Accurate prenatal discrimination of placenta accreta spectrum from uterine dehiscence is necessary to ensure optimal management

Theophilus Kofi Adu-Bredu,1 Atta Owusu-Bempah,1 Sally Collins2

SUMMARY

Uterine scar dehiscence with underlying placenta is often misdiagnosed as placenta accreta spectrum both prenatally and intraoperatively due to the absence of myometrial tissue in the area. Misdiagnosis generates obstetric anxiety and results in overtreatment which carries a risk of iatrogenic injury. We present a case of the antenatal diagnosis of uterine dehiscence in a 36-year-old woman with a history of two caesarean deliveries and a low-lying placenta. We further describe the sonographic features useful for differentiating this condition from placenta accreta spectrum in instances where the placenta lies under an area of full thickness uterine scar dehiscence.

BACKGROUND

Uterine scar dehiscence, which is also referred to as ‘uterine window’, is a well-known complication of previous caesarean section with an incidence of 4.6%.1 It occurs due to stretching of the scarred lower uterine segment in the third trimester. Differentiating uterine scar dehiscence from placenta accreta spectrum (PAS) in cases of placental previa is often challenging both prenatally and intraoperatively due to the absence of uterine myometrial tissue in the area. Making an accurate diagnosis and appropriate intrapartum management is vital in the case of PAS since attempted removal of the placenta can result in catastrophic haemorrhage with maternal mortality at the severe end of the spectrum being reported to be as high as 7%.2 In view of this, uterine dehiscence misdiagnosed as PAS generates inappropriate obstetric anxiety and overtreatment (such as interventional radiology, vertical abdominal incision and hysterectomy), all of which carry the risk of iatrogenic injury. In placenta previa with uterine scar dehiscence, the placenta spontaneously detaches from the uterus at caesarean delivery; there is no need for a classic uterine incision or hysterectomy, and blood loss is significantly lower, compared with PAS which is managed by a classic uterine incision during caesarean delivery and may necessitate interventional radiology or surgical pelvic devascularisation to control haemorrhage.3 There is, therefore, a need to increase awareness on uterine dehiscence to avoid confusing this phenomenon with PAS to prevent unnecessary iatrogenic maternal morbidity.

We present a case of prenatal discrimination of uterine scar dehiscence with an anterior low-lying placenta.

CASE PRESENTATION

A 36-year-old woman with a history of two caesarean deliveries and a mid-trimester anatomical survey indicating a low-lying placenta was referred to our centre for an ultrasound scan to rule out PAS. Ultrasound examination confirmed a low-lying placenta (1.8 cm from the internal cervical os) at 32+3 weeks’ gestation. Transvaginal ultrasound assessment of the lower uterine segment revealed an abnormally thin myometrium of about 0.4 mm overlying the placenta. The placenta, however, had a very homogeneous echogenicity with no significant lacunae and the placental bed showed no evidence of hypervascularity. Due to the dilemma in the diagnosis, anonymous ultrasound images were sent to Professor Sally Collins for a second opinion. Based on imaging findings, a prenatal diagnosis of uterine scar dehiscence (‘uterine window’) with low-lying placenta was made. In the meantime, two doses of betamethasone 12 mg, 24 hours apart, were administered for fetal lung maturation. She was counselled to report any symptoms of lower abdominal pain, vaginal bleeding, loss of fluid or reduced fetal movement. She was reviewed at 33 weeks with no reports. A follow-up ultrasound scan at 34+6 weeks revealed an area with undetectable myometrium spanning a length of 2.3 cm overlying the placenta (Figure 1). The patient reported severe lower abdominal pain during this ultrasound examination and so was admitted to the ward and counselled for a caesarean section. She was informed that caesarean hysterectomy would be performed in the event of uncontrolled postpartum haemorrhage or if the uterus could not be repaired. She was assessed by the anaesthetist and four units of blood were cross-matched ready for surgery the next day.

Caesarean delivery was performed through a transverse abdominal incision. Intraoperative findings revealed a large uterine scar dehiscence in the lower uterine segment spanning a length of 6 cm with the placenta partly bulging through the defect with no evidence of neovascularisation (Figure 2). A 1.86 kg healthy girl was delivered, with Apgar scores of 8 at 1 min and 9 at 5 min. The newborn was assessed by the neonatologist and admitted to the neonatal intensive care unit. The placenta spontaneously detached without abnormal bleeding and the uterus was repaired in two layers, and haemostasis secured using Vicryl suture. Estimated blood loss was 1100 mL and 20 units of oxytocin in 0.5 L normal saline plus 800 µg misoprostol were...
administered to keep the uterus contracted. Bilateral tubal ligation was performed at the request of the patient. The recovery of the mother was uncomplicated: the wound healed by primary intention and her postoperative haemoglobin level was 91 g/L. The mother was discharged on post-delivery day 7, and stayed at the nursery until the neonate was discharged on post-delivery day 14.

**DISCUSSION**

Uterine scar dehiscence is the incomplete separation of the uterine scar where the serosa remains intact with fetus, placenta and umbilical cord contained in the uterine cavity. It occurs as a result of the progressive loss of scar integrity which leads to the gradual inward-to-outward separation of the uterine layers resulting from the stretching of the lower uterine segment in the third trimester. This defect is considered to be a dehiscence as long as the serosa remains intact. The separation of serosa is termed a uterine rupture which is associated with the extrusion of uterine contents into the peritoneal cavity and can result in significant blood loss. PAS disorder, also called abnormally invasive placenta (AIP), describes a clinical situation where the placenta does not detach spontaneously after delivery and cannot be forcibly removed without causing massive and potentially life-threatening bleeding. The exact pathophysiology is unclear. Some suggest abnormal trophoblastic invasion through defective endometrium, while others argue for the trophoblastic attachment to defective decidua with progressive myometrial dehiscence with placental growth and pelvic adhesions. Regardless of the diverse opinions on the pathophysiology of PAS, both theories agree that there is usually abnormal invasion of the trophoblast deep into the myometrium resulting in the presence of considerable neovascularisation and extreme myometrial thinning.

Maternal and neonatal mortality and morbidity are reduced when PAS is diagnosed antenatally; as it gives an opportunity for essential preparation and precautions, including multidisciplinary team management, delivery timing, and providing prophylactic medical and surgical interventions in a tertiary care hospital. Although definitive diagnosis can only be made when the placenta fails to separate after delivery, antenatal imaging signs of PAS can be seen using ultrasound and MRI. The European Working Group on AIP (now international society for PAS) proposed standardised definitions of the AIP imaging descriptors, which has helped to increase diagnostic capabilities and facilitate international collaboration. However, an issue in the prenatal diagnostic conundrum is the potential confusion between PAS and ‘uterine window’. In such cases, the placental tissue can be seen under the serosa at the time of caesarean section. The common sonographic finding in both conditions is the presence of an abnormally thinned myometrial tissue. In view of this, the presence of a placenta underneath the abnormally thinned myometrium could be easily misdiagnosed as PAS antenatally. The imaging signs found with uterine dehiscence include placental ‘bulge’, loss of the retroplacental clear or hypoechoic zone, imperceptible myometrium in the area of the placental bulge, but clearly visible, normal myometrium at both extremes of the ‘bulge’, creating the pathognomonic ‘uterine window’. However, colour Doppler will not demonstrate any subplacental, uterovesical hypervascularity, and intraplacental abnormal vascularity or lacunae typically seen in PAS. A clear distinction can also be made with uterine scar dehiscence by assessing the
placental–bladder border which is smooth and regular compared with PAS which usually demonstrates bladder wall interruption and irregularity. Care must be taken though as abnormal adherence (accreta) often also presents with a fairly homogenous placenta and absence of significant lacunae and hypervascularity; but at this end of the PAS, the placenta has not abnormally invaded into the uterine tissue, the myometrium is usually clearly visible and >2 mm thick. A careful analysis of the combination of these sonographic findings therefore reduced our suspicion for PAS and inclined our prenatal diagnosis in favour of uterine dehiscence (see table 1). Nevertheless, the differential diagnosis between these two conditions is not always straightforward on antenatal imaging, therefore, imaging professionals are encouraged to seek expert opinion to confirm diagnosis when they are in doubt. Also, uterine dehiscence and PAS can coexist in the same patient; for this reason, careful examination of the entire placenta for all signs of PAS is mandatory.

Similarly, uterine scar dehiscence with the placenta seen underneath could be incorrectly diagnosed as AIP intraoperatively if the surgeon is inexperienced with this condition. An obvious placenta bulge through a dehisced lower uterine segment that is completely covered by a very thin serosa membrane is seen intraoperatively which is surrounded by completely normal myometrium with the absence of neovascularisation. In this situation, the placenta can be removed without massive haemorrhage as it is surrounded by normal myometrium and is not abnormally attached or invaded into the uterus.

Accurate prenatal differentiation between these closely related concepts is essential in planning the surgical procedure as well as the timing of delivery. In this case, due to the significant separation of the myometrial tissue observed on ultrasound and severe lower abdominal pain, the baby was delivered prematurely due to the risk of uterine rupture with prolonging the pregnancy. Also, accurate diagnosis enables adequate planning for the surgical procedure since a multidisciplinary approach and intraoperative management differ between these two conditions. An aggressive management approach which usually entails caesarean hysterectomy is used in PAS but not in cases of ‘uterine window’. In view of this, the prenatal counselling approach differs significantly between these two conditions.

To the best of our knowledge, this case report is the first paper to carefully describe the sonographic signs which can be used to differentiate these two conditions. The strength of this case report is in raising awareness on the difference between the two conditions and the need for careful sonographic evaluation of the placenta in suspected cases of PAS. Further research in this area is also recommended to improve prenatal diagnosis.

### Learning points

- An accurate prenatal diagnosis of uterine scar dehiscence can be made and differentiated from placenta accreta spectrum (PAS) by assessing the presence of abnormally thinned myometrium with normal myometrial thickness clearly seen at the edges of the ‘bulge’ and without additional sonographic makers of PAS.
- This criterion can be applied to any part of the uterus where there is full thickness scar tissue (eg, after myomectomy) and PAS might be suspected.
- Obstetricians, sonographers and radiologists should be educated regarding the differential sonographic features when screening for PAS to avoid confusing these two conditions and be encouraged to seek a second opinion when there is any doubt.

### Table 1  A comparison between sonographic findings of uterine dehiscence with overlying placenta and placenta accreta spectrum (PAS)

| EW-AIP signs of PAS | Uterine dehiscence with overlying placenta |
|---------------------|------------------------------------------|
| **2D greyscale**    |                                          |
| Loss of clear zone  | Usually present                          |
| Abnormal placenta lacunae (Finberg grade 3) | Often some lacunae present but not Finberg grade 3 |
| Bladder wall interruption | Not seen                              |
| Myometrial thinning <1 mm or undetectable | Present                                  |
| Placental bulge     | Usually present                          |
| Focal exophytic mass | Not seen                                 |
| **2D colour Doppler** |                                          |
| Uterovesical hypervascularity | Not seen                              |
| Subplacental hypervascularity | Not seen                               |
| Bridging vessels    | Not seen                                 |
| Placenta lacunae feeder vessels | Not seen                              |
| **3D power Doppler** |                                          |
| Intraplacental hypervascularity | Not seen                                |

EW-AIP, European Working Group on Abnormally Invasive Placenta.

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**Contributors** TKA-B performed the ultrasound examination and prepared the initial draft of the manuscript. AO-B was the lead clinician on the case and contributed to the manuscript. SC contributed to prenatal sonographic diagnosis, provided guidance and edited the final manuscript. All authors approved the final manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**ORCID iD** Theophilus Kofi Adu-Bredu http://orcid.org/0000-0003-2365-6769

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