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Abnormal uterine bleeding after ovarian vein embolotherapy for pelvic congestion syndrome: Case report and review of literature

Mostafa A. Borahay*, Gokhan S. Kilic, Mary C. Haver

Department of Obstetrics & Gynecology, University of Texas Medical Branch, Galveston, Texas, USA

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ABSTRACT

Ovarian vein embolotherapy is a relatively new treatment for pelvic congestion syndrome that is claimed to be safe and effective. A 36-year-old woman underwent ovarian (without internal iliac) vein embolotherapy for pelvic congestion syndrome. Her pain was improved following the procedure. Within three months of the procedure, she started experiencing distressing abnormal uterine bleeding. Specifically, she developed profuse bleeding after intercourse. After thorough evaluation and counseling, a total abdominal hysterectomy was eventually performed. The use of ovarian vein embolization for treatment of pelvic congestion syndrome may be associated with abnormal uterine bleeding.

1. Introduction

Pelvic congestion syndrome was firstly described by Taylor in 1949. It results from vascular engorgement of the uterus and the vessels of the broad ligament and lateral pelvic wall, which may lead to chronic pelvic pain[1]. Percutaneous transcatheter embolotherapy, firstly introduced by Edwards *et al.*[2] in 1993, is claimed to be a safe and effective treatment for the syndrome. In published studies, rates of significant relief varied from 50% to 100%[3-7]. The largest published series to date[4] describes 127 patients, 106 of whom underwent bilateral ovarian vein sclerotherapy followed by coil embolization. Eighty-three percent of the patients demonstrated relief of symptoms, 13% were no better, and 4% were worse. Generally, the procedure has few associated complications. One study involving 56 cases indicated no significant change in menstrual cycle[7]. Recently, procedure has been described to be successful in a pediatric patient with chronic pelvic pain[8].

2. Case report

A 35-year-old woman (gravida 6, para 3) presented to a different health care provider complaining of chronic pelvic pain that was worse toward the end of the day. Of note, she was a runner, and this activity significantly aggravated her symptoms. In addition, she complained of dyspareunia and pain with bowel movements. Menstrual history was unremarkable. Examination revealed lower extremity varicosities. Pelvic examination was normal. Ultrasonography demonstrated extensive pelvic varicosities. Percutaneous transjugular angiography of the ovarian veins showed pelvic varices. The ovarian veins were embolized with Gelfoam slurry and Gelfoam pledgets, followed by

*Corresponding author: Mostafa A. Borahay, MD, Department of Obstetrics & Gynecology, University of Texas Medical Branch, 301 University Blvd. Galveston, TX 77555-0587, USA.
Tel: (409) 772-1574
Fax: (409) 747-0366
E-mail: maboraha@utmb.edu

multiple 5 and 8 mm Gianturco coils.

Following the procedure, her pelvic pain was significantly improved. Shortly after the procedure, she started complaining of abnormal uterine bleeding. The patient presented to our institution 3 months after embolization. She stated that each time she felt she was about to have an orgasm during sexual intercourse; she became warm and noticed she was bleeding. The patient said that during intercourse she experiences "··· vaginal bleeding with clots for about 12 to 24 h ··· since I underwent the ovarian vein embolization. It is impacting my sexual relationship. I'm embarrassed and reluctant to engage in intercourse." She also stated that her periods were a little heavier after the procedure. She also noted more premenstrual symptoms. Pelvic examination was unremarkable, and Pap smear was within normal limits. Pelvic ultrasonography revealed a uterus that appeared normal; measuring 6.9 cm × 3.6 cm × 4.9 cm. Myometrium appeared homogenous. Endometrium was symmetrical in shape with a double-layer thickness of 1.05 cm. No intracavitary defects were noted on sonohysterography. In addition, she had a computerized tomography scan that did not reveal any abnormality and demonstrated that the coils were located in the ovarian veins (Figure 1). The patient was thoroughly counseled about different treatment options, including repeat venography with vein embolization, uterine artery embolization, endometrial ablation, surgery and expectant management. She opted for an expectant management. The patient was followed for 8 months after presentation. During this period, her abnormal uterine bleeding was not improved, and she clearly expressed her desire for a hysterectomy. A total abdominal hysterectomy was performed. Intraoperatively, the coils were visible through the peritoneum in the infundibulopelvic ligament (Figure 2). The postoperative course was uneventful, and she was discharged on the second postoperative day. She was completely asymptomatic in subsequent follow-up visits. Postoperative histopathologic examination of the uterus did not reveal any pathologic abnormalities.

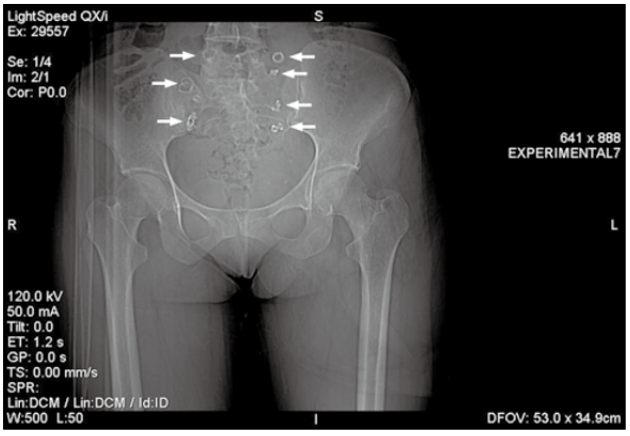

Figure 1. Preoperative scout film of computed tomography scan showing coils in bilateral ovarian veins.

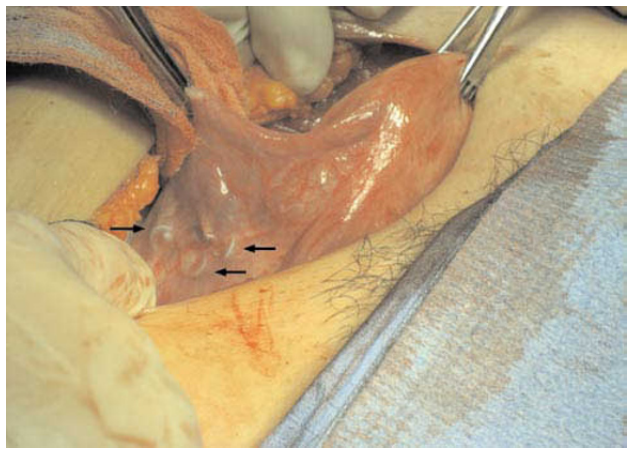

Figure 2. Intraoperative photograph showing coils in ovarian vein.

3. Discussion

Herein, we present a unique case of a patient who underwent ovarian vein embolotherapy for pelvic congestion syndrome. After the procedure, she presented to us with distressing abnormal uterine bleeding. We reviewed the literature, and found no reports of abnormal uterine bleeding as a complication of ovarian vein embolotherapy.

Pelvic congestion syndrome is a controversial diagnosis that is mentioned as one of the causes of chronic pelvic pain. The procedure is not popular in gynecology literature although it is practiced by some interventional radiololgists.

Several studies have reviewed short- and long-term results of ovarian vein embolization in pelvic congestion syndrome, evaluating technical success, effectiveness in alleviating symptoms, and complications. Venbrux *et al.*[7] studied the impact of ovarian and internal iliac vein embolotherapy on chronic pelvic pain and menstrual cycle. They described a significant decrease in pain based on the Visual Analog Scale without any notable impact on the menstrual cycle. The mean baseline pain level was 7.8 and, at 12 months, 2.7. The same researchers published a larger study 4 years later that involved 127 cases where the mean pelvic pain level had improved significantly from 7.6 to 2.9.

Our case is the first publication of abnormal uterine bleeding following ovarian vein embolotherapy for pelvic congestion syndrome. We reviewed the MEDLINE database using the search terms "menstrual" or "menorrhagia" or "bleeding" and "ovarian vein embolization" or "ovarian vein embolotherapy" without limit restrictions regarding language, date, or type of publication. We found no previous reports of abnormal uterine bleeding following embolotherapy for pelvic congestion syndrome. Of note, very little was published in gynecologic literature, whereas the vast majority of information was published in interventional

radiology journals.

Of note, the patient bled only with orgasm. She did not bleed during nonorgasmic sex. The cause of the abnormal uterine bleeding is not clear. Both the excitement and plateau phases of the female sexual response cycle are associated with increased blood flow to the pelvis. One of the possible explanations for the patient's abnormal uterine bleeding is the development of collateral circulation and aberrant neovascularization. Our theory is that these newly developed collateral vessels became very congested and fragile leading to abnormal uterine bleeding. Bleeding may depend on the location of the developing venous formation. If the development is close to the endometrium, it may manifest as abnormal uterine bleeding. We do not know if embolotherapy of the internal iliac veins would have prevented this. Embolization of the internal iliac veins in addition to the ovarian veins is still controversial in the treatment of pelvic congestion syndrome. Other studies have demonstrated complications in which coils placed in the internal iliac veins embolized to the pulmonary circulation[7,9]. Although the coils were snared in most series, this complication has discouraged some radiologists from embolizing the internal iliac veins. Other authors[4] feel that the success rate of embolization may be improved if the internal iliac veins are included. These authors proposed an approach to treat patients with pelvic congestion syndrome by embolizing ovarian veins firstly[4]. Using this approach, patients are reevaluated 6 weeks after ovarian vein embolization, and if they are still complaining of significant symptoms, the internal iliac veins are embolized.

Our advice is to counsel patients before ovarian vein embolotherapy about the possibility of abnormal uterine bleeding as a complication of the procedure. The procedure is relatively new and still evolving and other complications may be encountered in the future. Patients should be aware of this at the time of informed consent.

Conflict of interest statement

We declare that we have no conflict of interest.

References

[1] Stenchever MA, Droegemueller W, Herbst AL, Mishell D. *Comprehensive gynecology*. 4th ed. St. Louis: Mosby; 2001.

[2] Edwards RD, Robertson IR, MacLean AB, Hemingway AP. Case report: pelvic pain syndrome-successful treatment of a case by ovarian vein embolization. *Clin Radiol* 1993; **47**(6): 429-431.

[3] Nicholson T, Basile A. Pelvic congestion syndrome, who should we treat and how? *Tech Vasc Interv Radiol* 2006; **9**(1): 19-23.

[4] Kim HS, Malhotra AD, Rowe PC, Lee JM, Venbrux AC. Embolotherapy for pelvic congestion syndrome: long-term results. *J Vasc Interv Radiol* 2006; **17**(2 Pt 1): 289-297.

[5] Cordts PR, Eclavea A, Buckley PJ, DeMaioribus CA, Cockerill ML, Yeager TD. Pelvic congestion syndrome: early clinical results after transcatheter ovarian vein embolization. *J Vasc Surg* 1998; **28**(5): 862-868.

[6] Maleux G, Stockx L, Wilms G, Marchal G. Ovarian vein embolization for the treatment of pelvic congestion syndrome: long-term technical and clinical results. *J Vasc Interv Radiol* 2000; **11**(7): 859-864.

[7] Venbrux AC, Chang AH, Kim HS, Montague BJ, Hebert JB, Arepally A, et al. Pelvic congestion syndrome (pelvic venous incompetence): impact of ovarian and internal iliac vein embolotherapy on menstrual cycle and chronic pelvic pain. *J Vasc Interv Radiol* 2002; **13**(2 Pt 1):171-178.

[8] Wassong C, Shah B, Kanayama M, Bjarnason H, Milla SS. Radiologic findings of pelvic venous congestion in an adolescent girl with angiographic confirmation and interventional treatment. *Pediatr Radiol* 2012; **42**(5): 636-640.

[9] Rastogi N, Kabutey NK, Kim D. Unintended coil migration into the right ventricle during the right ovarian vein coil embolization. *Vasc Endovascular Surg* 2011; **45**(7): 660-664.