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Radiofrequency ablation of retained placenta accreta after conservative management



Dear Editor,

We herein report, to our knowledge, the first case of attempt to treat placenta accreta leaved *in situ* in human after delivery using radiofrequency (RF) ablation. The patient was a 35-year-old (gravida two para one) with history of cesarean delivery. Ultrasonography at 32 weeks of gestation showed an anterior placenta not low-lying. Labor was induced at 39 weeks and a female neonate weighing 3400 g was delivered by vacuum extraction. Placenta delivery was incomplete and attempts for manual removal and uterine revision failed leading to suspicion of partial placenta accreta. So, decision was made to leave remaining placenta *in situ*. Immediate postpartum hemorrhage was diagnosed and treated with sulprostone. Estimated blood loss was 2 L and patient required transfusion of 2 units of red blood cells concentrate (RBCC). Embolization of the uterine arteries was performed in the immediate postoperative period and the patient was admitted to the intensive care unit for two days. The day after delivery, patient was hemodynamically stable (Hb 8.6 g/dl, platelets 180 G/l), and received 2 units of RBCC. Two days after delivery and embolization, patient was hemodynamically stable (Hb 7.6 g/dl, platelets 153 G/l) and received 2 units of RBCC. Ultrasonography showed persistent vascularity of the placenta. Three days after delivery, the patient presented normal bleeding and blood tests were normal (Hb 8.7 g/dl, platelets 156 G/l). Seven days after delivery, a new episode of obstetrical hemorrhage occurred (600 cc). Ultrasonography showed persistent hyper-vascularized areas in the conserved placenta. After obtaining the patient's agreement, decision was taken for ablation of the retained placenta by RF in order to accelerate resolution by decreasing vascularization and tissue burden. Under epidural anesthesia, 7 hyper-vascularized areas of placenta were targeted by RF at 60–100 watts (RF3000™ Radiofrequency Ablation System, Boston Scientific), through percutaneous puncture (LeVeen™ CoAccess™, 4.0 cm × 15 cm needle) under ultrasound monitoring (Figure 1).

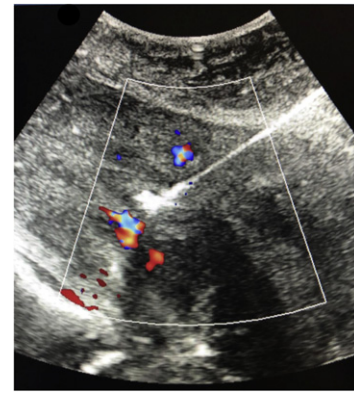


Fig. 1. RF ablation zone of a placental vascular bundle (Doppler Imaging) under ultrasonography with hyperechoic image of the needle electrode and gas bubble formation at its tip.

Thirteen days after, the patient had a recurrent hemorrhage episode and underwent embolization of uterine arteries and subtotal interannexial hysterectomy. Overall, 17 units of RBCC and 2 units of fresh-frozen plasma (FFP) were given pre- and intraoperatively. There were no postoperative complications and the patient was discharged home on postoperative day 8 (27 days postpartum) (Fig. 1).

Placenta accreta diagnosis can be made prenatally or when manual removal of the placenta after delivery, has failed. Conservative management of placenta accreta is a therapeutic approach which, when possible, may reduce morbidity of peripartum hysterectomy but implies close and long-term surveillance because of potential delayed complications [1]. Current management of secondary complications consists of different approaches including methotrexate injection or selective embolization procedures, but with no satisfactory results [2,3]. To date, no surgical procedure is available in order to reduce this delay allowing prevention of potential secondary complications. Ablation of the retained placenta by RF, a minimally invasive, image-guided technique [4], could be proposed as an alternative procedure, as the placenta is very permissive to RF [5]. Previously explored *in vivo* (animal models) and *in vitro*, RF application on the placenta at low power and low temperature appears to be safe, with good tolerance in terms of biological inflammation or secondary sepsis [5]. To date, there is not enough evidence to evaluate efficacy and potential risks related to RF. In the present case, RF ablation was not efficient but no complication was observed. Indeed, a recurrent hemorrhage episode required a second procedure of uterine arteries embolization followed by subtotal interannexial hysterectomy.

This unique case is, evidently, not enough to conclude in efficiency or potential complications associated with RF ablation of placenta accreta leaved *in situ*. But it seems important to us to report this therapeutic alternative option, as it could be considered for women who wish to preserve their fertility.

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Ultrasound-guided high-intensity focused ultrasound as pretreatment before surgical excision for fertility-preserving management of uterine arteriovenous malformation



Dear Editor,

A 33-year-old female, gravida 4 para 1 (one caesarean section and three abortions), was admitted for emergency treatment of abnormal vaginal bleeding. Transvaginal ultrasound (TVUS)

revealed an enlarged uterus with a $4.7 \times 2.1 \times 2.7$ cm (26.65 cm^3) ill-defined hypoechoic lesion on the anterior uterine wall, which suggested uterine arteriovenous malformation (UAVM) (Fig. 1A). Her hemoglobin level was 6.62 g/dL and serum β -hCG was negative. She was referred to interventional radiology for pelvic angiography and uterine artery embolization (UAE) of the UAVM (Fig. 1C–D). Approximately 1 month later, she complained of irregular vaginal bleeding again. TVUS confirmed UAVM recanalization on the anterior uterine wall. She wanted to preserve fertility. We considered that further embolization would increase the risk of complications, and this case was resistant to UAE. Moreover, hypervascularity around the UAVM lesion was contraindicated because of the potential risk of uncontrollable intraoperative bleeding. Therefore, ultrasound-guided high intensity focused ultrasound (USgHIFU) ablation as a preoperative treatment to reduce lesion size and intraoperative bleeding was performed, followed by surgical resection. After HIFU, TVUS revealed significant reduction in lesion size to $2.7 \times 2.2 \times 2.3$ cm (13.66 cm^3) (Fig. 1B). Intraoperatively, the uterus was enlarged, and the lesion was identified as a $2.0 \text{ cm} \times 3.0 \text{ cm}$ protrusion in the lower section of the anterior uterine wall (Fig. 1E). The lesion was resected based on the location confirmed by the coagulation necrotic trace of preoperative HIFU ablation (Fig. 1F). After complete clearance of UAVM, the resected area was sutured in multiple layers in a manner similar to myomectomy site closure with polyglactin suture (Fig. 1G). The procedure was successful with an estimated 200 mL blood loss and the pathological diagnosis of the resected specimen was consistent with the clinical diagnosis of UAVM (Fig. 1H–I). Postoperatively, her menstrual cycle returned to normal 1 month after surgery, and she had no further uterine bleeding. Thirteen months later, a 7-week intrauterine pregnancy was discovered.

UAVM is a rare condition but may lead to life-threatening hemorrhage. UAVM treatment includes lesion resection, hysterectomy, UAE, single/bilateral uterine artery ligation, and conservative treatment. Traditional hysterectomy is used for patients without fertility requirements or those in whom other treatments have failed [1]. Although UAE is the current primary treatment method and can also be used prior to surgical excision of lesions, possibly reducing intraoperative bleeding, its uncertainty and side effects limit its further application in UAVM. Direct surgical excision of the UAVM lesion is not recommended because of the potential risk of uncontrollable intraoperative bleeding [2]. Therefore, it is a challenge to identify less invasive and more effective preoperative treatments that have less influence on ovarian function.

HIFU is a non-invasive therapeutic technique that uses non-ionizing ultrasonic waves to heat tissues. USgHIFU ablation is increasingly used for treating solid tumors and gynecological diseases and has shown significant efficacies [3]. USgHIFU is also an effective pretreatment for the curettage of cesarean section uterine pregnancy scars. Our patient was the first to undergo HIFU prior to lesionectomy as she was resistant to UAE. Blood flow and lesion size were significantly reduced after HIFU. Because of the effect of HIFU ablation, we could perform lesionectomy. HIFU significantly reduced intraoperative blood loss and produced fewer complications after surgery. Therefore, HIFU ablation can be considered a safe and minimally invasive method for the treatment of UAVM.