

Premature Ovarian Failure After Uterine Artery Embolization

Corresponding Author:

Prof. Tae-Hee Kim,
Department of Obstetrics and Gynecology, Soonchunhyang University Bucheon, 1174, Jungdong Wonmigu Bucheon Si Gyeonggi-do, 420-767 - Republic of Korea

Submitting Author:

Prof. Tae-Hee Kim,
Department of Obstetrics and Gynecology, Soonchunhyang University Bucheon, 1174, Jungdong Wonmigu Bucheon Si Gyeonggi-do, 420-767 - Republic of Korea

Other Authors:

Dr. Ping Pisal,
M.D, Department of Obstetrics and Gynecology - Cambodia

Prof. Hae-hyeog Lee,
Ph D, Department of Obstetrics and Gynecology, Department of Obstetrics and Gynecology, Soonchunhyang University Bucheon Hospital, \n1174 Jung-1-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do\n, 424-767 - Korea, South

Prof. Wooseok Lee,
Ph D, Department of Obstetrics and Gynecology, Department of Obstetrics and Gynecology, Soonchunhyang University Bucheon Hospital, \n1174 Jung-1-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do\n, 420-767 - Korea, South

Dr. Soo-ho Chung,
Ph D, Department of Obstetrics and Gynecology, Department of Obstetrics and Gynecology, Soonchunhyang University Bucheon Hospital, \n1174 Jung-1-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do\n, 420-767 - Korea, South

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Premature Ovarian Failure After Uterine Artery Embolization

Author(s): Pisal P, Kim T, Lee H, Lee W, Chung S

Abstract

We report two cases of premature ovarian failure after uterine artery embolization (UAE). Our cases provide guidance for gynecologists who perform UAE. The first patient, aged 42 years, was para 1-0-0-1 and did not have a significant family history. She complained of metromenorrhagia, but she wanted to preserve her uterus for fertility. We performed a bilateral UAE. After 4 months, she complained of amenorrhea. She was diagnosed with early ovarian failure by checking follicle stimulating hormone (FSH). The second patient, aged 40 years, had infertility from uterine myoma, endometriosis, and adenomyosis. She had undergone UAE and in vitro fertilization (IVF) 6 years earlier. After IVF, she became pregnant and was admitted from 26 weeks to 29 weeks for preeclampsia and preterm labor. After delivery, she had postpartum hemorrhage, and repeat UAE was performed. Two years later, she complained of hot flashes and amenorrhea. She was diagnosed with premature ovarian failure.

Introduction

Uterine artery embolization (UAE) has emerged as a safe, effective, and durable alternative to surgery for treating uterine fibroids (1,2). However, premature ovarian failure has been described as one possible complication, with reported rates ranging from 3% to 5% in patients aged <45 years and from 7% to 14% in older patients (3,4).

This complication is thought to occur because of non-target ovarian embolization via the utero-ovarian collaterals, causing hypoxic ovarian damage and loss of ovarian follicles (5–7). It remains unknown, however, whether this is a sporadic event or whether there is a generalized impact of UAE on ovarian function that is more likely to be apparent in perimenopausal women (>45 years old), who have already-diminished ovarian reserve. For younger women, however, ovarian damage might occur that does not result in sudden ovarian failure but that might compromise subsequent ovarian function and even advance the onset of menopause (6,7).

The available data regarding the impact of UAE on the

long-term functioning of the ovaries are relatively few and inconsistent (7–8). This is an important issue because earlier menopause is associated with long-term health risks such as cardiovascular disease and osteoporosis (9).

UAE is advantageous for preserving the uterus for fertility; however, premature ovarian failure negates this advantage by causing infertility. The aim of reporting the cases is educational tip about the serious rare complication after UAE.

Case reports

Case 1

A 42-year-old woman arrived at the emergency room with vaginal bleeding and menorrhagia. The patient was para 1-0-0-1 and did not have a significant family history. The following laboratory results were reported: white blood cell count (WBC) $17.35 \times 10^3/\mu\text{l}$; hemoglobin (Hb)/ hematocrit (Hct), 7.4 g/dl/20.8%; platelets (PLT), $191 \times 10^3/\mu\text{l}$.

Due to menorrhagia, the patient had undergone insertion of an intrauterine device (IUD) at a local clinic for 3 years. Metromenorrhagia occurred, and she complained of dizziness. She was diagnosed with uterine myoma. Her menstrual flow filled as much as one pad per hour, and she came to the emergency room.

Her symptoms were dizziness, with abdominal pain. Pelvic examination revealed a hard palpable mass and tenderness. Computed tomography revealed a 100×98 -mm uterine myoma (Figure 1). We performed the embolization for preserving fertility. After transfusion, right femoral artery anesthetic puncture, and application of catheter, both a uterine artery angiography micro-guide wire and a catheter were applied, and embolization was carried out. Angiography revealed hypertrophied and tortuous both uterine arteries. The women were used 355-500 and 500-700 μm polyvinyl alcohol (PVA) particles.

After 4 months, the patient complained of amenorrhea. Ultrasonography revealed a 6×5 -cm decreasing myoma. A pregnancy test was negative; follicle stimulating hormone (FSH) and estradiol were 34.2 mIU/mL and less than 10 pg/mL, respectively. Menopausal hormone therapy (MHT) was started.

After MHT, She had no other complication without amenorrhea.

Case 2

A 37-year-old woman (0-0-0-0) was diagnosed with infertility with uterine myoma, adenomyosis, and endometriosis in the right ovary. We perform the embolization for preserving fertility. Both internal iliac arteriographies are done with 5 French catheter via right common femoral artery. After selecting Uterine artery with 3 French microcatheter, selective angiography is done.

Mixed Gel-foam and antibiotics are injected at both uterine arteries ascending branch.

At post-embolization follow-up angiography, the cervical branch was saved, and both uterine arteries were completely occluded. (figure 2) She became pregnant by in vitro fertilization (IVF) 1 year later. She was admitted for preeclampsia, preterm labor, and severe anemia.

A primary cesarean section was performed at 29⁺⁶ weeks. She delivered a male 1,080-g newborn. The Apgar was 7, 8 which was 1 minute or 5 minute respectively, hemoglobin was 7.7 g/dL, and proteinuria was detected. Postpartum hemorrhage occurred. She wanted to preserve uterus for fertility. Pelvic aortography is done via right Common femoral artery with 5 French catheter and then internal iliac artery is selected. After then, uterine artery is selected by 3 French micro catheter and angiography is done, at angiography, both uterine body and fundus are stained and via nonuterine arterial collaterals some part of uterine body portions are also stained. With 3 French microcatheter and PVA 700 μ m size, both uterine arteries are embolized.

She was performed embolization twice because of infertility and postpartum hemorrhage. After two year later, aged 40 year, woman suffered from hot flushes and amenorrhea. Her FSH and β -hCG test results were 95 and negative, respectively. MHT was started. After MHT, hot flushes were subsided.

Discussion

The patients presented with an increase in FSH values after UAE, suggesting ovarian failure. Changes in hormonal markers after UAE indicated impaired ovarian reserve, as indicated by an increase in FSH levels (7). Complications of UAE include infectious disease, deep vein thrombosis, malignant leiomyosarcoma, ovarian dysfunction, uterine necrosis, urinary tract infection, and hematoma (10). The

percentage of patients (>45 years) with premature ovarian failure was higher after UAE because of a higher prevalence of uterine-ovarian anastomosis (10). Premature ovarian failure is thought to reflect the initial ovarian follicles and the rate of follicle depletion with age (11). If this is so, factors that may directly or indirectly damage the follicular pool may affect the timing of menopause by decreasing ovarian perfusion. UAE has been hypothesized to impair ovarian reserve, which could result in earlier menopause, as described in women who undergo hysterectomy with ovarian conservation (12).

Some studies have suggested loss of ovarian reserve in patients of all ages (7, 13), and others have reported no adverse effects, especially in younger patients (14–15).

The polyvinyl alcohol (PVA) particle size is also a risk factor for ovarian failure. The ideal particle size of PVA has not been established, but current opinion is that the particles should not be <350 μ m in diameter, as smaller particles have a higher risk of causing endometrial atrophy by penetrating deeply into small-caliber vessels. Conversely, particles should also not be >550 μ m, as they can accidentally obliterate non-target vessels (7,12,13). Magnetic resonance angiography has been helpful in predicting early menopause in cases of uterine myoma because the presence of ovarian collateral vessels to the uterine myoma increases the risk of premature ovarian failure or early menopause (10).

We reported only two cases about early menopause and premature ovarian failure, which is limitation of our cases.

However, Performance of UAE twice in the same woman may be a risk factor for premature ovarian failure, such as in our patient. Early menopause is a rare complication of UAE but should be discussed in advance with patients.

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Illustrations

Illustration 1

Figure 1 Computed tomography revealed a 100 mm* 98-mm uterine myoma.

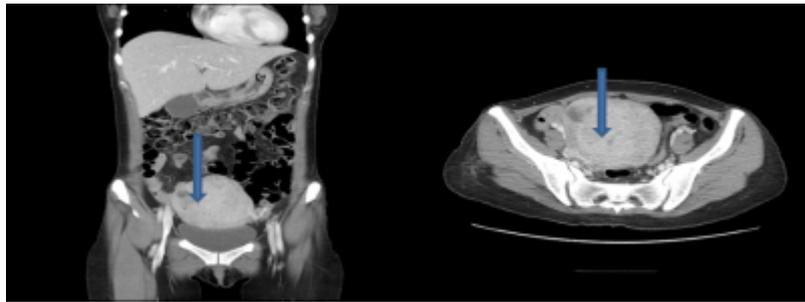


Illustration 2

There are post embolization angiography findings.

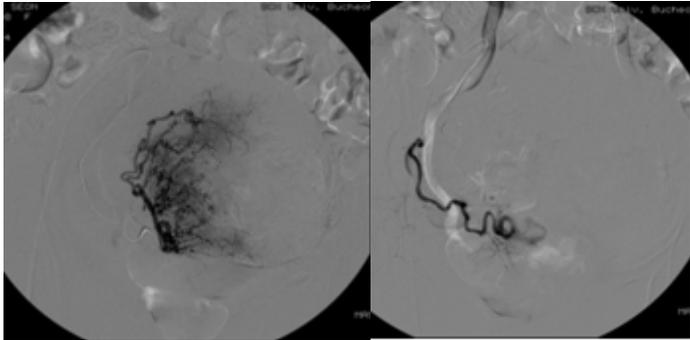


Figure 2.

There are post embolization angiography findings.

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