

# Uterine Rupture : A Catastrophic Complication

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## Abstract

**Background:** Lack of antenatal care , injudicious use of oxytocin/prostaglandins , delivery by unskilled birth attendants and caesarean sections in previous pregnancies can lead to rupture uterus

**Methods:** In this Prospective observational study, 30 cases of uterine rupture were included. Risk factors, clinical presentations, operative findings and post operative complications were recorded.

**Results:** The incidence of uterine rupture was 0.24% in present study. Most of the patients were nonbooked (86.7%), and came from rural area (76.7%). Common risk factors for uterine rupture were women with previous caesarean sections (86.7%), injudicious use of oxytocin and prostaglandins (33.3%), labour supervised by unskilled birth attendant (86.7%), trial of labour conducted outside the hospital (93.3), grandmultipara(16.7%) and prolonged obstructed labour(23.3%). Shock (36.7%) and sudden loss of uterine contractions (33.3%) were the commonest presentations. Lower uterine segment was involved in 83.3% cases. Repair of the uterus was possible in 80 % cases. Peripartum hysterectomy was done in 20 % cases. Blood transfusion was required in all the cases (100%) and fresh frozen plasma in 50%cases. There was no maternal death. There were 28 cases of stillbirths, 26 fresh and 2 macerated. Only 2 fetuses were born alive out of which 1 died within 24 hour contributing to perinatal mortality of 933.3per 1000 live births.

**Conclusion:** Injudicious use of Oxytocin/prostaglandin, history of previous caesarean section and labour supervised by unskilled birth attendants can increase the risk of uterine rupture .

**Key Words:** Uterine rupture, Previous Caesarean section, Grandmultipara, Maternal morbidity.

## Introduction

Uterine rupture is a catastrophic complication of pregnancy. It requires rapid surgical correction to safe guard maternal and fetal outcomes. Emergency surgery can itself lead to high rate of maternal complications.<sup>1</sup>

The absolute risk of uterine rupture in pregnancy is very low (1:2500 to 1:5000 deliveries).<sup>2</sup> However in the presence of risk factors its incidence is

increased to 1:200 deliveries. The most important risk factor is the woman with uterine scars.<sup>3</sup> The number of deliveries conducted by caesarean section has been considerably increased in recent years due to safe anesthesia and the use of antibiotics. Most published series indicate that 60-80% of trial of labour after a previous low transverse scar result in successful vaginal birth.<sup>4</sup> It is not possible to predict which women are likely to have uterine rupture. However striving for vaginal birth after caesarean section has suggested that the risk for uterine rupture is higher when labour is induced or augmented with oxytocin or prostaglandins, with single layer of uterine muscle closure, woman becoming pregnant before 24 months after a prior scar, in older women, classical upper segment scar or woman with two and more previous caesarean.<sup>5-7</sup> Other risk factors include weak uterine muscles after multiple deliveries, excessive use of labour inducing agents, prior surgical procedures on the uterus like momentum, difficult forceps delivery, obstructed labour or uterine anatomical deformities, placenta percreta or increta, hydramnios, Macrosomia and fetal anomaly(e.g. hydrocephalus) and malpresentation(brow or face).<sup>8</sup>

The classical signs of uterine rupture i.e. sudden tearing uterine pain vaginal hemorrhage, cessation of uterine contractions, and regression of fetus are frequently absent. Increasing pain and bleeding may occur with possible signs of hypovolaemic shock and haemoperitoneum. Prolonged, late or variable deceleration and bradycardia seen on fetal heart rate monitoring are the most common and often the only manifestations of uterine rupture<sup>9</sup>.The response time seems critical in improving the perinatal outcome. The best outcome is achieved where surgical delivery is conducted within 17 minutes of the onset of fetal distress on electronic monitoring.<sup>10</sup>

## Patients and Methods

This prospective observational study was performed in Obstetrics and Gynecology Unit DHQ Teaching Hospital Rawalpindi from 1<sup>st</sup> January 2006 to 31<sup>st</sup> December 2008. All cases of uterine rupture whether scarred or unscarred, and with complete rupture, were selected for study. Cases with scar

dehiscence were excluded from the study. Past obstetrical history, booking status, record of trial of labour, onset and duration of labour were also noted. The site of rupture and associated injuries to the adjacent organs were recorded. Total or sub total peripartum hysterectomy, repair of the ruptured uterus with or without tubal ligation was done depending upon the age, parity, maternal condition, site and type of rupture and the need for future fertility.

## Results

In the study period 30 cases of uterine rupture were recorded in 12347 deliveries, giving an incidence of 0.24%.

**Table 1: Uterine Rupture: Demographic profile, clinical and labour characteristics**

Characteristic	No	Percentage
Maternal age		
<35	12	40
>35	18	60
Parity		
1	5	16.7
2-4	20	66.7
≥5	5	16.7
Mean gestational age	36(34-42weeks)	
Booked	04	13.3
Unbooked	26	86.7
Rural	23	76.7
City	07	23.3
Multipara (1 - 4)	25	83.4
Grand Multipara (>4)	05	16.4
Previous Uterine Scar	26	86.7
Without uterine Scar	04	13.3
Labour supervised by		
unskilled birth attendants	28	93.3
Skilled birth attendants	2	6.7
Onset of labour		
Spontaneous	26	86.7
Induced	4	13.3
With prostaglandins	3	10
Oxytocin	1	3.3
Early amniotomy	1	3.3
Labour started in the hospital	28	93.3
Labour started outside the hospital	2	6.7
Augmentation of labour	24	80
Duration of labour		
<8hours	20	66.7
>8hours	10	33.3

Majority of the cases (86.7%) were unbooked. Grandmultipara were 16.7% and all other cases were multipara. 86.7% cases were previous scars and 13.3% cases were without scars. Most of the patients were referred from periphery (76.6%). Their

labour was supervised by unskilled birth attendant (Table 1). Previous cesarean section (86.7%) and use of oxytocin / prostaglandins were the commonest risk factors (Table 2). Loss of uterine contraction (33.3%) and shock (34.3%) were the commonest clinical presentations (Table 3)

**Table 2: Distribution of risk factors**

Risk Factors	No	Percentage
Obstructed /Prolonged Labour	7	23.3
Use of Oxytocin/prostaglandins	28	93
Grand Multiparavida	05	16.7
Previous Caesarean Section	26	86.7
Cephalopelvic disproportion	7	23.3
Placenta Increta/percreta	1	3.3
Macrosomia	3	10

**Table 3: Presenting symptoms**

Symptoms	No	Percentage
Loss of uterine contractions	10	33.3
Lower Abdominal Pain		
Shock	11	34.3
Septicaemia	4	13.3
Vaginal Bleeding	3	10
Hematuria	2	6.7

**Table 4: Site of rupture and injuries to adjacent viscera**

Adjacent Viscera	No	Percentage
Upper segment Rupture	5	16.7
Lower segment Rupture	25	83.3
Posterior Wall Rupture	2	6.7
Broad Ligament	4	13.3
Haematoma		
Urinary Bladder injury	4	13.3
Rectum	1	3.3
Cervical tear	5	16.7
Vaginal tears	1	3.3

The most common site of injury was the lower segment with extension of rupture to the cervix (Table 4). A combined high recto vaginal fistula along with vesicovaginal fistula was seen in 1 patient in whom rupture was due to prolonged obstructed labour. Surgical correction of rupture was possible in 80 % of cases while hysterectomy was done in 20 % of cases (Table 5). The commonest postoperative complication was anaemia (Table 6). There was no maternal death. There was very high perinatal

mortality (93.3%). There were 28 cases of still births with only 2 live births out of which one died within 24 hours (Table 7) .

**Table 5: Method of correction of uterine rupture and associated injuries**

Method	No	Percentage
Peripartum hysterectomy	6	20
Total	4	
Subtotal	2	
Repair of uterine rupture	24	80
With tubal ligation	2	
Without tubal ligation	20	
Colostomy	1	3.3
Repair of urinary bladder	4	13.3

**Table 6: Post operative maternal morbidity**

Maternal Morbidity	No	Percentage
Blood Transfusion	30	100
Fresh frozen plasma transfusions	15	50
Paralytic Illness	4	13.3
DIC	5	16.7
Septicaemia	5	16.7
Wound Sepsis	2	6.7
Vesicovaginal Fistula	2	6.7
Rectovaginal Fistula	1	3.3
Anaesthesia complications	2	6.7

**Table 7: Perinatal morbidity**

Perinatal Complication	No	Percentage
Stillbirth	28	93.3
Fresh	26	
Macerated	2	
Live births	2	6.7
Early Neonatal death	1	3.3
Total perinatal mortality rate	999.3 per 1000 live births	

## Discussion

A complete uterine rupture is a potentially life threatening condition for both mother and the baby. It requires immediate surgical correction to safeguard the life of mother and the baby. The incidence of uterine rupture in our study is high as compared with developed countries. This is in contrast with some local studies. However a higher incidence ranging between 33-55 percent is found in other local studies<sup>11-13</sup>. The incidence in other developing

countries ranges between 0.5-1.5 percent<sup>14</sup>

The most common risk factors in present study were found to be the injudicious use of oxytocin and prostaglandins by unskilled birth attendants in women with previous caesarean scars. This is consistent with the study conducted by Shahid et al where majority of the patients who presented with the uterine rupture were due to uterine scar rupture.<sup>15</sup> The trend is changing nowadays due to increased rate of caesarean section worldwide . The larger number of women are undergoing trial of labour after caesarean section. The risk of uterine rupture in prior caesarean section scar is less than 1percent but it is considerably increased if the labour is induced or augmented.<sup>16</sup> In the NICHD study the risk of uterine rupture/10,000 planned VBAC deliveries were 102, 87, and 36/ 10,000 for induced, augmented and spontaneous labour groups respectively.<sup>17</sup>This compares with overall risk of uterine rupture of 2/10,000 in women with unscarred uteri<sup>18</sup> Previously uterine rupture was more common with injudicious use of oxytocin in grandmultipara.<sup>19</sup>

Due to the lack of vigilant transport services and integrated referral system, women present late in the tertiary care settings. That is why more women present with hypovolaemic shock, disseminated intravascular coagulation (DIC) and septicaemia. <sup>19</sup> Blood transfusion requirement ranges between 25-50% but in our study it was 100% because of high prevalence of anaemia in our population. <sup>20</sup>

The need for peripartum hysterectomy is variable ranging from 18- 60% in various studies. <sup>21</sup> However in present study it was found to be only 20%. The risk of maternal bladder injury is higher in women with uterine rupture(8-12%).<sup>22</sup> There was no maternal death in the present series. The maternal mortality as a consequence of uterine rupture is 0-1% in developed nations and in developing countries it is 5-10%. <sup>23</sup> The availability of modern medical facilities is likely to account for the difference in maternal outcome.

A high rate of perinatal mortality was observed., which can be ascribed to the occurrence of rupture out of the hospital setting and interval between rupture and delivery was prolonged. The perinatal mortality associated with uterine rupture in developed countries ranges between 0-25 percent. Time interval between first sign of rupture and delivery of the fetus is very crucial in determining the perinatal outcome and best outcome is achieved when delivery is conducted within 15-30 minutes of onset of fetal distress. <sup>24</sup> The woman opting for a trial of labour

following caesarean section should be offered continuous electronic fetal monitoring during delivery and care during labour in a suitably staffed and well equipped unit, where there is immediate access to emergency caesarean, advanced neonatal resuscitation and an on-site blood transfusion service.

## Conclusion

There is a strong need for counselling of women with previous scars for their supervised delivery within the hospital where there is facility for emergency caesarean section and blood transfusion unit.

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