



Original Research

Clinical Characteristics and Outcomes of Laparoscopic Surgery in Ovarian Endometrioma Cases Treated at a Gynecology Clinic

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Abstract

Objectives: The aim of this study was to retrospectively investigate the clinical and surgical outcomes of patients diagnosed with ovarian endometrioma in a hospital gynecology clinic and to investigate the safety and efficacy of treatment with laparoscopic surgery.

Methods: The data of 44 patients who were operated on for ovarian endometrioma were analyzed retrospectively.

Results: The mean age of the patients was 30.1±5.3 years. The mean cyst size was 7.0±5.3 cm. In all, 54% of the patients had dysmenorrhea, and 29.5% of the patients were infertile. Laparoscopy was successfully performed in all of the patients, and no complications were observed in any patient. Furthermore, it was found that ovarian reserve tests in the infertile patients were not negatively affected.

Conclusion: With sufficient experience, laparoscopy is a very safe and effective method of surgery in ovarian endometrioma. If a laparoscopic cystectomy is performed with the proper technique, it does not adversely affect ovarian reserve.

Keywords: Endometrioma, laparoscopy, ovary, surgery.

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Although the diagnosis and treatment of endometriosis can be challenging, this is a gynecological problem that is increasingly common, especially in women of reproductive age. In women of reproductive age, the disease generally presents with ovulation problems, infertility, or chronic pelvic pain.^[1] The disease is defined as the extra-uterine presence and proliferation of ectopic non-neoplastic endometrial tissue, usually glands and stroma.^[2]

The true incidence of endometriosis is not known. General-

ly, endometriosis has been reported in 45% of women with chronic pelvic disease and 2.1% to 78% of infertile women.^[3-5] Endometrioma is the most frequently diagnosed form, and represents 17% to 44% of pelvic endometriosis cases and some 29% have bilateral ovary involvement.^[6] Endometriosis affects 2.5% to 3.3% of women of reproductive age. Tsuji et al. reported a global incidence of as much as 63% in infertile women.^[7,8] Generally, laparoscopic surgery is a safe approach to manage the disease; however, there

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are concerns that endometrioma surgery may reduce the ovarian reserve.^[9, 10]

In this study, the demographic, clinical, and laparoscopic outcomes of patients operated on with the indication of endometrioma were analyzed, and the impact of the duration and type of surgery on the ovarian reserve were investigated.

Methods

This retrospective clinical study evaluated patients of the gynecology and obstetrics clinic of Şişli Hamidiye Etfal Education and Research Hospital between August 1, and July 1, 2016. This hospital is a tertiary reference center in western Turkey. The hospital Ethics Committee approved the study and written, informed consent was obtained from the 44 patients evaluated. The study was performed in compliance with the 2008 Helsinki Declaration.

All of the patients were examined preoperatively with transvaginal ultrasound and the dimensions of the cyst were measured. Before surgery, the patients completed an information form at the time of hospitalization that included demographic data of age, height, weight, history of pregnancy or infertility, and complaints (if any), such as dysmenorrhea, dyspareunia, or chronic pelvic pain. Chronic pelvic pain was defined as pain in the same location for ≥ 6 months that caused functional limitation and required treatment.^[11] After admission, another ultrasonographic examination was performed. A cancer antigen 125 (CA 125) test was also performed for all of the patients. Follicle stimulating hormone (FSH), and anti-Müllerian (AMH) hormone values were assessed during the preoperative period and in the third postoperative month on the third day of the menstrual cycle in patients with a history of infertility. Inclusion criteria for the study were age between 18 and 45 years, suspected diagnosis of unilateral or bilateral ovarian endometrioma based on preoperative physical and ultrasonographic examinations and confirmed by histopathological analysis of the specimen acquired during laparoscopic surgery, and receipt of informed consent. The exclusion criteria were a history of previous ovarian surgery or hysterectomy, postoperative histopathological diagnosis of non-endometrioma, and any history of preoperative hormonal treatment or endocrinological disease.

All of the laparoscopic procedures were performed by the same surgical team. A 10-mm trocar was inserted through the umbilical region, and the lower abdominal area was entered using three 5-mm trocars. The endometriotic focus was incised from the antimesenteric surface, and the internal surface of the cyst was grasped with atraumatic forceps and peeled away from the ovarian wall intact and

sent for histopathological examination. Hemostasis of the remaining ovarian vascular bed was achieved using bipolar cautery. Conversion from a laparoscopic procedure to a laparotomy was not required in any patient. The surgical findings were recorded. The patients were called for a control visit at the postoperative first and third months.

Statistical analysis of the data was performed using IBM SPSS Statistics for Windows, Version 20.0 (IBM, Inc., Armonk, NY, USA). A chi-square test was used for categorical variables. For variables with normal distribution, a t-test was employed, and for those with non-normal distribution, the Mann-Whitey U-test was utilized. Multiple logistic regression analysis was used to determine factors affecting the duration of surgery. A p value < 0.05 was considered statistically significant.

Results

A total of 44 patients who were operated on and followed up with the diagnosis of endometrioma in our gynecology unit over a period of 3 years were investigated. Demographic characteristics and CA 125 values are provided in Table 1. The mean age of the patients was 30.1 ± 5.3 years, and the mean cyst size was 7.0 ± 1.3 cm. The mean CA 125 value was 56.5 ± 23.5 U/mL. In the study group, 29.5% of the patients were infertile, and 54.5% of them reported dysmenorrhea. In 47.7% of the patients with a unilateral mass, endometrioma was detected in the right ovary. A total of 43.1% of the patients were nullipara. All of the operations

Table 1. Demographic characteristics and surgical results

Characteristics	Value	Range
Age (years)	30.1 ± 5.3	(19-41)
≥ 30 (%)	24 (54.5)	
BMI (kg/m ²)	22.9 ± 2.2	(19-28)
Cyst size (cm)	7.0 ± 1.3	(5.0-9.0)
Cyst location (%)		
Right ovary	21 (47.7)	
Left ovary	20 (45.5)	
Bilateral	3 (6.8)	
Nulliparity (%)	19 (43.1)	
CA 125 (IU/mL)	56.5 ± 23.5	(25-102)
History of infertility (%)	13 (29.5)	
Dyspareunia (%)	9 (20.5)	
Dysmenorrhea (%)	24 (54.5)	
Chronic pelvic pain (%)	11 (25.0)	
Peritoneal implant (%)	9 (20.5)	
Operative time (min)	78.0 ± 19.0	(40-120)
Hospital stay (days)	2.0 ± 0.3	(1-3)

BMI: Body mass index; *Values are expressed as mean \pm SD; CA 125: Cancer antigen 125.

Table 2. Demographic clinical and surgical outcomes according to age groups

Characteristics	<30 years (n=20)	≥30 years (n=24)	p	RR (95% confidence interval)
BMI (kg/m ²)	22.6±2.0	23.2±2.4	0.388	
Nulliparity (%)	10 (50.0)	15 (62.5)	0.405	0.8 (0.4-1.3)
Cyst size (cm)	6.6±1.3	7.2±1.1	0.107	
CA 125(IU/mL)	55.7±23.8	57.2±23.9	0.841	
History of infertility (%)	6 (30.0)	7 (29.2)	0.952	1.0 (0.4-2.5)
Chronic pelvic pain (%)	4 (20.0)	7 (29.2)	0.484	0.6 (0.2-2.0)
Dysmenorrhea (%)	11 (55.0)	13 (54.2)	0.956	1.0 (0.5-1.7)
Dyspareunia (%)	4 (20.0)	5 (20.8)	0.946	0.9 (0.2-3.1)
Operative time (min)	77.0±15.7	78.9±21.7	0.739	

* Values are expressed as mean±SD; BMI: Body mass index; CA 125: Cancer antigen 125.

were achieved laparoscopically, and no complications were recorded. The mean operative time was 78.0 minutes, and the mean hospital stay was 2 days (Table 1).

Table 2 illustrates a comparison of demographic factors and surgical outcomes of the patients when divided into 2 groups based on age. In the group aged ≥30 years the number of patients with chronic pelvic pain was greater, but the difference between the groups was not statistically significant (29.2% vs 20.0%; $p=0.484$). Furthermore, a statistically significant intergroup difference was not found in the percentage of infertile patients (30% vs 29.9%) or operative time (77.0±15.7 minutes vs 78.9±21.7 minutes) (Table 2). Preoperative and postoperative third month FSH and AMH values were determined to evaluate the impact of surgery on ovarian reserve, and no statistically significant difference was observed (7.3±1.3U/mL vs 9.0±1.2 U/mL and 3.3±0.5 ng/mL vs 2.1±0.3 ng/mL, respectively) (Table 3). Finally, the effects of pre- and postoperative factors on operative time were evaluated using logistic regression analysis. A histo-

ry of infertility, age (≥30 years), cyst size (≥7 cm), and the presence of a peritoneal implant did not affect operative time ($p=0.666$, $p=0.868$, $p=0.586$, and $p=0.132$, respectively) (Table 4).

Discussion

Laparoscopic surgery is considered the gold standard method to achieve a definitive diagnosis and to treat endometrioma, and it is an attractive first alternative, especially for experienced gynecologists.

The mean age of the patients in this study with the indication of endometrioma was 30 years, which is consistent with many previous studies. Endometrioma was more frequently seen in the right ovary than the left ovary, but without a statistically significant difference (47.7% vs 45.5%). This result appears to be similar to that reported by Mishra et al.^[12] (51% vs 46%). In this study group, 54% of the patients cited dysmenorrhea, 20% dyspareunia, 25% chronic pelvic pain, and 29.5% had a history of infertility. These results are also consistent with those of Mishra et al.^[12] (42% dysmenorrhea and 12% dyspareunia) and Farquar^[13] (40% dysmenorrhea and 15% dyspareunia).

The patients were divided into 2 groups based on aged <30 and ≥30 years and intergroup differences in demographic data and clinical and surgical outcomes were examined. The percentage of infertile patients was similar in both groups (30% vs 29%). Although generally age is a risk factor for infertility, we attribute this result to deterioration of ovarian function due to endometrioma, independent of age. Matorras et al.^[14] had comparable results (32% vs 34.5%).

The type of surgery performed is significant in the treatment of endometrioma, and the effect on ovarian reserve is important, especially in infertile patients. Many studies have been published on this subject. Aspiration of the en-

Table 3. The effect of laparoscopic surgery on ovarian reserve

Parameter	Preoperative value	Postoperative 3rd month value	p
FSH (U/mL)	7.3±1.3	9.0±1.2	0.202
AMH (ng/mL)	3.3±0.5	2.1±0.3	0.321

AMH:Anti-Müllerian hormone; FSH: Follicle stimulating hormone.

Table 4. The impact of preoperative and intraoperative factors on operative time

Parameter	p
History of infertility	0.666
Age (≥30 years)	0.858
Cyst size (≥ 7 cm)	0.586
Peritoneal implant	0.132

ometrioma has been compared with inspection of the cyst cavity and extraction of the cyst without disrupting its integrity, and a 3-fold increase in recurrence rate was reported in patients who had undergone only aspiration of the cyst (18.5% vs 6%).^[15] It has been reported in the literature that if an ovarian cystectomy is performed properly and the appropriate hemostatic control is achieved afterward, then the cystectomy has no adverse effect on fertility (65%).^[16] Muzzi et al.^[17] found that the remaining ovarian tissue did not differ when a cystectomy was compared with other methods (31mm vs 29 mm). Saito et al.^[18] investigated the effects of cystectomy and vaporization on postoperative AMH values, and found no significant difference between the 2 methods (2.55 ng/mL vs 3.53 ng/mL; $p=0.29$). We also found no statistically significant difference in FSH or AMH levels measured in infertile patients before surgery and 3 months postoperatively, which was consistent with the literature ($p=0.202$ and $p=0.321$).

In the present study, we concluded that age greater than 30 years, a cyst larger than 7 cm in diameter, the presence of a peritoneal implant, and a history of infertility did not affect operative time. However, Gambadauro et al.^[19] performed a study with 148 patients and reported that a cyst larger than 5 cm in size was significantly correlated with longer operative time ($p=0.015$). The authors concluded that factors other than size did not affect operative time. We think that the limited number of patients in our series may be responsible for this difference in findings.

Our study has a number of weak points, such as the retrospective design, the small number of patients, and a limited follow-up period which precluded monitoring fertility status. However, use of the same laparoscopic technique by a single surgically experienced team, follow-up of the patients by the same health center, and histopathological analysis of all specimens by the same gynecopathologists may be considered strengths of the study.

In conclusion, endometriosis, and endometrioma are frequently seen gynecological problems among women of reproductive age. A history of infertility was detected in 29.5% of the patients operated in this study with the indication of endometrioma. Definitive diagnosis and definitive treatment of all of the patients was achieved with laparoscopic surgery. When performed at an experienced clinic using the appropriate surgical methods, good results can be obtained without adversely affecting ovarian reserve.

Disclosures

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