

CASE REPORT

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Spontaneous antenatal uterine rupture in a primiparous patient with placenta praevia: Does previous laparoscopic treatment of endometriosis increase the risk?

Sujata Datta¹ and Ritisha Basu^{2*}

Abstract

Background Unprovoked spontaneous uterine rupture in a primigravid unscarred uterus is a rare but serious obstetric complication. Our case highlights a prelabour uterine rupture in a primiparous patient with an anterior placenta praevia and transverse lie at 32 weeks.

Case presentation The patient presented with severe continuous abdominal pain and an abnormal Cardiotocograph antenatally. An emergency Caesarean section done with suspicion of concealed abruption revealed a cornual uterine rupture with 2 L of hemoperitoneum.

Conclusion The patient and her baby recovered well from surgery, thus, emphasizing the necessity of timely intervention. An association with previous laparoscopic treatment of severe endometriosis and adenomyosis is explored.

Keywords Uterine rupture, Unscarred uterus, Endometriosis, Obstetric complication

Background

A ruptured uterus is a catastrophic complication that can lead to severe maternal and fetal morbidity if not diagnosed in time. Common causes of uterine rupture include prior caesarean (8.9 and 37.1 per 10,000 births) (Miller et al. 1997), prior myomectomy, uterine malformations, connective tissue disorders, and placental disorders such as placenta percreta. Rupture of the uterus in the antenatal period prior to labour is a rare event, especially in an unscarred uterus. Uterine rupture in an

unscarred uterus is as rare as 0.6 per 10,000 deliveries (Spencer and Robarts 2008).

Our case highlights an unprovoked uterine rupture in a primigravida with an IVF (in vitro fertilization) pregnancy at 32 weeks having a transverse lie and anterior placenta praevia. She had adenomyosis and a past history of laparoscopic treatment of severe endometriosis. Since this patient was not in labour and had an unscarred uterus, this was a rare complication encountered.

Case presentation

A primigravida with an IVF pregnancy following laparoscopic treatment of grade 4 endometriosis, presented at 32 weeks of gestation with an insidious onset of left upper quadrant abdominal pain for one and a half days. An antenatal ultrasound showed an anterior placenta praevia covering the cervical os with the fetus in a transverse lie and normal fetal growth.

*Correspondence:

Ritisha Basu
basu.ritisha312@gmail.com

¹ Obstetrics and Gynaecology, Fortis Hospital, Anandapur, Kolkata, West Bengal 700107, India

² Obstetrics and Gynaecology, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, Meghalaya 793018, India

On admission, she complained of severe continuous abdominal pain with a single episode of minimal vaginal bleeding. On examination, she had stable vitals, and mild pallor but generalized abdominal tenderness of rapidly increasing severity. There were no uterine contractions and a speculum examination showed a closed cervical os with no vaginal bleeding, which showed that the patient was not in labour. A Cardiotocograph (CTG) was done concomitantly, which showed fetal tachycardia, poor beat-to-beat variability, and atypical variable decelerations, suggestive of non-reassuring fetal status.

In view of the abnormal CTG, an emergency Caesarean section was done immediately on the suspicion of a concealed abruption. At caesarean, on entering the abdominal cavity via a transverse incision, 2 L of blood was found in the peritoneal cavity. A transverse lower segment incision was made on the uterus through the placenta to deliver the baby in a transverse lie by the internal podalic version. The uterus was delivered out of the abdomen to reveal a large rupture on the left side of the fundus, close to the cornu. The rupture was repaired in 3 layers with continuous sutures of Polyglactin 1.

She was transferred to ICU as she quickly became hemodynamically unstable during surgery, requiring 4 units of packed red blood cells and fresh frozen plasma. The baby was transferred in good condition to the neonatal care unit and in due course made an uneventful recovery. Following stabilization, the patient had an uncomplicated postoperative period and was discharged in stable condition. She was advised against further pregnancies (Figs. 1 and 2).

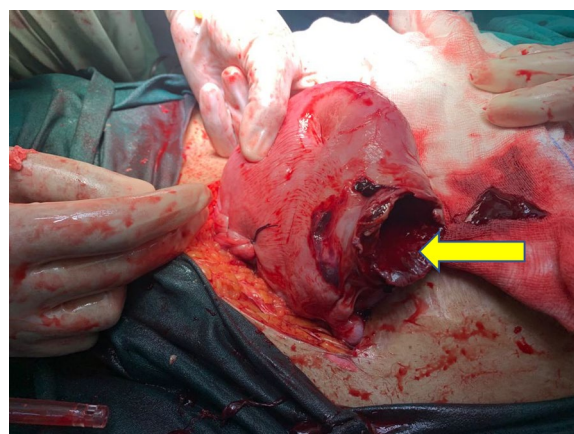


Fig. 2 Intraoperative image showing cornual rupture

Discussions

Early detection of uterine rupture and prompt laparotomy are essential in reducing maternal and perinatal morbidity. The classic clinical picture of acute abdomen, hypovolemia, vaginal bleeding, and foetal distress may not always be accompanying symptom. Therefore, regardless of parity, it's crucial to maintain a high index of suspicion for uterine rupture in women presenting with any of the above symptoms. Less common conditions that may present with a similar spectrum of symptoms include subcapsular liver hematoma with or without rupture, rupture of the broad ligament, splenic rupture, uterine torsion, and uterine vein rupture. These conditions need prompt surgical exploration as they cause quick hemodynamic instability; therefore, a high

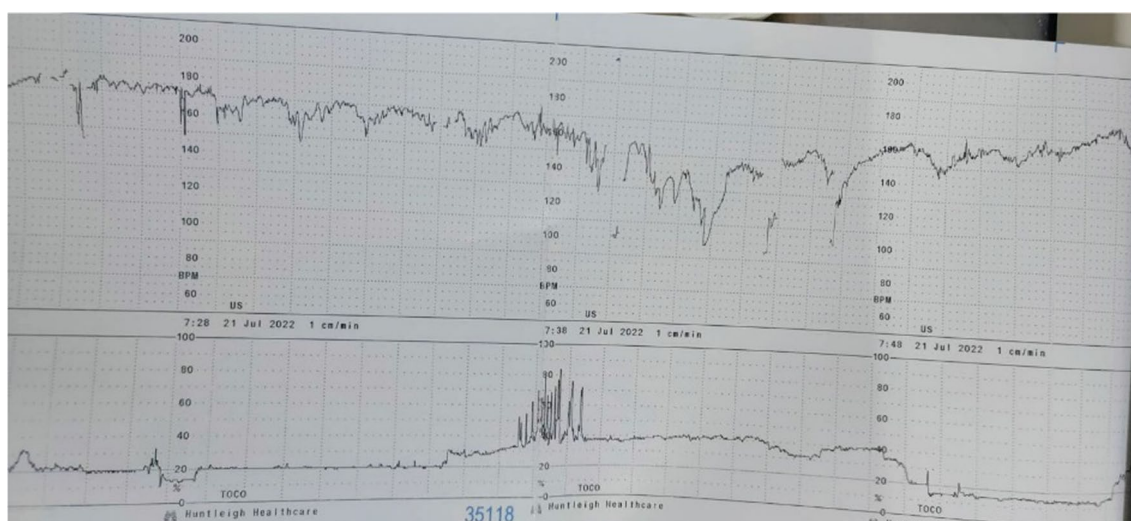


Fig. 1 Abnormal CTG with fetal tachycardia and unprovoked fetal decelerations

level of clinical suspicion is always needed when above-mentioned symptoms occur in a non-laboring patient.

Our patient, a primigravida at 32 weeks, presented with continuous abdominal pain and fetal distress—symptoms consistent with concealed placental abruption. However, on performing an emergency caesarean, a cornual rupture in the uterus was identified, a rare event in a primigravid unscarred uterus. Early recourse to surgery, led to an optimal maternal and fetal outcome. It has been noted that rupture of an unscarred uterus is a more catastrophic event than rupture through a previous scar, as the area of rupture is more vascular (Miller et al. 1997).

It is important that we discuss that our patient had a history of primary subfertility with grade 4 endometriosis and adenomyosis. She underwent an uncomplicated laparoscopic resection of an ovarian endometrioma and pelvic adhesiolysis for grade 4 endometriosis, a year prior to her IVF. Literature suggests surgical treatment of severe endometriosis, such as deeply infiltrating endometriosis [DIE], has shown a causal relationship with uterine rupture (Ziadeh 2020; Fettback et al. 2015; Leone Roberti Maggiore et al. 2017; Vystavěl et al. 2018). This relationship of DIE with uterine rupture may be explained by a lack of a consensus regarding the depth of excision of tissues and decreased vascularisation of the uterine tissue following extensive bipolar coagulation required in these surgeries.

Our patient also had another risk factor of adenomyosis. There are case reports in the literature of spontaneous uterine rupture of an unscarred uterus caused by adenomyosis in the early third trimester (Vimercati et al. 2022). Alteration in organization and resistance of uterine fibers in adenomyosis may have a contributing role in this pathology (Nikolaou et al. 2013).

Conclusion

Our case demonstrates the potential of a primigravid unscarred uterus to rupture, even if not in labour. It is extremely important to keep this differential diagnosis in mind when a non-labouring primigravida presents with pain abdomen and is diagnosed with abnormal CTG.

Also, we have reviewed the literature where a causal relationship between laparoscopic treatment of severe endometriosis and adenomyosis with uterine rupture has been explored.

Abbreviations

IVF	In vitro fertilisation
DIE	Deeply infiltrating endometriosis
CTG	Cardiotocograph
ICU	Intensive care unit

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Competing interests

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References

- Fettback PB, Pereira RM, Domingues TS, Zacharias KG, Chamié LP, Serafini PC (2015) Uterine rupture before the onset of labor following extensive resection of deeply infiltrating endometriosis with myometrial invasion. *Int J Gynaecol Obstet* 129(3):268–270. <https://doi.org/10.1016/j.ijgo.2015.01.007>
- Leone Roberti Maggiore U, Inversetti A, Schimberni M, Viganò P, Giorgione V, Candiani M (2017) Obstetrical complications of endometriosis, particularly deep endometriosis. *Fertil Steril* 108(6):895–912. <https://doi.org/10.1016/j.fertnstert.2017.10.035>. Erratum in: *Fertil Steril*. 2018;109(5):942. PMID: 29202964
- Miller DA, Goodwin TM, Gherman RB, Paul RH (1997) Intrapartum rupture of the unscarred uterus. *Obstet Gynecol* 89(5 Pt 1):671–673. [https://doi.org/10.1016/s0029-7844\(97\)00073-2](https://doi.org/10.1016/s0029-7844(97)00073-2)
- Nikolaou M, Kourea HP, Antonopoulos K, Geronatsiou K, Adonakis G, Decavalas G (2013) Spontaneous uterine rupture in a primigravid woman in the early third trimester attributed to adenomyosis: a case report and review of the literature. *J Obstet Gynaecol Res* 39(3):727–732. <https://doi.org/10.1111/j.1447-0756.2012.02042.x>
- Spencer C, Robarts P (2008) Risk factors for uterine rupture and neonatal consequences of uterine rupture: a population-based study of successive pregnancies in Sweden. *BJOG* 115(3):415–416. <https://doi.org/10.1111/j.1471-0528.2007.01617.x>
- Vimercati A, Dellino M, Suma C, Damiani GR, Malvasi A, Cazzato G, Cascardi E, Resta L, Cicinelli E (2022) Spontaneous uterine rupture and adenomyosis, a rare but possible correlation: case report and literature review. *Diagnostics (basel)* 12(7):1574. <https://doi.org/10.3390/diagnostics12071574>
- Vystavěl J, Eim JB, Pilka R (2018) Consecutive intrapartum uterine rupture following endoscopic resection of deep rectovaginal and bladder endometriosis. *Ceska Gynekol* 83(5):354–358
- Ziadeh H, Panel P, Letohic A, Canis M, Amari S, Gauthier T, Niro J (2020) Resection of deep-infiltrating endometriosis could be a risk factor for uterine rupture: a case series with review of the literature. *F S Rep* 1(3):213–218. <https://doi.org/10.1016/j.xfre.2020.09.005>

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