

Analysis of uterine rupture cases in Agri: a five-year experience

M. Kara¹, E. Töz¹, E. Yılmaz¹, T. Öge¹, İ. Avcı¹, İ. Eminli¹, Ş. Şentürk²

¹Agri Maternity and Children's Hospital, Agri; ²Rize State Hospital, Rize (Turkey)

Summary

Introduction: We attempted to establish the frequency of uterine rupture and to address etiological factors, complications, management and maternal and perinatal outcome of complete versus incomplete rupture, with the aim of proposing preventive measures. **Methods:** The clinical records of uterine rupture cases managed at the Obstetrics and Gynecology Department of Agri Maternity and Children's Hospital in Turkey from June 2004 to June 2009 were analyzed retrospectively. **Results:** There were 44 cases of ruptured uterus. Among 24,554 deliveries the total incidence of uterine rupture was 1/558 or 17%. The most common site for the location of rupture was the fundal region (36.36%) followed by the lower segment, isthmic and mixed types, respectively. **Discussion:** Prevention must necessarily include regular antenatal care and meticulous screening of high-risk patients. Improved organization and access to maternal care, decentralization of obstetric services into peripheral care units in villages to prevent home deliveries and good supervision during labor can reduce the incidence of this preventable obstetric catastrophe.

Key words: Uterine rupture; Hysterectomy; Grandmultiparity.

Introduction

Rupture of a gravid uterus is associated with high maternal and fetal mortality and morbidity. In spite of the recent advances in modern obstetric practice, it remains a life-threatening complication of pregnancy in underdeveloped countries [1]. Agri is situated in the Eastern Anatolian region of Turkey and has a low socio-economic status. The rise in primary cesarean section rates is likely to increase the prevalence of uterine rupture in the developed world as well as in the developing world. Predisposing factors for uterine rupture other than previous cesarean section include obstructed labor, inappropriate induction or augmentation of labor with oxytocic agents, previous uterine trauma, grand multiparity, uterine anomalies, abnormal placentation, fetal anomalies, and no antenatal care [2-4]. Uterine ruptures are commonly classified according to etiology as both traumatic and spontaneous. Spontaneous rupture may be seen in patients with a history of uterine surgery or those with an unscarred uterus. Spontaneous rupture may occur before the onset of labor or during labor. The differentiation between incomplete and complete rupture must be detected [5, 6].

We attempted to establish the frequency of uterine rupture and to address etiological factors, complications, management and maternal and perinatal outcomes of complete versus incomplete rupture, with the aim of proposing preventive measures.

Methods

The clinical records of uterine rupture cases that were managed at the Obstetrics and Gynecology Department of the

Agri Maternity and Children's Hospital in Turkey from June 2004 to June 2009 were analyzed retrospectively. Complete uterine rupture was defined as complete separation of the wall of the pregnant uterus. Incomplete uterine rupture was defined as the uterine muscle separated, whereas the uterine cavity was separated from the peritoneal cavity by the visceral peritoneum over the uterus or that of the broad ligament. Information was collected on patient characteristics, including age, socioeconomic status, parity, weeks of gestation, prior cesarean sections and maternal and fetal mortality/morbidity. Low socioeconomic status was defined as yearly income of \leq \$1,000 (US). SPSS 9.05 for Windows was used for statistical analysis.

Results

There were 44 cases of uterine rupture. Among 24,554 deliveries the total incidence of uterine rupture was 1/558 or 17%. Demographic and clinical characteristics are shown in Table 1. Mean maternal age was 27.65 ± 8.22 , gravida was 4.24 ± 2.8 , and parity was 3.72 ± 2.86 . The most common site for the location of rupture was the fundal region (36.36%) followed by the lower segment, isthmic and mixed types, respectively. Fetal death was seen in 19 cases (43.18% of all patients). Maternal death was seen in two (6.8%) cases. Maternal deaths were due to hypovolemic shock. Eleven of the perinatal deaths were intrapartum stillbirths, eight of which were neonatal deaths.

Table 2 details the clinical comparison of complete and incomplete uterine ruptures: there were 29 (65.9%) complete and 15 (34.09%) incomplete. The demographic characteristics of the complete and incomplete uterine rupture patients were similar. Possible etiological factors identified in the cases of uterine rupture were previous cesarean section in 17 (38.6%), prolonged labor in six (13%), use of oxytocics in seven (15%), previous hysteroscopic surgery in two (4.5%) and fundal pressure in

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Table 1. — Demographic and clinical characteristics (N: 44).

Mean maternal age (SD)	27.65 (8.22)
Gravidity (SD)	4.24 (2.8)
Parity (SD)	3.72 (2.86)
No. of previous cesarean sections (%)	17 (38.63)
Gestational age, weeks (SD)	37.12 (4.4)
Low socioeconomic class (%)	39 (88.63)
Location of site of rupture	
Fundal (%)	16 (36.36)
Isthmic (%)	8 (18.18)
Lower segment (%)	12 (27.27)
Mixed (%)	8 (18.18)
Postoperative hospitalization (days, SD)	8.2 (6.6)
No. of referred patients (%)	14 (31.81)
No. of maternal deaths (%)	2 (4.4)
No. of fetal deaths (%)	19 (43.18)
Hysterectomies (%)	18 (40.9)

Table 2. — Clinical comparison of complete and incomplete uterine ruptures.

	Complete	Incomplete
Mean maternal age (SD)	31.22 (5.46)	25.61 (6.12)
Number (SD)	29 (65.9)	15 (34.09)
Gravida (SD)	5.08 (3.02)	3.65 (2.11)
Parity (SD)	3.94 (2.4)	3.51 (2.22)
Gestational age, weeks (SD)	36.7(3.8)	38.64 (2.6)
Days of postoperative hospitalization (SD)	10.41 (4.6)	6.13 (3.7)
No. of referred patients (%)	9 (64.2)	5 (36.8)
No. of maternal deaths (%)	2 (6.8)	0 (0)
No. of fetal deaths (%)	15 (51.7)	4 (26.6)
Hysterectomies (%)	13 (44.8)	5 (33.3)

eight (18%). No data on the etiological factors were available for four (9%) cases. The mean number of postoperative hospitalization days was 8.2 ± 6.6 (Table 3). Subtotal abdominal hysterectomy and total abdominal hysterectomy were performed in nine (20.45%) cases each and 24 (54.54%) cases had uterine repair. General anesthesia was given in all cases.

Table 3 details the operative procedures.

Table 3. — Operative procedures (N: 44).

	Number (%)
Repair alone	19 (43.18)
Repair with tube ligation	5 (11.36)
Int. iliac artery ligation	2 (4.5)
Subtotal hysterectomy	9 (20.45)
Total hysterectomy	9 (20.45)

Discussion

Rupture of the gravid uterus is an important cause of maternal mortality, morbidity and perinatal mortality. The most common risk factor is previous uterine surgery, and most cases of uterine rupture occur in women with a previous cesarean delivery. Although practitioners are more likely to encounter uterine rupture in multiparous women with a previous cesarean delivery, it is an obstetric complication that must be considered in all women,

regardless of parity [7, 8]. Clinicians must be vigilant in accurately identifying primigravidas with a higher risk of uterine rupture, particularly those with previous uterine surgery, including myomectomy and, increasingly, laparoscopic myomectomy [9-11].

Prompt recognition of uterine rupture and an expeditious recourse to laparotomy are critical in influencing perinatal and maternal morbidity. The real incidence of uterine rupture is not known. As some deliveries are supervised at home by traditional birth attendants, we do not know how many patients die because of uterine rupture before reaching the hospital. Not all uterine ruptures present with the typical clinical picture of abdominal pain, hypovolemia, vaginal bleeding, and fetal compromise [12]. Therefore, it is important to maintain a high index of suspicion for uterine rupture in women presenting with some or all of these features, regardless of parity. Vedat *et al.* reported that the incidence was 1:966 in northern Turkey [13]. We found the incidence to be 1:558 or 17%.

Eighteen patients (40.9%) needed a hysterectomy which is much higher than 14% reported from a study in Japan [14], and 5/1,000 deliveries reported from Jordan [15]. The maternal mortality rate was 4.5%, and several other studies from developing countries have reported the same ratios. Maternal deaths occurred in cases where rupture was due to hypovolemic shock.

Prevention must necessarily include regular antenatal care and meticulous screening of high-risk patients. Family-planning advice to reduce grandmultiparity should also be made available. Improved organization and access to maternal care, decentralization of obstetric services into peripheral care units in villages to prevent home deliveries and good supervision during labor can reduce the incidence of this preventable obstetric catastrophe.

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Address reprint requests to:
M. KARA, M.D.
Vali Konagi Caddesi Ozlem
Eczanesi No. 88
04100 Agri (Turkey)
e-mail: emrahtoz@yahoo.com.tr