

Is uterine artery embolization prior to myomectomy for giant fibroids helpful?

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PURPOSE

To determine whether uterine artery embolization (UAE) prior to myomectomy is more effective than myomectomy alone.

MATERIALS AND METHODS

The study included 15 consecutive infertile women with uterine fibroids >10 cm (Group I) that underwent UAE with spherical particles using a microcatheter technique and a unilateral femoral approach between March 2005 and January 2007. The day after embolization all cases underwent myomectomy since the protocol for large fibroids in our hospital is myomectomy only. The control group was composed of 15 patients who underwent myomectomy only (Group II). Group II was established based on fibroid size (14 ± 3 cm). Operating time, estimated blood loss and transfusion, complications, and hospital stay were calculated by retrospective chart reviews, and comparisons were made between the groups with Student's t-test.

RESULTS

Mean operating time was 138 min in Group I and 240 minutes in Group II ($P < 0.01$). Mean estimated blood loss was 250 ml in Group I and 690 ml in Group II ($P < 0.01$). There was no need for transfusion in Group I, while transfusion was needed in 2 cases (13%) in Group II. Mean hospital stay in Group I was 5 days versus 8 days in Group II. Complications, including subsequent hysterectomy, were seen in 2 cases and bowel-bladder injuries in 1 case in Group II (a total of 20%), while no complications were observed in Group I. One of the cases in Group I later conceived and gave birth to a healthy child.

CONCLUSION

UAE prior to myomectomy is more effective than myomectomy alone.

Key words: • therapeutic embolization • uterine artery • fibroid

Uterine artery embolization (UAE) has gained wide acceptance as an alternative to surgery for patients who desire future pregnancy, based on the positive results of both short- and long-term studies (1–5). Large uterine fibroids can adversely affect the results of UAE and can cause serious complications, such as infection, sepsis, uterine necrosis, and death (6, 7). Pelage et al. reported that large diameter fibroids can cause major complications (2), but Katsumori et al. reported that there is no increased risk on the basis of tumor size (8).

Some case reports of combined pre-surgical UAE and surgery have been published, demonstrating good results (9, 10). This article presents the short-term results of a case series composed of 15 consecutive patients who underwent pre-surgical UAE followed by myomectomy.

Materials and methods

This cross-sectional study was conducted between March 2005 and January 2007. All patients gave informed oral and written consent.

The study included 15 consecutive infertile women (age range, 29–41 years; mean, 34 years) with uterine fibroids ≥ 10 cm (range, 10–18 cm; mean, 14 cm) (Group I) that underwent UAE with microspherical particles (Bead-Block 500–700 μ m, Terumo, Tokyo, Japan). Group I patients were all given intravenous (IV) prophylactic antibiotic treatment (cefazolin sodium 1 g) prior to embolization.

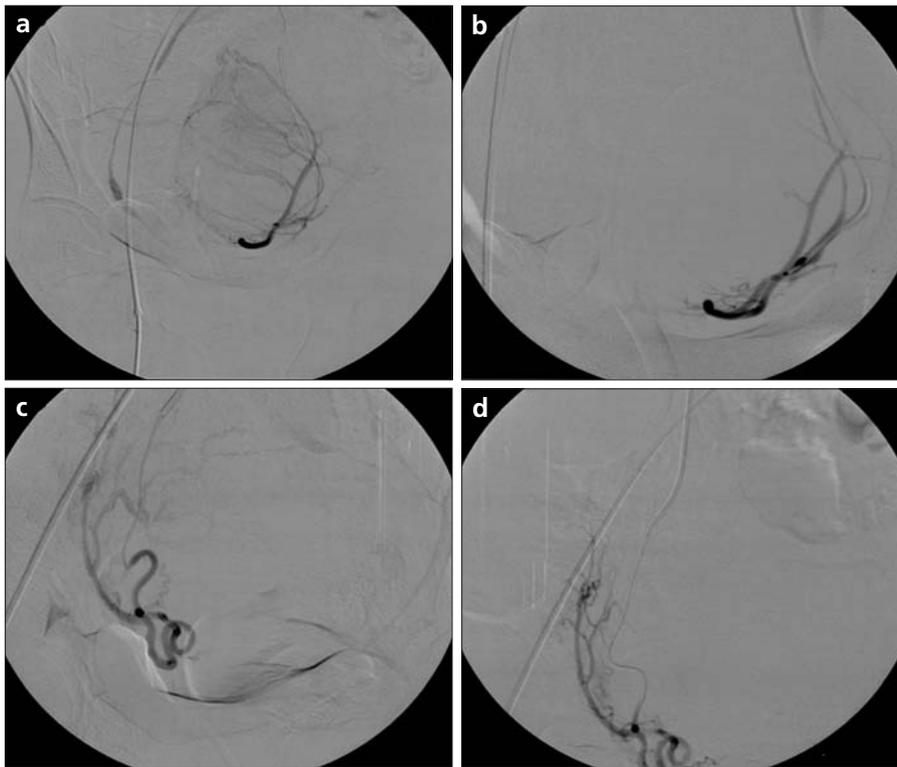
All UAE procedures were performed using a unilateral femoral approach under local anesthesia. After a 5-French Simmons-2 glide catheter (SIM 2, Terumo, Tokyo, Japan) was inserted into the right proximal uterine artery, a microcatheter (Progreat, Terumo, Tokyo, Japan) was coaxially advanced to the distal uterine artery (Figure). Both the road-mapping feature of the digital subtraction angiography device (Siemens Multistar Millennium Edition) and the fluorofade feature superimposed over pelvic angiograms were useful for navigation of the microcatheter towards the target fibroid vascularization. The microspherical particles were infused under fluoroscopic control until cessation of the flow. The same procedure was repeated for the contralateral uterine artery using the same catheter system.

The day after embolization all the cases underwent myomectomy since the protocol for large fibroids in our hospital is myomectomy only.

The control group was composed of patients who underwent myomectomy only (Group II). This group was established based on fibroid size (14 ± 3 cm) with the same mean diameter as Group I. Hence the ± 3 -cm range deviating from the mean made 15 control patients. Operating time, estimated blood loss and transfusion, complications, and hospital stay were calculated by retrospective chart reviews, and comparisons were made between the groups. Student's t-test was used for statistical analysis of comparison of means.

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DSA images of a 30-year-old female with giant fibroid involving uterine fundus and corpus (a–d). Pre-embolization left uterine artery (a). Post-embolization left uterine artery (b). Pre-embolization right uterine artery (c). Post-embolization right uterine artery (d).

Results

No complications of UAE were observed.

Mean operating time was 138 min in Group I and 240 min in Group II ($P < 0.01$). Mean estimated blood loss was less in Group I (250 ml) than in Group II (690 ml) ($P < 0.01$). There was no need for transfusion in Group I, while transfusion was needed in 2 cases (13%) in Group II. Mean hospital stay was significantly less in Group I (5 days) than in Group II (8 days). Complications, including subsequent hysterectomy, were seen in 2 cases and bowel-bladder injuries in 1 case in Group II (a total of 20%), while no surgery-related complications were observed in Group I. One of the patients in Group I later conceived within 12 months and gave birth to a healthy girl.

Discussion

Surgical removal of giant uterine fibroids is the traditional treatment since they may cause infertility and in the presence of pregnancy they may affect the outcome (9, 11). Surgical removal of giant fibroids presents technical difficulties mainly due to massive blood loss caused by increased vascularity.

UAE, as a pre-surgical treatment to decrease intraoperative blood loss, was found to be effective in some studies (12, 13). This was the case in our series as well. Mean estimated blood loss was 250 ml in our pre-surgical embolization group (Group I) versus 690 ml in the myomectomy only group (Group II). There was no need for transfusion in Group I compared to transfusion being indicated in 13% of Group II.

Operating time for giant uterine fibroids ranged from 130 to 510 min (mean, 240 min) in Group II patients, who underwent myomectomy only without prior embolization, whereas operating time ranged from 90 to 250 min (mean, 138 min) in Group I. This statistically significant difference between operation times likely reflects the results of UAE, namely diminished blood loss and better visualization of the operational field, facilitating the surgery.

UAE was reported to be more cost-effective than myomectomy and hysterectomy (14). Cost may increase when both embolization and surgery are performed together; however, when taking into consideration the reduced length of hospitalization, the combined ap-

proach is still a cost-effective option. Mean hospital stay was less in Group I than in Group II (5 days vs. 8 days).

Complications, including hysterectomy and bowel-bladder injuries, seen in Group II (20% overall) were not observed in Group I. This again may be related to better visualization of the surgical field as a result of minimized blood loss.

The management of uterine fibroids in patients who desire future pregnancy is controversial, but it was found that myomectomy and UAE together was safe and effective in recent series (15–18). One patient in Group I later conceived and gave birth to a healthy child. Nonetheless, long-term results need to be evaluated in order to arrive at more concrete conclusions based on our small series.

UAE prior to myomectomy for giant fibroids is more effective than myomectomy alone. Multicenter studies with larger series and long-term results are needed to further clarify the benefit.

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