

Editorial

Controversies in family planning: management of second-trimester pregnancy terminations complicated by placenta accreta

1. Case

The following case has come to the attention of our service: a 32-year-old, G2P1001, with a history of one cesarean section, presented at 17–18 weeks' gestation with preterm premature rupture of membranes (PPROM), heavy bleeding and a placenta previa highly suspicious for an accreta on MRI. She received 2 units of packed red cells upon admission to another service and is now in stable condition and in need of a termination of pregnancy. I am curious as to people's experiences and management strategies in these cases. Any thoughts or literature you can point us toward would be appreciated.

2. Respondent 1

I would keep her in-house, place laminaria and on the day of procedure, prepare ahead of time for uterine artery embolization if she bleeds. Work with interventional radiology (IR) to place catheters in the appropriate vessels ahead of time and make sure they are ready and available for an emergency. If you have no IR support, have a couple of 60-cc Foley balloons ready (or a Bakri if your institution stocks it) in case she bleeds. Alternatively, if she does not desire future childbearing, have a hysterectomy tray ready and a very low threshold to perform a laparotomy.

3. Respondent 2

If there is any reason to anticipate a difficult dissection near the urinary tract, preoperative catheterization of one or both ureters for ease of anatomical identification can be very helpful. Indications for ureteral catheterization could include prior abdominal scarring (due to prior cesarean or to prior PID), large serous fibroids or morbid obesity.

4. Respondent 3

If she does not desire future fertility, you can plan for a gravid hysterectomy.

5. Respondent 4

We had a case of a woman, at 14 weeks' gestation, PPROM, a placenta previa and one previous cesarean section, who became rapidly unstable due to an undiagnosed accreta/increta that required hysterectomy. Interventional radiology was not involved in this case, as it was a surprise and there was no time to arrange this on site. All conservative measures failed. The only thing that stopped the bleeding was when one of the surgeons held the uterus tightly between the abdominal hand and the vaginal hand, tamponading the site where the placenta had been. The second case we had was a pregnancy at 16 weeks' gestational age with huge vascular lakes seen by sonography. This patient had no previous cesarean section. She underwent preoperative uterine artery embolization but despite that had unmanageable hemorrhage after the fetus was removed and underwent emergent hysterectomy. Pathologic examination showed a placenta accreta. In both cases, we worked as a team with the gynecologic oncologists to perform the difficult hysterectomies as quickly as possible. Both women received substantial blood products.

6. Case conclusion

After stabilization, the team managing this patient decided to proceed with medical management. On hospital day 2, after initial admission bleeding stopped and her hematocrit stabilized with transfusions. She received a fetal intracardiac injection of 5 mEq of potassium chloride and 84.5 mg i.m. methotrexate. Approximately 24 h later, she delivered the fetus. Delivery was followed by heavy bleeding with the placenta in situ. She was treated with uterine artery embolization (UAE) and blood transfusion and stabilized. She spontaneously delivered the placenta within 24 h of the delivery of the fetus with no subsequent excessive bleeding.

7. Review

Malplacentation is a pathologic condition that occurs when the placenta abnormally adheres to the myometrium

and includes placenta accreta, percreta and increta. It can be a cause of massive hemorrhage prior to or at the time of delivery or termination and is the leading cause of obstetric hysterectomy and is associated with substantial maternal morbidity [1]. The incidence of placenta accrete in the United States has risen substantially over the past 30 years from approximately 0.8 per 1000 deliveries in the 1980s to 3 per 1000 deliveries in the past decade [2] and is largely due to the rapid increase in the rate of cesarean section to 30.2% in 2005 [3]. The likelihood of encountering placenta accreta in a second-trimester pregnancy is thought to be the same as that of a term pregnancy [4]. The related body of literature consists of retrospective chart reviews, case reports, case series and suggested guidelines on approaches to accreta management in the late third trimester of pregnancy. There is little published that addresses the nuances of management of placenta accreta in the setting of second-trimester abortion. Therefore, many of the strategies used in the second trimester are likely based on extrapolation from and adaptation of late third-trimester management options and postpartum and postabortal hemorrhage management protocols.

Risk factors for an abnormally adherent placenta include prior cesarean section, presence of placenta previa, other uterine surgery, multiparity, advanced maternal age, uterine anomalies, hypertensive disorders of pregnancy and smoking [2]. The risk of placenta accreta in women who have had one or two prior cesarean sections and have a placenta previa is 11% and 40%, respectively. The risk of encountering an accreta in a woman with no prior cesarean section is 0.03% and increases to 3.3% if previa is present even without the history of a cesarean section [2]. The majority of women with placenta accreta (95%) have identifiable risk factors [1]. Placenta accreta is initially diagnosed by ultrasound, with transvaginal approach and availability of color Doppler increasing the accuracy of diagnosis. The presence of placental lacunae and a very thin or absent hypoechoic myometrial retroplacental zone are both predictors of placenta accreta [1]. The addition of color Doppler to a transvaginal ultrasound allows for a higher specificity in diagnosis of a placenta accreta and in the assessment of depth of invasion. Turbulent blood flow extending from the placenta into the surrounding tissues and vessels to and from the myometrium can be well visualized with color Doppler and are both highly suspicious for placental vessels of an accreta [1]. MRI is indicated when ultrasound and color Doppler are inconclusive. MRI allows for clear visualization of posterior and lateral uterine invasion, parametrial invasion and bladder invasion. The sensitivity and specificity for ultrasound in the detection of accreta has been reported as 77% and 96%, respectively, and 88% and 100% for MRI [1]. Accreta can be detected by pelvic ultrasound as early as the first trimester [5], and if accreta is not suspected but previa is seen, a repeat ultrasound later in the pregnancy is recommended.

When malplacentaion is encountered in a second-trimester abortion case, management is dictated by whether or not the accreta was suspected before the uterine evacuation is initiated or only at the time of procedure. There are little data specifically to address accreta encountered in second-trimester spontaneous or induced abortion, but there are a few case reports or small case series that report on management strategies used and subsequent outcomes. In all cases identified in the literature, the abortion was accomplished via dilation and evacuation (D&E) or hysterectomy [4,6–8]. No cases of medical induction abortion were identified. If the accreta is not diagnosed preprocedurally, the management strategy is that for emergency postabortal hemorrhage. When there is a preprocedure diagnosis, confirmed or suspected, there is time to consider all surgical and medical options, counsel the patient regarding all of these options, convene a multidisciplinary team to care for the patient and prepare for potential complications.

To prepare for potential hemorrhage at the time of second-trimester abortion with suspected accreta, preoperative UAE has been used with mixed results. In one study examining the role of UAE for postabortion hemorrhage, prophylactic UAE was performed in one case of accreta, and ultimately, hysterectomy was required [6]. In another case series addressing the use of UAE for postabortal hemorrhage, eight women at risk for postabortal hemorrhage secondary to diagnosed or suspected accreta received UAE prior to their abortion procedure [7]. One woman had a planned hysterectomy without attempted D&E and had an 800-mL estimated blood loss. Of the remaining cases, one was a first trimester case that utilized UAE with concomitant methotrexate injection; this patient did not require a blood transfusion or additional surgery. Of the remaining six cases, all were in the second trimester and three had successful D&Es without requiring additional surgery and three underwent D&E followed by emergent hysterectomy for uncontrolled hemorrhage with an average estimated blood loss of 3600 mL [7]. In the case of term or near-term pregnancies, balloon catheters are placed in the uterine arteries prior to delivery but not inflated until after the fetus is delivered, requiring active intraoperative participation by IR [1]. In the case of a second-trimester procedure, UAE can be completed prior to the procedure, potentially decreasing the likelihood of hemorrhage and avoiding the emergent nature of IR's role as well as possibly avoiding hysterectomy for definitive treatment of postabortal hemorrhage [7].

Alternatively, IR can be consulted to be on standby in case of hemorrhage when accreta is suspected prior to second-trimester abortion. When UAE was performed after second-trimester abortion for massive hemorrhage due to accreta in a series of 7, it was successful in avoiding hysterectomy in 3 (43%) of 7 cases [6].

If accreta is encountered intraoperatively and cannot be resolved quickly with placental extraction and fertility is desired, placement of a Bakri balloon or Foley catheter

balloon to provide compression management of the hemorrhage can be attempted [1,6]. Hemorrhage prevention strategies used in second-trimester cases, including uterotonics and uterine massage, should be employed [6]. If none of the steps for postabortal hemorrhage are successful and UAE is unavailable or unsuccessful, hysterectomy should be performed.

Other conservative measures that have been reported as management strategies for placenta accreta to avoid hysterectomy include leaving the placenta in situ uninterrupted, the administration of methotrexate to theoretically hasten the absorption or expulsion of the retained placenta and the administration of mifepristone and misoprostol, also to theoretically hasten the reabsorption or expulsion of the placenta. Methotrexate's mechanism of action is to inhibit rapidly dividing cells, and given that the placenta stops dividing once a fetus is delivered, it seems unlikely that methotrexate would have substantial effect on the retained placenta [9]. There is no standard recommended dosing of methotrexate for either second-trimester or term cases of retained placenta secondary to accreta, and there exist potential serious complications from the administration of methotrexate, including gastrointestinal complications, myelosuppression, hepatotoxicity and renal failure. Outcomes do not appear to be significantly different in cases treated conservatively with or without methotrexate [1], and there is no convincing evidence at this point that methotrexate should be used routinely in cases of conservative management of the adherent placenta [9].

The use of mifepristone and misoprostol to manage retained adherent placenta after term deliveries has recently been described in two case reports. In both cases, there was successful expulsion of the retained placenta several weeks after cesarean delivery with placenta left in situ, and there were no complications attributed to the mifepristone or misoprostol [10]. Mifepristone and misoprostol have fewer potential complications than methotrexate, and while their use has not been described as a primary approach to second-trimester abortion with a known accreta, this may offer an alternative to conservative management with methotrexate, although further study is needed before a conclusion can be made.

Hysterectomy for treatment of accreta at the time of second-trimester abortion can either be planned or emergent due to massive hemorrhage. Women who no longer desire fertility can be counseled regarding all of their options, including a planned hysterectomy. Women need to be counseled thoroughly regarding the risks and benefits of hysterectomy, including the risks of emergent obstetric hysterectomy vs. planned hysterectomy and the likelihood of success of conservative measures based on the little data that exist. Women who undergo emergency obstetric hysterectomies are more likely to have greater blood loss, receive blood transfusions and have intraoperative hypotension than women who undergo planned obstetric hysterectomies [1]. In women with complex medical

histories undergoing abortions for medical indications, with suspected adherent placenta, it may be prudent to perform a planned hysterectomy over D&E and possible subsequent massive hemorrhage, as this subset of women may not be able to sustain the rapid blood loss associated with the delay [8].

Placenta accreta is an extremely serious condition that often leads to severe complications at the time of abortion or delivery. In the case of second-trimester abortion, there are little data to support evidence-based management guidelines. However, the experiences reported from second-trimester abortion cases in the setting of adherent placenta, combined with the commonalities from the data existing for third-trimester or term deliveries can be used to inform decision-making around second-trimester abortions in the setting highly suspicious for accreta. If the accreta is known to be present and fertility is not desired, the safest way to proceed may be with a planned gravid hysterectomy. If fertility is desired, either prophylactic UAE prior to D&E or D&E with the ability to efficiently access IR and UAE if the uncontrollable hemorrhage does ensue despite the standard steps of uterotonics and tamponade can be considered. Currently, there is no evidence that strongly supports the use of methotrexate either prior to D&E or after D&E if the placenta is retained or in lieu of D&E. Mifepristone and misoprostol have been used successfully in two cases of retained adherent placenta at term and may be demonstrated to have a useful role in the management of second-trimester abortion with accreta after further study.

Regardless of the decision to proceed with definitive or conservative treatment, it is most important that second-trimester abortion cases in which accreta is highly suspected take place in hospital settings in which a multidisciplinary team can be assembled. Ideally, the team is assembled preoperatively and includes participants from family planning, gynecology oncology, anesthesia, IR, blood bank and nursing staff to maximize patient safety and outcome.

Eva Lathrop

*Department of Gynecology and Obstetrics
Emory University School of Medicine
Atlanta, GA 30303, USA
E-mail address: elathro@emory.edu*

Courtney Schreiber

*University of Pennsylvania School of Medicine
Philadelphia, PA 19104, USA*

References

- [1] Doumouchtsis S, Arulkumaran S. The morbidly adherent placenta: an overview of management options. *Acta Obstet Gynecol* 2010;89: 1126–33.
- [2] SMFM Clinical Opinion. Placenta accreta. *Am J Obstet Gynecol* 2010; 203:430–9.

- [3] American College of Obstetricians and Gynecologists. ACOG Committee opinion. Cesarean delivery on maternal request. Number 2007:394.
- [4] Rashbaum W, Gates EJ, Jones J, Goldman B, Morris A, Lyman W. Placenta accreta encountered during dilation and evacuation in the second trimester. *Obstet Gynecol* 1995;85:701–3.
- [5] Yang JI, Kim HY, Kim HS, Ryu HS. Diagnosis in the first trimester of placenta accreta with previous cesarean section. *Ultrasound Obstet Gynecol* 2009;34:116–8.
- [6] Steinauer JE, Diedrich JT, Wilson MW, Darney PD, Vargas JE, Drey EA. Uterine artery embolization in postabortion hemorrhage. *Obstet Gynecol* 2008;111:881–9.
- [7] Borgatta L, Chen AY, Reid SK, Stubblefield PG, Christensen DD, Rashbaum WK. Pelvic embolization for treatment of hemorrhage related to spontaneous and induced abortion. *Am J Obstet Gynecol* 2001;185:530–6.
- [8] Tocce K, Worth Thomas V, Teal S. Scheduled hysterectomy for second-trimester abortion in a patient with placenta accreta. *Obstet Gynecol* 2008;112:568–70.
- [9] Hays A, Worely K, Roberts S. Conservative management of placenta percreta. *Obstet Gynecol* 2008;112:425–7.
- [10] Morgan M, Atalla R. Mifepristone and misoprostol for the management of placenta accreta—a new alternative approach. *Br J Obstet Gynecol* 2009;116:1002–3.