

The usefulness of CrystalVue™ technique in the diagnosis of abnormally invasive placenta

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Abnormally invasive placenta (AIP) is a clinical term used to describe abnormal adherence of placenta to the underlying myometrium [1]. Prior caesarean section, placenta praevia, assisted reproduction techniques and other uterine surgeries are all risk factors [1, 2]. AIP is associated with a greater risk of maternal and perinatal morbidity and mortality [1]. The diagnosis of AIP is based on ultrasound imaging. Magnetic resonance imaging is used to confirm the diagnosis [3]. The development of imaging techniques has enabled the creation of new technologies such as CrystalVue™ (Samsung's Ultrasound Imaging Technology). It is a technology-based image-contrast enhancement that allows processing and rendering of acquired three-dimensional volumes.

A 36-year-old pregnant woman, 34 weeks with history of previous caesarean delivery, was hospitalized due to vaginal bleeding with suspicion of placenta praevia. Subsequent ultrasound examination was performed after admission to the hospital. The placenta percreta with invasion into the urinary bladder wall was visualized by CrystalVue™ ultrasound reconstruction. Based on ultrasound images taken at the 12th week of pregnancy presented by the patient, the authors hypothesized that the current clinical situation is the result of an undiagnosed early stage of the caesarean scar pregnancy (Fig. 1). Cardiotocography did not show any abnormalities. Laboratory tests reported HGB 8.3 g/dL and HCT 24%, suggesting haemorrhagic anaemia. After antenatal corticosteroid therapy in order to prevent respiratory distress syndrome, the patient had no other symptoms and vital parameters appeared within normal range. Due to the overall condition and possibility of arising complications, the patient was qualified for a caesarean section. The precise diagnosis with the use of CrystalVue™ allowed surgery to be scheduled in a hybrid operating theatre with the assistance of an interventional radiologist. A healthy male newborn was delivered prematurely at thirty-four weeks of gestational age. After delivery, embolization of uterine arteries and vessels supplying the placenta was performed. Despite the absence of active bleeding in control angiography, several foci of active bleeding appeared after the removal of the placenta from the uterine cavity. The second embolization did not bring the expected results and the residual bleeding was still visible. Respectively the patient was qualified for hysterectomy. During the procedure the vascular sheath became unsealed, which resulted in considerable blood loss. The course of action was expanded to include removal of the left uterine appendages. The sheaths were sealed and no active bleeding sites were visualised during the control angiography. The intraoperatively damaged urinary bladder, which the placenta percreta had grown into, was sutured. During the laparotomy, seven units of fresh frozen plasma, eight units of red blood cell concentrates and two units of platelet concentrates were substituted. In the postoperative period the patient was in a stable condition.

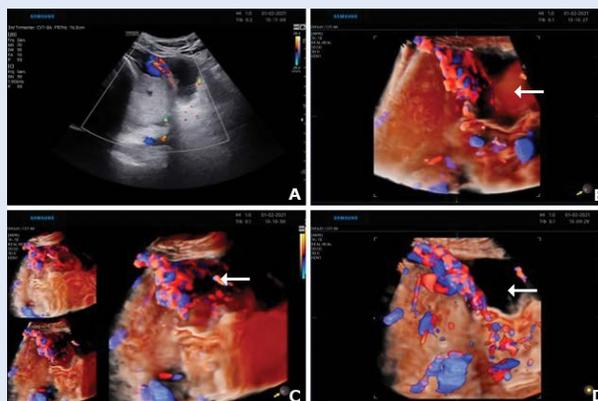


Figure 1. Transvaginal ultrasound examination showing; A — The two-dimensional ultrasound — the placenta in the lower uterine segment; B, C, D — The CrystalVue™ technique showing numerous blood in the wall of the urinary bladder documenting an abnormally invasive placenta (arrows)

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Only early diagnosis of AIP can prevent the occurrence of possible serious complications such as vesicovaginal fistula, life-threatening haemorrhage or even death [4]. Therefore, there is a need to use modern technologies enabling precise visualization of anatomical anomalies. This method is highly sensitive and specific in the prenatal diagnosis of AIP and allows the individual management of delivery, which minimizes possible complications.

Conflict of interest

The authors declare no conflict of interest.

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