7.2.2 Is there a role for magnetic resonance imaging (MRI) in the diagnosis of placenta accreta spectrum?

Clinicians should be aware that the diagnostic value of MRI and ultrasound imaging in detecting placenta accreta spectrum is similar when performed by experts. [*New 2018*] C

MRI may be used to complement ultrasound imaging to assess the depth of invasion and lateral extension of myometrial invasion, especially with posterior placentation and/or in women with ultrasound signs suggesting parametrial invasion. ✓

MRI has been increasingly used for the prenatal diagnosis of placenta accreta.[145–149] The main MRI features of placenta accreta include abnormal uterine bulging, dark intraplacental bands on T2-weighted imaging, heterogeneous signal intensity within the placenta, disorganised vasculature of placenta and disruption of the uteroplacental zone. A systematic review has found that most studies are of a small sample size and thus, sensitivity and specificity of MRI in diagnosing placenta accreta varies widely between 75% and 100%, and 65% and 100%, respectively.[148]

Two systematic reviews and meta-analyses have found that the diagnostic value of ultrasound imaging and MRI in detecting placenta accreta spectrum is similar. The first review[147] included 13 studies and reported a sensitivity of 83% (95% CI 77–88), specificity of 95% (95% CI 93–96) and detection OR of 63.41 (95% CI 29.04–138.48) for ultrasound, compared with a sensitivity of 82% (95% CI 72–90), specificity of 88% (95% CI 81–94) and detection OR of 22.95 (95% CI 3.19–165.11) for MRI. The second review (2014)[148] included 18 studies and found that the overall diagnostic accuracy of MRI has a sensitivity of 94.4% (95% CI 86.0–97.9), specificity of 84.0% (95% CI 76.0–89.8) and diagnostic OR of 89.0 (95% CI 22.8–348.1). The latter review also found that MRI has high predictive accuracy in assessing both the depth and topography of placental invasion. Evidence level 2++

The use of intravenous gadolinium injection may increase the sensitivity and specificity of MRI in the diagnosis of the invasive forms of placenta accreta spectrum but the evidence on long-term fetal safety is limited.[149] Furthermore, the experience of the radiologists remains an independent factor in the diagnostic accuracy of MRI. Evidence level 4

7.3 Where should women with placenta accreta spectrum be cared for?

Women diagnosed with placenta accreta spectrum should be cared for by a multidisciplinary team in a specialist centre with expertise in diagnosing and managing invasive placentation. [*New 2018*] ✓

Delivery for women diagnosed with placenta accreta spectrum should take place in a specialist centre with logistic support for immediate access to blood products, adult intensive care unit and NICU by a multidisciplinary team with expertise in complex pelvic surgery. [*New 2018*] D

More data have become available since the last version of this guideline on the specific management of placenta accreta spectrum. Overall, women with accreta placentation should be cared for according to the risks of severe maternal bleeding and premature delivery. Placenta percreta can be associated with major prenatal complications from early in pregnancy, such as uterine rupture[150–152] and bladder involvement with associated life-threatening haemorrhage.[153–155]

Evidence level 4

A 2015 expert review has suggested that caesarean delivery of women at high risk and/or diagnosed prenatally with placenta accreta spectrum, in particular its invasive forms, should occur in a specialist centre with multidisciplinary expertise and experience in managing complex pelvic surgery, and with access to an adult intensive care unit and NICU.[135]

A retrospective cohort study of 77 women with suspected placenta accreta found that women who delivered prior to a planned delivery date were significantly more likely to have had vaginal bleeding and uterine activity when compared with women who had a scheduled delivery.[20] Each episode of antenatal vaginal bleeding is associated with an increased risk of unscheduled delivery (aOR 3.8, 95% CI 1.8–7.8) and the risk increases when associated with preterm prelabour rupture of membranes.

Evidence level 2–

Considering the higher frequency of placenta praevia in the accreta group,[143,156] these results are likely to be influenced by the perinatal complications of placenta praevia. Surveys of healthcare providers in the US and Canada have highlighted widely varied approaches to virtually every aspect of care for placenta accreta spectrum.[157–160] Similarly, a recent online survey completed by members of the expert panel for the perinatal management of placenta accreta spectrum disorders for the International Federation of Gynecology and Obstetrics (FIGO) has found wide variation in global practices.[161]

Evidence level 4

There is increasing evidence from retrospective cohort studies from the USA that women with placenta accreta spectrum diagnosed prenatally, cared for by a specialist multidisciplinary team, are less likely to require large volume blood transfusion and reoperation within 7 days of delivery for bleeding complications compared with women cared for by non-multidisciplinary standard obstetric care without a specific protocol.[21,22,135,138,162,163] Women admitted at 34 weeks of gestation and delivered between 34 and 35 weeks of gestation by a specialist multidisciplinary team have a significantly lower emergency surgery rate than those not cared for by such a team (23% versus 64%; $P = 0.001$) despite a similar median gestational age at delivery [34 (16–39) weeks versus 34 (19–40) weeks; $P = 0.50$, respectively].[21] In addition, maternal outcomes are improved over time with increasing experience within a well-established multidisciplinary team performing two to three cases per month.[22] Very few of these studies provide data on the differential clinical diagnosis between abnormally adherent and abnormally invasive accreta, or detailed pathologic confirmation of the depth and lateral extension of villous myometrial invasion.

Evidence level 2–

7.4 *When should delivery be planned for women with placenta accreta spectrum?*

In the absence of risk factors for preterm delivery in women with placenta accreta spectrum, planned delivery at 35^{+0} to 36^{+6} weeks of gestation provides the best balance between fetal maturity and the risk of unscheduled delivery. [*New 2018*]

✓

Similarly to placenta praevia, clinical factors should be considered when determining the timing of administration of antenatal corticosteroids and the optimal gestational age for delivery in women with placental accreta.[164,165] There are currently no RCTs or well-controlled observational studies to guide best practice in delivery timing of placenta accreta spectrum.

In cases of suspected placenta accreta spectrum, where significant blood loss and caesarean hysterectomy is anticipated, delivery at between 34 and 35 weeks of gestation has been proposed in order to avoid emergency delivery, which still occurs about 20% of the time even in scheduled cases.[164,166] A 2010 decision analysis supports this approach based on the increasing likelihood of emergency delivery as pregnancy goes beyond 34 weeks of gestation.[167]

Evidence level 4

The data of three recent single institution retrospective cohort studies of women with prior caesarean delivery diagnosed prenatally with placenta accreta have indicated that in the absence of risk factors for preterm delivery, it is safe to plan the delivery at 36 weeks of gestation. The first study included 103 women delivered between 1982 and 2002 and found that the mean gestational age at delivery is 33^{+5} weeks of gestation in cases of deep placental invasion (increta and percreta) compared with 35^{+2} weeks of gestation in the superficial adherent group.[168] The second study of 216 women found that urgent delivery for bleeding decreased significantly with advancing gestation.[169] Most women were delivered at 36 weeks of gestation or greater, with nearly 90% in the absence of bleeding complications. The third study of 84 women who had reached 34^{+0} weeks of gestation with a suspected praevia accreta found that those with no risk factors for preterm birth are at low risk for an unscheduled delivery prior to 36 weeks of gestation.[170]

Evidence level 2+

8. Planning delivery of women with suspected placenta accreta spectrum

Once the diagnosis of placenta accreta spectrum is made, a contingency plan for emergency delivery should be developed in partnership with the woman, including the use of an institutional protocol for the management of maternal haemorrhage. [*New 2018*]

Due to a lack of RCTs or well-controlled observational studies, the optimal management of placenta accreta spectrum remains undefined and is determined by the expertise available, the depth and lateral extension of the accreta portion of the placenta, the presence of an associated placenta praevia, radiological findings, the medical and surgical comorbidities, and finally, the accessibility of a regional team focused on these patients.

The main risk associated with the delivery of placenta accreta spectrum is massive haemorrhage and its associated complications, such as coagulopathy, multisystem organ failure and death. Many women with placenta accreta spectrum require massive blood transfusion (8 units or more) and their median platelet count is lowest compared with other causes of massive PPH.[171,172]

Evidence level 2+

A review of 34 studies published between 1977 and 2012, including a total number of 508 617 deliveries and 865 cases of confirmed placenta accreta, found that the most significant maternal risks associated with delivery are the need for postpartum transfusion due to haemorrhage and peripartum hysterectomy. Maternal mortality remains rare, but significantly higher than among matched postpartum controls.[122]

Transfusions in placenta accreta spectrum should be guided by a national and/or institutional protocol for the management of PPH.[87,88]

Evidence level 4

8.1 *What should be included in the consent form for caesarean section in women with suspected placenta accreta spectrum?*

Any woman giving consent for caesarean section should understand the risks associated with caesarean section in general, and the specific risks of placenta accreta spectrum in terms of massive obstetric haemorrhage, increased risk of lower urinary tract damage, the need for blood transfusion and the risk of hysterectomy. ✓

Additional possible interventions in the case of massive haemorrhage should also be discussed, including cell salvage and interventional radiology where available. [*New 2018*] D

Any woman with suspected placenta accreta spectrum should meet with a senior obstetrician in the antenatal period. The different risks and treatment options should have been discussed and a plan agreed, which should be reflected clearly in the consent form and medical record. This should include standard discussion for the caesarean section procedure[83] and whether conservative management of the placenta or proceeding straight to hysterectomy is preferred in the situation where increta or percreta is confirmed at surgery.

Where available, cell salvage should be considered. If the woman refuses donor blood transfusion, it is recommended[88] that she be transferred to a unit with a cell saver.

Evidence level 4

8.2 *What healthcare professionals should be involved?*

The elective delivery of women with placenta accreta spectrum should be managed by a multidisciplinary team, which should include senior anaesthetists, obstetricians and gynaecologists with appropriate experience in managing the condition and other surgical specialties if indicated. In an emergency, the most senior clinicians available should be involved. ✓

Following the previous version of the guideline, the National Patient Safety Agency in collaboration with the RCOG and the Royal College of Midwives set up an expert working group to develop a care bundle for placenta accreta.[173] Six elements of good care were agreed upon. The care bundle was then tested in six units over a 5-month pilot study period and it was found to be both achievable and practical. Clinical outcomes were monitored, confirming the high morbidity associated with this condition.

Evidence level 4

The six elements considered to be reflective of good care are:

- Consultant obstetrician planning and directly supervising delivery.
- Consultant anaesthetist planning and directly supervising anaesthesia at delivery.
- Blood and blood products available.
- Multidisciplinary involvement in preoperative planning.
- Discussion and consent, including possible interventions (such as hysterectomy, leaving the placenta in situ, cell salvage and interventional radiology).
- Local availability of a level 2 critical care bed.

The 2015 MBRRACE report from the Confidential Enquiry into Maternal Deaths in the UK has indicated that despite increasing numbers of women at risk from placenta accreta spectrum following previous caesarean section, only one death occurred in a woman who had a placenta praevia percreta and history of two previous caesarean sections.[174] There were no deaths from unexpected placenta accreta found at caesarean section, suggesting that previous recommendations regarding imaging and preparations for women with placenta praevia and a previous caesarean section have been followed.[175]

Evidence level 2++

A 2015 single centre retrospective cohort study of the effectiveness of a standardised operative approach in 98 cases of histologically confirmed placenta accreta supports the early presence of a gynaecological surgeon and oncologist at delivery and demonstrates that a 'call if needed' approach is not acceptable for these complex cases.[176]

Evidence level 2+

The American College of Obstetricians and Gynecologists (ACOG) guidelines highlight that to enhance patient safety, it is important that the delivery be performed by an experienced obstetric team that includes an obstetric surgeon, with other surgical specialists, such as urologists, general surgeons, and gynaecological surgeons and oncologists, available if necessary.[165]

Evidence level 4

8.3 What anaesthetic is most appropriate for delivery?

The choice of anaesthetic technique for caesarean section for women with placenta accreta spectrum should be made by the anaesthetist conducting the procedure in consultation with the woman prior to surgery.

✓

The woman should be informed that the surgical procedure can be performed safely with regional anaesthesia but should be advised that it may be necessary to convert to general anaesthesia if required and asked to consent to this. [*New 2018*]

D

Both general and regional anaesthetic techniques have been shown to be safe for surgical procedures required for the delivery of placenta accreta spectrum; the judgment of which type of technique to be used should be made on an individual basis.[166]

Evidence level 4

There is insufficient evidence to support one technique over another and there have been no new trials since the previous version of this guideline.

