ORIGINAL ARTICLE: ENDOMETRIOSIS

Second surgery for recurrent endometriomas is more harmful to healthy ovarian tissue and ovarian reserve than first surgery

Ludovico Muzii, M.D.,[a] Chiara Achilli, M.D.,[a] Francesca Lecce, M.D.,[a] Antonella Bianchi, M.D.,[b] Silvia Franceschetti, M.D.,[a] Claudia Marchetti, M.D.,[a] Giorgia Perniola, M.D.,[a] and Pierluigi Benedetti Panici, M.D.[a]

[a] Department of Obstetrics and Gynecology, "Sapienza" University of Rome; and [b] Department of Pathology, Campus BioMedico University, Rome, Italy

Objective: To evaluate the excised specimen with histologic analysis and to assess the antral follicle count (AFC) at follow-up. This is to determine whether excisional surgery for recurrent endometriomas is more harmful to ovarian tissue and to the ovarian reserve than first surgery.
Design: Prospective controlled study.
Setting: University hospital.
Patient(s): Consecutive patients with pelvic pain and/or infertility undergoing laparoscopic excision of a monolateral ovarian endometrioma for the first time (17 patients) or for recurrence after previous surgery (11 patients).
Intervention(s): Laparoscopic excision of ovarian endometrioma and ultrasonographic evaluation 3 months after surgery.
Main Outcome Measure(s): Cyst wall histologic evaluation (specimen thickness, presence and morphology of ovarian tissue) and evaluation of ovarian reserve with AFC and ovarian volumes of both the operated and contralateral, nonoperated ovary at follow-up.
Result(s): The cyst wall specimen was significantly thicker in the recurrent endometrioma group than in the first surgery group (1.7 ± 0.3 mm vs. 1.1 ± 0.3 mm). Both main components of the cyst specimen (i.e., endometriosis tissue and ovarian tissue) were more represented in the recurrent endometrioma group than in the first surgery group. At sonographic follow-up, the operated ovary had a significantly lower AFC and volume than the contralateral nonoperated ovary in the recurrent endometrioma group, but not in the primary surgery group.
Conclusion(s): Surgery for recurrent endometriomas is associated with evidence of a higher loss of ovarian tissue and is more harmful to the ovarian reserve evaluated by AFC and ovarian volume, if compared with endometriomas operated for the first time. Indications to surgery for recurrent endometriomas should be reconsidered with caution. (Fertil Steril® 2015;■:■–■. ©2015 by American Society for Reproductive Medicine.)
Key Words: Endometrioma, laparoscopic surgery, ovarian cyst excision, ovarian reserve, recurrence

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Endometriosis is a disease characterized by the presence of endometrial glands and stroma outside of the uterine cavity. Endometriosis affects women of reproductive age, and is usually associated with dysmenorrhea, pelvic pain, and infertility (1).

Ovarian endometriomas are present in 17%–44% of patients with endometriosis (2). In most cases it is associated with symptoms (3). Laparoscopic surgery with complete excision of the cyst wall is considered the gold standard for the treatment of endometriomas as it is associated with better outcomes in terms of subsequent pregnancies or recurrence of symptoms compared with drainage and ablation (4).

International guidelines on the management of endometriosis suggest

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Reprint requests: Ludovico Muzii, M.D., Department of Obstetrics and Gynecology, "Sapienza" University of Rome, Viale del Policlinico 155, 00161 Rome, Italy (E-mail: ludovico.muzii@uniroma1.it).

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surgery in case of endometriomas larger than 3 or 4 cm. This is even in the absence of associated symptoms (1, 5).

Surgical excision is, however, associated with a considerable burden of recurrences, with reported recurrence rates after surgery between 6% and 67% (6–8). Recurrence of an ovarian endometrioma is, therefore, a common occurrence, and the clinician is often faced with the decision of whether undertaking a second surgical procedure or managing the recurrence expectantly or with medical therapy. Current guidelines on the management of endometriosis do not give specific indications for treatment of the recurrence as opposed to first diagnosis (1, 5), except for a more careful consideration of the decision to proceed with surgery in case of previous interventions (1).

Recently concerns have been raised as to possible damage to the ovarian reserve after laparoscopic excisional surgery (9–12), possibly determined by the inadvertent removal of healthy ovarian tissue in addition to the endometrioma wall (13). Surgery for the recurrence of an ovarian endometrioma may be even more detrimental to the ovarian reserve than primary surgery as the ovary with the recurrent cyst may already have a reduced reserve due to the damage from the first surgery.

The aim of the present study was to evaluate, with histologic analysis of the excised endometrioma wall and with ultrasonographic follow-up of operated ovaries and of contralateral, nonoperated ovaries, whether excisional surgery for recurrent endometriomas is more harmful to the ovarian reserve than the first excisional surgery.

MATERIALS AND METHODS

From January 1, 2012, to December 31, 2012, all consecutive patients presenting at the Department of Obstetrics and Gynecology of "Sapienza" University in Rome with a preoperative ultrasound diagnosis of a presumed ovarian endometrioma were considered for the inclusion in the present prospective study. The study was accepted by the local Institutional Review Board, and all participating women signed an informed consent form.

Inclusion criteria in both study groups were: age between 18 and 38 years, monolateral endometrioma with a diameter more than 3 cm, presence of infertility, and/or moderate-to-severe pelvic pain as the main indication to surgery, and either no previous surgery or one single monolateral cystectomy on the same ovary of the recurrence performed previously to study enrollment.

Exclusion criteria were: bilateral endometriomas at study enrollment, medical therapy for endometriosis in the previous 6 months, more than one previous conservative surgery for endometriomas, previous excisional surgery performed on the contralateral ovary, previous nonexcisional surgery (fenestration and coagulation/ablation) or previous nonconservative surgery (adnexectomy) on either ovary, and any previous surgical treatment for bilateral endometriomas.

Among the scrutinized patients, 28 patients met the inclusion criteria, 17 were never operated on (primary surgery group), and 11 patients were previously operated on the same ovary using the stripping technique (recurrent surgery group). Mean interval from first surgery to surgery for recurrence in the second group was 15 months (range, 9–24 months). Five of the 11 patients recurred within 1 year from the first surgery, and 6 within the second year after surgery. In three of the seven patients not desiring pregnancy at the moment, a trial of medical therapy was attempted, but for either pain persistence or the presence of an enlarging endometrioma, medical therapy was interrupted and patients were put on the waiting list for the second surgical procedure. More than 6 months elapsed between medical treatment interruption and second surgery. No pregnancy occurred in the interval between the first and second surgery in any patient.

Both groups were comparable as to mean age, associated symptoms, mean diameter of the cyst, and mean revised American Society for Reproductive Medicine score (14) at surgery (Table 1). Patients in both groups were submitted to laparoscopic excision of the monolateral endometrioma using the stripping technique, as previously described elsewhere (15, 16). Briefly, after careful identification of the cleavage plane, the endometrioma wall was stripped off the remaining ovarian parenchyma by tractions exerted in opposite directions with two atraumatic grasping forceps. After stripping of the cyst wall, hemostasis, when necessary, was obtained with targeted, pin-point bipolar coagulation applied on the ovarian parenchyma after identification of small bleeders. No sutures were used for reapproximation of the ovarian edges. All surgeries were performed by the same operator. The cyst wall was sent for routine histology analysis. In addition, a 2 × 2 cm specimen from the cyst wall was selected for inclusion in the present study. This specimen was selected from the intermediate part of the specimen (i.e., midway between the initial part of the stripping, usually at the site of ovarian adhesion to the lateral pelvic wall, and the final part, usually near the ovarian hilus). A blinded pathologist evaluated the presence or absence of ovarian tissue adjacent to the endometriotic tissue in the excised specimen. The morphological characteristics of the ovarian tissue, when present, were graded on a semiquantitative scale of 0–4 (0, complete absence of follicles; 1, primordial follicles only; 2, primordial and primary follicles; 3, some secondary follicles; 4, pattern of primary and secondary follicles as seen in normal ovary) (17, 18). The pathologist also recorded the mean thickness of the total cyst wall from each specimen,

TABLE 1

Patient characteristics.

Characteristic	PS group (n = 17)	RS group (n = 11)	*P* value
Age (y)	32.8 ± 2.7	33.9 ± 2.3	.25
No. of patients with CPP (%)	17 (100)	11 (100)	1.00
No. of patients with infertility (%)	8 (47)	4 (36)	.70
Cyst size (cm)	5.7 ± 1.0	5.6 ± 1.4	.77
Revised ASRM score	38.7 ± 12.4	43.7 ± 16.2	.36

Note: Data are expressed as mean ± SD or number (%). ASRM = American Society for Reproductive Medicine; CPP = chronic pelvic pain; PS = primary surgery; RS = recurrent surgery.

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