ORIGINAL ARTICLE

Uterine Dehiscence and Rupture: An Overview

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ABSTRACT

Background: Uterine rupture and dehiscence usually occurs in patients who had previous delivery through cesarean section. There are certain complications involved due to rupture or dehiscence.
Methods: This cross sectional study was carried out in April 2019 in the department of obstetrics & gynecology teaching unit at Aziz Bhatti Shaheed teaching hospital, Gujrat. Total 59 deliveries were recruited for the study purpose in patients with previous 1 or more cesarean sections. The records of 59 patients of uterine rupture were retrieved from hospital record who were either admitted with uterine rupture or dehiscence or developed this complication after admission.
Results: The mean age of patients was 28.11±4.15years. There were 4(6.8%) booked while 55(93.2%) unbooked. Out of 59 patients, 56(94.9%) had spontaneous initiation of labour, bleeding occurs in 16(27.1%) cases. Out of 59 cases, 45(76%) had dehiscence while 14(24%) had uterine rupture, which was repaired with (13.6%) or without (83.1%) BTL while 3.4% had total hysterectomy.
Conclusion: The frequency of dehiscence was more common among females who had previous 1 or more cesarean sections and the outcome was better with operative management.
Keywords: dehiscence, uterine rupture, cesarean section, bleeding, maternal mortality

INTRODUCTION

Uterine rupture is defined as a disruption of the uterine muscle extending to and involving the uterine serosa or disruption of the uterine muscle with extension to the urinary bladder or broad ligament. Although a rare event, uterine rupture is associated with significant maternal and perinatal morbidity and mortality[1]. Uterine rupture is rarely encountered in developed countries in the absence of previous surgery, at an estimated rate of 0.3/10,000 maternities. Uterine rupture is more frequent when women have prolonged, obstructed labor. This is more likely to occur in developing countries[2,3].

Rupture of the scarred uterus is more common than rupture of the intact uterus, occurring in 20-80/10,000 women with prior hysterotomy, 20-70/10,000 women with prior LSCS. A previous classical CS has a risk of rupture of 3-6%, increased to 12% if a trial of labor takes place.[4] Cesarean at periviability compared to term is associated with an increased risk for uterine rupture in a subsequent pregnancy, even after low transverse incision. These data support judicious use of cesarean at periviable gestational ages and inform subsequent counseling[5].

Uterine rupture is a serious life threatening event that may cause peripartum hysterectomy, haemorrhage, shock and even maternal and newborn mortality. Immediate complications like anemia, urinary bladder rupture or shock and long term complications like infertility and VVF may be encountered. Fetomaternal outcomes of uterine rupture vary from country to country depending on availability and quality of health facilities[6].

Higher prevalence of complete uterine ruptures per trial of labor after cesarean (TOLAC) was observed in countries with low previous CS and high TOLAC rates. Rates of hysterectomy and perinatal death are about 10% following complete uterine rupture, but in women undergoing TOLAC the rates are extremely low (only 2.2 and 3.2 per 10 000 TOLACs, respectively)[7].

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METHODS

This cross sectional study was carried out in April 2019 in the department of obstetrics & gynecology teaching unit at Aziz Bhatti Shaheed teaching hospital, Gujrat. A total of 3806 deliveries were managed in teaching unit at ABSTH Gujrat during Jan 2018 to Apr 2019. From this uterine rupture or dehiscence was found in 59 cases. The record of these 59 deliveries were recruited for the study purpose. The patients presented in labor with history of previous 1 or more cesarean sections. The records of 59 patients with uterine rupture who were either admitted with or who developed this complication in the hospital, were retrieved and included in the study over a period of Jan 2018 to March 2019.

Independent variables collected such as age, parity, residence, history of antenatal care, duration of labor, obstructed labor, induction of labor, augmentation of labor, maternal vital signs, diagnosis of uterine rupture or dehiscence were noted. Treatment related variables recorded as uterine repair with or without BTL, bladder injury and repair, transfusions of blood and blood products, stay in ICU. Maternal outcomes in terms of admission due to uterine rupture or dehiscence, length of hospital stay, patient discharged or maternal death were also noted. Data was analysed using SPSS version 20.

RESULTS

The mean age of patients was 28.11±4.15years. Out of 59 patients, 48(814%) came from urban community while 11(18.6%) came from rural area. About 49(83.1%) had gravidity 2-4 while 10(16.9%) were grand multigravida (5-

7). There were 4(6.8%) booked while 55(93.2%) unbooked. The mean systolic and diastolic blood pressure at time of admission were 114.24±10.70mmHg and 72.54±7.09mmHg (Table 1).

Out of 59 patients, 56(94.9%) had spontaneous initiation of labour, 3(5.1%) had history of induction of labor while no augmentation done in any case. The duration of labor was <8 hours in 40(67.8%) cases, while 19(32.2%) females had >8 hour of labor. Obstructed delivery was observed in 1(1.7%) case, cessation of uterine contractions during labor occurred in 13(22%) cases and bleeding occurs in 1(27.1%) cases. Abdominal tenderness was observed in 27(45.8%) cases on clinical assessment (Table 2).

Out of 59 cases, 45 (76%) had dehiscence while 14 (24%) had uterine rupture (Fig 1). Rupture was observed in anterior lower uterine segment in 58 (98.3%) cases, while one case had rupture in lateral segment. Rupture was repaired with (13.6%) or without (83.1%) BTL while 3.4% had total hysterectomy. Broad Ligament damage occurred in 1 (1.7%) case. The mean hospital stay after surgery was 4.34±0.96 days. Table 3

Table 1: Baseline characteristics of patients

n	59
Age of Patient	28.11±4.15
Urban	48 (814%)
Rural	11 (18.6%)
Gravida 2-4	49 (83.1%)
Gravida 5-7	10 (16.9%)
Booking Status	
Booked	4 (6.8%)
Unbooked	55 (93.2%)
Systolic BP	114.24±10.70
Diastolic BP	72.54±7.09

Table 2: Clinical presentation of patients

Progress of Labor	
Spontaneous	56 (94.9%)
Induction	3 (5.1%)
Augmentation	0 (0.0%)
Duration of labour	
<8hours	40 (67.8%)
>8hours	19 (32.2%)
Obstructed Delivery	1 (1.7%)
Cessation of Uterine Contractions	13 (22%)
Bleeding during labour	16 (27.1%)
Abdominal Tenderness	27 (45.8%)

Fig 1: Operative findings of uterine rupture or dehiscence

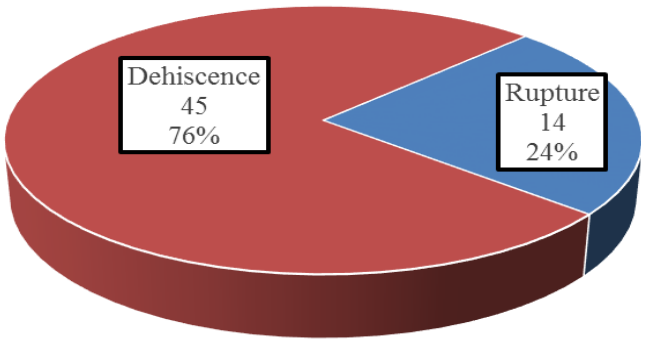

Table 3: Outcome of cesarean section in females with uterine rupture or dehiscence

Anterior lower uterine segment	58 (98.3%)
Lateral Segment	1 (1.7%)
Repair without BTL	49 (83.1%)
Repair with BTL	8 (13.6%)
Total abdominal hysterectomy	2 (3.4%)
Broad Ligament damage	1 (1.7%)
Hospital stay	4.34±0.96

DISCUSSION

Uterine rupture in pregnancy is a rare and often catastrophic complication with a high incidence of fetal and maternal morbidity. Numerous factors are known to increase the risk of uterine rupture, but even in high-risk subgroups, the overall incidence of uterine rupture is low.

Uterine rupture has continued to be a catastrophic feature of obstetric practice especially in the low-resource settings.[8] In WHO systemic review of uterine rupture the incidence of rupture in general population was 5.3/10,000 birth. Although this unfortunate event is very rare in the developed world, has remained a major public health problem in developing countries, and often indicates poor obstetric care.[9] Uterine rupture is the leading cause of maternal and fetal death in developing countries[10].

In our study, 45 (76%) had dehiscence while 14 (24%) had uterine rupture. Previous studies reported the incidences of uterine rupture in women with prior CS from 0.22% to 1.69% and these were similar to the results of this study, with an overall rate of 0.5%[11,12].

The incidence of uterine rupture among women with at least one prior CS was 0.5% (170/37,366), ranging from 0.2% in high-Human Development Index (HDI) countries to 1.0% in low-HDI countries. Factors significantly associated with uterine rupture included giving birth in medium- or low-HDI countries (adjusted odds ratio [AOR] 2.0 and 3.88, respectively), lower maternal educational level (≤6 years) (AOR 1.71), spontaneous onset of labour (AOR 1.62), and gestational age at birth <37 weeks (AOR 3.52)[13].

The normal, unscarred uterus is least susceptible to rupture. Grand multiparity, neglected labor, malpresentation, breech extraction, and uterine instrumentation are all predisposing factors for uterine rupture. A 10-year Irish study by Gardeil et al showed that the overall rate of unscarred uterine rupture during pregnancy was 1 per 30,764 deliveries (0.0033%). No cases of uterine rupture occurred among 21,998 primigravidas, and only 2 (0.0051%) occurred among 39,529 multigravidas with no uterine scar[14].

A meta-analysis of 8 large, modern (1975-2009) studies from industrialized countries revealed 174 uterine ruptures among 1,467,534 deliveries. This finding suggests that the modern rate of unscarred uterine rupture during pregnancy is 0.012% (1 in 8,434). This rate of spontaneous uterine rupture has not changed appreciably over the last 50 years, and most of these events occur at term and during labor.

In our study, rupture was observed in anterior lower uterine segment in 58 (98.3%) cases, while one case had rupture in lateral segment. Rupture was repaired with (13.6%) or without (83.1%) BTL while 3.4% had total hysterectomy. Broad Ligament damage occurred in 1

(1.7%) case. The mean hospital stay after surgery was 4.34±0.96 days. In a study from South Africa, 78% of women (261 of 335) who had uterine rupture were treated with hysterectomy. Flamm et al found that 3 of 39 patients (8%) who developed uterine rupture required hysterectomy[15]. Kieser and Baskett found that 1 of 18 patients (6%) who developed complete uterine rupture required hysterectomy.[15] Blanchette et al reported that hysterectomy was necessary in 17% of women (2 of 12) who developed uterine rupture[15].

Schrinsky and Benson reported 22 cases of uterine rupture in gravidas with unscarred uteri. Nineteen occurred during labor (86%), and 3 occurred before labor (14%). This percentage was markedly different from that of gravidas with a previous uterine scar, for whom the timing of uterine rupture between labor and the antepartum period was nearly evenly distributed[17].

A study by Lydon-Rochelle et al showed that the uterine rupture rate among 10,789 women with a single previous cesarean delivery who labored spontaneously during a subsequent singleton pregnancy was 0.52%.[18] This rate of uterine rupture implies an increased relative risk (RR) of 3.3 (95% CI, 1.8-6.0) for women who labor spontaneously compared with women who undergo elective repeat cesarean delivery.

In a study by Ravasia et al of 1,544 patients with a previous cesarean delivery who later labored spontaneously, the uterine rupture rate was 0.45%[19]. Zelop et al found that, among 2,214 women with 1 previous cesarean delivery who labored spontaneously, the uterine rupture rate was 0.72%.[20] The authors of this article performed a meta-analysis of 29,263 pregnancies from 9 studies from 1987-2004 and showed that the overall risk of uterine rupture was 0.44% for women who labor spontaneously after a previous cesarean delivery.

Maternal death as a consequence of uterine rupture occurs at a rate of 0-1% in modern developed nations, but the mortality rates in developing countries are 5-10%.[21, 22] But in our study, there was no maternal mortality observed.

CONCLUSION

The frequency of dehiscence was more common among patients who had previous 1 or more cesarean sections and the outcome was better with operative management. So there is a need further to study prospectively on uterine rupture and dehiscence to manage the patients to reduce the complications.

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