



ELSEVIER

3 Small bowel obstruction due to adhesive disease observed 4 after uterine fibroid embolization

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19 KEY WORDS

20 Uterine fibroid
 21 embolization
 22 Adhesion
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After uterine fibroid embolization (UFE), the development of intra-abdominal adhesions, especially those involving the bowel, is a very rare complication. Seven months after UFE, a patient had a complete small bowel obstruction develop that was caused by an adhesive band between the posterior fibroid and cul-de-sac. She underwent an exploratory laparotomy, lysis of adhesion, and myomectomy. No bowel resection was needed. Inflammation after UFE may cause the development of intraperitoneal adhesions. We report an unanticipated case of a complete small bowel obstruction caused by an adhesion observed after UFE.

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24 Uterine fibroid embolization (UFE) is an increasingly
 25 used, effective, and minimally invasive treatment for
 26 symptomatic leiomyoma. UFE is a treatment alternative
 27 to hysterectomy or myomectomy, 2 surgeries with high
 28 postsurgical rates of adhesive disease, often affecting the
 29 bowel. The development of adhesions, especially those
 30 involving the bowel, after UFE is a very rare complica-
 31 tion.^{1,2} We present an unusual case of a delayed complete
 32 small bowel obstruction caused by adhesions observed
 33 after UFE.

34 Case report

35 A 32-year-old nulligravid woman with menorrhagia and
 36 anemia had a fibroid uterus diagnosed on clinical

examination. She denied a history of prior surgeries, pelvic pain, endometriosis, or pelvic infections. A pelvic ultrasound verified a uterus measuring 13.9 × 10.8 × 13.5 cm with multiple myomas, the largest, 9 × 8 × 6.5 cm, arising posteriorly. She elected to undergo a uterine fibroid embolization performed via a 4-French sheath in the right common femoral artery. Coaxial catheterization with a 3-French catheter was used to deliver 500 to 700 μm Embospheres (Biosphere Medical, Inc, Rockland, Mass) selectively into both right and left uterine arteries under fluoroscopic guidance until near-stasis of flow was achieved. Both embolizations were performed with the catheter tip in the transverse portion of the uterine artery. No reflux of particles out of either uterine artery was observed. The patient had no acute postoperative complications and returned to work in approximately one week. Her prior symptoms soon thereafter improved.

Seven months after the UFE, she experienced an acute onset of crampy abdominal pain, accompanied by

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nausea and vomiting. In an emergency department, her abdominal examination revealed diffuse tenderness and rebound. A computed tomographic scan had findings consistent with a distal complete small bowel obstruction. An exploratory laparotomy found a dense adhesive band running between a 2-cm subserosal posterior fibroid and the cul-de-sac, trapping a dilated loop of small bowel. The location of this fibroid corresponded with the preembolization 9 × 8 × 6.5-cm fibroid. No other abdominal disease, including other adhesions or endometriosis, was visualized. The adhesion was lysed, releasing the obstructed loop of bowel. This posterior fibroid was then removed. A careful inspection of the previously obstructed area of small bowel revealed no discoloration or nonviable areas, allowing the avoidance of a resection. Postoperatively, the patient did well. After slowly advancing her diet, she was discharged on the fourth postoperative day.

Comment

A MEDLINE search using the MeSH terms *uterine artery embolization*, *uterine fibroid embolization*, *adhesion*, and *bowel obstruction*, identified only 2 articles that potentially attributed adhesion formation as a result of UFE.^{1,2} One of these articles also reported a partial small bowel obstruction caused by adhesive disease.²

Intrauterine adhesions causing infertility were reported by Honda et al¹ in 4 patients after UFE. In their discussion, a hypothesized etiology of adhesion formation was infection and inflammation resulting from sloughed necrotic fibroids obstructing the cervix and interfering with the passage of intrauterine discharge.¹ They did not report any intra-abdominal adhesions in their series.

Payne and Haney² reported a patient who had a partial small bowel obstruction develop 2 weeks after UFE. On laparotomy, the patient underwent extensive adhesiolysis, including separating small bowel adherent to the uterus. Also found was a large ovarian adenocarcinoma. No mention was made of whether the patient had previously undergone any surgical proce-

Small bowel obstruction caused by adhesive disease should be included in the differential of patients with abdominal pain having a history of uterine fibroid embolization.

dures, which could have also been an cause of her adhesive disease.

The proposed mechanism of action of adhesion formation in our case is similar to that encountered in surgical patients. The large posterior fibroid, in direct contact with the cul-de-sac, underwent devascularization and ischemia after UFE. The resulting inflammatory reaction set off a cascade of intra-abdominal adhesion formation between the peritoneal surfaces. Inflammation of the adjacent peritoneal surfaces initiated adhesion formation with the formation of a fibrin matrix in the presence of suppressed fibrinolysis. Local ischemia allowed persistence of the fibrin matrix. Vascular granulation tissue, containing fibroblasts, macrophages, and giant cells, then gradually replaced the matrix. As the adhesion band slowly matured, it was covered by mesothelium and connective tissue fibers.

Although it is possible that the adhesion could have preceded the UFE, given her lack of previous intra-abdominal surgeries, or any evidence of prior pelvic infections or endometriosis, our patient's adhesion and subsequent complete bowel obstruction is most plausibly a result of the UFE. Although adhesion formation is a common occurrence after myomectomy and hysterectomy, it may also occur when fibroid disease is treated with UFE, which may subsequently lead to a small bowel obstruction, in this case 7 months post-embolization. In patients presenting with abdominal pain who have previously undergone UFE, small bowel obstruction should be included in the differential diagnosis. In our case, prompt recognition of and intervention for the obstruction prevented the need for a small bowel resection.

References

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