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Research Article

Pregnancy outcome in cases of rupture uterus: a clinical study

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ABSTRACT

Background: The aim of the study was to evaluate and analyze the risk factors, maternal and perinatal outcome in cases of ruptured uterus.

Methods: It is retrospective observational study was designed from January 2015 to December 2015. A total of 69 patients diagnosed with ruptured uterus during the study period were included.

Results: The incidence of uterine rupture was 0.64%. The uterine rupture in scarred uterus seen in 66 (95.6%) cases and unscarred uterus 3 (4.4%) cases. Forty five (65.3%) patients did not receive any antenatal care. Sixty six (49.1%) of the cases underwent previous uterine surgery due to cesarean. Other observed predisposing factors were induced/augmented labor seen in 39 cases (29.1%), prolonged labor in 8 (6%), macrosomic fetus 8 (11.6%), grand multiparous 10 (7.5%), multiple pregnancies 4 (3%) and malformed baby 2 (1.5%), cephalopelvic disproportion 2 (1.5%), instrumental deliveries 1 (0.7%) respectively. Primary repair of uterus was performed in 52 (75.2%) of the patients. Subtotal abdominal hysterectomy was performed in 10 patients (15.2%). There were seven fetal deaths and two maternal deaths recorded during the study period.

Conclusions: Uterine rupture is a major contributing factor for maternal and perinatal morbidity and mortality. Proper antenatal care and early referral of women at risk to tertiary center will significantly improve maternal and perinatal outcome. Uterine rupture is amongst the preventable obstetric complication that carries severe risks both to the mother as well as the baby. Health education of people, training and supervision of health personal will reduce incidence especially in remote areas.

Keywords: Uterine rupture, Scar rupture, Pregnancy outcome

INTRODUCTION

Uterine rupture is a major obstetric hazard. Gravid uterine rupture is associated with high maternal and perinatal mortality-morbidity rates and loss of future fertility. Despite advances in modern obstetric practice, rupture of gravid uterus still remains as a fetal and maternal life threatening complication especially in developing countries; the incidence is high due to a greater number of unbooked obstetric emergencies, often originating from rural areas with poor antenatal care. In India it still accounts for 5-10% of all maternal deaths.¹ The perinatal mortality ranges from 80 to 95 %.

Uterine rupture typically is classified as either: 1) Complete uterine rupture was defined as complete when all layers of the uterine wall are separated, with or without expulsion of the fetus or 2) Incomplete uterine rupture was defined as incomplete when the uterine muscle is separated but the visceral peritoneum is intact.

Uterine rupture is also classified on the basis of previous surgery into 1) Rupture of scarred uterus 2) Rupture of unscarred uterus.

As there is increase in the incidence of previous cesarean section deliveries or VBAC in teaching and referral hospitals.^{1,2} Most common cause of uterine rupture seen

in these centers are those involving a previous uterine scar rupture during labor.

Rupture of an unscarred uterus may be either traumatic or spontaneous. Traumatic factors include instrumental deliveries, internal podalic version, assisted breech delivery, abdominal trauma, labor induction, and in particular the unmonitored usage of oxytocin or prostaglandins. Fundal pressure during third stage of labor also has been linked to traumatic rupture. Spontaneous rupture is usually observed with cephalopelvic disproportion, delivery of a macrosomic or a grossly anomalous fetus, malpresentation. Rupture may also develop spontaneously in grand multiparas, congenitally abnormal uteri (e.g. Unicornuate or bicornuate), abnormal placental implantation, previous history of uterine perforation and in women with a history of invasive mole in previous pregnancy. Uterine rupture occurs in 1: 200 to 1: 3000 deliveries depending upon standard of obstetric care and the population dealt with.^{2,3}

This obstetrics complication is also associated with short term maternal morbidities such as vesicovaginal fistula, rectovaginal fistula, bladder rupture, foot drop, psychological trauma, anemia and in the long term because of the surgical intervention, the woman may be sterilized which can lead to divorce and loss of economic support.⁴

An early diagnosis, their timely referral from gross route level and prompt treatment of the condition is the most important factor in improving the maternal and perinatal outcome. This retrospective study was undertaken to evaluate and analyse various aspects of uterine rupture.

METHODS

It is a retrospective observational study done over one year.

All cases of rupture of uterus treated in the Lokmanya Tilak Municipal Medical College and Hospital, Sion, Mumbai during period from Jan 2015 to Dec 2015.

Patients diagnosed with the rupture uterus, with previous scarred or unscarred uterus during latent phase or active phase were included in our study.

RESULTS

Incidence of uterine rupture in our study is 0.64%.

In developing countries like Nigeria it is higher i.e. 1.69% according to study conducted by Ibrahim SM, Umar NI et al.⁵ The incidence in developed countries is at least ten times lower i.e. 0.086% in Australia study conducted by Lynch JC, Pardy JP et al

and 0.023% in Ireland study conducted by Gardiel F, Daly S et al.^{6,7}

Table 1: Incidence.

Total number of delivery	10734
Total number of rupture	69
Incidence	0.64%

The uterine rupture was classified as scarred in 66 (95.6%) patients and unscarred in 03 (4.4%) patients depend on previous surgical history. Scarred uterine rupture is again classified into complete uterine rupture in 7 (10.6%) patients and incomplete uterine rupture in 59 (85%) patients according to the surgical finding. As shown in the above table Incidence of rupture in scarred uterus was much higher than in unscarred uterus.

Table 2: Type of uterine rupture.

Type of uterine rupture	Number	Percentage
Scarred	66	95.6
Complete	7	10.6
Incomplete	59	85
Unscarred	03	4.4

In study conducted by Ibha K, Poonam G, Sehgal A et al 49.1% uterine rupture occurred at the previous lower segment cesarean section (LSCS) scar and our observation is similar to that of others.^{3,11}

Table 3: Incidence of uterine rupture with regard to demographic variables.

Variables	Number	Percentage
Age		
<20	0	0
21-25	19	27
26-30	41	60
31-35	7	10
>35	2	3
Booking status		
Booked	24	34.7
Unbooked	45	65.3
Parity		
Para 0	1	1.5
Para 1	23	33
Para 2	35	51
>/=Para 3	10	14.5
Birth weight		
<2.5kg	9	13
2.6-3.5kg	52	75.4
>3.6kg	8	11.6

60% of the cases were in the 26-30 year age group whereas 27% were in 21-25 years age group. 45 (65.3%) cases were unbooked and 24 (34.7%) were booked cases. Most of the booked cases were post caesarean, which

came to the hospital long after onset of labor pains at their homes. Majority of the unbooked patients came from rural areas and most of them had irregular antenatal check-ups. 90% of the women belonged to the low socio economic group.

Table 4: Etiology of uterine rupture.

Etiology	Number	Percentage
Previous LSCS	66	49.2
Previous 1 LSCS	39	29
Previous 2 LSCS	10	7.5
VBAC after 1 LSCS	17	12.7
Induction and/or augmentation of labour	39	29.1
Grand multiparity	10	7.5
Prolong labour	8	6
Twins/multiple pregnancy	4	3
Cephalopelvic disproportion (borderline)	2	1.5
Spontaneous rupture	2	1.5
Malformed baby	2	1.5
Instrumental delivery	1	0.7
Previous myomectomy/other surgery	0	0

Study conducted in Nigeria by Ibrahim SM, Umar NI et al uterine rupture seen most commonly in 25 to 35 age of age group 45%, incidence was higher in parous women 95% and incidence in unbooked patients was 93.7%.⁵

Table 5: Surgical management.

Surgery	Number	Percentage
Scar repaired	52	75.2
With sterilization	46	66.6
Without sterilization	6	8.6
Hysterectomy	14	21
Total	4	5.8
Subtotal	10	15.2
Bladder repaired	2	3
Colporrhexis	1	0.8

In our study average fetal weight at which uterine rupture occurred were between 2.6kg-3.5kg which was 52 (75.4%).

Sixty six (49.1%) of the cases had previous caesarean section. Other observed predisposing factors were induced/augmented labor seen in 39 cases (29.1%), prolonged labor in 8 (6%), macrosomic fetus 8 (11.6%), grand multiparous 10 (7.5%), multiple pregnancies 4 (3%), malformed baby 2 (1.5%), cephalopelvic disproportion 2 (1.5%), and instrumental deliveries 1 (0.7%).

Study conducted in Rawalpindi medical college by Ara J et al, incidence of rupture in scarred uterus was 86.7%, obstructed labor 23.3%, prolonged labor 33.3% and in induced labor was 26%.⁸

Primary repair of uterus was performed in 52 (75.2%) of the patients with bilateral tubal ligation in 46 (66.6%) patients and without tubal ligation in 6 (8.6%) patients. Subtotal abdominal hysterectomy was performed in 10 patients (15.2%). Total hysterectomy was performed in 4 (5.8%) patients. Bladder repair was done in two patients (3%) and colporrhexis in 1 (0.8%).

Table 6: Maternal and fetal outcome.

Outcome	Number	Percentage
Maternal morbidity		
Anemia (required blood transfusion)	10	14.5
Postpartum hemorrhage	4	5.8
Febrile morbidity	13	18.9
ICU admission	4	5.8
Maternal mortality	2	2.9
Perinatal outcome		
Normal fetus	46	66.6
Hypoxic injury	16	23.2
Malformed baby	2	2.9
Perinatal mortality	7	10.1

In Nigerian study uterine repair done in 67.9% of cases and subtotal hysterectomy done in 24% cases and total hysterectomy done in 7.5% cases incidence is near to similar with our study.⁵

Common complications seen in our study is anemia that required blood transfusion is 10 (14.5%), PPH 4 (5.8%) and febrile morbidities seen in 13 (18.9%) cases. ICU admission required in 4 (5.8%) cases.

2 patients with rupture uterus expired in spite of all the efforts taken and there were 7 neonatal deaths in our study.

In study conducted in Nigeria maternal mortality rate was 1.1% and perinatal mortality rate was 87.4%.⁵ In our study perinatal mortality rate 0.7 per 1000 live birth was very low because of early diagnosis and prompt management of uterine rupture.

DISCUSSION

Rupture of the gravid uterus is an unexpected obstetric emergency with high maternal and perinatal morbidity-mortality rates. The frequency of uterine rupture in the presented study was 0.64%. This is due to increase in number of referrals from peripheral hospitals. Our hospital caters to rural as well as urban areas and is one of the referral centers for complicated cases in and around the city. In developing countries like Ethiopia and

Nigeria it is 0.03% and 0.83% respectively.^{6,9} The incidence in developed countries is at least ten times lower i.e. 0.086% in Australia and 0.023% in Ireland.^{6,7}

Higher incidence in developing countries is attributable to neglected and obstructed labor, inadequate access to medical care, injudicious use of oxytocin by untrained people, poor monitoring of patients with previous CS, several shortcoming in health care system as Lack of antenatal booking, lack of specialist staff, failure of referral and transport system between health care centers.¹⁰

In our study incidence of rupture in previous LSCS was 66%. In study conducted by Ibha K, Poonam G, Sehgal A et al 49.1% uterine rupture occurred at the previous lower segment cesarean section (LSCS) scar and our observation is similar to that of others^{3, 11}. Rupture of LSCS scar most often takes place when the women are allowed to labor. There is a lack of awareness in our population about the need for antenatal care and supervised hospital delivery, especially in those women who have had previous cesarean section. Incidence of uterine rupture in induced/augmented labor was 29.1% in our study. Women with previous LSCS and induction of labor are more prone to rupture than those who undergo spontaneous labor.¹²

Other most common cause of spontaneous uterine rupture in our study was grand-multipara which was 7.5%. Dare and Oboro reported rupture in grand multiparas was 12.7/1000 deliveries, and rupture in paras 1-4 in 3.1/1000 deliveries.¹³ In Ezechi et al series 50.8 % were grand multiparas and in Ibha et al series 32% were grand multiparas.^{11,14}

The decision to perform uterine repair or hysterectomy in cases of uterine rupture is influenced by the parity, number of living children, extent of uterine rupture, condition of the tissues, and the general condition of the patient. In our study Obstetric Total hysterectomy was performed in 5.8% cases, subtotal hysterectomy in 15.2% cases and primary repair with sterilization in 66.6% of cases.

In our study there were two (2.9%) maternal deaths. One patient was G2P1L1 with previous one LSCS, scar ruptured during second stage of labor with colporrhexis and bladder injury. Exploration was done immediately, but patient died post-op due to sepsis with MODS (multi organ failure). Other patient was multiparous with malformed baby (large ventriculomegaly with meningocele) spontaneously uterus ruptured during delivery, explorative laparotomy with obstetrics hysterectomy done, patient was admitted in ICU, died due to irreversible shock. This low maternal mortality 0.2 per 1000 live births could be attributed to early presentation, availability of blood transfusion, and intensive care facilities with round the clock services of competent anaesthetist and obstetrician enabling prompt

management. This incidence was similar to other study performed in india.¹⁵

In our study perinatal mortality was 0.7 per 1000 live birth, in study conducted in Nigeria maternal mortality rate was 1.1% and perinatal mortality rate was 87.4%.⁵ In our study perinatal mortality rate is very low because of early detection, prompt treatment of uterine rupture and this is due to higher number of incomplete scarred uterine ruptures.

CONCLUSION

Rupture uteri is a serious life-threatening obstetric complication. The high maternal and fetal morbidity and mortality rates that follow uterine rupture calls for an integrated effort to prevent its causes. Good ANC, Family planning services, prompt referral of obstructed labor, availability of transportation and obstetric care are the essential factors to prevent complications and to decrease the maternal mortality, fetal mortality and maternal morbidity rates associated with it. At the same time, there is a significant rise in rupture of previous cesarean scars. Reducing the primary cesarean section rate and optimizing care for women with previous scarred uterus will go a long way in decreasing the incidence of rupture uterus. Educating women who have undergone cesarean section once or twice before, about risks and consequences will help to reduce complications in these patients, especially in those who insist on VBAC and avoid going to hospitals as Labor pains begin.

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