Uterine rupture; case report and review of literature

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Uterine rupture; case report and review of literature

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Abstract

Uterine rupture is an obstetric catastrophe that is associated with high maternal and perinatal mortality rates. Its incidence is high in developing countries. Uterine rupture may be silent and obscure but requires immediate surgical intervention and its occurrence can result in severe maternal morbidity.

We report a case of G4P3+0 with previous traumatic rupture uterus presented in labor at 32 weeks and found in caesarean section to be ruptured fundus of the uterus with active bleeding. Baby delivered alive, and uterus repaired.

Most cases of ruptured uterus are preventable with good antenatal care, intra-partum care and proper identification of high risk cases. Thinning in the lower uterine segment measured by ultrasonography is a predictor of uterine rupture but, ideal thickness cut-off value could not be defined. We recommend; use of partogram as tool in recognising deviations from normal, prevention of unnecessary cesarean sections, facilitating early referral and continued education of staff in order to prevent uterine rupture.

Background

Cesarean section is by far the most common major surgical procedure in obstetrics [1]. Currently, its rates are above the levels of reference stated by the World Health Organization (WHO), in both developed and developing countries, with a tendency to increase [1-3].

Delivery by cesarean section is associated with increased risk of maternal and perinatal morbidities in the current pregnancy [1, 3]. Additionally, it has been reported an increased risk of adverse obstetric outcomes in the following pregnancy regardless of the delivery mode [3-5]. These outcomes include high risk of uterine rupture, which is raising according to the number of previous cesarean section, and of developing placental abruption [3, 5]. Also, some studies have showed an enormous possibility of developing placenta previa [2, 5].

Worldwide, every year, between 340,000 and half a million women die due to complications of pregnancy and child birth, the majority of these occurring in low income countries [6-8]. Sub- Sahara Africa bears over 90 percent of the burden [9]. Obstetric haemorrhage remains one of the major causes of maternal deaths [3, 10].

Uterine rupture is a potentially catastrophic event during childbirth by which the integrity of the myometrial wall is breached [8, 11]. In an incomplete rupture the peritoneum is still intact [2]. With a complete rupture the contents of the uterus may spill into the peritoneal cavity or the broad ligament [2, 5]. A uterine rupture is a life-threatening event for mother and baby [8, 11]. A uterine rupture typically occurs during active labor, but may already develop during late pregnancy [3, 4]. Uterine dehiscence is a similar condition, but involves fewer layers, less bleeding, and less risk [9, 10].

The occurrence of uterine rupture varies in different parts of the world [6, 9, 11]. While it is rare in high-income countries, it remains a public health problem in low income countries, particularly in Africa and mainly occurring as consequence of prolonged, obstructed labour [6, 11]. It is associated with immediate complications, such as severe anaemia, shock and a ruptured bladder [8]. Those who survive may experience long-term complications, such as vesicovaginal fistula, foot drop and a subsequent inability to deliver children [2, 3].

A uterine scar from a previous cesarean section is the most common risk factor [3, 8]. Other forms of uterine surgery that result in full-thickness incisions (such as a myomectomy), dysfunctional labor, labor augmentation by oxytocin or prostaglandins, and high parity may also set the stage for uterine rupture [2, 5, 8].

The risk of uterine rupture in laboring women with a previous CS varies between 0.2 and 1.5% after induction of labor, compared to 0.5% in women with spontaneous labor after a previous CS [2, 8]. On the other hand, there is an increased risk of placenta previa and accreta with every subsequent repeat CS, resulting in higher rates of peripartum hysterectomy [10, 12]. Uterine rupture requires immediate emergency exploratory laparotomy with cesarean delivery accompanied by fluid and blood transfusion are indicated for the management of uterine rupture [3, 4]. Depending on the nature of the rupture and the condition of the patient, the uterus may be either repaired or removed (cesarean hysterectomy) [8]. Delay in management places both mother and child at
significant risk [6].

Symptoms of a rupture may be initially quite [8]. An old cesarean scar may undergo dehiscence; but with further labor the woman may experience abdominal pain and vaginal bleeding, though, these signs are difficult to distinguish from normal labor [8, 10]. Often a deterioration of the fetal heart rate is a leading sign, but the cardinal sign of uterine rupture is loss of fetal station on manual vaginal exam [3]. Intra-abdominal bleeding can lead to hypovolemic shock and death. Although the associated maternal mortality is now less than 1%, the fetal mortality rate is between 2-6% when rupture occurs in the hospital [8].

Most cases of uterine rupture that occur in developing countries are preventable [6, 7]. The underlying factors for rupture include delays in seeking appropriate care at the onset of labour, a poor or non-existent referral system, non-attendance of antenatal care, and delayed interventions due to a combination of factors, especially the lack of skilled human resources and medical consumables [6, 9].

Case report

28 years old Mali Woman Gravida 4 para 3 + 0 (G4 P3+0), was referred from rural hospital to our Emergency room by ambulance. Patient complaining of sever labour pain started 9 hours ago with tender scar of previous laparotomy noticed.

Her first delivery was 11 years ago spontaneous vaginal delivery at home and baby living and well. Patient was diagnosed with Lymphoma 10 years ago and she received chemotherapy for 9 months and cured, but she developed right leg deep vein thrombosis (DVT) and pulmonary embolism (PE). Both were treated and she received warfarin for one year. In the next pregnancy 9 years ago, she delivered SVD at home at 26 -28 weeks and baby died and she developed recurrent right leg DVT and she was treated and kept on warfarin for life. 7 years ago she was pregnant 28 -30 weeks when she felt down on her abdomen and she had a traumatic ruptured uterus repaired but baby died in utero.

Patient this time, pregnant 32 weeks by gestational age (GA). She arrived to ER with stable vital signs, conscious and with severely tender abdomen. Fetal heart (FH) was heard and on vaginal examination (PV); cervix was dilated 1 cm and membranes intact with no vaginal loss.

Decision was taken to do cesarean section (CS) for the patient and she agreed. During the operation uterus was ruptured in the fundal posterior aspect 5-6 cm with active bleeding (Figure 1, Figure 2). Baby was delivered alive 1.8 KG (4 Pounds) and admitted to neonatal intensive care unit (NICU). Rupture site repaired, bleeding controlled and patient transfused one unit of blood.

During the next 5 days in the hospital patient recovered well and discharged in good conditions with hemoglobin 10.9 g/dl. Baby was discharged 4 days later in good condition. She was seen healthy in the clinic 6 weeks later.

Discussion

Globally, maternal deaths and stillbirths have continued to rise unabated, with total annual figures of about 529,000 and 3.3 million, respectively [5, 7]. More than 90% of these occur in developing countries, and ruptured uterus is a major contributor, having accounted for more than 31.9% of maternal and 96.3% of perinatal deaths, as reported in a study from southeastern Nigeria [6].

There is a steady decrease in the rate of vaginal birth after Cesarean (VBAC) [11]. Combination of the rising number of women with a previous CS and decrease in the VBAC rate suggests an even greater increase in the CS rate in the future. The VBAC rate has been greatly influenced by clinical studies on the safety of a trial of labor (TOL) after previous CS [8]. Initially a TOL was accepted as safe in the 1980s and early 1990s. However, since the publication of articles questioning the safety of VBAC, there has been a consistent decrease in the VBAC rate. One of the greatest concerns regarding VBAC is the potential for uterine rupture [2, 8]. McMahon et al. in 19962 and Lydon Rochelle et al. in 20013 found that uterine rupture in women with a previous CS was more common after TOL [5, 7]. Nonetheless, the American College of Obstetricians and Gynecologists (ACOG) Committee on Obstetric Practice declared that most women with one previous Cesarean delivery with a low-transverse incision are candidates for and should be counseled regarding VBAC, and should be offered TOL [13]. Accurate prediction of uterine rupture would therefore be extremely valuable, as it would allow women at low risk to proceed with a trial of labor, whereas women at high risk for uterine rupture could undergo a planned CS. [12-14]

Several studies have proposed that thinning in the lower uterine segment (LUS) measured by ultrasonography is a predictor of uterine rupture [13]. In 2010 Jastrow et al. conducted a meta-analysis of 12 articles on LUS thickness and risk of uterine scar
defect and showed a strong association between the degree of LUS thinning and the risk of uterine defects [14]. However, an ideal LUS thickness cut-off value, usable in clinical practice in women with a scarred uterus, could not be defined [12-14].

Appropriate use of the partograph is an important tool for audit and monitoring progress of labour and a warning device to detect deviations from normal labour, preventing obstructed labour and thereby improving maternal and fetal outcome [6, 9]. However, its use has been a challenge in most facilities probably due to lack of skills and negative attitudes by service providers [6, 7]. Not using a partograph was 19 times more likely to result in uterine rupture. All these factors have to be considered in planning for implementation of proper use of partographs in health settings [4, 6, 7, 9].

Proper diagnosis is paramount and this is based on clinical signs and symptoms of uterine rupture [5]. Proper stabilization of the patient before surgery is critical as this improves outcome and prognosis. Modes of management of uterine rupture will be based on the extent of rupture, desire of mother, the number of children she has, the decision and experience of the physician on the operating table in theatre [2]. Modes of management include total hysterectomy, subtotal hysterectomy, repair with bilateral and repair without tubal ligation. However, there is need to get informed consent for sterilization from the patient or couple [2, 8, 11].

Conclusions

The utilisation of the antenatal risk scoring index and the partograph are recommended as tools in recognising deviations from normal. Moreover, preventing unnecessary cesarean sections are essential in reducing the occurrence of uterine rupture. Also, facilitating early referral and continued education of staff providing care is necessary to ensure the timely intervention of delivery in order to prevent uterine rupture.

Most cases of ruptured uterus are preventable with good antenatal care, intra-partum care and proper identification of high risk cases. There is a proper decline of overall morbidity from rupture uterus in the past decade (2000-2010) from 19.3% to 6% and also, mortality rate decreased from 11.1% to less than 1% [2, 8]. On the other hand, developing countries have a long way to achieve targets comparable to developed countries. For example, in Canada the incidence reported as low as 1 in 2000 cases with no cases reported from obstructed labor and no maternal mortality [6, 9].

References

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