Letters to the Editor

Uterine Fibroid Embolization without the Use of Iodinated Contrast Material

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Editor:

Uterine fibroid embolization (UFE) is a safe and effective therapy for women with symptomatic uterine fibroids (1). At the present time, contraindications specific to UFE are still being established. However, the relative contraindications to angiography apply to this procedure, including a history of a severe allergic reaction to iodinated contrast material. Because hysterectomy is a proven alternative to UFE, patients with a history of anaphylaxis may choose to undergo surgery rather than risk a potentially lethal reaction during UFE. We have recently performed UFE in a patient with a history of anaphylaxis to iodinated contrast material with use of CO_2 and gadolinium as the angiographic contrast agents and polyvinyl alcohol (PVA) and Gianturco coils as the embolization agents.

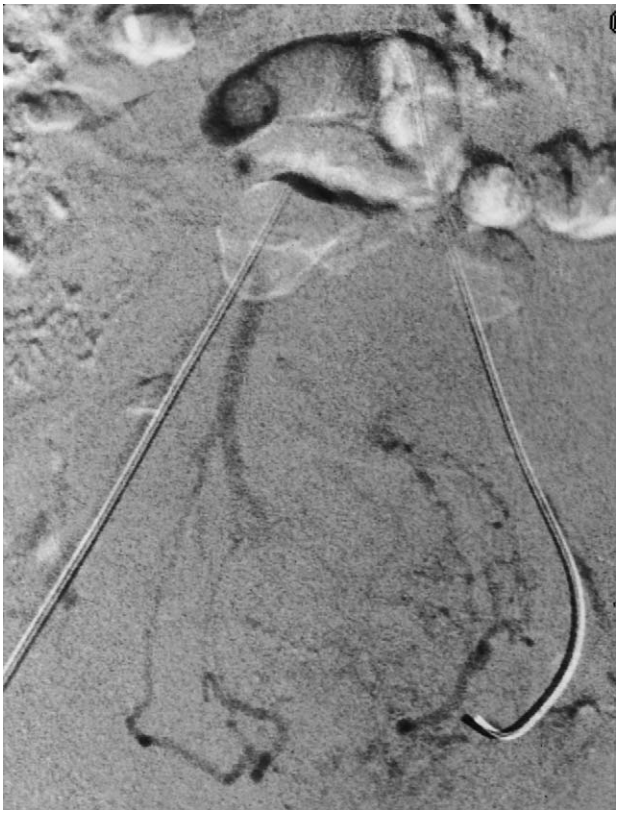

Figure 1. Selective arteriogram of the left uterine artery performed with CO_2 demonstrating the extensive vasculature of the dominant fibroid as well as the uterine-uterine anastomoses.

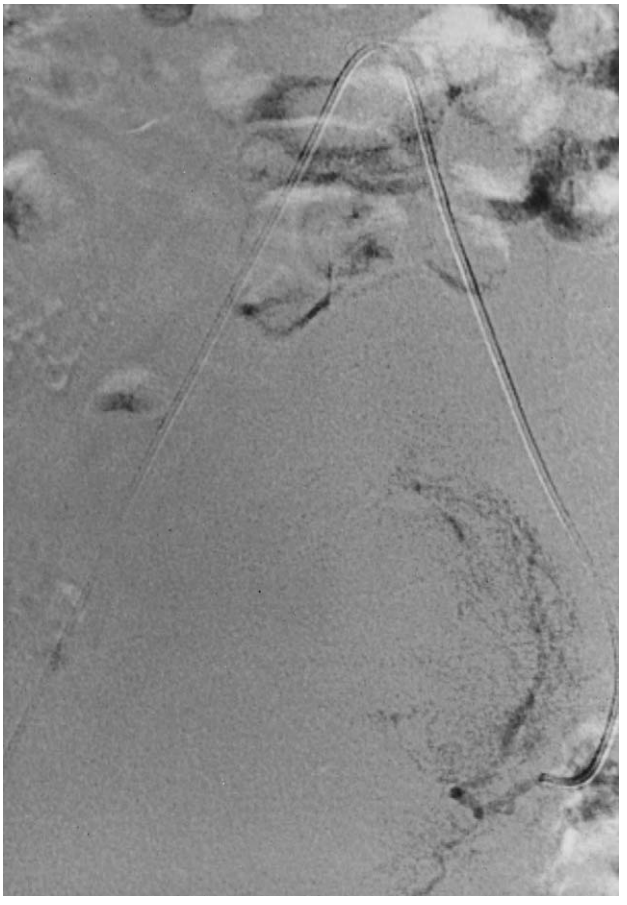

Figure 2. Selective arteriogram of the left uterine artery performed with gadolinium demonstrating the vasculature of the dominant fibroid and confirming catheter position.

A 48-year-old woman presented with abnormal uterine bleeding and increased urinary frequency. The patient reported a history of anaphylactic reactions following an intravenous pyelogram and also after the use of nonsteroidal antiinflammatory medication, both of which required intubation. A pelvic magnetic resonance (MR) image revealed an enlarged uterus measuring 13.5 cm × 11.2 cm × 12.2 cm (volume = 965.3 mL) and two dominant fibroids: a posterior intramural myoma measuring 6.1 cm × 6.0 cm × 6.5 cm (volume = 124.5 mL) and a fundal, subserosal, broadly pedunculated myoma measuring 5.0 cm × 5.1 cm × 6.5 cm (volume = 86.7 mL). Given her strong desire to avoid surgery, she was interested in the UFE procedure

Before any treatment decisions were made, our use of iodinated contrast material during the procedure and nonsteroidal antiinflammatory drugs for pain relief after the procedure was discussed with the patient. In light of her wish to proceed with UFE, we agreed to attempt this procedure with use of alternative contrast agents with the stipulation that the procedure would be terminated if iodinated

Figure 3. Pelvic arteriogram performed with CO_2 demonstrating occlusion of the left uterine artery and opacification of the right uterine artery, which ultimately opacifies branches of the left uterine artery via the uterine-uterine anastomoses.

Figure 4. Selective arteriogram of the right uterine artery with CO_2 demonstrating the vasculature of the dominant fibroid.

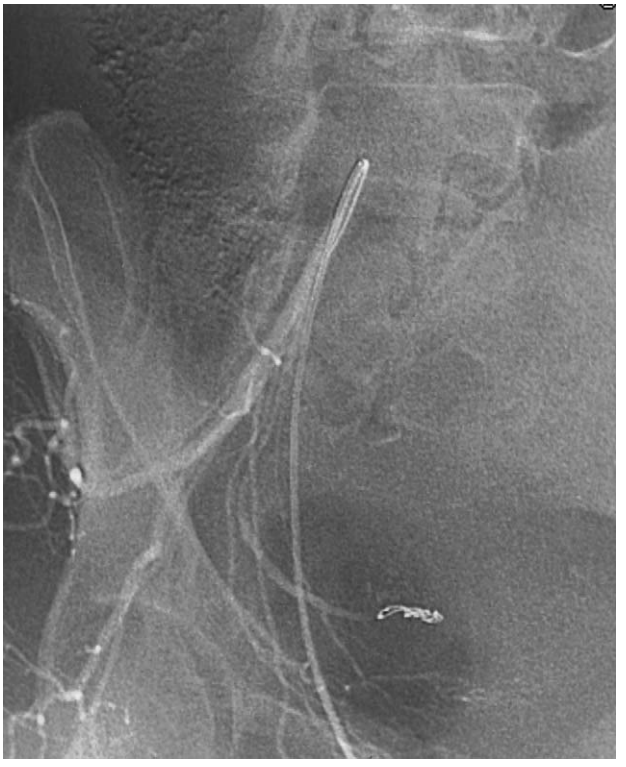

Figure 5. Selective arteriogram of the right uterine artery with gadolinium after embolization of this vessel with PVA and coils.

contrast material was required for arterial visualization or for administration of the embolic agents.

Percutaneous access was gained through the right common femoral artery and a Cobra-2 Glidecatheter (Terumo, Somerset, NJ) was used to selectively catheterize the left uterine artery. CO_2 was used to guide this catheterization and to confirm the catheter position (**Fig 1**). Before embolization, the catheter position was confirmed with 5 mL of Gadodiamide (Omniscan; Nycomed-Amersham, Buckinghamshire, UK) (**Fig 2**). Based on previous experience with UFE, 3 mL of PVA particles (Contour; Target Therapeutics, Fremont, CA) were administered into the left uterine artery. Each cm^3 of PVA was mixed with 5 mL of gadolinium and 5 mL of normal saline solution before intravascular administration. After the administration of PVA, 3 3-mm Gianturco coils (Cook, Bloomington, IN) were used to achieve a more definitive proximal embolization and to minimize the risk of particle reflux because our ability to visualize the PVA as it was being administered was reduced. A postembolization arteriogram confirmed successful embolization (**Fig 3**), although the right uterine artery was visualized as a result of cross-pelvic collaterals arising from other left internal iliac branches.

With use of the Waltman Loop technique, the Cobra catheter was used to selectively catheterize the right uterine artery with use of CO_2 for guidance (**Fig 4**). Embolization was performed in the same manner as on the left side and the result was confirmed with an injection of gadolinium (**Fig 5**). A postembolization nonselective arteriogram was then obtained with CO_2 to confirm the presence of significant ovarian contribution to the uterine circulation (**Fig 6**).

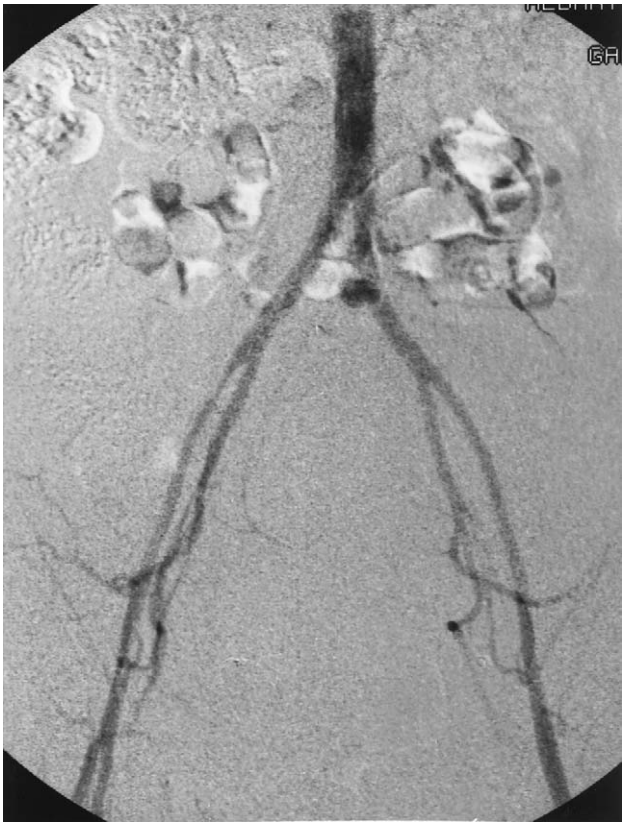

Figure 6. Nonselective arteriogram of the pelvis with CO_2 demonstrating bilateral uterine artery occlusion.

At 6-month follow-up, there was significant improvement in the degree of menorrhagia and urinary frequency that the patient was experiencing and she was quite satisfied with the results of the procedure. MR imaging performed at that time revealed a uterine volume decrease of 60% and reductions in the two dominant fibroids of 53% and 51%.

Because UFE typically requires the use of iodinated contrast material, women with a history of severe contrast allergy or renal insufficiency are considered poor candidates for this procedure. For diagnostic peripheral and renal angiography, CO_2 has been used successfully in patients with renal insufficiency (2,3). When image quality with CO_2 is suboptimal, gadolinium has been used successfully (4). The application of these contrast agents to therapeutic interventions has only recently been reported for renal stent and endograft placement (5,6).

PVA particles, gelatin-based microspheres, and gelatin sponge particles, the agents used most frequently for UFE, are not radiopaque. To facilitate visualization during administration, these agents are typically mixed with iodinated contrast material. In the present case, mixing PVA with gadolinium provided some visualization of the particles as they were administered. Coils were used to supplement the administration of PVA to assure stasis of flow because they can be administered safely without simultaneous contrast material injection.

This case demonstrates a successful outcome after UFE in a patient with symptomatic uterine fibroids and history of a severe allergic reaction to iodinated contrast material. The use of CO_2 and gadolinium were used to guide the selective catheterization of the uterine arteries and to prepare the embolic agent. Coils were used to induce a proximal embolization after the administration of PVA. With this technique, a patient who may have not been offered UFE because of the risk of a severe contrast material allergy was able to benefit from this minimally invasive procedure.

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Re: Percutaneous Closure of a Subclavian Artery Injury after Inadvertent Catheterization

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Editor:

Drs. Wallace and Ahrar recently reported on "Percutaneous closure of a subclavian artery injury after inadvertent catheterization" (1). They described treatment of a patient after inadvertent puncture of the subclavian artery and placement of a 9.5-F double-lumen catheter. The complication was immediately recognized and treated with a combination of the Prostar XL suture-mediated arterial closure device (Perclose-Abbott, Redwood City, CA) and a total of 10 minutes of balloon tamponade with use of an angioplasty balloon introduced through a femoral puncture.

We have previously reported a similar case (2). Our case was an inadvertent subclavian artery placement of a 12-F dialysis catheter, which we treated 5 days after placement. We used balloon tamponade with an angioplasty balloon introduced from a femoral approach. Two separate 2-minute duration balloon inflations were required to produce hemostasis, although we did subsequently inflate the balloon for a further 5 minutes to completely ensure hemostasis had been achieved. Consequently, our case differs from that of Drs. Wallace and Ahrar in that the size of the arterial injury was substantially larger. Despite this, we were able to achieve hemostasis in a shorter period of balloon tamponade, and did not use any other form of closure device. This suggests that use of the suture-mediated closure device in