



embolization) 가 (nontarget

2

2.8Fr (coaxial microcatheter) (Progreat, Terumo, Tokyo, Japan) 500 - 710  $\mu$ m Polyvinyl alcohol (PVA) (Contour, Boston Scientific Corp., Natick, MA, U.S.A.) 가 2.8Fr (Fig. 1A).

(4 - 6).

(Fig. 1B). 3 mm (Tornado embolization microcoil, Cook, Bloomington, U.S.A.) 2 (Fig. 1C)

(Fig. 1D). 가

1 32 가

MRI 5.5 × 4.8 × 5.6 cm

2 38

1

5 Fr

MRI 4.5 × 4.3 × 5.2 cm

(Fig.

2A).

5 Fr

2006 3 7

2006 5 3

2.8Fr (coaxial  
microcatheter) (Progreat, Terumo, Tokyo, Japan)  
355 - 500  $\mu$ m Polyvinyl  
alcohol (PVA) (Contour, Boston Scientific Corp., Natick, MA,  
U.S.A.) 가  
5 Fr 2.8Fr

(Fig. 2E).

(Fig. 2F).

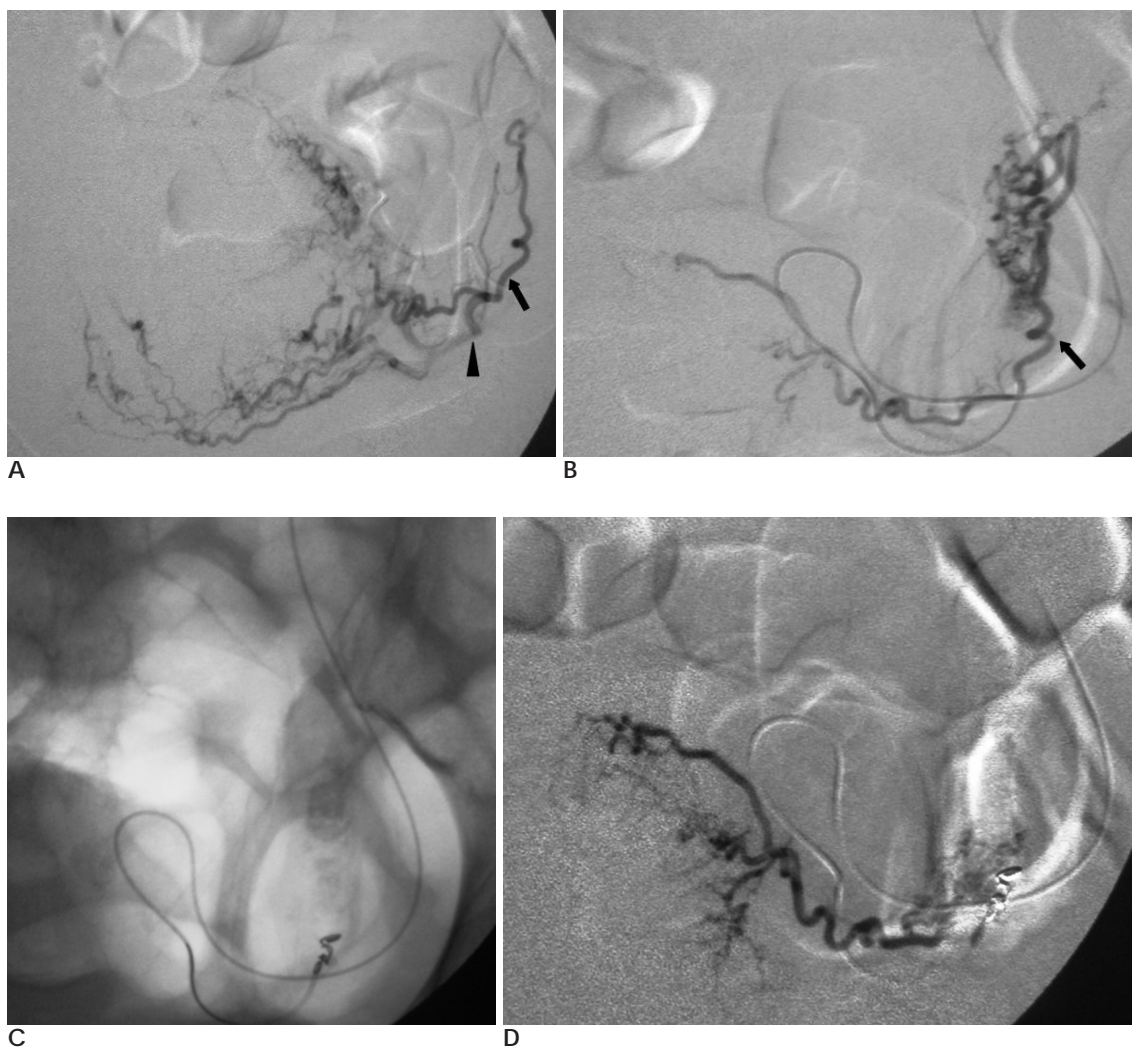
3

(Fig. 2B).

(Fig. 2C, D). 1 mm

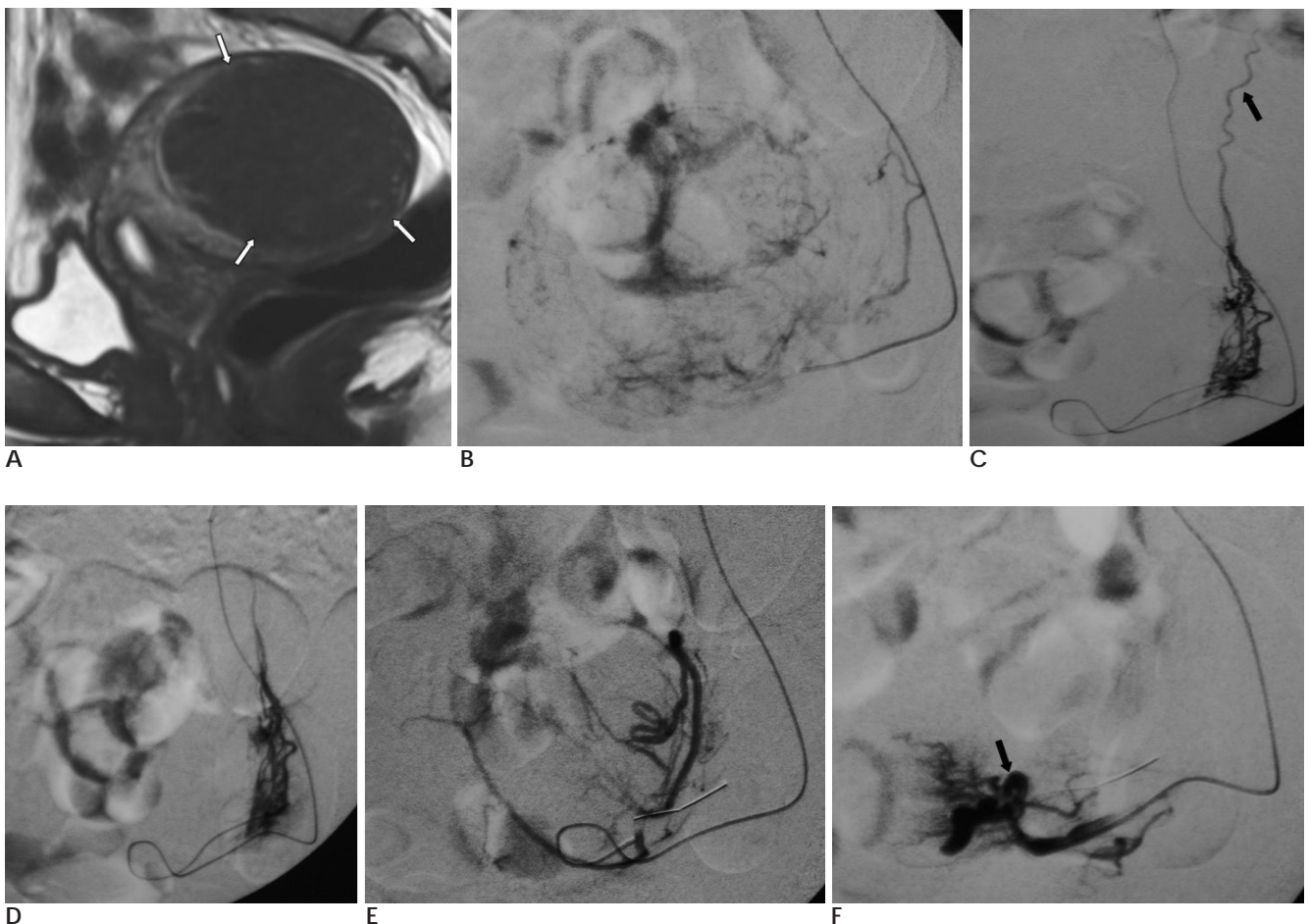
(Hilal embolization microcoil, Cook,  
Bloomington, U.S.A.) 2

가 (1-3).



**Fig. 1.** Intramural type uterine myoma in a 32-year-old woman presented with hypermenorrhea and vaginal bleeding.  
A. Left uterine artery angiogram shows collateral vessel (arrow) to the left ovary arising from the distal ascending segment (arrowhead) of the uterine artery.  
B. Tuboovarian collateral angiogram shows large tuboovarian collateral (arrow) with retrograde flow to the ovary and faint ovarian blush.  
C. Radiogram shows microcoil deployed within the proximal collateral.  
D. After coil embolization of the ovarian collaterals angiogram shows no definite flow to the left ovary.

가  
(cervicovaginal artery)  
46%  
5 - 11%  
(4 - 6). 가  
(8, 9). 3  
가  
(ovarian reserve)  
(7). 6 1



**Fig. 2.** Intramural type myoma in 38-year-old woman presented with hypermenorrhea and anemia.  
**A.** Sagittal T2-weighted MR image shows intramural myoma(open arrows) at body and fundus with low signal intensity.  
**B.** Uterine artery angiogram shows collateral vessel to the left ovary arising from the distal ascending portion of the uterine artery.  
**C, D.** Tuboovarian collateral angiogram shows reflux to the ovarian artery(arrow) and subsequent washout of contrast material toward to the uterus.  
**E.** After coil embolization, uterine artery angiogram shows hypervascularity to the uterus and myoma, but no definite flow to the left ovary.  
**F.** After uterine artery embolization with PVA particle, uterine angiogram shows complete occlusion of ascending portion(arrow) of uterine artery preserving cervicovaginal artery.

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Razavi (10)

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III

Tropeano (11)

40

FSH

E2 level

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(11).

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lb

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1. Spies JB, Ascher SA, Roth AR, Kim J, Levy EB, Gomez-Jorge J. Uterine artery embolization for leiomyomata. *Obstet Gynecol* 2001;98:29-34
2. McLucas B, Adler L, Perrella R. Uterine fibroid embolization: non-surgical treatment for symptomatic fibroids. *J Am Coll Surg* 2001;192:95-105
3. Pron G, Bennett J, Common A, Wall J, Asch M, Sniderman K, et al. The Ontario uterine fibroid embolization trial. Part 2. Uterine fibroid reduction and symptom relief after uterine artery embolization for fibroids. *Fertil Steril* 2003;79:120-127
4. Chrisman HB, Saker MB, Ryu RK, Nemcek AA Jr, Gerbie MV, Milad MP, et al. The impact of uterine fibroid embolization on resumption of menses and ovarian function. *J Vasc Interv Radiol* 2000;11:699-703
5. Goodwin SC, McLucas B, Lee M, Chen G, Perrella R, Vedantham S, et al. Uterine artery embolization for the treatment of uterine leiomyomata midterm results. *J Vasc Interv Radiol* 1999;10:1159-1165
6. Spies JB, Scialli AR, Jha RC, Imaoka I, Ascher SM, Fraga VM, et al. Initial results from uterine fibroid embolization for symptomatic leiomyomata. *J Vasc Interv Radiol* 1999;10:1149-1157
7. Marx M, Wack JP, Baker EL, Stevens SK, Barakos JA. Ovarian protection by occlusion of uteroovarian collateral vessels before uterine fibroid embolization. *J Vasc Interv Radiol* 2003;14:1329-1332
8. Itkin M, Shlansky-Goldberg R. Uterine fibroid embolization for the treatment of symptomatic leiomyomata. *Appl Radiol* 2002;31:9-17
9. Worthington-Kirsch RL, Andrews RT, Siskin GP, Shlansky-Goldberg R, Lipman JC, Goodwin SC, et al. II. Uterine fibroid embolization: technical aspect. *Tech Vasc Interv Radiol* 2002;5:17-34
10. Razavi MK, Wolanske KA, Hwang GL, Sze DY, Kee ST, Dake MD. Angiographic classification of ovarian artery to uterine artery anastomoses: initial observation in uterine fibroid embolization. *Radiology* 2002;224:707-712
11. Tropeano G, Di Stasi CD, Litwicka K, Romano D, Draisci G, Mancuso S. Uterine artery embolization for fibroids does not have adverse effects on ovarian reserve in regularly cycling women younger than 40 years. *Fertil Steril* 2004;81:1055-1061

## Ovarian Protection by Selective Coil Embolization of a Uteroovarian Anastomosis before Uterine Fibroid Embolization: A Report of Two Cases<sup>1</sup>

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Premature menopause can be developed as a result of undesired nontarget ovary embolization during the performance of uterine fibroid embolization. The etiology of ovarian failure after uterine fibroid embolization is not yet clearly defined, but one of the leading possibilities is nontarget embolization of the ovaries. We report here on two cases in which superselective coil embolization of distal uterine artery collateral pathways to the ovary was performed during uterine fibroid embolization.

**Index words :** Angiography  
Arteries, therapeutic blockade  
Uterus  
Arteries, therapeutic embolization

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