar, seeking a trial of labour. Escalated accessibility to superior obstetric care and prompt referral system to better facilities with availability of transportation services is essential for developing countries to avoid these devastating emergencies. This in association with significant maternal and fetal morbidity with uterine rupture may necessitate the need for pre-pregnancy counselling for women with more than one c/sections and antenatal LUS thickness.

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