Admission to hospital during pregnancy is a risk factor for venous thromboembolism. RCOG Green-top Guideline No. 37a addresses thromboprophylaxis during pregnancy, including women at increased risk of haemorrhage.

Evidence level 4

#### 4.4.2 Asymptomatic women (low-lying placenta or placenta praevia)

**Women with asymptomatic placenta praevia or a low-lying placenta in the third trimester should be counselled about the risks of preterm delivery and obstetric haemorrhage, and their care should be tailored to their individual needs.**

✓

**Women with asymptomatic placenta praevia confirmed at the 32-week follow-up scan and managed at home should be encouraged to ensure they have safety precautions in place, including having someone available to help them as necessary and ready access to the hospital.**

✓

Most women with asymptomatic placenta praevia (no bleeding or contractions) can be cared for as outpatients with similar outcomes compared to hospitalisation, and at lower cost.[5] Numerous factors influence the chances of low-lying placenta or placenta praevia persisting until delivery, such as prior caesarean section,[43] the distance between the placental edge and the internal os, and the thickness of the placental edge.[4] These parameters can be useful in tailoring individual woman's needs.

Evidence level 4

### 4.5 *Is there a place for cervical cerclage in women with placenta praevia or a low-lying placenta?*

**The use of cervical cerclage to reduce bleeding and prolong pregnancy is not supported by sufficient evidence to recommend its use outside of a clinical trial.**

✓

The Cochrane systematic review by Nielson[61] on the impact of cerclage in women diagnosed as having, or being likely to have, placenta praevia included two small RCTs (n = 25 and 36) comparing cervical cerclage versus no cerclage. There may be a reduction in preterm births before 34 weeks of gestation (RR 0.45, 95% CI 0.23–0.87), but this evidence is not robust enough to recommend its use outside of clinical trials.

Evidence level 1–

There have been no new trials looking at this issue since the last update of this guideline.

### 4.6 *In what circumstances, and at what gestation, should women be offered antenatal corticosteroids?*

**A single course of antenatal corticosteroid therapy is recommended between $34^{+0}$ and $35^{+6}$ weeks of gestation for pregnant women with a low-lying placenta or placenta praevia and is appropriate prior to $34^{+0}$ weeks of gestation in women at higher risk of preterm birth. [*New 2018*]**

✓

 

A large case–control study found that neonatal morbidities in women with placenta praevia include an increased risk of lower 5-minute Apgar scores, neonatal intensive care unit (NICU) admission, anaemia, respiratory distress syndrome, mechanical ventilation and intraventricular haemorrhage.[64] There is no evidence, however, that neonates born after pregnancies with placenta praevia are more likely to be small for gestational age when compared to non-praevia controls.[65]

Evidence level 2++

Compared with placebo or no treatment with antenatal corticosteroids (betamethasone, dexamethasone or hydrocortisone), antenatal corticosteroids are associated with a reduction in the most serious adverse outcomes related to prematurity, including perinatal death (RR 0.72, 95% CI 0.58–0.89), respiratory distress syndrome (average RR 0.66, 95% CI 0.56–0.77), intraventricular haemorrhage (average RR 0.55, 95% CI 0.40–0.76) and necrotising enterocolitis (RR 0.50, 95% CI 0.32–0.78).[66]

The 2016 RCT has found that the administration of betamethasone to women with a singleton pregnancy at risk for late preterm delivery ($34^{+0}$ to $36^{+5}$ weeks of gestation) significantly reduces the rate of neonatal respiratory complications.[67]

Evidence level 1+

A decision analytic model designed to compare total maternal and neonatal quality-adjusted life years for delivery of women with placenta praevia at $34^{+0}$ to $36^{+6}$ weeks of gestation indicated that corticosteroids administration at $35^{+5}$ weeks of gestation followed by planned delivery at 36 weeks of gestation optimises maternal and neonatal outcomes.[69]

Evidence level 4

### 4.7 *Is there a place for the use of tocolytics in women presenting with symptomatic low-lying placenta or placenta praevia, who are in suspected preterm labour?*

**Tocolysis for women presenting with symptomatic placenta praevia or a low-lying placenta may be considered for 48 hours to facilitate administration of antenatal corticosteroids. [*New 2018*]**

C

**If delivery is indicated based on maternal or fetal concerns, tocolysis should not be used in an attempt to prolong gestation. [*New 2018*]**

C

A systematic review to determine if the prolonged (48 hours or more) use of tocolytics in women with symptomatic preterm placenta praevia improves perinatal outcome identified two retrospective studies (total, n = 217) and one RCT (n = 60).[69] The results of the RCT showed that pregnancy can be prolonged for more than 7 days with continued tocolytics (OR 3.10, 95% CI 1.38–6.96). When combined with the data of retrospective studies, the results did not reach significance (OR 1.19, 95% CI 0.63–2.28). The RCT was judged inadequately compliant with the Consolidated Standards of Reporting Trials statement.

Evidence level 1–

A randomised, double-blind, placebo-controlled multicentre trial including 109 women at $24^{+0}$ to $33^{+6}$ weeks with at least one episode of placenta praevia bleeding and intact membranes has shown that there was no difference in the prolongation of pregnancy between the nifedipine (n = 54) and placebo (n = 55) groups.[70] Adverse perinatal outcomes were comparable between groups.

Evidence level 1+

 

### 4.8 *At what gestation should planned delivery occur?*

**Late preterm ($34^{+0}$ to $36^{+6}$ weeks of gestation) delivery should be considered for women presenting with placenta praevia or a low-lying placenta and a history of vaginal bleeding or other associated risk factors for preterm delivery. [*New 2018*]** **C**

**Delivery timing should be tailored according to antenatal symptoms and, for women presenting with uncomplicated placenta praevia, delivery should be considered between $36^{+0}$ and $37^{+0}$ weeks of gestation. [*New 2018*]** **C**

As the risk of major haemorrhage increases rapidly after 36 weeks of gestation, expert opinions have highlighted that decisions regarding timing of delivery must be individualised and suggest that on the basis of the limited data available, women with uncomplicated placenta praevia should undergo scheduled birth by caesarean section between 36 and 37 weeks of gestation.[68,71,72] Evidence level 4

The risks of bleeding, labour, or bleeding and labour leading to the need for emergency delivery increase with advancing gestational age, whereas the risks of morbidity associated with prematurity decrease.[4,5] The risk of an emergent bleed associated with placenta praevia has been reported to be 4.7% by 35 weeks of gestation, 15% by 36 weeks of gestation, 30% by 37 weeks of gestation and 59% by 38 weeks of gestation.[73] Evidence level 2–

A US population-based cohort study using the Centers for Disease Control and Prevention's Linked Birth and Infant Death data files has evaluated the effects of delivering placenta praevia at 35, 36 and 37 weeks of gestation on the risk of several neonatal outcomes.[74] Compared with neonates born at 38 weeks of gestation, those delivered at 35, 36 and 37 weeks of gestation have no greater odds of meconium passage, fetal distress, fetal anaemia, neonatal seizures, increased ventilator needs or infant death at 1 year. However, aOR odds of 5-minute Apgar scores of less than 7 are greater at 35 and 36 weeks of gestation (aOR 3.33, 95% CI 1.71–6.47; and aOR 2.17, 1.11–4.22, respectively) as are odds of NICU admission rates (aOR 2.25, 95% CI 2.01–2.50; and aOR 1.57, 1.38–1.76, respectively). Evidence level 2+

### 4.9 *In what situations is vaginal delivery appropriate for women with a low-lying placenta?*

**In women with a third trimester asymptomatic low-lying placenta the mode of delivery should be based on the clinical background, the woman's preferences, and supplemented by ultrasound findings, including the distance between the placental edge and the fetal head position relative to the leading edge of the placenta on TVS. [*New 2018*]** **D**

Women presenting with a placental edge less than 20 mm from the internal os in the third trimester are more likely to need delivery by caesarean section when the placental edge is thicker (over 10 mm)[75,76] and/or contains a sponge-like echo[77] or marginal 'sinus'.[78] These additional ultrasound features are poorly defined, not routinely assessed in UK practice and the success rates of vaginal delivery when the placental edge is between 10 and 20 mm from the internal os vary widely (56% and 93%, respectively).[79–82] The corresponding studies are small, observational and retrospective, making a recommendation for a specific mode of delivery based on ultrasound findings difficult. Evidence level 2–

 

## 5. Optimising the delivery of women with placenta praevia

**Prior to delivery, all women with placenta praevia and their partners should have a discussion regarding delivery. Indications for blood transfusion and hysterectomy should be reviewed and any plans to decline blood or blood products should be discussed openly and documented.** ✓

**Placenta praevia and anterior low-lying placenta carry a higher risk of massive obstetric haemorrhage and hysterectomy. Delivery should be arranged in a maternity unit with on-site blood transfusion services and access to critical care.** D

**Women with atypical antibodies form a particularly high-risk group and the care of these women should involve discussions with the local haematologist and blood bank.** D

**Prevention and treatment of anaemia during the antenatal period is recommended for women with placenta praevia or a low-lying placenta as for any pregnant woman.** D

General procedures for discussing and obtaining consent for caesarean section are described in detail in RCOG Consent Advice No. 7: *Caesarean section*.[83] Evidence level 4

Women having a caesarean section for placenta praevia are at increased risk of blood loss of more than 1000 ml compared with women having a caesarean section for other indications (RR 3.97, 95% CI 3.24–4.85).[84] Women with anterior placenta are at increased risk of blood loss.[85] Placenta praevia covering the internal cervical os and anterior placentation are independent risk factors (OR 4.1 and OR 3.5, respectively) for massive haemorrhage during caesarean section.[85] A US case–control study from the National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units (MFMU) Network Cesarean Section Registry has shown that maternal haemorrhagic morbidity is more common in women with praevia (19% versus 7%, adjusted RR 2.6, 95% CI 1.9–3.5) and the main factors associated with maternal haemorrhage include pre-delivery anaemia, thrombocytopenia, diabetes and magnesium use.[86] Evidence level 2++

The risk of massive haemorrhage together with the possibility of needing a blood transfusion has been estimated to be approximately 12 times more likely in caesarean section for placenta praevia than in caesarean delivery for other indications.[87,88] Similarly to uncomplicated pregnancies, women with placenta praevia should be screened for anaemia and investigated if their haemoglobin levels are outside the normal UK range (110 g/l at first visit and 105 g/l at 28 weeks of gestation).[36] Iron supplementation should be implemented if indicated.

For women at high risk of emergency transfusion, such as those presenting with placenta praevia and with no clinically significant alloantibodies, it has been recommended that group and screen samples should be sent once a week to exclude or identify any new antibody formation and to keep blood available if necessary for delivery. However, this should be at the discretion of the team responsible and managed according to local facilitites.[88] Evidence level 4

 

## 6. Delivery for women with placenta praevia or a low-lying placenta

### 6.1 *What grade of obstetrician and anaesthetist should attend the caesarean delivery of a woman with placenta praevia?*

**As a minimum requirement for a planned caesarean section for a woman with placenta praevia, the surgical procedure should be carried out by an appropriately experienced operator. [*New 2018*]** ✓

**In cases of planned caesarean section for placenta praevia or a low-lying placenta, a senior obstetrician (usually a consultant) and senior anaesthetist (usually a consultant) should be present within the delivery or theatre suite where the surgery is occurring.** ✓

**When an emergency arises, the senior obstetrician and senior anaesthetist should be alerted immediately and attend urgently.** ✓

Maternal complications at caesarean section increase when the primary surgeon is a trainee rather than an experienced surgeon.[89] Placenta praevia is often associated with additional complications, including fetal malpresentation (transverse or breech presentation) requiring complex intraoperative manoeuvres to deliver the baby.[90] Evidence level 4

### 6.2 *What anaesthetic procedure is most appropriate for women having a caesarean section for placenta praevia?*

**Regional anaesthesia is considered safe and is associated with lower risks of haemorrhage than general anaesthesia for caesarean delivery in women with placenta praevia or a low-lying placenta. Women with anterior placenta praevia or a low-lying placenta should be advised that it may be necessary to convert to general anaesthesia if required and asked to consent to this. [*New 2018*]** D

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

An RCT of regional versus general anaesthesia for placenta praevia, including women with placenta accreta, has indicated that blood transfusion requirements (although not estimated blood loss) are greater in the general anaesthetic group.[91] Evidence level 1−

A 4-year observational study at 19 US academic centres of women undergoing caesarean delivery found that the risk factors for haemorrhage-related morbidity are increased in those undergoing general anaesthesia.[92] Evidence level 2−

The recent case–control study from the NICHD/MFMU Network Cesarean Section Registry found general anaesthesia to be one of the main factors associated with maternal haemorrhage in women with placenta praevia.[86] Evidence level 2++

 