

Steps to minimize morbidity from unanticipated placenta accreta spectrum

Appropriate planning for placenta accreta spectrum can optimize management, facility transfer when needed, and patient outcomes

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CASE Placenta accreta spectrum following uncomplicated vaginal delivery

Imagine you are an obstetric hospitalist taking call at a level II maternal level of care hospital. Your patient is a 35-year-old woman, gravida 2, para 1, with a past history of retained placenta requiring dilation and curettage and intravenous antibiotics for endomyometritis. This is an in vitro fertilization pregnancy that has progressed normally, and the patient labored spontaneously at 38 weeks' gestation. Following an uncomplicated vaginal delivery, the placenta has not delivered, and you attempt a manual placental extraction after a 40-minute third stage. While there is epidural analgesia and you can reach the uterine fundus, you are unable

to create a separation plane between the placenta and uterus.

What do you do next?

Placenta accreta spectrum (PAS) includes a broad range of clinical scenarios with abnormal placental attachment as their common denominator. The condition has classically been defined pathologically, with chorionic villi attaching directly to the myometrium ("accreta") or extending more deeply into the myometrium ("increta") or attaching to surrounding tissues and structures ("percreta").¹ It is most commonly encountered in patients with low placental implantation on a prior cesarean section scar; indeed, placenta previa, particularly with a history of cesarean delivery, is the strongest risk factor for the development of PAS.² In addition to abnormal placental attachment, these placental attachments are often hypervascular and can lead to catastrophic hemorrhage if not managed appropriately. For this reason, patients with sonographic or radiologic signs of PAS should be referred to specialized centers for further workup, counseling, and delivery planning.³

Although delivery at a specialized PAS center has been associated with improved patient outcomes,⁴ not all patients with PAS will be identified in the antepartum period. Ultrasonography may miss up to 40% to 50% of PAS cases, particularly when the sonologist



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TABLE Published clinical definitions of PAS⁷⁻⁹

	FIGO	IS-PAS	PACCRETA
Vaginal delivery	Abnormally adherent placenta with manual removal Heavy bleeding from implantation site requires mechanical or surgical procedures	Adherent placenta with no plane of separation, as assessed by a senior operator	Adherent placenta with no cleavage plane, or Forced placental removal leads to major bleeding without another source
Laparotomy (any one criterion)	Distended, bluish uterus over placental bed Hypervascularity “Dimple sign” with cord traction Abnormal adherence as with vaginal delivery	Bluish bulge over distended placental site Neovascularity “Dimple sign” with cord traction Adherence as with vaginal delivery	Visual signs of PAS in patients with preoperative suspicion, or Abnormal adherence as with vaginal delivery
Additional notes	If successful manual removal, then likely not PAS	If spontaneous separation, then not PAS	

Abbreviations: FIGO, International Federation of Gynecology and Obstetrics; IS-PAS, International Society for Placenta Accreta Spectrum; PACCRETA, Placenta Accreta Study; PAS, placenta accreta spectrum.

has not been advised to look for the condition,⁵ and not all patients with PAS will have a previa implanted in a prior cesarean scar. A recent study found that these patients with nonprevia PAS were identified by imaging less than 40% of the time and were significantly less likely to be managed by a specialized team of clinicians.⁶ Thus, it falls upon every obstetric care provider to be aware of this diagnosis, promptly recognize its unanticipated presentations, and have a plan to optimize patient safety.

Step 1: Recognition

While PAS is classically defined as a pathologic condition, no clinician has the luxury of histology in the delivery room. Researchers have variously defined PAS clinically, with the common trait of abnormal placental adherence.⁷⁻⁹ The **TABLE** compares published definitions that have been used in the literature. While some definitions include hemorrhage, no clinician wants to induce significant hemorrhage to confirm their patient’s diagnosis. Thus, practically, the clinical PAS diagnosis comes down to abnormal placental attachment: If it is apparent that some or all of the placenta will not separate from the uterine wall with digital manipulation or careful

curettage, then PAS should be suspected, and appropriate steps should be taken before further removal attempts.

At cesarean delivery, the PAS diagnosis may be aided by visual cues. With placenta previa, the lower uterine segment may bulge and take on a bluish hue, distinctly different from the upper healthy myometrium. PAS may also manifest with neovascularization, particularly behind the bladder. As with vaginal births, the placenta will fail to separate after the delivery, and controlled traction on the umbilical cord can produce a “dimple sign,” or visible myometrial retraction at the site of implantation (**FIGURE 1**). Finally, if the diagnosis is still in doubt, attempts to gently form a cleavage plane between the placenta and myometrium will be unsuccessful if PAS is present.⁸

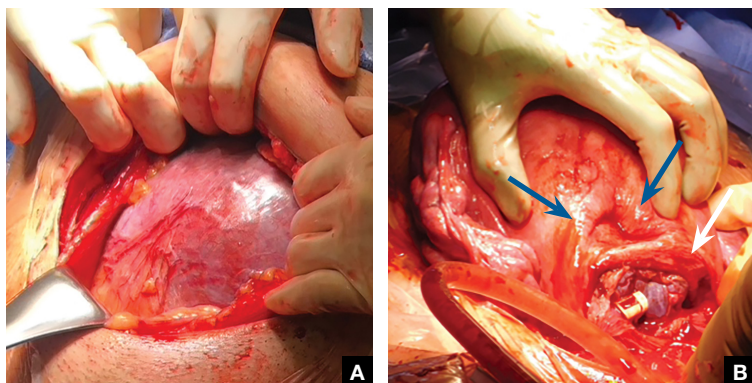
Step 2: Initial management—pause, plan

Most importantly, do not attempt to forcibly remove the placenta. It can be left attached to the uterus until appropriate resources are secured. Efforts to forcibly remove an adherent placenta may well lead to major hemorrhage, and thus it falls on the patient’s care

FAST TRACK

Practically, the clinical PAS diagnosis comes down to abnormal placental attachment. Suspect PAS if some or all of the placenta will not separate from the uterine wall with digital manipulation or careful curettage.

FIGURE 1 Placenta accreta spectrum



(A): A uterus with confirmed grade 1 placenta accreta spectrum that was not identified by ultrasound. The lower uterine segment has a bluish bulge with fine neovascularization around the bladder. (B): The “dimple sign” (blue arrows) demonstrated with placenta accreta spectrum. The placental edge and nonadherent portions of placenta can be seen through the open low transverse uterine incision (white arrow).

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Although every maternal care unit should have a protocol for managing PAS, patients should be managed at level III or IV centers

team to pause and plan for PAS care at this point. **FIGURE 2** displays an algorithm for patient management. Further steps depend primarily on whether or not the patient is already hemorrhaging. In a stable situation, the patient should be counseled regarding the abnormal findings and the suspected PAS diagnosis. This includes the possibility of further procedures, blood transfusion, and hysterectomy. Local resources, including nursing, anesthesia, and the blood bank, should be notified about the situation and for the potential to call in specialized services. If on-site experienced specialists are not available, then patient transfer to a PAS specialty center should be strongly considered. While awaiting additional help or transport, the patient requires close monitoring for gross and physiologic signs of hemorrhage. If pursued, transport to a PAS specialty center should be expedited.

If the patient is already hemorrhaging or unstable, then appropriate local resources must be activated. At a minimum, this requires an obstetrician and anesthesiologist at the bedside and activation of hemorrhage protocols (eg, a massive transfusion protocol). If blood products are unavailable, consider whether they can be transported from other nearby blood banks, and start that process

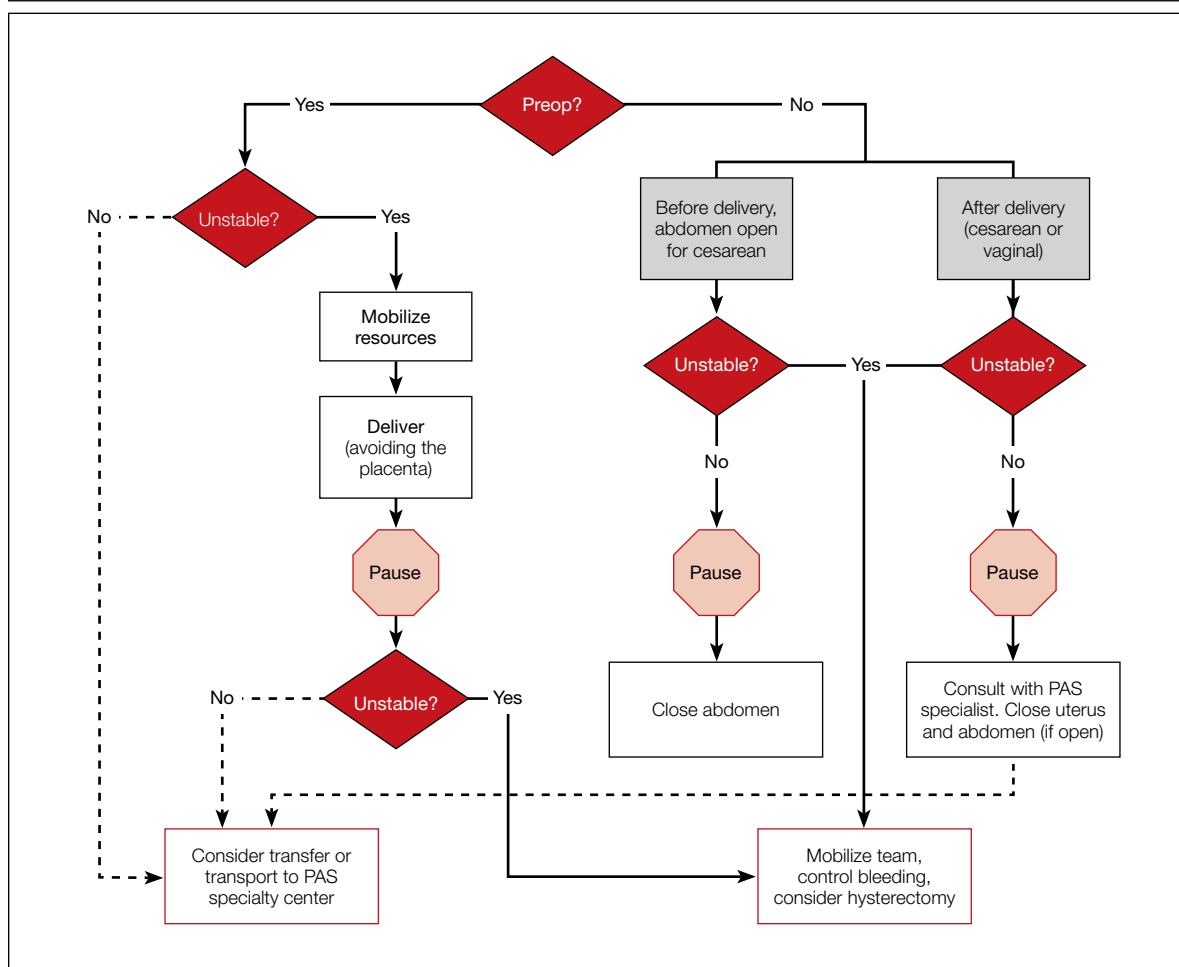
promptly. Next, contact backup services. Based on local resources and clinical severity, this may include maternal-fetal medicine specialists, pelvic surgeons, general and trauma surgeons, intensivists, interventional radiologists, and transfusion specialists. Even if the patient cannot be safely transferred to another hospital, the obstetrician can call an outside PAS specialist to discuss next steps in care and begin transfer plans, assuming the patient can be stabilized. Based on the Maternal Levels of Care definitions published by the American College of Obstetricians and Gynecologists and the Society of Maternal-Fetal Medicine,¹⁰ patients with PAS should be managed at level III or level IV centers. However, **delivery units at every level of maternal care should have a protocol for securing local help and reaching an appropriate consultant if a PAS case is encountered.** Know which center in your area specializes in PAS so that when an unanticipated case arises, you know who to call.

Step 3: Ultimate management—mobilize and prepare for bleeding

If diagnosis occurs intraoperatively at a PAS specialty center, or if safe transport is not possible, then the team should mobilize for the possibility of hysterectomy and prepare for massive bleeding, which can occur regardless of the treatment chosen. Many patients require or will opt for hysterectomy. For example, a patient who has finished childbearing may consent to a hysterectomy upon hearing she likely has PAS. In patients with suspected PAS who are actively hemorrhaging or are unstable, hysterectomy is required.

Uterine conservation may be considered in stable patients who strongly desire future childbearing or uterine retention. This often requires leaving densely adherent placental tissue in situ and thus requires thorough counseling regarding the risks of delayed hemorrhage, infection, and emergent hysterectomy.¹¹ This may not be desirable or safe for some patients, so informed consent is crucial. In such cases, we strongly recommend consultation with a PAS specialist, even if that

FIGURE 2 Algorithm for managing placenta accreta spectrum



requires immediate control of the placental blood supply (such as with arterial embolization), and transfer to a PAS specialty center.

Clinical scenarios

Vaginal delivery

The patient in the opening case was never expected to have PAS given her normal placental location and absence of a uterine scar. Even though she had some possible PAS risk factors (past retained placenta with instrumentation and in vitro fertilization), her absolute risk for the condition was low. Nevertheless, inability to create a separation plane should be considered PAS until proven otherwise. Although at this point many obstetricians would move to an operating

room for uterine curettage, we recommend that the care team pause and put measures in place for possible PAS and hemorrhage. This involves notification of the blood bank, crossmatching of blood products, alerting the anesthesia team, and having a clear plan in place should a major hemorrhage ensue. This may involve use of balloon tamponade, activation of an interventional radiology team, or possible laparotomy with arterial ligations or hysterectomy. Avoidance of a prolonged third stage should be balanced against the need for preparation with these cases.

It is important for clinicians to bear in mind, and communicate to the patient, that hysterectomy is the standard of care for PAS. Significant delays in performing an indicated hysterectomy can lead to coagulopathy and

patient instability. Timeliness is key; we find that delays in the decision to perform an indicated hysterectomy are often at the root of the cause for worsened morbidity in patients with unanticipated PAS. With an unscarred uterus and no placenta previa, a postpartum hysterectomy can be performed by many obstetrician-gynecologists experienced in this abdominal procedure.

Cesarean delivery

Undiagnosed PAS may present at cesarean delivery with or without placenta previa and a prior uterine scar. With this combination, PAS is often visually apparent upon opening the abdominal cavity (TABLE and FIGURE 1). Such surgical findings call for a clinical pause, as further actions at this point can lead to catastrophic hemorrhage. The obstetrician should consider a series of questions:

1. Are appropriate surgical and transfusion resources immediately available? If yes, they should be notified in case they are needed urgently. If not, then the obstetrician should ask whether the delivery must occur now.

2. Is this a scheduled delivery with a stable patient and fetus? If so, then closing the abdominal incision, monitoring the patient and fetus, and either transferring the patient to a PAS center or awaiting appropriate local specialists may be a lifesaving step.

3. Is immediate delivery required? If the fetus must be delivered, then it is imperative to create a hysterotomy out of the way of the placenta. Disrupting the adherent placenta with either an incision or manual manipulation may trigger a massive hemorrhage and should be avoided. This may require rectus muscle transection or creating a “T” incision on the skin to reach the uterine fundus and creating a hysterotomy over the top or even the back of the uterus. Once the fetus is delivered and lack of uterine hemorrhage confirmed (both abdominally and vaginally), the hysterotomy and abdomen can be closed with anticipation of urgent patient transfer to a PAS team or center.

4. Is the patient hemorrhaging? If the patient is hemorrhaging and closure is not

an option, then recruitment of local emergent surgical teams is warranted, even if that requires packing the abdomen until an appropriate surgeon can arrive.

Diagnosis at cesarean delivery requires expedited and complex patient counseling. A patient who is unstable or hemorrhaging needs to be told that hysterectomy is lifesaving in this situation. For patients who are stable, it may be appropriate to close the abdomen and leave the placenta in situ, perform comprehensive counseling, and assess the possibility of transfer to a specialty center.

Summary

All obstetric care providers should be familiar with the clinical presentation of undiagnosed accreta spectrum. While hemorrhage is often part of the diagnosis, recognition of abnormal placental adherence and PAS-focused management should ideally be undertaken before this occurs. Once PAS is suspected, avoidance of further placental disruption may save significant morbidity, even if that means leaving the placenta attached until appropriate resources can be obtained. A local protocol for consultation, emergency transfer, and deployment of local resources should be part of every delivery unit’s emergency preparedness plan.

CASE Outcome

This patient is stabilized, with an adherent, retained placenta and no signs of hemorrhage. You administer uterotonics and notify your anesthesiologist and backup obstetrician that you have a likely case of accreta spectrum. A second intravenous line is placed, and blood products are crossmatched. The closest level III hospital is called, and they accept your patient for transfer. There, she is counseled about PAS, and she expresses no desire for future child-bearing. After again confirming no placental separation in the operating room, the patient is moved immediately to perform laparotomy and total abdominal hysterectomy through a Pfannenstiel incision. She does not require a blood transfusion, and the pathology returns with grade I placenta accreta spectrum. ●

FAST TRACK

If PAS is visually apparent at CD, pause, and consider available resources and whether or not the patient is stable before moving forward

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