

Aberrant Ovarian Artery Originating from the Iliolumbar Artery: A Case Report

난소동맥의 엉덩허리동맥으로부터의 이상 기시: 증례 보고

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Here, we report a case of a 30-year-old woman who presented with primary postpartum hemorrhage due to uterine atony. She received uterine artery embolization (UAE). During left internal iliac arteriography, an aberrant left ovarian artery originating from the left iliolumbar artery was visualized. The aberrant left ovarian artery was connected to the left uterine artery via prominent collateral vessels. It supplied a significant amount of blood to the fundus of the uterus. Bilateral hypertrophied uterine arteries were embolized very carefully so that the embolic material did not reflux into the aberrant left ovarian artery. After the procedure, her vaginal bleeding was successfully controlled. Accurate understanding of anatomical variations of the ovarian artery is essential to avoid failure in controlling postpartum hemorrhage with UAE.

Index terms

Ovary
Uterine Artery
Postpartum Hemorrhage
Uterine Artery Embolization

INTRODUCTION

Uterine artery embolization (UAE) as a method for controlling postpartum hemorrhage was first introduced by Brown in 1979. Since then, the technique has become more widespread. Several literatures have shown a high clinical success rate of UAE with a low complication rate, making it a valuable treatment option for control of severe postpartum hemorrhage (1, 2). However, failure of UAE may occur due to various causes. One of the important causes is the additional blood supply to the uterus via collaterals such as ovarian arteries (3). Thus, for performing successful UAE, it is essential that the operator should be aware of the anatomy and the variations of the ovarian artery.

Ovarian arteries usually originate directly from the anterior aspect of the aorta at the level of renal arteries or just below the

level of renal arteries (3). Anatomic variations of ovarian arteries are not rare. The most common anatomic variation is an aberrant ovarian artery arising from the renal artery (4). In this report, we present a very rare case of an aberrant ovarian artery originating from the iliolumbar artery.

CASE REPORT

A 30-year-old multipara gave birth to a girl child weighing 3160 g at 38 weeks of gestation in a local hospital. After one hour, she was admitted to our emergency department with intractable primary postpartum hemorrhage. Her vital signs were stable, but her hematocrit value and hemoglobin level were below the normal range; they were 31% and 10.7 g/dL, respectively. She had no past medical history. Clinically, uterine atony was sus-

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pected. After consultation with the emergency department and the gynecology department, UAE was considered. Embolization was performed via a single right femoral artery approach with a 5-Fr sheath (Radifocus; Terumo, Tokyo, Japan). First, selective angiography of the left internal iliac artery was performed with 5-Fr Cobra catheter (Cook, Bloomington, IN, USA). An hypertrophied left uterine artery providing profound blood supply to the uterus body was visualized. From the left iliolumbar artery (the first branch originating from the posterior trunk of the internal iliac artery), a small tortuous vessel with sinus course was opacified (Fig. 1A). Based on the typical tortuous appearance and characteristic ovarian blush, this vessel was identified as the aberrant left ovarian artery originating from the left iliolumbar artery. This aberrant ovarian artery showed communication with the left uterine artery. It provided rich perfusion to the enlarged uterine fundus (Fig. 1B). Selective angiography and care-

ful embolization of the left uterine artery was performed with PVA (355–500 μ m, Contour; Boston-Scientific, Natick, MA, USA). We were cautious so that the embolic material did not reflux into the aberrant left ovarian artery. After successful embolization of the left uterine artery, selective angiography of the aberrant left ovarian artery was performed using a 2.2-Fr microcatheter (Progreat, Terumo, Tokyo, Japan). Persistent ovarian blush was observed without visualization of any uterine artery branch (Fig. 2). Selective angiography of the right internal iliac artery revealed a hypertrophied right uterine artery. However, no aberrant ovarian artery was seen. The right uterine artery was also embolized with PVA (355–500 μ m, Contour; Boston-Scientific, Natick, MA, USA). After successful embolization of both uterine arteries, flush aortography was performed with a 5-Fr pigtail catheter (Cook) positioned just above the level of both renal arteries. There was no evidence of other aberrant

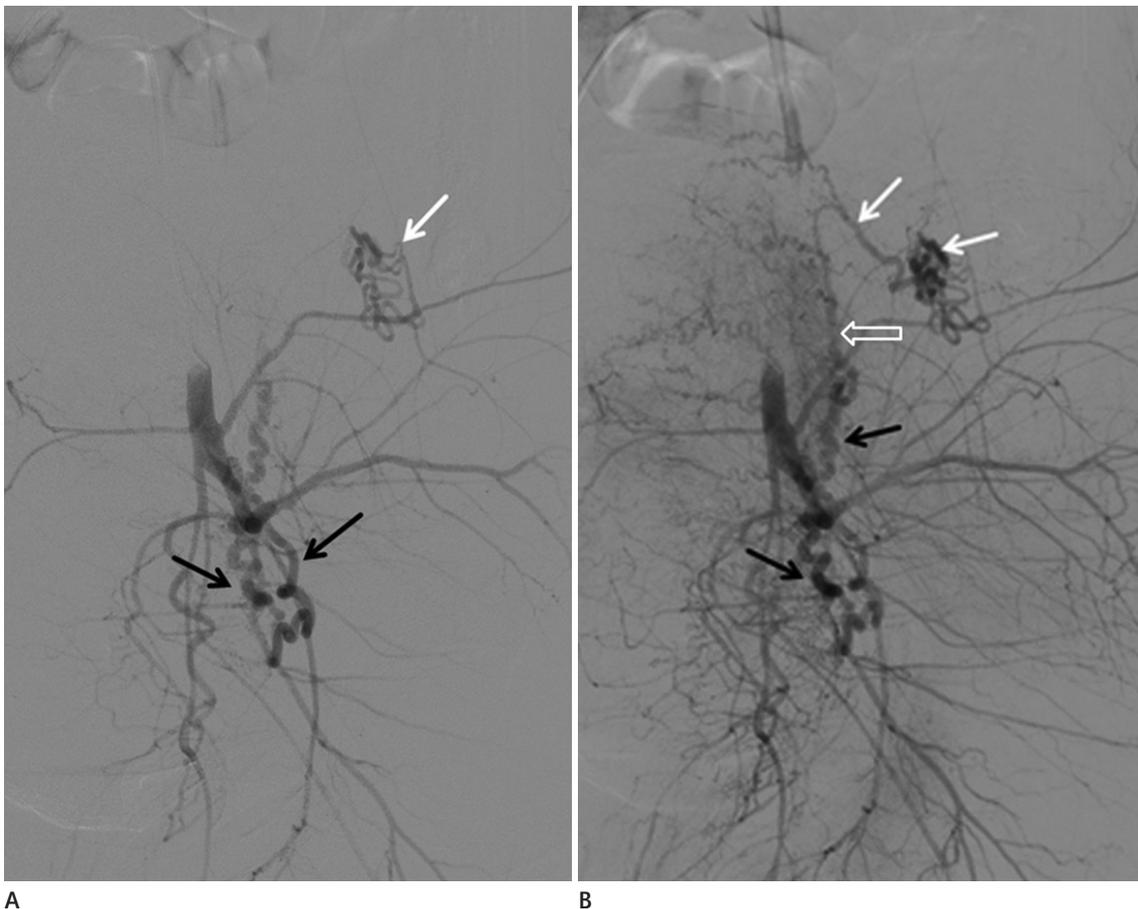


Fig. 1. Left internal iliac arteriogram shows hypertrophied left uterine arteries (black arrows) and an aberrant left ovarian artery originating from the left iliolumbar artery (white arrow) (**A**). This aberrant ovarian artery (white arrows) shows communication (open arrow) with hypertrophied left uterine arteries (black arrows) and provides prominent blood supply to the uterine fundus (**B**). There is no definite extravasation of contrast material into the uterine cavity in this arteriogram.

ovarian arteries. The right ovarian artery was visualized and it originated from the typical position on the ventral aspect of the abdominal aorta close to the origin of the inferior mesenteric artery. It showed the characteristic tortuous course with the typical ovarian blush. There was no evidence of blood flow from the right ovarian artery to the uterus. After the procedure, her vaginal bleeding was successfully controlled. The patient was discharged from our institution a few days later after full recovery.

DISCUSSION

Postpartum hemorrhage is one of the most important causes of maternal mortality, despite the progress in medical and surgical treatment (5). Occasionally, life-threatening obstetric complication can occur shortly (several hours to days) after the delivery. Primary postpartum hemorrhage is generally defined as more than 500 mL of vaginal bleeding during the first 24 hours after delivery. The most common cause is uterine atony as observed in our case, followed by lower genital tract injury, placental retention, abnormal placentation, or coagulopathy (5). Treatment options for controlling postpartum bleeding include con-

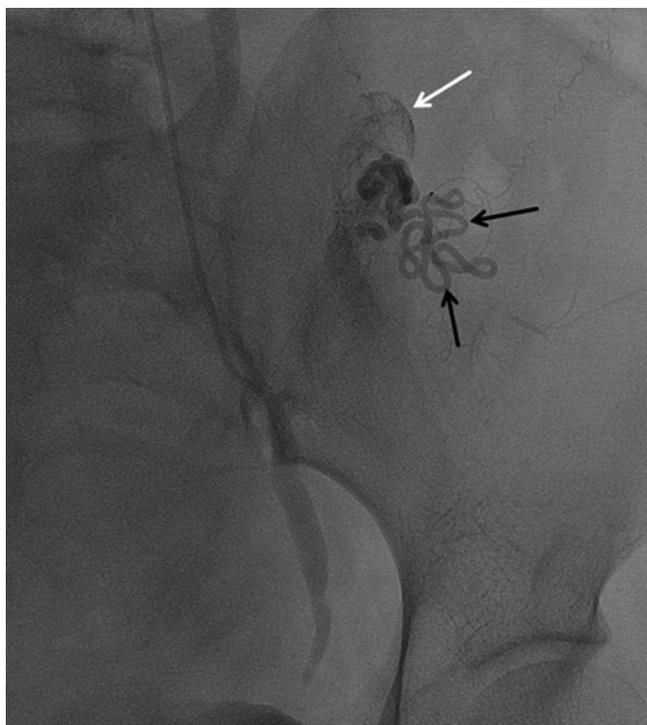


Fig. 2. Selective angiography of the aberrant left ovarian artery (black arrows). Left ovarian staining is demonstrated (white arrow) without visualization of the uterine artery branch.

servative treatment such as vaginal packing and administration of uterotonic drugs. With respect to intractable postpartum hemorrhage, more invasive procedures such as vascular ligation or hysterectomy can be performed (5). The advantages of UAE over surgical treatment include less invasiveness, potential to preserve the uterus and fertility, and an overall shorter hospitalization period. Thus, in recent years, UAE has become one of the major alternative treatments for controlling postpartum hemorrhage.

In spite of its many merits, clinical failure of UAE is an issue that must be confronted. One of the major causes is the presence of blood supply to the uterus by ovarian arteries (3). This emphasizes the importance of being aware of the normal and anatomic variation in the origin of ovarian arteries. The ovarian arteries normally originate directly from the anterior circumference of the aorta at the level of the renal artery or just below the level of the renal artery (3). The ovarian artery descends into the pelvic cavity up to the level of the ovarian hilum, where it provides blood supply to the ipsilateral ovary and fallopian tube. It forms an anastomosis with the corresponding distal branches of the uterine arteries (6). Angiographically, normal ovarian arteries appear as tortuous vessels (corkscrew appearance) with a small caliber and the typical ovarian blush (6).

Variations in the origin of ovarian arteries are common. In 6–12% of the cases, they arise from the renal artery, more commonly from the right renal artery (3). When accessory renal arteries are present, the ovarian arteries tend to arise more commonly from these arteries rather than from the aorta (7). Few case reports have demonstrated more rare locations of the aberrant ovarian artery origin, including the proximal portion of the common iliac artery, external and internal iliac artery, and inferior mesenteric artery (4, 7–9). To the best of our knowledge, this is the first report of an aberrant ovarian artery originating from the iliolumbar artery, which is the first branch of the posterior trunk of the internal iliac artery.

In addition to gaining knowledge of the vascular anatomy of the ovarian artery, it is important to avoid unwanted embolization of the ovarian artery. Ovarian artery embolization is associated with increased risk of ovarian failure with symptoms such as hot flashes and amenorrhea (10). However, postpartum hemorrhage is one of the most dramatic and acute hemostatic disorders with high maternal mortality. Thus, if angiography shows a hypertrophied ovarian artery providing profound blood sup-

ply to the enlarged uterus, the issue of fertility becomes secondary. In previously published case reports, all aberrant ovarian arteries (4, 7-9) were embolized. They supplied a significant amount of blood to either uterine fibroids or the enlarged uterus itself.

In our case, embolization of the left uterine artery was performed first, taking care careful that the PVA particles did not enter the ovarian circulation via anastomotic channels. Then, selective angiography of the aberrant left ovarian artery was performed, and it showed no evidence of persistent vascular flow from the aberrant ovarian artery to the left uterine artery branches. Thus, unlike the previously published case reports (4, 7-9) embolization of the ovarian artery was not necessary, and the left ovarian blood supply could be preserved.

In conclusion, here, we report a rare case of an aberrant left ovarian artery originating from the left iliolumbar artery. Knowledge of main anatomical variations in the origin of ovarian arteries is essential because ovarian arterial supply to the uterus could be a major cause of UAE failure.

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난소동맥의 엉덩허리동맥으로부터의 이상 기시: 증례 보고

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분만 후 자궁이완증으로 발생한 일차성 산후출혈로 30세 여자 환자가 내원하였다. 자궁동맥색전술을 위해 시행한 좌측엉덩동맥조영술에서 좌엉덩허리동맥으로부터 이상 기시하는 좌난소동맥의 증례를 경험하였다. 이 좌난소동맥은 측부혈관을 통해 좌자궁동맥과 연결되어 있었고 자궁저로 많은 양의 혈류를 공급하고 있었다. 저자들은 색전물질이 난소동맥으로 역류되지 않도록 주의하며 양측 자궁동맥에 대한 혈관색전술을 시행하였고 환자는 보존적 치료 후 합병증 없이 회복되었다. 자궁동맥색전술은 산후출혈의 치료로서 보편적으로 이용되고 있으며, 성공적인 치료를 위해 측부혈관 중 하나인 난소동맥으로부터의 결순환 유무를 확인하고 해부학적 변이를 이해하는 것이 중요하다.

순천향대학교 의과대학 부천병원 영상의학과