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Uterine Ruptures in Labour with a Previous Lower Segment Caesarean Section Scar: Who are at Risk?

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ABSTRACT

In a retrospective study of women with a previous lower segment caesarean section scar in labour at Sarawak General Hospital during 2014, there was 2 incidences of uterine rupture. Both women had different risk factors for uterine rupture. Case reports analyzed those risk factors as well as symptoms and signs of uterine rupture. Case reports notified that absence of previous vaginal delivery was the strong association with uterine rupture and incidences occurred without warning.

1. Introduction

Uterine rupture is the disruption of the uterine muscle involving to the uterine serosa with or without extension to the bladder or broad ligament. Presence of previous lower segment caesarean section scar in a uterus is a well-known risk for uterine rupture during trial of labour. [1] The overall incidence of uterine rupture is low but it can be associated with serious maternal and foetal outcomes. Signs and symptoms of uterine ruptures are abnormal foetal cardiotocograph tracing, severe abdominal pain, acute of onset caesarean section scar tenderness, abnormal vaginal bleeding, haematuria, cessation of previously efficient uterine activity, maternal tachycardia and hypotension and shock. [2] Case reports in Sarawak general hospital highlighted women who have risks of uterine rupture in trial of labour with a previous lower segment caesarean scar as well as the incidence could be happened without signs and symptoms.

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2. Case Reports

Case 1

A 27 -year- old Gravida 2 Parity 1 lady with body mass index (BMI) 23 Kg/m^{2}at 38 weeks' pregnancy came to a district hospital with leaking liquor and breech presentation of foetus. She had a previous lower segment caesarean section scar which was done 5 years ago with the indication of breech presentation at term pregnancy. She was referred to Sarawak General hospital. On arrival after 12 hours of labour, she was in advanced labour and undergone emergency lower segment caesarean section immediately. During the operation, there was 100 ml of blood in intraperitoneal cavity and 3 cm vertical uterine rupture in right angle of previous lower segment caesarean section scar and foetal foot was exposing through rupture. A baby boy of body weight 1.99 Kilogram was delivered without maternal and foetal complications.

Case 2

A 27 -year- old Gravida 2 Parity 1 lady with body mass index (BMI) 38.4 Kg/m^2 at 39 weeks' pregnancy came to Sarawak General hospital with latent phase of labour. She had a previous lower segment caesarean section scar which was done a year ago with the indication of chorioamionitis at term pregnancy. The foetus was singleton, longitudinal lie and cephalic presentation. She was keen for trial of labour. After 24 hours of trial, she was undergone emergency lower segment caesarean section in view of closed pregnancy interval. During operation, there was a previous scar rupture in 5 centimetres in length and foetal membranes bulging out through it. A baby girl of 3 Kilogram was delivered without maternal and foetal complications.

Table 1
Summary of Case Reports

	CASE - 1	CASE - 1
Age in years	27	27
Gravidity	2	2
BMI	23	38.4
Gestational age of current pregnancy	term	term
Gestational age of previous caesarean section	Term pregnancy	Term pregnancy
Foetal presentation in labour	Breech	Cephalic
Foetal weight in Kilogram	1.99	3
Stage of labour uterine rupture occurred	2nd stage	1st stage
Induction of labour	No	No
Augmentation of labour	No	No
Presence of previous vaginal delivery	No	No
Signs and symptoms of uterine rupture	No	No
Maternal complication of uterine rupture	No	No
Maternal complication of uterine rupture	No	No

3. Discussion

If uterus is unscarred, its rupture rate is 0.02% of deliveries. But among women with previous lower segment caesarean section scar, rupture rate is 0.2-0.5% in planned trial of labour [2]. WHO

multi-countries survey also showed uterine rupture rate among women with a previous lower segment caesarean section is 0.2% in high human development index countries and 1% in low human development index countries [3].

There are evidences showing women who had higher risk of uterine rupture in trial of labour with previous caesarean section scar. Kaczmarczyk *et al.,* did a large, population-based prospective cohort study and concluded that women with no previous vaginal delivery were higher risk of uterine rupture as well as high maternal age, induction of labour, and high birthweight of foetus contributed to uterine rupture.[4] Lannon *et al.,* and Fitzpatrick *et al* studies also notified as risk factors for uterine rupture in women with a history of caesarean section were prior classical incision, labour induction or argumentation, macrosomia, increasing maternal age, post-term delivery, short maternal stature, no previous vaginal delivery, and prior periviable caesarean section [5,6]. RCOG stated that maternal obesity, short inter-delivery interval, post-date pregnancy, maternal age of 40 years or more, lower pre-labour Bishop Score, foetal macrosomia and no previous vaginal delivery are increasing risk to uterine rupture in women with previous caesarean section scar [2].

In case reports of Sarawak General Hospital, both women had contrast risk factors for uterine rupture among two women such as BMI 38 and 23, inter-delivery interval 1 and 5 years, breech presentation and cephalic presentation during labour, foetal body weight 1.99 and 3 kilograms. On the other hand, they had similar factors which were not favouring uterine rupture. Both of them were 27 years which were not elderly mother, previous caesarean sections were also term pregnancies. Lannon study also notified previous caesarean section at periviability compared to term is associated with an increased risk for uterine rupture in a subsequent pregnancy and advised to do proper counselling in subsequent trial of labour [5]. But both women's previous caesarean sections were done at term pregnancies. Women who have had a caesarean delivery appear to have an increased risk of uterine rupture associated with the use of oxytocin, both when it is used for labour augmentation and labour induction [7]. A population-based incidence of uterine rupture in Netherlands found that overall relative risk of caesarean section scar rupture in of induction of labour was 3.6 (95% confidence interval 2.7-4.8) [8]. Uterine rupture cases of Sarawak general hospital were neither induced nor augmented during labour. The same risk factor in both women was they had no previous vaginal delivery and only delivery they had was previous caesarean section.

Several studies have shown a protective association of previous vaginal birth on uterine rupture risk in subsequent attempts at vaginal birth after previous caesarean delivery. The study of Zelop *et al*., compared 1,021 women who underwent a trial of labour after caesarean section after a single previous caesarean delivery with one previous vaginal delivery with 2,762 women who underwent a trial of labour with no previous vaginal delivery. The uterine rupture rate was 0.2% versus 1.1% [9] Caughey et al also found that among women with a previous LSCS scar, those with at least one previous vaginal delivery had one fifth the risk for uterine rupture compared with women without a previous vaginal delivery [10] .In a study of 205 patients who underwent a trial of labour after one previous caesarean delivery, Kayani and Alfirevic noted that all of cases of uterine ruptures occurred in women with no previous vaginal delivery [11]. Kaczmarczyk *et al*., study also concluded that compared, women who had a caesarean without previous vaginal delivery had a substantially increased risk of uterine rupture in their second delivery comparing to women who had delivered vaginally in the first birth and caesarean section in first delivery was the strongest predictor of uterine rupture [4]

As mentioned earlier, there are many classic signs and symptoms of uterine rupture and among them, abnormal cardiotocography (CTG) is the most consistent finding in uterine rupture. [12] We also found two cases of partial uterine rupture in women with previous LSCS scar rupture in labour in Sarawak General hospital at 2010 which were notified with abnormal (CTG) tracing [13]. A case-

controlled study by reviewing 26 cases of uterine rupture in an academic medical centre notified that mild and severe variable foetal heart rate decelerations, especially in the presence of persistent abdominal pain, may predict uterine rupture in patients attempting vaginal birth after caesarean section [14]. Another retrospective study of universities maternity unit noticed foetal heart rate abnormalities were most frequent sign (82%), while the complete set of standard symptoms is present in less than 10% of cases [15]. In other hand, a 6 years' study of uterine rupture case series in UK concluded that signs and symptoms of uterine rupture are typically nonspecific making diagnosis difficult [16]. Similarly, in current case reports, there was no sign and symptom warning uterine rupture.

Uterine rupture is associated with increased morbidity and mortality of mother and foetus especially in developing countries [17]. To prevent those complication, early diagnosis and prompt intervention are necessary. A study concluded early diagnosis of uterine scar rupture followed by expeditious laparotomy and neonatal resuscitation are essential to reduce associated morbidity and mortality [18]. Another observational study indicated a potential upper limit for non-hypoxic neonatal delivery of 18 minutes from suspected uterine rupture to delivery [19]. Diagnosis of uterine rupture is sometimes difficult as symptoms and signs are complexed and non- specific. In the other hand, closed observations during labour as well as delivering in well- equipped hospital are recommended. In these case reports, there was no maternal and foetal adverse outcomes as Sarawak General hospital is well equipped tertiary hospital and closed monitoring during labours and timely intervention is usual practice.

4. Conclusions

Women with previous lower segment caesarean section scar who has no previous vaginal delivery is the strongest risk factor for uterine rupture and symptoms and signs of uterine rupture can be absent. Timely decision and institutional delivery during trial of labour in well-equipped hospital can avoid maternal and foetal complications of uterine rupture.

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