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Retrospective Evaluation Of Patients Who Underwent Laparoscopic Surgery With Preliminary Diagnosis Of Adnexal Mass In Eskişehir Private Hospital Practice Between 2021-2023

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1. Abstract

1.1. Objective: This study aims to retrospectively evaluate the results of patients who underwent laparoscopic surgery with a preliminary diagnosis of adnexal mass and to examine the efficacy, safety and clinical outcomes of the laparoscopic approach.

1.2. Materials and Methods: The study retrospectively reviewed the medical records of 96 patients who underwent laparoscopic surgery with a preliminary diagnosis of adnexal mass between 2021 and 2023. Sociodemographic data, classification of cases according to preoperative O-RADS (Ovarian - Adnexal Report Data System) ultrasonography model, laparoscopic surgical procedures, laparoscopy complications and postoperative pathological results were evaluated retrospectively.

1.3. Results: 64.5% of our cases were in the reproductive period, 33.3% were postmenopausal and 2.1% were in the adolescent period. According to the ultrasonographic O-RADS model before the operation, 12.5% O-RADS 1, 78.1% O-RADS 2, 6.2% O-RADS 3 and 3.1% O-RADS 4. Cystectomy was the first in laparoscopic surgery with a rate of 34.3%. Ninety-six patients had laparoscopic complications in 6.1% of our cases. Urinary system complication was the most common with 3.1%. During laparoscopy, Frozen examination was applied to all cases. Endometriotic benign cyst was the most frequently reported in 34.4% and ovarian malignant histopathology in 3.1% of the postoperative histopathological results.

1.4. Conclusion: Retrospective evaluation has shown that laparoscopic surgery with O-RADS ultrasonography model is an effective and safe approach in the preliminary diagnosis of adnexal masses in combination with Frozen. Its minimally invasive nature has allowed surgical complications and postoperative recovery time to be optimized. The cosmetic results have been met with a high level of satisfaction by patients.

Keywords:

Adnexal mass, Laparoscopy, Ultrasonography

2. Introduction

Over the past three decades, significant advancements in laparoscopic surgery have been achieved with the development of modern medical tools [1]. Adnexal masses are commonly observed in women during adolescence, reproductive age, and postmenopause. These masses originate from the ovary, fallopian tube, or surrounding connective tissue, with a prevalence ranging between 4% and 8% [2]. Ultrasonography is the most frequently used diagnostic tool for adnexal masses. To enhance the predictive accuracy of transvaginal ultrasonography in detecting these masses, radiological models such as the International Ovarian Tumor Analysis (IOTA) and Ovarian-Adnexal Report and Data System (O-RADS) have been implemented [3-4]. In the treatment of adnexal masses, laparoscopy is a reliable option due to its minimally invasive nature. Compared to laparotomy, laparoscopy is a safer and more commonly accepted standard treatment [5-6]. Recent studies have also integrated laparoscopy into clinical practice for the diagnosis, staging, and management of benign, malignant, and borderline ovarian tumors [7-8]. Notably, emerging literature indicates that intraoperative tumor rupture during laparoscopy does not adversely affect survival in cases of ovarian malignancies [9].

This study aims to retrospectively evaluate sociodemographic data, preoperative classification of adnexal masses using the O-RADS ultrasonography model, laparoscopic surgical procedures, complications

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associated with laparoscopy, and postoperative pathological outcomes in cases with adnexal masses of unknown pathology.

3. Materials And Methods

This retrospective study analyzed 96 patients who underwent operative laparoscopy for adnexal masses at the Obstetrics and Gynecology Clinics of Özel Gürlife Hospital and Özel Acıbadem Hospital between January 2021 and December 2023. Informed consent was obtained from all participants included in the study. Patients with a preliminary diagnosis of adnexal masses were assessed using ultrasonography based on the O-RADS radiological model. For sexually active patients, preoperative ultrasonographic evaluation was conducted via transvaginal ultrasound, whereas transabdominal ultrasound was employed for others. All ultrasonographic evaluations were performed using the GE Voluson S8 system by specialists involved in the study.

Laparoscopic surgeries were performed using a STORZ endoscopic tower for visualization. Harmonic and LigaSure energy modalities were chosen during the procedures. When suturing was necessary, 0 and 2/0 V-Lock sutures were utilized for tissue repair. The laparoscopic surgeries were initiated with the insertion of four trocars. The telescope was introduced through the umbilicus or the supraumbilical point (Hu Yong's point) in cases involving masses exceeding 10 cm. Three 5-mm trocars were used for additional access, and a 10-mm trocar was employed for mass removal with an endobag. Frozen-section analysis for histopathological examination was performed for all cases at the Department of Pathology, Osmangazi University Faculty of Medicine.

4. Results

The preoperative sociodemographic data and ultrasonographic assessments of the 96 patients, as classified using the O-RADS model, were retrospectively analyzed. These findings are summarized in Tables 1 and 2. In 35.4% (34/96) of the cases, suppression therapy with oral contraceptive pills was administered for six months before surgery. Twelve cases (12.5%) presented with acute abdomen symptoms, among which ovarian cyst torsion was observed in three cases, and ruptured ectopic pregnancy was identified in nine cases. The types of operations performed during laparoscopic surgery are presented in Table 3. Except for adnexal masses diagnosed as torsion and ectopic pregnancy, frozen pathological examinations were requested in all other surgeries (87.5%).

Table 1: Demographic characteristics of the cases.

Demographic Characteristics	N=96
Age	46+/-30.1
Reproductive period	62(%64,5)
Postmenopausal period	32(%33,3)
Adolescent	2(%2,1)
Previous surgery	50(%52)

Concomitant disease	33(%34)

Table 2: Scores distribution of cases according to O-RADS classification.

O-RADS	Sayı=96
O-RADS 1	12(%12,5)
O-RADS 2	75(%78,1)
O-RADS 3	6(%6,2)
O-RADS 4	3(%3.1)

Table 3: Types of operations performed in laparoscopic surgery

Types of Operation	N=96
TLH+BSO	13(%13,5)
TLH+USO	5(%5,2)
BSO	9(%9,3)
USO	21(21,8)
Cystectomy	33(%34,3)
Bilateral Salpingectomy	9(%9,3)
Unilateral Salpingectomy	3(%3,1)
Detorsion	3(%3,1)

The total number of complications related to intraoperative and postoperative surgery during our laparoscopic procedures was six (6.2%), as presented in Table 4. Increased laparoscopic complications were observed in patients with a history of more than two surgeries and in cases with endometriosis. Aside from the three detorsion cases, the pathological examination results of all other cases after laparoscopic surgery were classified in Table 5.

Table 4: Our laparoscopic surgery complications

Complications	N=6
Bladder incision	2(%2.1)
Ureter incision	1(%1)
Intestinal incision	1(%1)
Intraoperative bleeding	1(%1)
Postoperative bleeding	1(%1)

Table 5: Postoperative pathology results of our laparoscopic surgery cases

Postoperatif Patoloji	N=93
Endometriotic benign cyst	32(%34,4)
Serous benign cyst	22(%23,6)
Mucinous benign cyst	15(%16,1)
Tubal ectopic pregnancy	9(%9,6)
Dermoid benign cyst	4(%4,3)
Paratubal serous benign cyst	4(%4,3)

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Chronic salpingitis	3((%3,2)
Serous malignant tumor	2(%2,1)
Granulosa cell malignant tumor	1(%1,1)
Borderline malignant tumor	1(%1,1)

5. Discussion

The sociodemographic characteristics of adnexal masses significantly impact the prevalence, type, management, and prognosis of these masses. Sociodemographic factors influencing the development and management of adnexal masses include, most notably, age. Approximately 4% of women are hospitalized for adnexal masses by the age of 65 [10]. In particular, the risk of malignancy in adnexal masses increases in postmenopausal women, necessitating a more cautious evaluation and follow-up of masses in this age group [11]. In our study, 65.4% of cases were in the reproductive age group, 33.3% were postmenopausal, and 2.1% were adolescents. The risk of ovarian malignancy in our postmenopausal patients was found to be 9.1%. The diagnostic methods used for adnexal masses are critical in determining the type of mass, evaluating the risk of malignancy, and planning appropriate management strategies. Imaging techniques, such as ultrasonography, CT, MRI, laboratory tests (CA-125 and other tumor markers), and functional tests like Doppler ultrasonography, play a pivotal role in the preoperative management of adnexal masses [12,13]. Additionally, artificial intelligence and novel technologies are improving these processes. Recently, the O-RADS radiological classification model based on transabdominal and transvaginal ultrasonography has gained prominence in clinical practice [3,4].

Preoperatively, all cases were evaluated by the attending physicians using transvaginal and transabdominal ultrasonography according to the O-RADS radiological model. According to this model, 12.5% of cases were classified as O-RADS 1, 78.1% as O-RADS 2, 6.2% as O-RADS 3, and 3.1% as O-RADS 4. Among the three O-RADS 4 cases, postoperative pathology revealed ovarian malignancy (serous carcinoma in two cases and granulosa cell tumor in one case). For one case classified as O-RADS 3, postoperative pathology indicated borderline ovarian malignancy. Laparoscopy offers numerous advantages in the diagnosis and treatment of adnexal masses, including minimal invasiveness, rapid recovery, lower complication rates, enhanced imaging, cosmetic benefits, quick return to daily activities, and precise mass removal. These advantages have been extensively discussed in the literature, emphasizing its benefits for patients and effectiveness for surgeons [14,15]. Laparoscopic surgery was performed in all 96 cases diagnosed with adnexal masses. The types of procedures included 13 (13.5%) total abdominal hysterectomy with bilateral salpingo-oophorectomy (TLH+BSO), 5 (5.2%) total abdominal hysterectomy with left salpingo-oophorectomy (TLH+L-USO), 9 (9.3%) bilateral salpingo-oophorectomy (BSO), 21 (21.8%) unilateral salpingo-oophorectomy (USO), 33 (34.3%) cystectomy, 9 (9.3%) bilateral salpingectomy, 3 (3.1%) unilateral salpingectomy, and 3 (3.1%) detorsion. While gynecological laparoscopy is a minimally invasive surgical method with many benefits, it also carries risks of complications, such

as bladder, bowel, vascular, and nerve injuries, similar to other surgical procedures. The general complication rates for gynecological laparoscopy are approximately 1–2% [16]. These rates vary based on the complexity of the procedure, the patient's general health status, and the surgeon's expertise. The surgeon's laparoscopic skill level is the most critical factor influencing complication rates [17,18].

In our laparoscopic cases, six (6.2%) intraoperative and postoperative complications were observed. This rate, higher than the literature average, was attributed to the high proportion of patients with prior surgeries (52%) and the severe adhesions encountered in endometriosis-related cyst cases (34.4%). In the laparoscopic approach to ovarian masses, concerns arise regarding the potential malignancy of the mass. However, recent studies support laparoscopic surgery as a treatment option for early-stage ovarian malignancies [19]. Frozen examinations were conducted in all laparoscopic cases. Among the three (3.2%) cases with malignant frozen results, complementary cytoreductive surgeries were completed one month postoperatively by gynecologic oncologists. Postoperative benign pathologies were most commonly endometriotic benign cysts (32 cases, 34.4%). Fertility-preserving laparoscopic surgery was performed in all these cases. In conclusion, this retrospective study supports laparoscopy as a safe and effective option for managing adnexal masses. The advantages of laparoscopic surgery accelerate recovery and improve cosmetic outcomes. However, appropriate patient selection, surgeon expertise, and effective complication management are critical for successful implementation. Future research should focus on further optimizing laparoscopic approaches and evaluating their efficacy across broader patient populations.

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