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3 Small bowel obstruction due to adhesive disease observed4 after uterine fibroid embolization

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19 KEY WORDS

- 20 Uterine fibroid
- 21 embolization
- 22 Adhesion
- 23 Bowel obstruction

After uterine fibroid embolization (UFE), the development of intra-abdominal adhesions, 11 especially those involving the bowel, is a very rare complication. Seven months after UFE, a 12 patient had a complete small bowel obstruction develop that was caused by an adhesive band 13 between the posterior fibroid and cul-de-sac. She underwent an exploratory laparotomy, lysis of 14 15 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 16 small bowel obstruction caused by an adhesion observed after UFE. 17 18 © 2005 Mosby, Inc. All rights reserved.

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 complication.^{1,2} We present an unusual case of a delayed complete 31 small bowel obstruction caused by adhesions observed 32 after UFE. 33

34 Case report

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

examination. She denied a history of prior surgeries, 37 pelvic pain, endometriosis, or pelvic infections. A pelvic 38 ultrasound verified a uterus measuring $13.9 \times 10.8 \times$ 39 13.5 cm with multiple myomas, the largest, $9 \times 8 \times 6.5$ 40 cm, arising posteriorly. She elected to undergo a uterine 41 fibroid embolization performed via a 4-French sheath in 42 the right common femoral artery. Coaxial catheteriza-43 tion with a 3-French catheter was used to deliver 500 to 44 700 µm Embospheres (Biosphere Medical, Inc, Rock-45 land, Mass) selectively into both right and left uterine 46 arteries under fluoroscopic guidance until near-stasis of 47 flow was achieved. Both embolizations were performed 48 with the catheter tip in the transverse portion of the 49 uterine artery. No reflux of particles out of either 50 uterine artery was observed. The patient had no acute 51 postoperative complications and returned to work in 52 approximately one week. Her prior symptoms soon 53 thereafter improved. 54

Seven months after the UFE, she experienced an 55 acute onset of crampy abdominal pain, accompanied by 56

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57 nausea and vomiting. In an emergency department, her 58 abdominal examination revealed diffuse tenderness and 59 rebound. A computed tomographic scan had findings 60 consistent with a distal complete small bowel obstruc-61 tion. An exploratory laparotomy found a dense adhesive 62 band running between a 2-cm subserosal posterior 63 fibroid and the cul-de-sac, trapping a dilated loop of 64 small bowel. The location of this fibroid corresponded 65 with the preembolization $9 \times 8 \times 6.5$ -cm fibroid. No 66 other abdominal disease, including other adhesions or 67 endometriosis, was visualized. The adhesion was lysed, 68 releasing the obstructed loop of bowel. This posterior 69 fibroid was then removed. A careful inspection of the 70 previously obstructed area of small bowel revealed no 71 discoloration or nonviable areas, allowing the avoidance 72 of a resection. Postoperatively, the patient did well. 73 After slowly advancing her diet, she was discharged on 74 the fourth postoperative day.

75 Comment

A MEDLINE search using the MeSH terms *uterine artery embolization, uterine fibroid embolization, adhe- sion,* 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

82 Intrauterine adhesions causing infertility were re-83 ported by Honda et al¹ in 4 patients after UFE. In their 84 discussion, a hypothesized etiology of adhesion forma-85 tion was infection and inflammation resulting from 86 sloughed necrotic fibroids obstructing the cervix and 87 interfering with the passage of intrauterine discharge.¹ 88 They did not report any intra-abdominal adhesions in 89 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.

99 The proposed mechanism of action of adhesion formation in our case is similar to that encountered in 100 surgical patients. The large posterior fibroid, in direct 101 contact with the cul-de-sac, underwent devasculariza-102 tion and ischemia after UFE. The resulting inflamma-103 tory reaction set off a cascade of intra-abdominal 104 adhesion formation between the peritoneal surfaces. 105 Inflammation of the adjacent peritoneal surfaces initi-106 ated adhesion formation with the formation of a fibrin 107 matrix in the presence of suppressed fibrinolysis. Local 108 ischemia allowed persistence of the fibrin matrix. Vas-109 cular granulation tissue, containing fibroblasts, macro-110 phages, and giant cells, then gradually replaced the 111 matrix. As the adhesion band slowly matured, it was 112 covered by mesothelium and connective tissue fibers. 113

Although it is possible that the adhesion could have 114 preceded the UFE, given her lack of previous intra-115 116 abdominal surgeries, or any evidence of prior pelvic infections or endometriosis, our patient's adhesion and 117 subsequent complete bowel obstruction is most plausi-118 bly a result of the UFE. Although adhesion formation 119 is a common occurrence after myomectomy and hys-120 terectomy, it may also occur when fibroid disease is 121 treated with UFE, which may subsequently lead to a 122 small bowel obstruction, in this case 7 months post-123 embolization. In patients presenting with abdominal 124 pain who have previously undergone UFE, small 125 bowel obstruction should be included in the differential 126 diagnosis. In our case, prompt recognition of and 127 intervention for the obstruction prevented the need for 128 129 a small bowel resection.

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