Conservative surgical management for diffuse uterine adenomyosis

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Objective: To determine the effects of new conservative surgical management for diffuse uterine adenomyosis.

Design: Retrospective clinical study.

Setting: Gynecology department in a general hospital.

Patient(s): A total of 44 women with diffuse adenomyosis.

Intervention(s): Conservative surgical management.

Main Outcome Measure(s): Mean visual analog scale score of dysmenorrhea and menorrhagia after a 3-month follow-up.

Result(s): After this surgery, the mean visual analog scale score of dysmenorrhea decreased from 9.4 to 0.8, and anemia due to menorrhagia improved in all women. Two patients became pregnant, with one interstitial pregnancy and one normal pregnancy that is continuing. No major complications or sequelae were observed.

Conclusion(s): This procedure should be considered as a therapeutic option in women with symptoms of diffuse uterine adenomyosis who wish to avoid hysterectomy. (Fertil Steril® 2010;94:715–9. ©2010 by American Society for Reproductive Medicine.)

Key Words: Uterine adenomyosis, diffuse adenomyosis, therapy, conservative surgery

Uterine adenomyosis most commonly occurs in multiparous women in their late 30s or 40s, and the standard treatment is simple hysterectomy. However, although rare, uterine adenomyosis can also occur in nulligravid women. Treatment in such cases is more complicated as these patients often wish to preserve their uterus. Use of danazol, GnRH agonists (GnRHa), and low-dose oral contraceptives, as for endometriosis, does not provide satisfactory effectiveness (1). Some reports have described pregnancy after conservative treatments for adenomyosis such as focused ultrasound surgery or conservative surgery. However, the number of cases for each such treatment is small, and these are not standard therapies (2–5).

Uterine adenomyosis can be classified into two categories: focal adenomyosis, with lesions localized in the anterior or posterior wall; and diffuse adenomyosis, with lesions involving the entire uterus. Lesion excision has been reported for focal adenomyosis (6–9), but surgical treatments other than hysterectomy have not been described for diffuse adenomyosis.

We describe herein both a conservative surgical management for diffuse uterine adenomyosis and prognoses for our patients.

MATERIALS AND METHODS

Between May 19, 2005, and December 19, 2007, we treated 44 women with diffuse uterine adenomyosis diagnosed by magnetic resonance imaging (MRI). Diagnostic criteria for diffuse uterine adenomyosis included uterine enlargement on pelvic examination, centered uterine cavity, hypertrophy of the anterior and posterior walls, and loss of the junctional zone on sagittal MRI. All interpretations of MRI for the diagnosis of diffuse adenomyosis were performed by one of the authors (MN) together with several radiologists. Each patient was sufficiently informed regarding all aspects of management before surgery, and written consent was obtained. This surgery was developed as a way of complying with the wishes of individual patients who strongly desired to avoid hysterectomy. We therefore did not obtain Institutional Review Board approval.

The mean age of the patients was 37.1 ± 3.8 years (range, 29–45 years). Of the 44 patients, 15 had previously undergone surgery (e.g., for endometriosis). Dysmenorrhea was the chief complaint in all patients. Thirty women were married, 11 were unmarried, and three were divorced. Twenty-three were nulligravid, 17 were multigravid, and four were multiparous. Three

FIGURE 1

(**A**) Dissection of the uterus. (**B**) Opening of the uterine cavity.
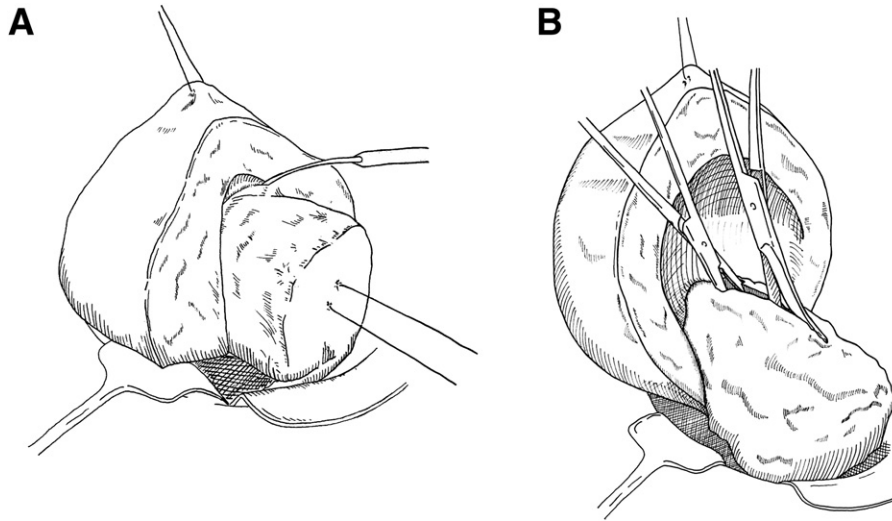
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women had undergone IVF, but none had become pregnant. All patients expressed a desire to preserve the uterus.

In general, we do not administer GnRHa because of the risk of missing some of the lesion if the size is reduced. However, we do use GnRHa in some patients to stop menstruation before surgery and thus to improve anemia. Surgery was performed as soon as possible after menstruation, when the endometrium was thinnest. A lower abdominal transverse incision was made, and uterine mobility was ensured after dissecting adhesions in case of periuterine adhesions. In this procedure, one fallopian tube must be sacrificed, so the normal fallopian tube was preserved. If both were normal, the fallopian tube on the side of the thinnest interstitial portion of myometrium was preserved.

We injected the uterus with 100-fold diluted vasopressin 20–30 mL in total, retracted the fundus of the uterus upward with a number 1 silk suture, and then dissected the uterus longitudinally using a high-frequency electric surgical knife (spear-type electrode; Honest Medical, Tokyo, Japan) at 124 W to divide inside and outside. In essence, we performed asymmetric dissection of the uterus, preserving both the uterine cavity and bilateral uterine arteries. This permitted optimal excision of the adenomyosis lesion from the cut surface. One fallopian tube was cut at the interstitial portion. The serosal incision formed a line between the height of the internal os at the anterior/posterior wall and the uterine fundus (Fig. 1A). From the incision, the myometrium was dissected diagonally, as if hollowing out the uterine cavity. In case of dissection from the right side, dissection proceeded parallel with the uterine fundus to the interstitial portion of the left fallopian tube then continued longitudinally to the height of the internal os along the left side of the uterine cavity. During this process, the uterine cavity might be open at

the cornu of the left fallopian tube, and asymmetric longitudinal dissection of the uterus was performed.

Next, a transverse incision was made to open the uterine cavity (Fig. 1B). While inserting the index finger in the uterine cavity, using the round type of loop electrode of a high-frequency cutter (Honest Medical), the adenomyosis lesion was excised to a thickness of 5 mm of the inner myometrium on the right uterine side (Fig. 2A). The lesion was then excised to a thickness of 5 mm of the serosal myometrium on the left uterine side (Fig. 2B). After that, the uterine cavity was sutured and closed using 3-0 absorbable suture, followed by uterine rejoining, with the left side covering the right side, using 1-0 absorbable suture (Fig. 3A). At this time, to avoid creating dead space in the sutured area, the suture needle was inserted at the serosal surface of the left side, through the myometrium on the right side and again through the serosal surface on the left side for ligation. The serosa was sutured continually with the same suture to rejoin the uterus (Fig. 3B). Before closing the abdomen, antiadhesive materials such as Interceed (Ethicon, Somerville, NJ) or Seprafilm (Genzyme, Cambridge, MA) were used over the suture line on the uterus. We do not use any tourniquets. Postoperatively, to prevent adhesions, we do not place anything in the endometrial cavity. No medications are administrated after surgery.

Three months after surgery, dysmenorrhea and menorrhagia were evaluated, MRI findings were checked in all patients, and pregnancy was permitted. We did not perform hysterosalpingography postoperatively.

RESULTS

During surgery, the right fallopian tube was preserved in 29 patients, and the left fallopian tube was preserved in 15

FIGURE 2

(**A**) Excision of the inner side lesion. (**B**) Excision of the outer side lesion.

A

B
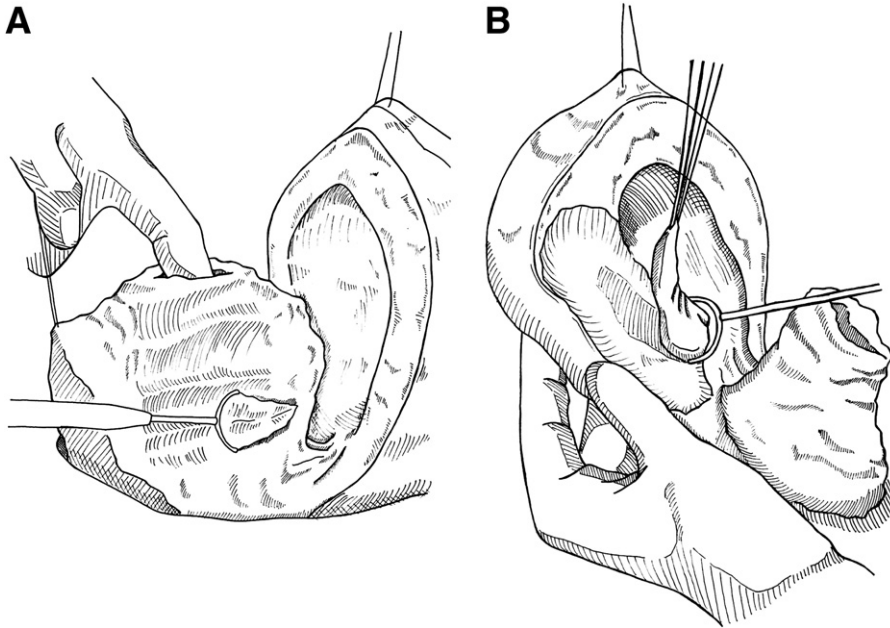
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patients. The mean operative time was 159 ± 43.7 minutes (range, 107–305 minutes), and the mean blood loss was 745 ± 56 g (range, 50–2951 g). Seven patients required transfusion. The mean resected adenomyotic tissue weight was 281 ± 231 g (range, 46–1300 g).

Histological evaluation revealed adenomyosis in all patients. Twenty-one patients underwent the described surgery alone. Of the remaining 23 patients, 13 had periuterine adhesiotomy, eight had myomectomy, three had chocolate cystectomy, two had salpingoplasty, and one had uterine septoplasty (with some overlapping data). Patients were managed using the same clinical path used in open abdominal surgery for benign disease at our hospital. The 11-day period of hospitalization for this procedure is the same as that used for both leiomyomectomy and abdominal total hysterectomy. Menstruation resumed in all women within 3 months after surgery. Dysmenorrhea was compared pre- and postoperatively in 40 patients. The mean visual analog scale (10) of dysmenorrhea decreased from 9.4 ± 1.0 (range, 6.5–10) preoperatively to 0.8 ± 1.0 (range, 0–4.0) postoperatively. Menstrual blood loss decreased postoperatively in all women, and anemia due to menorrhagia improved in all women. Mean CA125 values decreased markedly from 820.9 ± 2173.9 μg/mL (range, 38–12,454 μg/mL) preoperatively to 51.7 ± 50.4 μg/mL (range, 10–259 μg/mL) postoperatively. Two women became pregnant after surgery. One had an interstitial pregnancy, and the other had IVF/ET and is currently pregnant. One year after the surgery, only three of 32 patients have had recurrent symptoms such as dysmenorrhea. The

three patients with recurrences were patients 3, 8, and 19, all of whom were in the earlier period of the implementation of this procedure. The volume of adenomyosis was large in each of the three patients (at 550, 465, and 186 g, respectively). Two of these three women also had a history of surgery. No postoperative complications, including uterine necrosis, incision hematoma, or infections have been encountered. None of our patients displayed Asherman's syndrome.

DISCUSSION

Conservative management for adenomyosis is currently an important issue in Japan because the number of women who marry at a later age has been increasing. However, effective management to preserve the uterus for women who want to retain the potential for childbearing has not yet been established.

As of December 2007, we have performed conservative surgery for adenomyosis in 225 patients. Of these, 44 of the 53 patients with diffuse adenomyosis underwent the conservative surgical procedure mentioned in this report.

Our initial procedure for diffuse adenomyosis was to excise the adenomyosis lesion from the anterior and posterior walls and cover the remaining part of the uterus with myometrium. However, these women quickly developed adenomyosis and had to undergo hysterectomy within 1 year. The next procedure, for women with large uterine cavities, was to dissect the uterus longitudinally in the midline, excise the lesion

FIGURE 3

(**A**) Suture of the lesion. (**B**) Rejoining of the uterus.
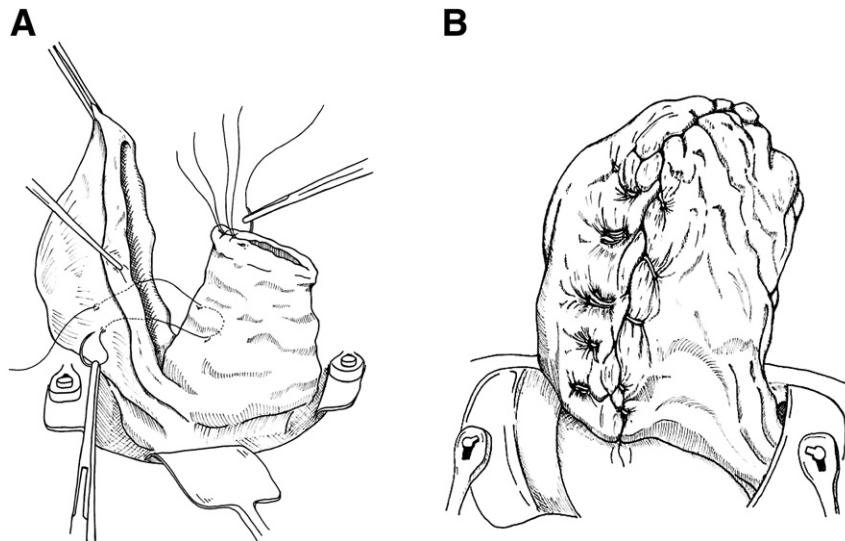
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from the center of the anterior/posterior wall, and suture to rejoin the right and left sides of the uterus. However, the uterine cavity is not enlarged in all cases of generalized adenomyosis, so this procedure had limited indications. These experiences led us to develop the surgical procedure described herein.

We had misgivings that dysmenorrhea or menorrhagia would be persistent, as excision of the entire lesion is impossible for diffuse adenomyosis. However, our procedure showed good outcomes with dramatic relief of symptoms and a low rate of recurrence.

Pregnancy was permitted from 3 months after surgery, but the pregnancy rate was low. This may be attributable to reduced uterine volume after the removal of adenomyosis and weakened uterine muscle tension after damage to the uterus (1). Moreover, 16 of the 30 married women had primary infertility, and only one had been pregnant within 2 years before surgery. Generalized adenomyosis thus markedly reduced fertility, and even our surgical procedure could not improve this effect.

In our surgical procedure, the anterior and posterior walls must be sutured over a long length to rejoin the left and right parts of the uterus. This may lead to changes such as fallopian tube adhesions in the sutured area, which would contribute to a decreased postoperative pregnancy rate.

Even if a normal pregnancy is achieved after our surgical procedure, safety remains unknown during pregnancy. Residual adenomyosis in the myometrium, combined with possible inhibition of pregnancy-related changes like uterine softening, may increase the risk of miscarriage or uterine rupture. Patients should thus be followed up carefully.

Despite a low postoperative pregnancy rate, our surgical procedure provides dramatic relief from dysmenorrhea and improves anemia by reducing menstrual blood loss. This is a great blessing for women with severe dysmenorrhea and menorrhagia before surgery and is one reason for the high rate of postoperative patient satisfaction. The major benefits of our surgical procedure are relief from dysmenorrhea and menorrhagia, leading to improved physical and psychological quality of life. This surgical procedure may thus be indicated more in women wanting relief from dysmenorrhea and menorrhagia while still preserving the uterus than in women who want to become pregnant.

Our new technique provides good outcomes in women with symptoms of diffuse uterine adenomyosis and should be considered as a useful treatment option.

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