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An Overview on Site and Complications of Placenta Accreta

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Abstract

Placenta accreta spectrum (PAS) affects approximately 3 in 1000 pregnancies, with even conservative estimates demonstrating a 5-fold increase in incidence over the past 3 decades. PAS occurs when there is damage to the boundary between the endometrium and myometrium allowing placental trophoblast to grow into, or in some cases through, the uterine wall. It has been implicated in substantial perinatal maternal morbidity due to an increased risk of intrapartum and postpartum hemorrhage, frequently requiring massive transfusion of blood products. Hysterectomies are often necessary, contributing to an increased risk of surgical complications and lengthier hospital stays. PAS may also cause a significant emotional toll on women, particularly those who had plans for future childbearing.There is a paucity of data evaluating the effect of placental location on diagnosis, risk factors, and resultant outcomes in cases of placenta accreta spectrum.

Keywords: Location of Placenta, Placenta Accreta Spectrum, PAS

Mini review article **Corresponding Author*, e-mail: *ayman.h.mohsen@gmail.com*

1. Introduction

As such, PAS is a significant contributor to maternal morbidity. Most specifically, the risk of hemorrhagic morbidity for women with PAS is quite high, with up to 90% of women receiving a blood transfusion and 40% requiring more than 10 units of packed red blood cells [1]. However, only a few studies on placenta previa and PAS have investigated the association between the placental position and pregnancy outcome in these cases. Thus, in the present prospective study, we aimed to examine effects of different placental sites on pregnancy outcomes in cases with PAS. It is unknown whether placental location can further modify the risk of surgical morbidity for women undergoing primary or repeat cesarean sections for PAS with or without placenta previa. In setting of a repeat cesarean delivery, providers may hypothesize that an anterior PAS carries higher risks of hysterectomy, as the uterine scar is thought to promote abnormal placental adherence. However, this theory has not been accurately predestined, and few studies have directly evaluated impact of PAS location on maternal morbidity at time of cesarean delivery. In contrast, in an unscarred uterus, obstetricians may not consider placental location a significant modifier of surgical risk for a primary cesarean.

However, requirement of incising the lower uterine segment in the area of increased placental bed vascularity from an anterior PAS may result in additional morbidity [2]. When placenta is attached to the anterior wall, hemorrhage may occur due to the location of uterine incision. When placenta is embedded at this location, it cannot be completely avoided during a caesarean section. Pushing off the placental tissue or creating a hole in placenta during childbirth will lead to a large amount of bleeding in a short time. After the uterine muscle is cut, destruction of uterine muscle fiber integrity also leads to poor uterine contractions, resulting in increased bleeding [3]. To prevent placenta from crossing into uterine cavity in patients with anterior placentation, caesarean section incision may occasionally be made closer to uterine body. Increased bleeding may be associated with increased uterine tissue thickness. Additionally, anterior placentation will lead to an increased number of blood vessels near incision. Intraoperative incision of these vessels may lead to severe bleeding [4]. Therefore, we speculated that increased number of blood vessels near incision may be another reason for postpartum hemorrhage. More vessels are involved in anterior placentation than in posterior placentation; therefore, surgical incisions resulting in rupture of blood vessels can cause increased bleeding in former case.

Previous studies have found that placenta previa is associated with a greater risk of postpartum hemorrhage when placenta is located on anterior wall of the uterus. Anterior position of placenta previa with Placenta accreta were significantly higher in complete placenta previa group than in incomplete placenta previa group, in addition to increased intraoperative blood loss in complete placenta previa group [5]. The reassessment in surgery is equally important. Especially when it is found that the uterine vessels in the lower segment are significantly dilated and even the placenta is visible through serosa, it is necessary to invite experienced obstetricians to participate in operation. The position of surgical incision should avoid the main attachment of the placenta as far as possible [6]. Adequate blood preparation and active cooperation between

anesthesiologists and intensive care units should be done before operation, to avoid occurrence of acute hemorrhagic shock and multiple organ dysfunction, and to reduce hysterectomy rate as much as possible [7]. Although placental location has been explored in the context of placenta previa, with anterior placenta previa being more often associated with greater blood loss and increased risk of placental invasion and hysterectomy, there are scant clinical data on posterior placental location.

Placenta accreta spectrum with posterior placental location is associated with delayed diagnosis, surgical complications, assisted reproductive technology, and lower numbers of prior cesarean deliveries relative to anterior location. These differences in outcomes and risk factors based on placental location may allow for heightened clinical awareness, and improved diagnosis and management [8]. To date, no studies have examined whether the distribution of risk factors and outcomes for PAS vary based on placental location. As such, PAS cases with the posterior location remain diagnostic and therapeutic challenges, with a paucity of data regarding risk factors and relation to anterior PAS. Given the lack of examination of the role of placental location in cases of PAS, the purpose of this study was to assess how risk factors, diagnosis, and outcomes might vary for the PAS cases with posterior location compared to those with anterior or anterior/posterior location [9]. Identifying the preoperative predictors associated with increased the morbidity may assist in surgical planning and coordination of the multidisciplinary care.

As placental location is known preoperatively via ultrasound examination, it may be a useful predictor of morbidity in addition to a woman's cesarean delivery history. We sought to evaluate whether PAS location impacts rate of hysterectomy and blood transfusion in setting of both primary and repeat cesarean delivery [10]. The location of the majority of placenta (anterior or posterior) was prospectively determined by ultrasound report documented by attending ultrasonologist. All ultrasounds at our facility are performed by attending maternal-fetal medicine specialists or obstetricians with advanced ultrasound training [11]. The sagittal plane of the uterus is used to determine the position of the placenta in the anterior or posterior wall. If the distance from the internal cervical ostium to the placenta edge of the anterior wall is longer than that of the posterior wall, we define it as a PAS on the anterior wall, or vice versa. If there is no placental tissue attached to the anterior and posterior wall on the sagittal plane, the probe should be observed at 90 degrees clockwise or counterclockwise. If the main body of the placenta is seen on the lateral wall, it is considered as the PAS of the lateral wall [12].

2. Primary and secondary outcomes

Basic patient characteristics and surgical outcomes of all cases were obtained. The primary outcomes were massive obstetric hemorrhage, hysterectomy or a packed red-cell transfusion intraoperatively or in the first 24 h postoperatively. The relationship between a placental location from the internal so and risk of transfusion and hysterectomy was examined. Secondary outcomes included estimated blood loss, secondary complications of coagulopathy, multisystem organ failure, site-specific operative repair and neonatal outcomes, 1-minute Apgar score and birth weight. Basic information post-operative included intensive care unit or not, blood transfusion rate, postpartum hemorrhage in conservative uterus, need for re-exploration or not, estimated length of hospitalization till discharge [13]. Pathology reports were available for all hysterectomy specimens. Blood bank records used to confirm the presence and timing of any transfusion. Additionally, as some may define a placental location from the internal os and associate this with a decreased risk of morbidity [14].

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