

# Uterine necrosis after laparoscopic uterine vessel dissection for symptomatic fibroid - A case report

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## Summary

Laparoscopic dissection of uterine vessels is a new minimally invasive method to treat symptomatic fibroids. A potential complication of uterine artery dissection is uterine necrosis. A woman with a large intramural fibroid underwent laparoscopic dissection of the uterine vessels using ultrasonic activated shears and three months later developed focal uterine necrosis requiring exploratory laparotomy and supracervical hysterectomy. Although uterine artery coagulation and dissection are procedures with a low reported rate of complications, uterine fibroid or focal uterine necrosis can occur.

**Key words:** Laparoscopy; Uterine artery dissection; Fibroid; Uterine necrosis.

## Introduction

Dissection of uterine vessels is the surgical option for women with symptomatic fibroids who wish to retain their uterus. There is a growing number of women seeking minimally invasive surgery in order to avoid major surgery. Laparoscopic bipolar coagulation of the uterine vessels (LBCUV) and anastomotic sites of the uterine artery with the ovarian artery in treating fibroids was first introduced by Liu [1] in 2000. Laparoscopic uterine vessel dissection (LDUV) using an ultrasonic technique was reported by Holub and Kliment in 2002 [2]. However, these techniques are still the subject of debate. Early reports show that laparoscopic uterine artery occlusion or dissection using electrosurgery, ultrasonic energy, clips or ligature are associated with normal reproductive functions and low-risk operative and postoperative complications [1-3].

The following might be the first report of uterine necrosis after LDUV for symptomatic fibroids.

## Case Report

A 37-year-old gravida 2, para 2, woman experienced menorrhagia and pelvic pain caused by uterine fibroids. Overall uterine size was 120 x 80 x 110 mm. The dominant posterior intramural fibroid was 100 x 80 x 70 mm. She had a six-year history of insignificant uterine inflammatory disease related to an intrauterine device (IUD). After the IUD was removed, the patient received successful therapy with oral nonsteroidal anti-inflammatory drugs. The woman had completed her family and her gynecologist recommended hysterectomy, however, she refused because she wanted to preserve her uterus. She was referred for laparoscopic dissection of the uterine vessels as an alternative to hysterectomy. The LDUV was performed using three disposable 5-mm ports and one 10-mm port in the umbilicus. The telescope was inserted intraumbilically and one 5-mm

port was made suprapubically and medially. Two 5-mm ports were placed in each of the lower quadrants at the lateral edge of the rectus abdominis muscle. Dissection using ultrasonically activated shears (LCS-C) (Ultracission, Ethicon EndoSurgery, Johnson & Johnson, Ltd, Cincinnati, OH) was started. The line of dissection was between the round ligament anteriorly, infundibulopelvic ligament medially and pelvic sidewall laterally. The peritoneum was opened and paravesical and obturator space developed by blunt dissection. This ultrasonic technique allows skeletonization of the obliterated hypogastric artery, which was grasped and traced until the uterine artery was reached. Then the uterine artery was thoroughly desiccated and dissected just medial to their origin from the hypogastric artery with ultrasonic activated shears while visualizing the ureter. After a final check to control hemostasis, the Redon catheter was left for drainage. The procedure was completed within 30 minutes without difficulty and the patient was discharged the next day.

During the two months after the procedure the patient experienced moderate vaginal bleeding. Vaginal cultures were negative. She also continued to have abdominal pain that required oral ibuprofen 800 mg three times/day. Three months after the procedure she was referred back to the hospital for evaluation of acute pelvic pain. The gynecologist's diagnosis was probable necrotizing fibroids, and the patient was administered intravenous ampicillin sodium, sulbactam sodium and metronidazole. Ultrasound showed the dominant fibroid to measure 6.5 x 6.0 x 5.0 cm (volume 195 cm<sup>3</sup>, 65.1% decrease). The ultrasound hypoechoic picture was suspicious for uterine fibroid necrosis. Laboratory tests found white blood cells at 16,200/mm<sup>3</sup> and an increased level of CRP 95 mg/l. Her pelvic pain and pressure increased progressively. Supracervical abdominal hysterectomy was performed by exploratory laparotomy. The diagnosis of uterine necrosis was confirmed. No other pathologic conditions were found. Anaerobic and aerobic cultures were negative. The postoperative stay was uneventful and the patient was discharged on day 4.

The gross surgical specimen revealed a 12-cm uterus with a soft necrotic fibroid mass (6 x 6 x 5 cm) in the posterior uterine wall. Sections of the mass showed focal fibroid coagulative necrosis and surrounding necrotic endomyometrial tissue.

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## Discussion

The long-established and conventional treatment for symptomatic or rapidly enlarging fibroids is hysterectomy. The current literature reflects a trend toward alternatives to hysterectomy for the treatment of symptomatic uterine fibroids [4]. Some of the following procedures as myolysis, uterine artery embolization, coagulation or dissection of uterine vessels provide alternatives for women with uterine fibroids that reduce morbidity and preserve the uterus. What appears common to these techniques is the concept of devascularization of the tumor. What distinguishes the approaches is the mechanism and technologies employed to occlude the blood supply to the lesion.

The procedure of uterine artery embolization (UAE) has been recently introduced by Ravina *et al.* [5] as a therapeutic alternative to the treatment of fibroids. UAE is a minimally invasive procedure which blocks the arteries supplying blood to the fibroids using tiny particles. Most reports suggest that it is a well tolerated and effective treatment [6, 7]. However, UAE is associated with an appreciable inpatient stay, considerable analgesic requirements, a longer recovery period than many patients realize, and potentially fatal complications [8]. Complications of this procedure can be serious, including contrast reaction, postembolization syndrome, pulmonary embolus, premature ovarian failure, uterine infection and bowel necrosis in conjunction with necrosis of subserous or pedunculated fibroids [9-11]. Submucous fibroids are suggested to pose a high risk of infection, although no definite mechanism has been suggested [8].

Recent reports on uterine necrosis after uterine artery embolization include that of Godfrey and Zbella [10]. The authors reported a case of diffuse uterine necrosis requiring exploratory laparotomy, total hysterectomy and left salpingo-oophorectomy two months after UAE. In a letter to the editor, Pelage *et al.* [11] discussed the scientific paper of Godfrey and Zbella. They believe that diffuse necrosis of a fibroid is a normal finding after embolization but necrosis of normal myometrium is a rare complication. Sultana *et al.* [12] presented a case of vesicouterine fistula and extrusion of a degenerating leiomyoma into the bladder after UAE, necessitating hysterectomy and partial cystectomy for repair. Uterine necrosis after arterial embolization is most likely related to the small size of the particles used. Cottier *et al.* [13] suggest, that in the management of postpartum bleeding by arterial embolization, the material choice is sponge pledgets, and the use of small particles should be avoided.

Only one (2%) patient in our series ( $n = 49$ ) developed uterine necrosis three months after LDUV. She had chronic ischemic fibroid degeneration, and pathology showed coagulative necrosis. This tumor was a deep intramural fibroid. Given this finding, we now routinely prescribe antibiotic prophylaxis for five days after surgery to decrease the chance of infection in patients with an inflammatory uterine history.

We believe a similar mechanism may exist for UAE

and laparoscopic coagulation or uterine artery dissection, when an advanced form of degenerating fibroids can become secondarily infected, especially if an inflammatory history or large necrotic areas exist. As well, treatment failure after uterine artery dissection is more likely to occur in the presence of a submucosal fibroid associated with uterine infection or a large fibroid of more than 6 cm [14]. Accordingly, patients whose primary symptoms include submucosal fibroid and menorrhagia are best treated with hysteroscopic myomectomy or hysterectomy.

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