

## Management of the Morbidly Adherent Placenta

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### ABSTRACT

Morbidly adherent placenta, and the spectrum of placenta accreta, increta, percreta, are becoming more commonly encountered with higher cesarean section rates. These cases are complicated by high maternal morbidity with high rates of maternal hemorrhage. This literature review discusses management of morbidly adherent placenta, from preoperative considerations and planning, to timing of delivery, and operative considerations. Care of the patient with abnormal placentation now commonly involves a multi-disciplinary team approach. Creation of care teams dedicated to the management of morbidly adherent placenta may optimize patient care and ultimately reduce morbidity.

**Keywords:** Morbidly adherent placenta; Placenta accreta; Increta; Percreta

### SIGNIFICANCE

Morbidly adherent placenta is known to cause significant morbidity with most cases requiring management by peripartum hysterectomy. This literature review discusses the many aspects of preoperative and perioperative care, and highlights the complex interdisciplinary care required for these cases.

### INTRODUCTION

Morbidly adherent placentation includes three grades of abnormal attachment: accreta, increta, and percreta. The standard definitions for each of these grades is by depth of placental invasion with accreta being the most superficial, and percreta defined as chorionic villi invading completely through the myometrium. The reported incidence of morbidly adherent placentation has been estimated as high as 3 in 1000 deliveries [1]. Recent evidence has also shown that occurrence of morbidly adherent placentation is not limited to patients with prior cesarean section, any pregnancy can be affected including those in nulliparous patients [2]. The Maternal Fetal Medicine Units (MFMU) based study found 37% of cases had no history of prior cesarean, and 18% occurred in nulliparous women. Additionally, only half of the cases were suspected prior to delivery.

Cases of morbidly adherent placentation are associated with many complications increasing maternal morbidity. With

increased risk of maternal hemorrhage, placenta accreta spectrum also increases risk of surgical morbidity, damage to bladder, bowel, ureters, need for re-operation for post-operative bleeding, and post-operative recovery risks including VTE, infection, and transfusion reactions.

The most recognized risk factor for morbidly adherent placentation is the combination of placenta previa with prior cesarean delivery. In their study, Silver et al. found that incidence of accreta progressively increased with the number of Cesarean sections in the presence of placenta previa. For instance, if there was placenta previa, placenta accreta was found at the time of primary Cesarean section in 3% of cases, this incidence increased to 11%, 40%, 61%, 67% for two, three, four and five previous Cesarean sections respectively [3]. Unfortunately, no biochemical or laboratory marker has been prospectively evaluated and validated as a screening tool for morbidly adherent placentation.

In cases where the increased risk for morbidly adherent placentation is identified, ultrasound is both highly sensitive and specific. A systematic review of 14 cohort studies of ultrasound identification of placenta accreta in cases of placenta previa found ultrasound sensitivity to be 88% and specificity to be 90% [4].

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In this article, we will focus on the management of the morbidly adherent placenta and the multi-disciplinary team approach to management.

## PREOPERATIVE PLANNING

Identification of morbidly adherent placenta in the antepartum period allows for planning multi-disciplinary care. Preoperative consultation with anesthesia and surgical teams can establish care plans and prepare appropriate resources that may be needed at the time of delivery. Surgical teams commonly include gynecologic oncology to provide hysterectomy expertise, with other surgical specialties utilized as necessary on a case by case basis, as an example, urology for cases with bladder or ureter involvement, general surgery for bowel involvement. About 90% of placenta accreta cases ultimately require hysterectomy at the time of attempted placental removal due to maternal hemorrhage [5]. Preoperative identification allows for patient counseling and preparation for anticipated cesarean hysterectomy.

Anesthesia for most cesarean deliveries utilizes neuraxial anesthesia techniques, however the American Society of Anesthesiologists Task Force on obstetric anesthesia identify prolonged cases, or maternal hemorrhage as cases where general anesthesia may be preferred [6]. Practically, a combined approach may be utilized where neuraxial anesthesia is started for the case, then converted to general anesthesia after fetal delivery.

The ideal facility for delivery would have all maternal, fetal, and surgical care teams whose expertise may be invaluable, these include maternal fetal medicine, neonatology, anesthesia, gynecologic oncology, general surgery, urology, and critical care medicine. The blood bank should be sufficiently stocked to handle the initial demands of postpartum hemorrhage. Blood loss estimates in cesarean hysterectomy vary widely from 2 liters to 5 liters or more.

To reduce blood loss, interventions such as interventional radiology placement of internal iliac arterial balloons has been proposed and performed prior to planned cesarean hysterectomy [7]. However, studies regarding use of this intervention are based on small retrospective analysis and case series, and this intervention carries the risk of severe complications such as iliac artery thrombosis [8]. Additional studies are required prior to adopting routine use of preoperative internal iliac balloon placement.

## TIMING OF DELIVERY

Delivery timing is an art which requires balancing maternal and fetal risks. A scheduled late preterm delivery time is often utilized to help avoid emergency deliveries. Optimal utilization of preplanned safety measures to reduce hemorrhage may not be feasible in emergency deliveries. However, despite planning and preoperative efforts, unplanned preterm delivery remains common, usually due to maternal antepartum hemorrhage. Warshak et al. found planned delivery at 34-35 weeks as an interval that reduced maternal morbidity from unexpected

hemorrhage while not significantly increasing neonatal morbidity [9].

## OPERATIVE CONSIDERATIONS

With regard to patient positioning, the patient should be placed in a modified lithotomy position with leftward tilt. Using lithotomy stirrups accommodates vaginal access to continually evaluate vaginal blood loss throughout the case; in addition transvaginal access can be used to delineate the cervicovaginal junction for colpotomy. This positioning also accommodates the ability to perform both cystoscopy and proctoscopy if required.

Placement of ureteral stents preoperatively, has been reported in a case series to reduce early post-operative morbidity such as reoperation, ICU admission greater than 1 day, transfusion of more than 4 units or packed RBCs, and ureteral injury [10].

Setup of a cell salvage systems to capture surgical blood loss, can also assist in hemorrhage management. Previously, utility in obstetrics was limited due to theoretical concerns regarding amniotic fluid embolism, but modern systems' filtering reduces potential for contamination [11].

While Pfannensteil incision is the most commonly utilized and preferred incision for cesarean deliveries, if a cesarean hysterectomy is anticipated, a midline or paramedian skin incision allows for better visualization and surgical access. The incision site for the hysterotomy should be planned to avoid the placental bed. Intraoperative ultrasound can assist if the placental location is in question from the preoperative imaging. Often times, a classical or fundal uterine incision is the best access.

For planned cesarean hysterectomy, when the diagnosis of morbidly adherent placenta has been established, placental removal should not be attempted. The umbilical cord may be clamped, ligated, and the ligated placenta end (with either a suture or umbilical cord clamp) placed back into the uterus with the in situ placenta. The hysterotomy should be quickly closed in a single layer to reduce bleeding.

The hysterectomy can then proceed with securing of the utero-ovarian ligament and separation of the posterior leaf of the broad ligament from the uterus after ascertaining the positions of the ureters. The vesico-uterine peritoneum is then divided and the bladder dissected away from the front of the uterus and cervix. Bladder dissection can be associated with increased hemorrhage especially if placental invasion into the bladder wall has occurred. Next, the uterine vasculature is clamped, ligated and secured on both sides. Stepwise usage of para-cervical pedicle clamping, ligation and suturing then follows until the hysterectomy is completed. Case reports have described successful management of hemorrhage with supracervical hysterectomy, and even use of a transcervical balloon tamponade after peripartum hysterectomy [12].

## CONSERVATIVE MANAGEMENT

Less commonly, conservative management i.e. without hysterectomy is attempted for morbidly adherent placentation. There are case reports of utility of a variety of conservative

methods from uterine artery embolization, placental bed oversew, wedge resection, methotrexate, these are associated with a high risk of requiring postpartum hysterectomy [13,14]. The primary goal of conservative management is typically fertility preservation, and subsequent pregnancies after management with uterine artery embolization have been reported [12].

## DISCUSSION

Cesarean section rates rose sharply in the US in the early 2000s [14]. The CDC reported a c-section rate of 31.6% for 2016, much higher than the previous rates 20.7% in 1996 [15]. As previously shown by Silver et al. increasing c-section rates and placenta previa greatly increase the risk of morbidly adherent placentation.

Management of these cases is often complicated by uncertainty. Despite improvements in ultrasound and better detection antenatally, delivery is often prompted by maternal hemorrhage prior to scheduled interventions. Preoperative planning should be of benefit because of additional preoperative imaging, surgical planning, and resources such as cell salvage systems and blood bank screening. Additionally, while identification of morbidly adherent placentation at the time of delivery requires emergent intervention, many of the same tools and approaches used in the prenatally diagnosed cases are often utilized [16].

## CONCLUSION

Care of the patient with morbidly adherent placenta involves a multidisciplinary team to optimize outcomes and reduce morbidity and mortality. To help facilitate patient care, tertiary care centers may benefit from creating care teams with expertise in management of morbidly adherent placenta. An interesting area for study would be to assess if creation of these streamlined teams and standardized checklists could help reduce maternal morbidity compared to historical morbidity and mortality. Other potential benefits of care teams would be increased exposure to these cases and familiarity with the management options. Until larger cohort studies or randomized trials are performed, case series, case reports, and the use of expert opinion will continue to guide our management.

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