

ABNORMAL INVASIVE PLACENTATION—PLACENTA PREVIA INCRETA AND PERCRETA

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The incidence of abnormal placentation, including placenta accreta, increta and percreta, ranges from 1 in 540 to 1 in 93,000 deliveries [1]. A study clarified the incidence of placenta previa increta/percreta in a large-scale series of pregnancies in Japan, with an observed prevalence of 1 in 2,565 deliveries [2]. Placenta percreta is the most serious of placental implantation anomalies beyond the uterine serosa. It can unexpectedly lead to catastrophic blood loss, multiple complications such as adult respiratory distress syndrome, Sheehan's syndrome, renal failure, and even death. Maternal mortality and morbidity are significantly increased by placenta percreta. The mortality can be as high as 10% [3]. The morbidity included bladder laceration (20%), urinary fistula (13%), ureteral transection (6%), and a resulting small bladder capacity (4%). Partial cystectomy was performed in 44% of cases [4]. There is a need for reliable antenatal diagnosis for these serious conditions. If these pregnancies can be identified before delivery, the site and time of delivery as well as the surgical approach can be planned ahead and decrease the blood loss.

We know that 75% of placenta percreta cases are associated with placenta previa. Approximately 25% of women with placenta previa and one previous cesarean delivery have an accreta/percreta, whereas almost 50% with placenta previa and two prior cesarean deliveries have placenta accreta/percreta [5]. Placenta increta/percreta can only be diagnosed at the time of delivery, or may be suggested antenatally by ultrasonographic or magnetic resonance imaging findings in patients whose clinical history, such as a previous abdominal delivery, previous uterine surgery, a suction dilatation and curettage, or placenta previa, raises a suspicion [6]. Until

recently, two-dimensional (2D) ultrasonography (US) remained the standard screening tool for the diagnosis of invasive placentation. Currently, there is a lack of data about the accuracy of prenatal diagnosis of placenta increta/percreta. The antenatal detection rate of placenta accreta (a collective term for accreta, increta and percreta) on ultrasound varies in the literature, ranging from 33% (4/12) [5] to 100% (5/5) [7].

In this issue, Chou et al [8] reports that seven of the 45 patients exhibited characteristic 2D US findings for placenta increta/percreta. The 2D US criteria for placenta increta/percreta included placental lacunae, absence of the retroplacental clear zone, and interruption of posterior bladder wall–uterine interface. Among these seven patients of advanced invasive placentation, a targeted scan with adjunctive three-dimensional (3D) US correctly provided additional convincing information to the indeterminate diagnosis by 2D US in these patients who were affected with variable degrees of bladder wall involvement found at surgery. The tentative proposed 3D US criteria for advanced invasive placentation of suspected bladder involvement are as follows: (1) a loss of the echolucent space between the bladder and the placenta in coronal and axial scans; (2) invasion of the bladder by the infiltrating placenta with irregularity and disruption of the normal bladder wall architecture and/or a focal exophytic placental mass projecting into the bladder in coronal and axial scans; and (3) aberrant blood vessels in the spatial vascular network in the region of interest extending into the bladder by rotational angiography [8,9]. The authors concluded that 3D US may be a useful adjunctive tool in refining 2D ultrasonographic techniques to identify the extent and degree of placental invasion of the bladder. Finally, Chou et al did not calculate the antenatal detection rate of placenta increta and percreta on ultrasound. A recent publication by Shih and colleagues [10] assessed the role of 3D power Doppler in the antenatal diagnosis of placenta accreta and compared its diagnostic performance with grayscale and color Doppler US. The final results revealed that



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placenta accreta and its variants (including increta and percreta) were confirmed in 39 patients at the time of cesarean delivery. Based on receiver-operating characteristics analysis, "numerous coherent vessels" visualized using 3D power Doppler in the basal view was the best single criterion for the diagnosis of placenta accreta, with a sensitivity of 97% and a specificity of 92%. If Shih et al [10] considered the presence of at least one criterion to be diagnostic when using each ultrasound technique, then 3D power Doppler would have the best positive predictive value (76%), followed by grayscale (51%) and color Doppler (47%).

Chou et al [9] recommended that timely pregnancy termination is an appropriate management option because of decreased morbidity and mortality. In this issue, two patients received total hysterectomy and the other five received cesarean hysterectomy among those seven patients. Three patients had morbidity: one had focal bladder wall resection and repair, one had inadvertent ureteral injury with primary repair and reanastomosis of the right ureter, and the last had rebleeding from the bladder base. The total blood loss was from 850 mL to 20,000 mL. Attempted forcible ablation of placenta increta/percreta almost always necessitates hysterectomy to achieve hemostasis or even the partial resection of adjoining organs. For this reason, several reports of conservative treatment of placenta percreta have already been published [6,11]. Timmermans et al [11] reviewed the efficacy and safety of conservative management of abnormally invasive placentation. From 1985 through 2006, 48 reports have described the outcomes of 60 women who were treated conservatively for abnormally invasive placentation. Overall, of the 60 women, 11 experienced infection, 21 experienced vaginal bleeding and four suffered disseminated intravascular coagulopathy. Spontaneous loss of placental tissue was noted in 16 women. Subsequent pregnancies were reported in eight women. The authors concluded that conservative management of abnormally invasive placentation can be effective and fertility can be preserved. It should only be considered in highly selected cases in which blood loss is minimal and there is desire for fertility preservation. Conservative treatment of placenta increta/percreta should be a safe alternative management.

In conclusion, grayscale, color Doppler and 3D power Doppler US remain the standard screening tool for the diagnosis of invasive placentation. 3D power

Doppler would have the best positive predictive value (76%), followed by grayscale (51%) and color Doppler (47%) [10]. In some cases, magnetic resonance imaging may be a useful adjunct to ultrasound in diagnosing invasive placentation prenatally [12].

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