



## Research Letter

# A case of severe uterine bleeding postpartum following manual removal of placenta increta



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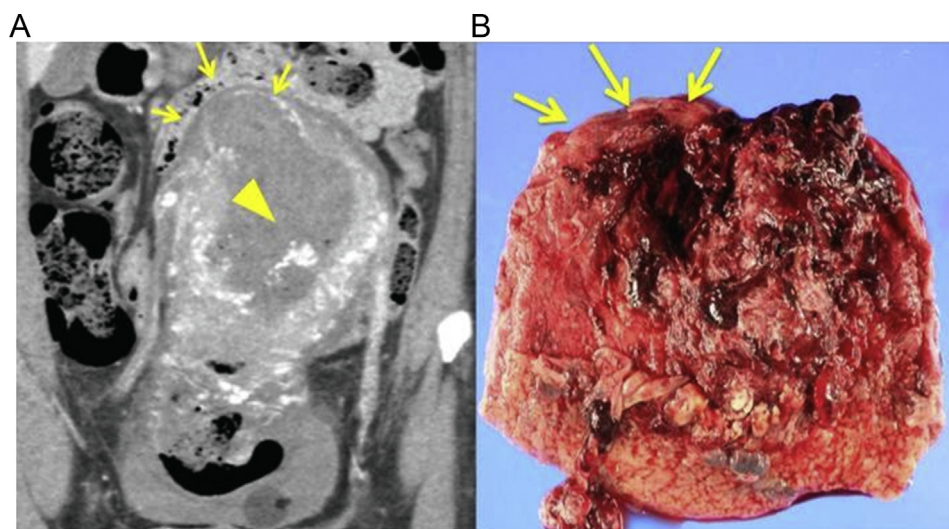
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Dear Editor,

Our medical center was referred a case of severe postpartum hemorrhage due to manual removal of the placenta followed by uterine inversion. In brief, the patient, a 37-year-old woman (gravida 1, para1) with previous delivery complications of uterine

inversion and manual removal of the retained placenta, had undergone a normal vaginal delivery of a healthy, 3546-g male infant at 39 weeks of gestation; however, the placenta had to be removed by controlled cord traction and incomplete uterine inversion occurred. Hemorrhage continued following the procedure and her blood pressure decreased to 86/45 mmHg (systolic/diastolic). She had lost 1675 g of blood and, therefore, two units of packed red blood cell concentrate (RCC) and two units of fresh frozen plasma (FFP) were given by transfusion. However, the bleeding continued, and she was referred to our institution.

On admission to our center, she was clearly conscious with a blood pressure of 116/59 mmHg and a pulse rate of 77/min. The



**Figure 1.** MSCT scan was performed using an Aquilion ONE 320-detector row scanner (Toshiba Medical Systems, Otawara, Japan) with a collimation of  $80 \times 0.5$  mm and a pitch of 0.890. After non-contrast CT scanning, a total of 100 mL iodinated contrast material was administered intravenously at a rate of 3 mL/s, and CT images were acquired at 30 s (arterial phase) and 60 s (parenchymal phase) after initiation of contrast administration. Arrows = uterine muscular defect near the fundus; arrowhead = intrauterine contrast extravasation.

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initial diagnosis was atonic bleeding from uterine inversion, and intravenous infusion of oxytocin and blood transfusion were initiated. A contrast-enhanced multisliced computed tomography (MSCT) scan showed subtle intrauterine contrast extravasation in the left side of the uterine cavity (Figure 1A, arrowhead). An additional uterine muscular defect of the uterine body was noted near the fundus (Figure 1A, arrows). Uterine artery embolization was performed, but the bleeding continued. She elected to have a hysterectomy, and after receiving signed informed consent forms from both her and her partner, we performed an emergency supravaginal hysterectomy. Grossly, a 3-cm area of deep uterine muscular defect was observed in the right corner of the uterine body (Figure 1B, arrows). The pathological diagnosis was placenta increta. The total amount of bleeding was estimated to be 4750 g, and she was transfused with 18 units of RCC and 12 units of FFP. She was discharged on Day 7 post admission.

To our knowledge, there has been only one case reported of uterine inversion associated with uterine perforation with placenta percreta diagnosed intraoperatively [1]. Manual removal of the placenta before complete placental separation is known to be one of the risks of uterine inversion [2]. The risk factors for placenta accrete syndrome are reported to be placenta previa, prior cesarean delivery, and any type of myometrium injury [3]. A case of uterine perforation with placenta increta/percreta followed by hysterectomy has also been reported [4].

In our case, MSCT technology played a crucial role in our decision making and treatment strategy. The cross-sectional images at an optimal angle from MSCT scanning can clearly elucidate target

lesions [5]. The MSCT scan preoperatively provided precise information not only of the bleeding site and vascular condition of the uterine artery but also of the degree of uterine muscular defect, thereby allowing us to perform uterine artery embolization efficiently and determine the surgical intervention without delay. The advantages of MSCT scans are widespread availability, ease of use, and cost-effectiveness compared with magnetic resonance imaging scans. The speed of MSCT scanning is particularly advantageous for rapidly evaluating emergency cases.

### Conflicts of interest

The authors have no conflicts of interest relevant to this research letter.

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