

PATIENT SAFETY SERIES

Center of excellence for placenta accreta

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Placenta accreta occurs when the placenta abnormally adheres to underlying myometrium, often where there is an absence of decidua basalis. Depending upon the depth of villous invasion, abnormal placental attachment is defined as placenta accreta, increta, and percreta. This article, however, will use the term “accreta” to refer to the entire spectrum of an abnormally adherent placenta. The condition can lead to massive hemorrhage and associated morbidity such as multisystem organ failure, acute respiratory distress syndrome, disseminated intravascular coagulation, and death.^{1,2} The frequency of placenta accreta has steadily increased over the past 40 years, increasing in the United States from <1 in 2000 in the 1980s to currently about 1 in 500 pregnancies.^{1,3} Placenta accreta has become the most common reason for cesarean hysterectomy in resource-rich countries.^{4,5} This increase is thought to be due to a concomitant rise in the rate of cesarean delivery. Indeed, prior cesarean delivery is the strongest risk factor for accreta, with an increasing risk noted with increasing numbers of prior cesareans.⁶ The risk is especially high in the setting of prior cesarean delivery and placenta previa.⁶

The optimal management of placenta accreta remains uncertain with regard to the timing of delivery and optimal

Placenta accreta spectrum is one of the most morbid conditions obstetricians will encounter. The incidence has dramatically increased in the last 20 years. The major contributing factor to this is believed to be the increase in the rate of cesarean delivery. Despite the increased incidence of placenta accreta, most obstetricians have personally managed only a small number of women with placenta accreta. The condition poses dramatic risk for massive hemorrhage and associated complication such as consumption coagulopathy, multisystem organ failure, and death. In addition, there is an increased risk for surgical complications such as injury to bladder, ureters, and bowel and the need for reoperation. Most women require blood transfusion, often in large quantities, and many require admission to an intensive care unit. As a result of indicated, often emergent preterm delivery, many babies require admission to a neonatal care intensive care unit. Outcomes are improved when delivery is accomplished in centers with multidisciplinary expertise and experience in the care of placenta accreta. Such expertise may include maternal-fetal medicine, gynecologic surgery, gynecologic oncology, vascular, trauma and urologic surgery, transfusion medicine, intensivists, neonatologists, interventional radiologists, anesthesiologists, specialized nursing staff, and ancillary personnel. This article highlights the desired features for a center of excellence in placenta accreta, and which patients should be referred for evaluation and/or delivery in such centers.

Key words: accreta, center of excellence

EDITORS' ★ CHOICE

surgical approach. Indicated preterm delivery at 34-35 weeks has been proposed as a means to decrease the risk of having to perform emergency surgery, given the increasing risk of spontaneous bleeding >34 weeks' gestation.^{1,7,8} This strategy is supported by a study of 90 cases in Texas, in which the 57 cases managed by a multidisciplinary accreta team and

delivered at 34-35 weeks' gestation had a significantly lower rate of emergency surgery.⁹ However, many cases progress to 36 weeks' gestation without complications and the issue remains controversial.⁸

Considerable data however, indicate decreased morbidity in cases of planned cesarean hysterectomy prior to the onset of labor, rather than emergent delivery, which is often necessitated by contractions or when clinically significant bleeding occurs.^{10,11} Blood loss and morbidity also are decreased if no attempt is made to remove the adherent placenta.^{10,11} Instead, a hysterotomy is made to avoid the placenta (often fundal), the infant is delivered, the hysterotomy is quickly sutured, and then hysterectomy is performed. In rare cases conservative management may be employed and can take 2 forms: (1) resection of that portion of the anterior uterine wall that includes the morbidly adherent placenta, followed by uterine reconstruction¹²; or (2) cesarean delivery without removal of the placenta, closure of the hysterotomy, and

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TABLE 1
Suggested criteria for accreta center of excellence

1. Multidisciplinary team
 - a. Experienced maternal-fetal medicine physician or obstetrician
 - b. Imaging experts (ultrasound)
 - c. Pelvic surgeon (ie, gynecologic oncology or urogynecology)
 - d. Anesthesiologist (ie, obstetric or cardiac anesthesia)
 - e. Urologist
 - f. Trauma or general surgeon
 - g. Interventional radiologist
 - h. Neonatologist

2. Intensive care unit and facilities
 - a. Interventional radiology
 - b. Surgical or medical intensive care unit
 - i. 24-h availability of intensive care specialists
 - c. Neonatal intensive care unit
 - i. Gestational age appropriate for neonate

3. Blood services
 - a. Massive transfusion capabilities
 - b. Cell saver and perfusionists
 - c. Experience and access to alternative blood products
 - d. Guidance of transfusion medicine specialists or blood bank pathologists

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expectant management with the uterus and placenta left in situ.

Outcomes are further improved if the delivery is accomplished in a center of excellence with a multidisciplinary team with expertise and experience in the management of accreta. A study assessing 141 cases of accreta in Utah noted that women managed by a multidisciplinary team in tertiary care centers were less likely to require large volume blood transfusion, undergo a second surgical procedure, or experience composite morbidity than those receiving standard obstetric care.¹³ In fact, the same is true for all cases of massive obstetric hemorrhage, whether or not an accreta is present. Wright et al¹⁴ noted a decrease in maternal mortality in women with obstetric hemorrhage managed at a center of excellence compared to those cared for in traditional settings. It also is noteworthy that emergency deliveries still have reasonably good outcomes if performed in a center of excellence with a multidisciplinary team.^{9,15}

Despite the clear benefits of delivery in a center of excellence, referral to specialized units is underutilized. A cross-sectional survey of members of the American Congress of Obstetricians and Gynecologists revealed that only a fourth

of general obstetricians referred patients with suspected accreta to centers of excellence.¹⁵ Thus, our purpose was to outline criteria for centers of excellence and suggested indications for referral in cases of suspected placenta accreta.

Center of excellence: placenta accreta

The key to success of an accreta center of excellence is to have coordinated, multidisciplinary teamwork between providers with the high level of skill that comes with experience in treating the condition. These criteria are outlined in Table 1 and are most often (but not exclusively) present in tertiary care centers.

Accurate diagnosis is the first step toward this goal. Expertise and experience in pelvic imaging is paramount. Blood loss at delivery has been shown in multiple studies to be significantly reduced when accreta is diagnosed antenatally rather than intraoperatively.^{1,10,11} The field in which one subspecializes (eg, maternal-fetal medicine or radiology) is likely less important than the individual's knowledge and experience with the antenatal diagnosis of placenta accreta. As outlined below, the primary modality for diagnosis of accreta is ultrasound.

Magnetic resonance imaging (MRI) may be a useful adjunct in some cases but requires specialized equipment for pelvic imaging and experience in the assessment of accreta.

Appropriate surgical expertise is critical for an accreta center. Due to the increased size and vascularity of the uterus, the potential for severe hemorrhage is high. Particularly when the placenta is also a previa, the neovascularization that accompanies accreta is abundant deep in the pelvis, and the operative field may be obscured by the bulk of the placenta. Furthermore, the likelihood of having to remove portions of the bladder and/or ureters during the hysterectomy in placenta accreta cases is considerably higher than in simple hysterectomies in nonpregnant individuals.^{1,5} The specific credentials of the surgeon (eg, gynecologic oncologist, general obstetrician-gynecologist, maternal-fetal medicine specialist) are probably less important than consistent, ongoing experience with cases of placenta accreta. Most authorities believe that outcomes are improved when the surgeon is comfortable with opening and exploring the retroperitoneal space. Although not universally recommended, some data suggest less risk of ureteral injury after the placement of ureteral stents.⁹ In addition, some cases of percreta require additional skills such as the ability to reimplant ureters, repair major blood vessels, or resect bowel. Such cases require specialists such as gynecologic oncologists, vascular surgeons, urologists, or general surgeons.

Anesthesiologists experienced in both massive hemorrhage and obstetrics are other key players in the care of women with placenta accreta. The anesthesiologist is often the “quarterback” for the intraoperative medical care of women with massive hemorrhage. They assess vital signs, oxygenation, urine output, serum electrolytes, hematocrit, and coagulation status. They make decisions regarding the use of vasopressors and administration of blood products. The skills needed to perform these tasks optimally are best developed with repetition and experience. The unique physiologic changes in pregnancy require specialized

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