

Sonographic diagnosis of spontaneous uterine rupture at the site of cornual wedge resection scar – a case report

Abstract

Introduction: Uterine rupture and uterine dehiscence during pregnancy are known complications of a scarred uterus. Spontaneous uterine rupture at the site of prior cornual wedge resection has been previously reported in the literature, however remains rare.

Discussion: We present a case of uterine rupture at 30 weeks gestation. This woman had previous right sided interstitial pregnancy treated with uncomplicated laparoscopic cornual wedge resection at eight weeks gestation. The index pregnancy occurred eight months after surgery. An emergency ultrasound prompted by non-specific abdominal pain and tenderness at 30 weeks gestation enabled diagnosis of uterine dehiscence. At emergency caesarean section four hours later full thickness wall rupture and haemoperitoneum were found. Surgical intervention resulted in a good outcome for both mother and baby.

Conclusion: A brief account on uterine rupture in late pregnancy and relevant sonographic features related to this case are presented. This case demonstrates the value of ultrasound in the assessment of subtle clinical signs and symptoms in patients at risk of uterine rupture.

Keywords: cornual wedge resection, interstitial pregnancy, laparoscopy, scarred uterus, uterine rupture, uterine dehiscence, ultrasound.

Case report

30-year-old woman, Gravida 3, Para 1.

History:

- 1 Myomectomy via laparotomy with removal of a 10cm broad ligament fibroid, five years prior to index pregnancy
- 2 Uneventful pregnancy with ventouse delivery at 41 weeks four days, two years prior
- 3 Right sided eight week interstitial pregnancy treated by laparoscopic cornual wedge resection and salpingectomy, eight months prior.

In the index pregnancy eight week dating, 12-week nuchal translucency and 18-week morphology ultrasound scans were unremarkable. Further scans at 24, 25, 27 and 29 weeks to assess fetal growth and right cornual wedge resection scar thickness showed normal growth, amniotic fluid index (AFI), fetal Dopplers and intact scar. Myometrial mantle on the right side measured between 3 mm–4.2 mm (Figure 1).

At 30 weeks 4 days she was admitted with non-specific abdominal pain, predominantly across the lower abdomen and persistent tightness. There was no right upper quadrant pain, vaginal loss, bleeding or uterine contractions. Vital signs were unremarkable. On speculum examination the cervix was long and closed and

a cardiotocograph trace was normal.

An urgent ultrasound was performed 4 hours after initial admission and showed a live fetus in breech presentation, posterior placenta, normal AFI, normal umbilical artery Doppler flow and a long, closed cervix. No pelvic or abdominal free fluid was seen.

At right cornual wedge resection area an anechoic herniation, 29 x 27 x 30 mm was seen ballooning out from the uterine wall and connecting with the main uterine cavity (Figure 2). This area was non-vascular and tender with pressure (Figure 3).

Uterine dehiscence was diagnosed and clinicians were notified.

Steroids were administered and informed consent obtained for emergency lower segment caesarean section and tubal ligation, which was performed four hours after the ultrasound diagnosis.

At surgery the uterus had full thickness wall rupture at the site of the right cornual scar (Figure 4), intact membranes and haemoperitoneum with estimated blood loss of 900 mL.

A male infant weighing 1920 g was born with Apgar scores of 6 and 9 after 1 and 5 minutes respectively. He was intubated, ventilated and admitted to the Neonatal Intensive Care Unit.

The uterine rupture was repaired in three

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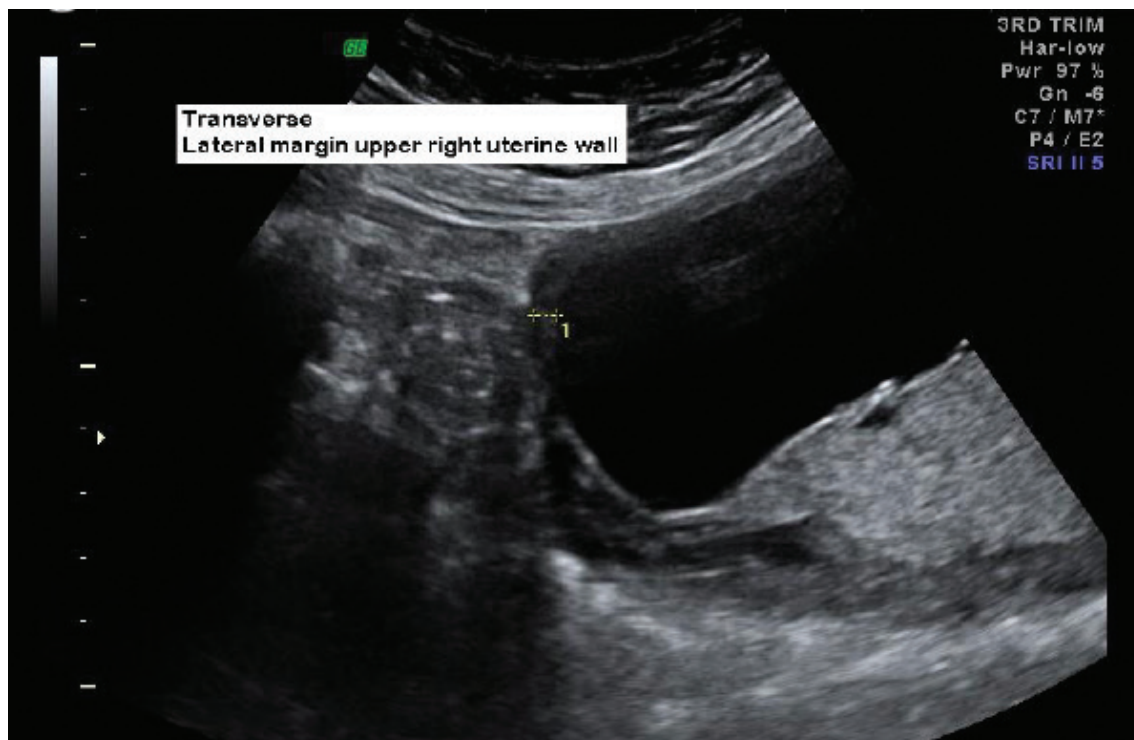


Figure 1: Ultrasound of lateral margin of upper right uterine wall at 27 weeks gestation. Myometrial mantle measures 3.6 mm.

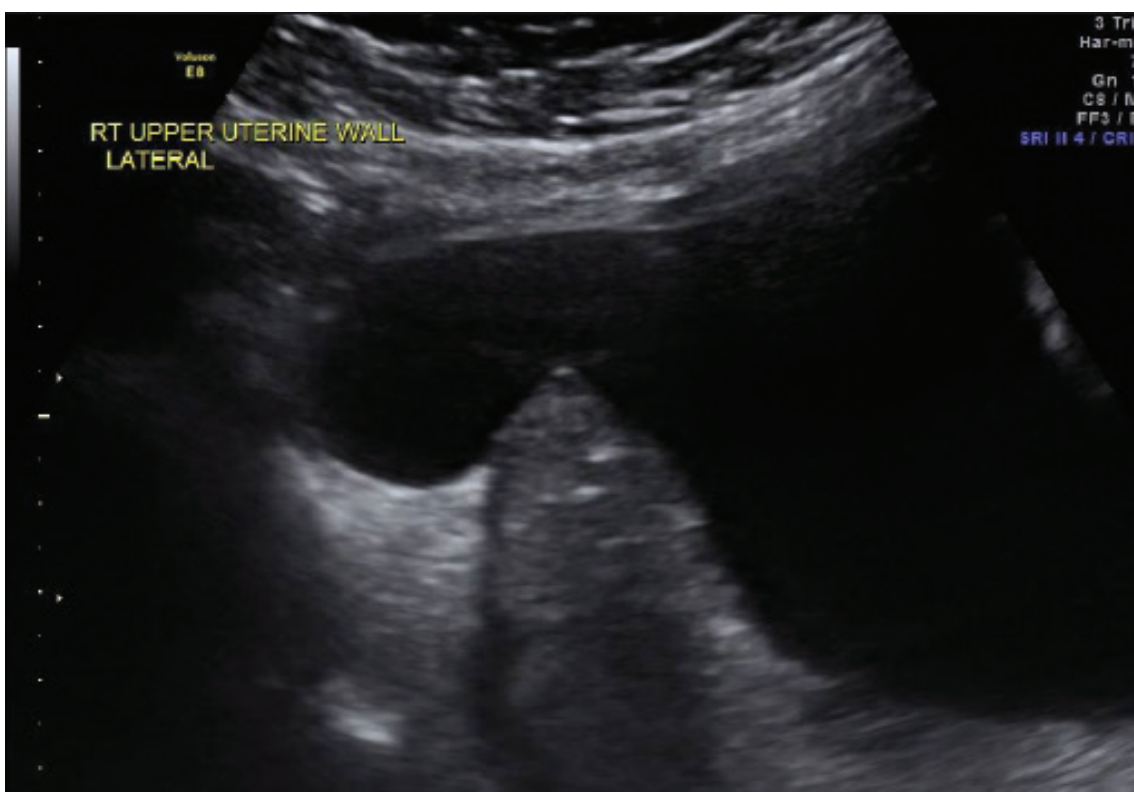


Figure 2: Ultrasound of lateral margin of upper right uterine wall at 30 weeks gestation. An anechoic herniation connects with the main uterine cavity.

layers using Vicryl 1. The woman was discharged three days post surgery with no complications.

The infant was discharged weighing 3035 g with no complications 7 weeks later.

Discussion

Uterine rupture and uterine dehiscence during pregnancy are known complications of a scarred uterus. The initial signs

and symptoms may be subtle and non-specific and a delay in diagnosis, especially of a complete rupture, may be life-threatening to both the mother and fetus.

Uterine rupture (also termed 'complete rupture') is a full-thickness separation of the uterine wall and the overlying serosa, resulting in communication between the amniotic and abdominal cavities. It is associated with extensive bleeding, ruptured membranes, abdominal pain, fetal distress and

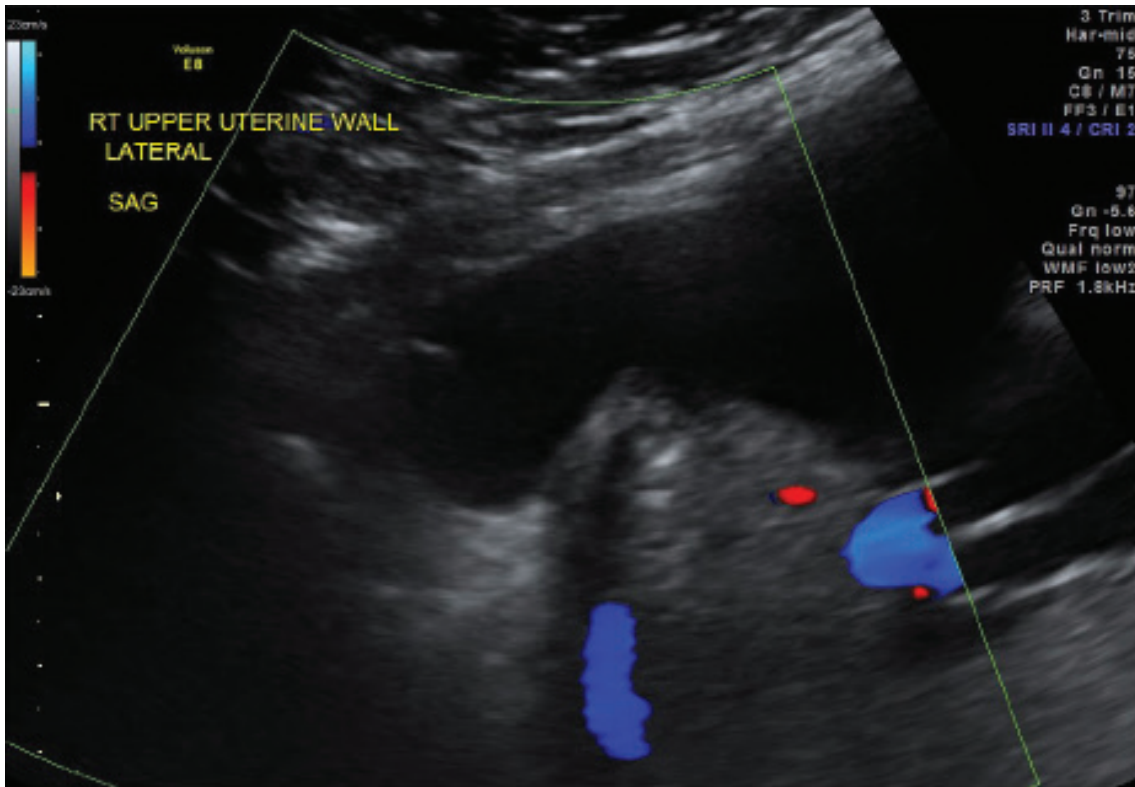


Figure 3: Sagittal plane. Non-vascular, anechoic herniation consistent with dehiscence.

expulsion of the fetus and/or placenta into the abdominal cavity.¹⁻³

Rupture is considered spontaneous if it occurs without contractile activity of the myometrium and is not the result of trauma such as violence, car accidents or manipulation.^{4,5} Spontaneous rupture may rarely occur in unscarred uteri with adenomyosis, uterine or placental anomalies, infection, cephalopelvic disproportion or underlying connective tissue disease however most cases are associated with a scarred uterus, usually due to prior caesarean section.³⁻⁵

Uterine dehiscence (also termed ‘incomplete rupture’) is a more common event than uterine rupture and is defined as the thinning or separation of a prior uterine scar which does not involve the uterine serosa or fetal membranes and is not associated with intra-abdominal haemorrhage.^{2,3,6}

The risk of scar rupture during a subsequent pregnancy is strongly related to its location, with corporeal (upper uterine, cornu area) scars tending to rupture more easily and more often prior to the onset of labour than lower uterine segment scars.^{5,7} It has been suggested that such ruptures may be due to attenuation of the cornual region musculature, connective tissue factors, a deficiency in the reconstruction of the uterine wall or tissue damage contributed by electrosurgery.^{4,6,8-10}

At present uterine rupture following cornual resection cannot be predicted or prevented and data on the absolute risk of uterine rupture is still unknown.^{9,10} However according to Ng, *et al.*,⁹ following review of 53 cases, laparoscopic management of cornual pregnancy can have good outcomes. Similarly, Soriano, *et al.*¹¹ advocate laparoscopy as the preferred method for treating cornual pregnancy.

We support recommendation of previous authors that patients must be aware of the risk of uterine rupture prior to

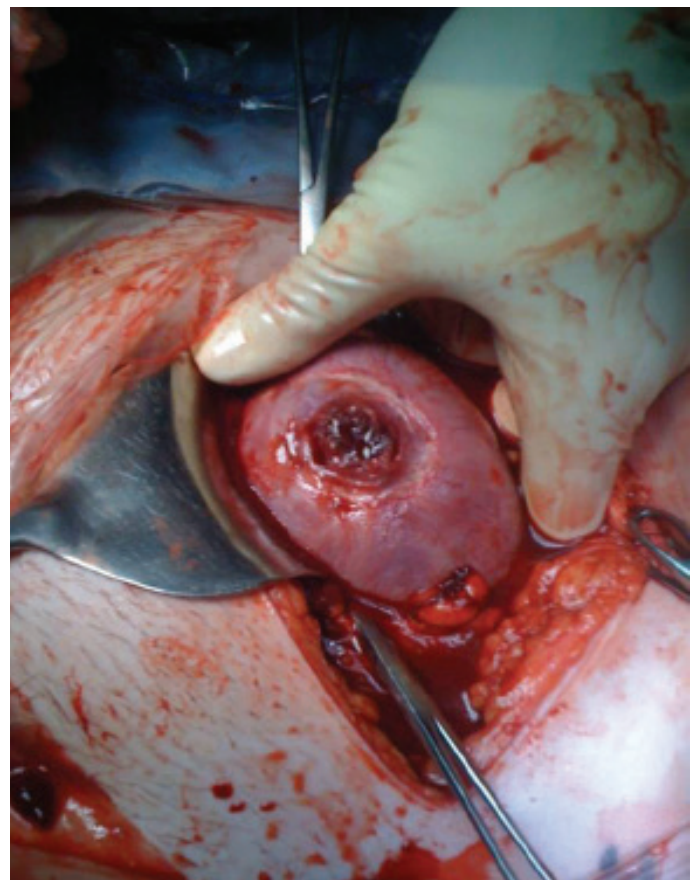


Figure 4: Surgical photo demonstrating the full thickness wall rupture.

conceiving again and subsequent pregnancies must involve close ante-natal surveillance and management.^{1,8,10,12}

Symptoms of uterine rupture may range from severe

(abnormal fetal heart rate, abdominal pain, bleeding, hypovolemic shock) to subtle and non-specific such as in our case. Many cases of dehiscence have no symptoms at all and are only found incidentally at caesarean section.^{2,6}

The most common ultrasound feature of uterine dehiscence/rupture is that of herniated membranes through a uterine defect. This was first described in 1978 by Acton and Long¹³ in a patient in her third pregnancy with previous complicated curettage.

With cornual wedge resection scars a herniation will be seen in the upper, lateral uterine wall.^{4,5,12} It may contain varying amounts of amniotic fluid with possible oligohydramnios in the main uterine cavity.^{4,5,7} Fetal parts, most commonly the fetal limbs, or the umbilical cord may be seen within the herniation.^{4,5,7,12} Abdominal or pelvic free fluid, due to ruptured membranes and/or haemoperitoneum may be present.⁸ In severe cases of rupture there may be an empty uterus, expulsion of fetus and placenta from uterine cavity^{1,2} and absence of fetal heart activity.^{2,4}

In our case, regular ultrasounds to assess the integrity of the uterine wall at the site of cornual wedge resection scar failed to identify scar thinning or predict scar dehiscence. This is probably due to lack of standardised measurement techniques and cut off levels. Serial scans of cornual scar region by van Alphen, *et al.*⁵ also failed to predict dehiscence in their case and prediction of dehiscence or rupture remains a challenge to lower segment caesarean section scar assessments as well.^{2,14} An emergency scan prompted by mild clinical symptoms in our case enabled recognition of herniation within the cornual wedge resection scar site. A prompt diagnosis of dehiscence was made and as a result urgent delivery was recommended to the patient.

Conclusion

Our case demonstrates that ultrasound assessment may be of benefit to any woman, not in need of immediate delivery, who presents with symptoms, even subtle and non-specific ones, and a history of uterine surgery to assess the possibility of uterine dehiscence or rupture.

We support recommendation that women who undergo laparoscopic cornual wedge resection should be counselled on the risk of uterine rupture in subsequent pregnancies and that these subsequent pregnancies should involve frequent and careful ante-natal assessment. As laparoscopic management of such cases is likely to increase, there may be a need in future for the development of standardised scanning techniques and cut off levels for scar assessment to assist in better patient care.

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