

Unexpected Uterine Rupture: A Case Series and Review of Literature

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ABSTRACT

Unscarred uterine rupture is rare and disastrous for the mother and the foetus. It has been reported in each trimester of pregnancy and its presentation varies from silent uterine rupture to haemorrhagic shock. It may occur in prelabour stage, second stage or even in fourth stage of labour causing uncontrolled postpartum haemorrhage. Here, we report 4 cases of unscarred uterine rupture during labour. First case was of gravida 3, para 2 who came in shock following failed attempt of forceps application during second stage of labour. Laparotomy revealed uterine rupture with dead foetus. Second case was of gravida 2 para 1 who was referred in view of deep transverse arrest but she went into shock and uterine rupture was confirmed on laparotomy with delivery of an alive baby with poor APGAR score. Third case was of a primigravida who had cessation of uterine contraction after applying fundal pressure. Clinically, she was diagnosed with rupture uterus that was confirmed on laparotomy with delivery of still born baby. Fourth case was of a primigravida who was induced with misoprostol. She had foetal bradycardia followed by cessation of uterine contractions during second stage of labour. On laparotomy she had uterine rupture and a still born baby was delivered. All these cases were survived as a result of timely diagnosis and immediate laparotomy. All of them received multiple blood transfusions and discharged in satisfactory condition.

High index of suspicion of an unscarred uterine rupture should be kept in mind irrespective of trimester or phase of labour. Immediate action must be taken to prevent major maternal and foetal morbidity.

Keywords: Haemoperitoneum, Peripartum hysterectomy, Postpartum haemorrhage, Unscarred uterine rupture

CASE SERIES

Case 1: A 29-year-old gravida 3, para 2 at 41 weeks gestation was referred with hypotension and tachycardia following forceps application. This was an induced labour with misoprostol followed by oxytocin augmentation and forceps delivery was attempted for foetal distress in second stage of labour. Her antenatal period was unremarkable and she had previous two normal vaginal deliveries.

On examination, she had severe degree of pallor with pulse rate of 118 beats/minute, blood pressure was 82/62 mm of Hg and generalised tenderness was present all over the abdomen with loss of uterine contour with superficially palpable foetal parts. On per vaginam examination, cervix was fully dilated, vertex at '0' station with grade 2 caput and liquor was not drained. Clinical findings were suggestive of uterine rupture and were confirmed on ultrasonography. Following resuscitation, laparotomy was performed which revealed haemoperitoneum and dead foetus of 2.8 kg was laying in the peritoneal cavity. Rupture was seen on posterior wall of lower uterine segment that was extending to left lateral wall upto left fornix with a hematoma of 4 × 4 cm in left broad ligament. The rupture site was repaired in two layers with chromic catgut No-1 along with bilateral fallopian tubes ligation. Patient was transfused multiple units of blood and blood components. She was discharged on day six of surgery, in satisfactory condition.

Case 2: A 23-year-old gravida 2, para 1 at 40+1 weeks gestation was referred with deep transverse arrest. Her labour was spontaneous in onset and was augmented with oxytocin. Total duration of second stage of labour till referral was approximately four hours. Her antenatal period was uncomplicated in index pregnancy and she had previous one normal vaginal delivery.

On admission, she had normal vitals (pulse rate 100 beats/min, blood pressure 120/70 mm of Hg), moderate uterine contraction with regular foetal heart rate and estimated foetal weight was about 3.8 kg. Decision of emergency cesarean section was taken. On Operation theatre table, suddenly her blood pressure fell to 50/26 mm of Hg and tachycardia of 167 beats/min was noticed on monitor. Laparotomy revealed rupture of anterior wall of lower uterine segment involving left uterine artery and left side of broad ligament. A male baby weighing 3.7 kg with apgar score of 1, 4, at one and five minute of birth respectively was delivered from peritoneal cavity followed by repair of rupture site in layers. Patient also received intensive care for 24 hours. Baby was admitted in intensive care unit. Tubal ligation was deferred due to poor APGAR of baby. She received multiple blood and blood products transfusion. Injection Depot Medroxyprogesterone Acetate (DMPA) was given in postoperative period and she was discharged in satisfactory condition on day seven of surgery.

Case 3: A 22-year-old primigravida at 37+6 weeks of gestation referred with non progress of labour. She went into spontaneous labour and was augmented with oxytocin. She had given history of cessation of labour pains after use of fundal pressure.

On admission she had severe pallor and tachypnea with pulse rate of 130 beats/min and blood pressure was 100/60 mm of Hg. There was tenderness all over the abdomen, foetal parts were palpable superficially and uterus was lying separately on left side, foetal heart rate was not audible with stethoscope. On per vaginal examination cervix was fully dilated, vertex at -2 station, no caput, no moulding and sutures were in Anterior-Posterior diameter. Ultrasonography confirmed uterine rupture and foetal demise. Following resuscitation, laparotomy was performed which revealed haemoperitoneum

due to rupture of left lateral wall of uterus involving left fornix with cervix and left vagina. A 3.2 kg still born baby was delivered from the abdominal cavity. Uterine repair was done followed by repair of vaginal tear. Patient was transfused three units of blood and four units of fresh frozen plasma. She was discharged in satisfactory condition on postoperative day eight.

Case 4: A 26-year-old primigravida at 40+4 weeks gestation was induced with single dose of 25 microgram misoprostol followed by augmentation with oxytocin. She was booked and supervised at our hospital and had uncomplicated antenatal period. After 2 hours of 5 cm dilatation she had bearing down efforts and on vaginal examination, cervix was fully dilated and vertex was at 0 to +1. Within 15 minutes, foetal bradycardia was noted followed by cessation of uterine contraction and loss of station. Uterine rupture was confirmed by ultrasound. Laparotomy was performed revealing haemoperitoneum, and a dead foetus weighing 3.4 kg lying in peritoneal cavity with completely separated placenta. There was rupture of right uterine wall starting just above the internal os to anterior wall till fundus of the uterus. Ureter on right site was traced along its length. Rupture site was repaired and relatives were explained regarding risk of scar rupture in subsequent pregnancy by senior obstetrician. They did not want to take any risk in subsequent pregnancy and opted for bilateral tubal ligation. She received multiple transfusions. She was discharged under satisfactory condition on postoperative day five.

DISCUSSION

Uterine rupture is a life threatening condition and may lead to near miss mortality to maternal mortality. Maternal and foetal complications can be avoided if uterine rupture is detected timely. The present case series of uterine rupture happened in unscarred uterus which were avoidable and emphasise us to treat each and every women during labour with utmost care along with anticipation of any complication most worst is uterine rupture.

Rupture of unscarred uterus has been reported in 4.54 per 100,000 deliveries [1]. Although, the incidence of rupture in both scarred and unscarred uterus has increased in recent decades but unscarred uterine rupture is more disastrous for both the mother and foetus [1]. Congenital weakness of uterus due to Ehlers-Danlos Type IV syndrome have been reported as a cause of unscarred uterine rupture [2]. Whereas, acquired weakness of the myometrium may also occur from the use of uterotonic drugs like misoprostol and oxytocin which causes unscarred uterine rupture by prolonged stress on myometrium [3]. The unscarred uterine rupture even in prelabour stage has been reported in placenta increta and also in rudimentary horn pregnancy [4,5]. Case report of unscarred uterine rupture in second trimester with unknown factor too has been reported [6]. During labour, factors like grand multiparity, malpresentation, uterine anomalies, multiple gestation, short interpregnancy interval, previous cervical encircage and use of drugs like cocaine, in-utero exposure to diethylstilbestrol and steroids have been reported as causes of unscarred uterine rupture [7-14]. Rupture of unscarred uterus during second stage has been seen after use of fundal pressure, inappropriate application of vacuum or forceps, and obstructed labour [7,15]. This stage was found to be most common stage for unscarred uterine rupture as reported by Aggarwal P et al., [16]. In presented case series, all cases had second stage uterine rupture and the causative factors were wrong application of forceps and undiagnosed cephalo-pelvic disproportion along with neglected and prolonged second stage of labour in case (1) and (2) respectively. In case (3) fundal pressure was the culprit however cause of uterine rupture in case (4) was of iatrogenic or of idiopathic origin, could not be clearly understood.

In literature, mismanaged labour has been documented as most common (30.8%) cause of uterine rupture followed by use of

oxytocin (23%), instrumental delivery and obstructed labour were equally contributory (15.4% each) [17]. In present era, infusion pump is being used to deliver accurate dose of uterotonic drugs like oxytocin but in remote areas infusion of uterotonic drugs is still monitored manually. Even then, induced as well as augmented labour by oxytocin are more likely to cause rupture in unscarred uterus than spontaneous labour (50% versus 18%) and (80% versus 37%) respectively [1]. Use of low dose oxytocin in multigravida may be prudent to prevent uterine rupture. A meta-analysis of randomised trials has concluded association of high-dose oxytocin with a non-statistical increase in the risk of uterine rupture as compared to low dose oxytocin group [18]. Further when the above mentioned risk factors combine with relative fetopelvic disproportion chances of uterine rupture are magnified during the second stage like in case 2.

The use of intrauterine pressure catheter during labour is not competent to detect the change in intrauterine pressure during uterine rupture [19]. High index of suspicion of an unscarred uterine rupture from prelabour stage till delivery and even in fourth stage of labour is warranted [20].

There are variable clinical presentations of uterine rupture from silent uterine rupture with features of intestinal obstruction to haemorrhagic shock [21]. Although, bradycardia is the most common clinical appearance of uterine rupture that may be preceded by variable or late decelerations but no foetal heart rate is specific to rupture of uterus. However, when patient undergoes induced or augmented labour under optimal care, there are some sequential events when detected in time can prevent major catastrophic events to both mother and foetus.

Resuscitative management protocol of rupture uterus is similar as in haemorrhagic shock. General anaesthesia is recommended as acute foetal distress, maternal shock, impending coagulopathy are contraindications to spinal anaesthesia. Abdomen must be opened by midline skin incision which provides better exposure of upper abdomen along with pelvis and shortened incision-to-delivery interval to three minutes from four minutes for Pfannenstiel incisions [22]. Although, timely intervention will not always effectively prevent adverse maternal and foetal outcome because outcome is directly related to the extent of placental separation.

Hysterectomy has been done in haemodynamically unstable patient requiring multiple blood transfusions and in irreparable uterine laceration extending into the cervix or otherwise rupture site can be repaired by skilled surgeon taking care of ureter [23]. Bilateral fallopian tube ligation is to be decided according to the risk of reoccurrence of uterine rupture in subsequent pregnancy if desired. Adequate haemostasis to be achieved by two to three layers closure of rupture site with an absorbable suture and consultation with urologist, or expert gynaecologist should be sought during operation. If unscarred uterine rupture occurred in previous pregnancy, elective cesarean section should be planned at 34 weeks in subsequent pregnancy after corticosteroids cover for foetal lung maturation. Recurrent rupture is less with a prior lower uterine segment rupture; henceforth plan of cesarean delivery can be delayed till 36 to 37 weeks of gestation in these cases.

CONCLUSION

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. The delivery points should have the capability as well as the facility for monitoring and titration of drugs like oxytocin and prostaglandins along with timely surgical interventions in high risk cases.

Ethics: All procedures followed were in accordance with the ethical standards of the responsible committee on human experiments

(Institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

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FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Sep 02, 2017**
Date of Peer Review: **Dec 14, 2017**
Date of Acceptance: **May 02, 2018**
Date of Publishing: **Jul 01, 2018**