SHORT REPORT

Transcatheter Embolization of an Ovarian Artery Pseudoaneurysm: An Elusive Source of Post-hysterectomy Bleeding

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Endovascular management of obstetric and gynecologic hemorrhage has seen the rapid growth of uterine artery embolization for the treatment of symptomatic fibroids, or leiomyomas. However, patients do continue to undergo hysterectomies and are thus prone to the known complications of surgical procedures. We report the case of a 37-year-old woman who underwent a total abdominal hysterectomy for fibroid-related menometrorrhagia. She presented 15 days following this procedure with severe abdominal pain, secondary to a large pseudoaneurysm arising from the right ovarian artery. This was successfully treated with endovascular embolization. This case emphasizes the importance of considering this vessel as a potential source of pelvic hemorrhage following hysterectomy and highlights transcatheter embolization as a suitable management choice.

Keywords: Arterial embolization; Pseudoaneurysm.

Introduction

Endovascular management of obstetric and gynecologic hemorrhage has been recently highlighted with the rapid growth of uterine artery embolization for the treatment of symptomatic fibroids, or leiomyomas. However, patients do continue to undergo hysterectomies and are thus prone to the known complications of surgical procedures. In this case, we present a 37-year-old woman who underwent a total abdominal hysterectomy for fibroid-related menometrorrhagia. She presented 15 days following this procedure with severe abdominal pain, secondary to a large pseudoaneurysm arising from the right ovarian artery. This was successfully treated with endovascular embolization.

Case Report

A 37-year-old gravida 0 woman presented to the clinic with increasing menometrorrhagia and abdominal fullness that has been unresponsive to both hormonal treatment and ibuprofen for the past few months. A sonogram revealed a 20–22 weeks’ sized enlarged uterus with multiple fibroids, the largest measuring 7.8 cm in maximum diameter.

After informed consent, a total abdominal hysterectomy was performed. The abdominal approach was favored over the vaginal approach due to the massive size of the multiple leiomyomas. The procedure was uneventful and the patient tolerated it well. There was no mention of mobilizing or ligating the ovarian arteries.

One-week status post-total abdominal hysterectomy, follow-up pelvic examination was unremarkable. Two weeks status post-hysterectomy, however, the patient presented to the emergency department complaining of worsening severe abdominal pain relieved by only morphine. The pain was localized to the mid-abdomen, was intermittent in nature, and seemed to worsen when feeling constipated. She reported hard stools but denied any bright red blood per rectum or melena. She denied any vaginal discharge, or bleeding.

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A contrast-enhanced computerized tomography (CT) scan showed a 2×2.5 cm² hyperdense enhancing mass with mild extravasation in the right hemi-pelvis just adjacent to the right iliac artery (Fig. 1). This was interpreted by the attending diagnostic radiologist as a pseudoaneurysm arising from either the right common or internal iliac artery with significant surrounding hemorrhage.

The patient was immediately brought to the angiography suite. A pelvic angiogram appeared normal. A flush aortogram at the level of the renal arteries, however, demonstrated opacification of a pseudoaneurysm/arteriovenous fistula arising off the distal most portion of the right ovarian artery with filling of the right ovarian vein (Fig. 2(A) and (B)). It was decided that transcatheter embolization of the ovarian artery was the most suitable management choice. The right ovarian artery was selected using a 5 F Mikealsson catheter (AngioDynamics, Inc., Queensbury, NY, USA) and further selected using a 3 F Renegade microcatheter (Boston Scientific, Inc., Natick, MA, USA) over a 0.018 Transend wire (Boston Scientific, Inc., Miami, FL, USA). The artery was subsequently embolized with 2×3 mm² and 2×4 mm² Vortex coils (Boston Scientific, Inc., Cork, Ireland). A post-embolization angiogram revealed stasis within the ovarian artery (Fig. 3). A follow-up CT scan revealed successful thrombosis of the pseudoaneurysm. The patient remains stable 6 months after the embolization.

**Comment**

Over 645,000 hysterectomies are performed in the USA each year, of which more than one-third performed for the treatment of uterine fibroid-associated symptoms.¹ This makes uterine leiomyomata the largest single indication for the surgery.² Although less invasive treatment alternatives to hysterectomy, such as uterine artery embolizations, are becoming more commonplace for the management of uterine fibroids, hysterectomy remains a routine gynecologic surgery.

A prospective observational study of 10,000 hysterectomies carried out in Finland in 1997 by Harkki-Siren et al. outlines the major differences in complication rate between the various types of hysterectomies. They report a complication rate of 17.2% for the abdominal approach, 23.3% for the vaginal approach and 19% for laparoscopic hysterectomy, with infection being the most common problem. A significant difference between the various routes was that ureteric injury was seven times more common during operations performed by the vaginal than the abdominal route. Hemorrhage occurred in 2.1, 3.1, and 2.7% of abdominal, vaginal and laparoscopic hysterectomies, respectively. A specific cause or source of bleeding was not identified.³ ⁴

A few case reports, however, have angiographically diagnosed the ovarian artery as a source of hemorrhage post-hysterectomy. These were successfully treated with transcatheter embolization.⁴ ⁵ Arterial pseudoaneurysms have been previously reported in the obstetrics literature as a rare complication of hysterectomy.⁷ ⁹ In the reported cases, as in this case, the patients' presented with symptoms related to delayed rupture and subsequent hemorrhage of the pseudoaneurysm. Diagnostic angiography identified the uterine artery, common iliac artery, and collateral circulation of the uterine cervix (vaginal branch of the uterine artery) as the sources of bleeding in these cases, respectively.

In our case, the culprit vessel was more elusive. It was thought to be arising from a blood vessel that originated in the pelvis, however, our non-selective pelvic arteriogram proved to be non-diagnostic. Only after a repeat angiogram at the level of the renal arteries was performed were we able to accurately delineate the patient’s pseudoaneurysm and identify the source of bleeding. A large right ovarian artery pseudoaneurysm with an A-V fistula to the right ovarian vein was revealed on the aortogram. This level was elected based on the knowledge that the ovarian arteries originate from the aorta just distal to the origins of the renal arteries.

A handful of case reports in the literature have described aneurysms arising from the ovarian artery.¹⁰ ¹² Successful transcatheter embolization of ruptured ovarian artery aneurysms has even been detailed.¹¹ ¹² To the best of our knowledge, however,
this is the first reported case of an ovarian artery pseudoaneurysm following hysterectomy. This case emphasizes the importance of considering this vessel as a potential source of pelvic hemorrhage following invasive procedures.

References


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