



PREVALENCE OF OVARIAN CYST AMONG WOMEN IN CHILD BEARING AGE GROUP IN TEACHING HOSPITALS AT MOSUL CITY-IRAQ

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ABSTRACT

Background: Prevalence of ovarian cyst among women in child bearing age group still common clinical and ultrasound findings. Approximately 1 in 25 (4%) women will have an ovarian cyst causing symptoms at some point in their lives. Once a cyst has been diagnosed it is important to classify its features (using transvaginal ultrasonography). as pain, pressure or fertility will guide management. **Aim of the study:** is to find out prevalence of ovarian cyst among women in child bearing age group who visit teaching hospitals (Al.Batool, Al.Khansaa) at Mosul city-Iraq. **Subjects and method:** A cross sectional study was conducted during the period starting from first of May 2020 to the end of October 2020 among patients visited to teaching hospitals at Mosul city of Iraq. People with Ovarian cyst who visited consultation room(2days/week) and were presented at the visiting day during the study period were included. The data collected using structured questionnaire designed according to researches for Ovarian Cyst completed by the people while visiting the hospitals for one time. The aims, contents and other aspects of the study were explained to each hospital providers and administrative staff to avoid any misunderstanding. **Results:** The study showed that the prevalence of ovarian cyst was 7.26% higher number and percentage of ovarian cyst 112 (37.3%) at age 21-30years, ($P<0.01$), The study found that, 154 (51.3%) of patients with ovarian cyst were in primary level of education and 8 (2.7%) was educated ($P<0.01$). The study demonstrated that, majority of patients with ovarian cyst were married (77.7%) and belonged to urban area (66.67%). The study found that, women have menarche at age (12-13) were more liable for ovarian cyst, (women have menarche at age (12-13) years were 58%, followed by each of <12 year (30%) and (14-16) years (10.7%). Also women who has 27 days and above between menstrual period 189(63%) more liable for Ovarian cyst. Also, women who has irregular cycle 222 (74%) more liable for Ovarian cyst. Women who have (5-7) days of menstrual flow 198 (66%) more liable to have Ovarian cyst. The study revealed that, Ovarian cyst not affected on state of bleeding during Menstrual cycle but most of women with Ovarian cyst 223 (74.3%) have Cramping or pain during Menstrual cycle. Two third of women with Ovarian cycle 201(67%) have not bleeding or spotting in between Menstrual Cycle. The difference is just significant of Pelvic pain on days other than during Menstrual Cycle. But the difference was not significant regarding pelvic pressure or fullness. The study found that, women who not use contraception 258(86%) more liable for Ovarian Cyst with very high significance. The study found that, majority of women with Ovarian Cyst 264(88%) have pain interfere with daily activities. But one third of women with Ovarian Cyst 93(31%) had mood swing. The study found that, half of women with Ovarian Cyst 160(53.3) have Knowledge of cyst from Physician and 120 (40%) still don't know, and 20(6.7%) have Knowledge from Family and friends. The study found that, most of women with Ovarian. Cyst 266 (88.7%) have (good, very good) of general health. Two third of women with Ovarian cyst 195 (65%) visit to physician in the past 6 months and majority of them 272 (90.7%) not visit Emergency Department in the past 6 months. The study showed that, 45% of studied patients were with follicular type of cyst, 22.3% Polycystic ovary and 20% serous cyst. The study also demonstrated that, 45% of patients were with right site of cyst, 29.3% left and 25% bilateral. The study showed than majority of studied women haven't family history of ovarian cyst (60%). The study found that, 63.7% of patients need only medication for ovarian cyst, 17.3% need surgical interaction and 19% didn't need any type of treatment. **Conclusions:** The prevalence of ovarian cyst was in women attending teaching hospitals at Mosul city was similar to other countries. The highest rate of Ovarian Cyst women was within the age group 21-30 year. Most Ovarian Cysts were symptomatic and some may disappear without treatment, but it is essential. Lack of prior knowledge of the disease can be attributed to lack of education, poor understanding of the patients regarding their disease and non-compliance with the medication that were prescribed to them.

INTRODUCTION

An ovarian cyst is a sac filled with liquid or semiliquid material that arises in an ovary.^[1] It is a common gynecological problem and is divided into 2 main categories; physiologically (follicular cysts and luteal cysts) and *pathologically^[2] (ovarian tumors benign, malignant, and borderline).

Benign tumors are more common in young females, but malignant are more frequent in elderly females.^[3] Functional cysts account for about 24% of all ovarian cysts, benign cysts 70% and malignant 6%.^[4] Up to 4% of reproductive-age women will have an ovarian cyst in the luteal phase.

The prevalence of benign ovarian cysts in women of reproductive age is reported as 7%.^[1] Most ovarian cysts, nonetheless, arise during infancy and adolescence, which are hormonally active periods of development.^[5] The most common causes of ovarian cysts include:

- A. Hormonal problems. Functional cysts usually go away on their own without treatment. They may be caused by hormonal problems or by drugs used to help you ovulate.^[6]
- B. Endometriosis. Endometriosis happens when the lining of the uterus grows outside of the uterus. Women with endometriosis can develop a type of ovarian cyst called an endometrioma.^[7] The endometriosis tissue may attach to the ovary and form a growth. These cysts can be dyspareunia and dysmenorrhoea.^[7]
- C. Pregnancy. An ovarian cyst normally develops in early pregnancy to support the pregnancy until the placenta forms. Sometimes, Luteal cyst stays on the ovary until later in the pregnancy and may need to be removed.^[8]
- D. Severe pelvic infections.^[9]

Most ovarian cysts are asymptomatic and disappear spontaneously. When ovarian cysts are large, they may cause abdominal discomfort. If pressing on the bladder it may also cause frequency of urination.^[10] Other signs and symptoms may include; pelvic pain, dysmenorrhea, and dyspareunia, nausea, vomiting, or breast tenderness, fullness and heaviness in the abdomen and difficulty emptying of the bladder.^[11]

The number of diagnoses of ovarian cysts has improved with the wide spread carrying out of regular physical examinations and ultrasonographic technology.^[12] A pelvic ultrasound, preferably transvaginal, will reveal the dimensions and morphology of the mass.^[13]

The management of an ovarian cyst depends on a combination of several factors including age and menopausal status (A woman is considered to react physiologically as a premenopausal woman up to 1 year after termination of bleeding. Some articles have used the 50 years of age as the menopausal state has not been given. Malignant tumors: ovarian cancers and borderline

tumors), symptoms, ultrasonographic features, unilateral/bilateral findings, size of the mass, and the level of serologic markers.^[14]

A thorough history and examination are important in the assessment of a patient with ovarian cysts, as the diagnosis may be anticipated. Patients should be specifically asked about symptoms suggestive of acute torsion, such as intermittent or severe pain or symptoms of endometriosis, such as dysmenorrhoea, dyspareunia or dyschezia.^[15,16]

Symptoms associated with malignancy should also be considered, including abdominal distension, early satiety, urinary urgency or frequency, and abdominal/pelvic pain. Previous gynaecological and surgical history should be elicited, specifically regarding any previous ovarian cysts or breast/bowel malignancy. The family history is important, and should include enquiries about breast or ovarian cancer, bowel or endometrial cancer. Examination should include abdominal and bimanual examination to assess for palpable adnexal masses and any palpable endometriotic nodules. It is important to consider non-gynaecological causes of pain and abdominal distension during assessment.^[5]

Management of ovarian cysts depends on the severity of symptoms, size and ultrasound characteristics of the cyst, CA-125 results, age of the patient and risk of malignancy index and the desire for further children. Over 50% of simple cysts will resolve spontaneously and almost 30% will remain static.^[17]

In premenopausal women, asymptomatic simple ovarian cysts less than 50mm in diameter are very likely to be physiological and likely to resolve in three menstrual cycles. Those with cysts of 50–70mm in diameter should have a yearly ultrasound follow-up and those with larger cysts should be considered for further imaging (MRI) or surgical intervention. Ovarian cysts that persist or increase in size are unlikely to be functional and may warrant surgical management.^[18]

In postmenopausal women, simple cysts of less than 5 cm in the presence of normal CA-125 levels may be managed conservatively with repeated evaluation in 4–6 months. A woman with a suspicious or persistent complex adnexal mass needs surgical evaluation. If surgery is indicated, a laparoscopic approach is considered the gold standard for the management of benign ovarian masses.^[19]

This study is aiming for finding out prevalence of ovarian cyst among women in child bearing age group in teaching hospitals at Mosul city-Iraq.

SUBJECTS AND METHODS

The study protocol was approved by research ethics committee of the executive office of Arab Board of Health Specializations and a formal consent letter from

Mosul director of health (DOH) was obtained before starting the research. Managers of hospitals included in this study were informed of the nature and scope of the study and a verbal consent was obtained from each of them prior to participation and before filling up the questionnaire form by the researcher with the assurance of the privacy and confidentiality of collected data.

A cross sectional study was carried out for the period from the 1st of May to the end of October 2020. The study included approximately 4000 women attending teaching hospitals at Mosul city [Al-Khansaa teaching hospital (1900), Al-Batool teaching hospital (2100)] for determining of ovarian cyst. Women with Ovarian cyst who visited consultation room and were present at the visiting day during the study period were included.

The data collected using structured questionnaire designed according to research for O.C.^[9,10] completed by the people while visiting the hospitals for one time.

Descriptive data analysis was applied using SPSS, version 24 to describe the basic features of the data, while appropriate inferential statistical tests (Chi-square and Fisher exact) was used to determine variations in the data. Frequencies and percentages were calculated. P-value < 0.05 was set as the level of significant.

RESULTS

The study included approximately 4000 women attending teaching hospitals at Mosul city, Iraq, the prevalence of ovarian cyst was 300 cases (7.26%), as shown in Figure 1.

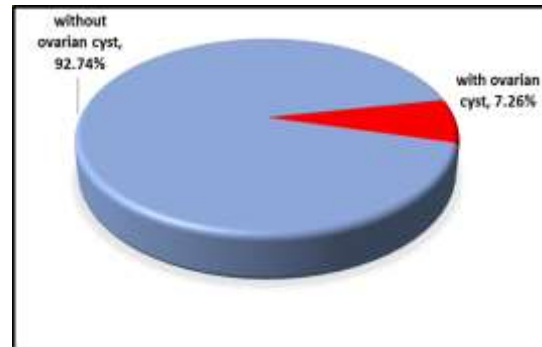


Figure 1: Prevalence of ovarian cyst among studied sample.

The study showed that the higher number and percentage of ovarian cyst 112 (37.3%) at age 21-30 years (P<0.01). And 154 (51.3%) of patients with ovarian cyst were in primary level of education and 8 (2.7%) was educated (P<0.01). Majority of patients with ovarian cyst were married (77.7%) and belonged to urban area (66.67%).

Table 1: Socio-demographic distribution of study patients.

Characteristics	Subdivision	n = 300		Chi-Square test
		No	%	P-value
Age	10-20 year	43	14.3%	0.000**
	21-30 year	112	37.3%	
	31-40 year	75	25%	
	41-50 year	70	23.35%	
level of education	Illiterate	40	13.3%	0.000**
	Primary	154	51.3%	
	Secondary	63	21%	
	Higher secondary	35	11.7%	
	Educate	8	2.7%	
Marital status	Married	233	77.7%	0.000**
	Single	67	22.3%	
Residence	Urban	200	66.7%	0.000**
	Rural	100	33.3%	

Table 2 shows that, women are have menarche at age (11-13) were more liable for ovarian cyst, (women have menarche at age 12-13 years was 58%, followed by each of <12 year (30%) and 14-16 years (10.7%) and >16 years (1.4%). Also women who has 27 days and above

between menstrual period 189(63%) more liable for O.C. Also women who has irregular cycle 222(74%) more liable for O.C. Women who has (5-7) days of menstrual flow 198(66%) more liable to have O.C.

Table 2: Distribution of studied patients according to characteristics of menstrual cycle.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Menarche	< 12	90	30%	0.000**
	12-13	174	58%	
	14-16	32	10.7%	
	>16	4	1.4%	
Days between M.P	10-18 days	41	13.7%	0.000**

	19-27 days	70	23.3%	
	Above 27 days	189	63.0%	
Regular cycle	Yes	78	26%	0.000**
	No	222	74%	
Days of menstrual flow	2-4 days	66	22%	0.000**
	5-7 days	198	66%	
	8-10 days	36	12%	

The study revealed that, O.C not affected on state of bleeding during M.C but most of women with O.C 223 (74.3%) have Cramping or pain during M.C. Two third of women with O.C 201(67%) have not bled or spotting

in between M.C. The difference is just significant of pelvic pain on days other than during M.C. But the difference was not significant regarding pelvic pressure or fullness (P=0.166).

Table 3: Distribution of studied patients according to characteristics of Pelvic symptoms.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Heavy bleeding during menstrual period	Yes	152	50.7%	0.000**
	No	148	49.3%	
Cramping or pain during M.P	Yes	223	74.3%	0.000**
	No	77	25.7%	
Bleeding or spotting in between menstrual cycle	Yes	99	33%	0.000**
	No	201	67%	
Pelvic pain on days other than during menstrual period	Yes	168	56%	0.038*
	No	132	44%	
pelvic pressure or fullness	Yes	138	46%	0.166
	No	162	54%	

Table 4 shows that women who not use contraception 258(86%) more liable for O.C, with very high significance.

Table 4: Distribution of studied patients according to Contraception use and type.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Contraception use and type	with drawl	6	2%	0.000**
	COCP	22	7.3%	
	Progesterone only pills	2	0.7%	
	NO	258	86%	
	IUCD	10	3.3%	
		2	0.7%	

Table 5 shows that, majority of women with O.C 264(88%) have not Difficult to walk because of pain. But one third of women with O.C 93(31%) had mood swing.

Table 5: Symptoms experienced by patient during last 4 weeks.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Difficult to walk because of pain.	Yes	36	12%	0.000**
	No	264	88%	
Had mood swing	Yes	93	31%	0.000**
	No	207	69%	

Table (6) half of women with O.C 160 (53.3) have Knowledge of cyst from Physician and 120(40%) still don't know, and 20 (6.7%) have Knowledge from Family and friends.

Table 6: Knowledge of ovarian cyst by patient.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Knowledge of ovarian cyst by patient	Physician	160	53.3%	0.000**
	Family and friends	20	6.7%	
	Still don't know	120	40%	

Table (7) shows that, most of women with O.C 266 (88.7%) have good, very good general health. Two third of women with O.C 195 (65%) Visit to physician in the

past 6 months and majority of them 272 (90.7%) not Visit E.D in the past 6 months.

Table 7: Characteristics of Patient's History of Health.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
General health	Very good	63	21%	0.000**
	Good	203	67.7%	
	Fair	34	11.3%	
Visit to physician in the past 6month	Yes	195	65%	0.000**
	No	105	35%	
Visit emergency Din the past 6 month	Yes	28	9.3%	0.000**
	No	272	90.7%	

The study showed that, 45% of studied patients were with follicular type of cyst, 22.3% PCO and 20% serous cyst. The study also demonstrated that, 45% of patients

were with right site of cyst, 29.3% left and 25% bilateral, Table 8.

Table 8: Type and Site of ovarian cyst.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Type of ovarian cyst	Follicular cyst	135	45%	0.000**
	Poly cystic ovary	67	22.3%	
	Serous cyst	60	20%	
	Hemorrhagic cyst	30	10%	
	Chocolate cyst	8	2.7%	
Site of ovarian cyst	Rt	137	45.7%	0.000**
	Lt	88	29.3%	
	Bilateral	75	25%	

The study showed than majority of studied women haven't family history of ovarian cyst (60%), Table 9.

Table 9: Family history of ovarian cyst.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Family history	Yes	120	40%	0.001**
	No	180	60%	

The study found that, 63.7% of patients need only medication for ovarian cyst, 17.3% need surgical

interaction and 19% didn't need any type of treatment, Table 10.

Table 10: Treatment option of ovarian cyst.

Characteristics	Subdivision	n = 300		P-value
		No.	%	
Treatment option	Nil	57	19%	0.000**
	Medications	191	63.7%	
	Surgery	52	17.3%	

DISCUSSION

The study included 4000 women attending teaching hospitals at Mosul city, Iraq, the prevalence of ovarian

cyst was 300 cases (7.26%), as shown in Figure 1. In a random sample of 335 asymptomatic 24-40-year-old women, the prevalence of an ovarian cyst was 7.8%.^[20]

In a similar study (Indonesia), the prevalence of benign ovarian cysts in women of reproductive age was reported as 7%.^[21] In a cross-sectional study (Europe), about 4% to 7% of women who were examined by sonography had ovarian cysts larger.^[22]

In a large ovarian cancer screening study at the University of Kentucky, 13% of women had unilocular ovarian cysts that were discovered during the course of the screening program.^[23]

Another study that examined ovarian cysts in postmenopausal women showed a prevalence of 2.5% for a simple unilocular adnexal cyst.^[24] In postmenopausal women, 18% can develop one or more Graffian follicles, which appear as cysts on imaging.^[14]

The study showed that the higher number and percentage of ovarian cyst 112 (37.3%) at age 21-30 years, ($P < 0.01$), Table 1. In agreement with this finding at Tikrit, Hashim *et al*^[25] found that 59.6% of patients from age group 15-30 years while only 3.2% less than 15 years. Saudi, Abduljabbar *et al*^[6] indicated that, the rate of patients with ovarian cyst was within the age group below 32 years range years. Ovarian tumors are relatively uncommon in children.^[26] A study done by Terzic *et al*^[7] found that the mean age of functional ovarian cysts in their study was 36 years. Iran, Arab *et al*^[27] found that complicated functional ovarian cysts was present in younger patients (mean age 30 for hemorrhagic and 25 for torsed cysts). Similar mean age for functional ovarian cysts have been reported in other studies^[28,29,8] to be 34.5 years to 38 years. Similarly, Qatar (Zahra)^[5] reported that, the majority of the women were in the 21–30 year old age group (42%) followed by the 31–40 year old age group (29.6%). Ovarian cysts are known to be more common and larger in adolescents compared to children as a result of increased gonadotropin stimulation of ovaries during puberty.^[5] The ovary is more active during puberty due to the increased gonadotropin secretion. Hence, finding an ovarian cyst is more common in adolescence than in any other stage of growth.^[26] This also because of the ovulation process where follicles continues to form, mature and rupture and sometimes it may not rupture or dissolve but converts into physiologic cysts which may or may not dissolve with the successive menstrual cycles.^[7]

Result in Table (2) showed that 154 (51.3%) of patients with ovarian cyst were in primary level of education and 8 (2.7%) was educated ($P < 0.01$). Zahra (Qater)^[5] reported that, the majority of the women were illiterate. Education among females is most important especially when the matter is about the awareness of their health and treatment outcomes.

The study demonstrated that, majority of patients with ovarian cyst were married (77.7%) and belonged to urban area (66.67%). In agreement with this finding, Abduljabbar *et al* (Saudi)^[6] indicated that majority of

women with OC were belonged to urban areas and in the same study, He included 244 patients who diagnosed with ovarian cysts, 165 were married (67.4%), and of those only 16 were pregnant (6.6%). About thirty-three percent of the patients were married which shows the prevalence of ovarian cyst is more in the married women than the single as compared to the study at Saudi where it was shown that the chances of ovarian cyst are same in that of single and married women.^[6]

Table 4 shows that, women are have menarche at age (12-13) were more liable for ovarian cyst, (women have menarche at age < 12 year was 30%, followed by age (14-16) years (10.7%) and > 16 years (1.4%). Also women who has 27 days and above between menstrual period 189 (63%) more liable for O.C. Also women who has irregular cycle 222 (74%) more liable for O.C. Women who has (5-7) days of menstrual flow 198 (66%) more liable to have O.C. in another study, 30 % women with a regular cycle, about 50 % in women with irregular cycle, and 6% postmenopausal women have ovarian cysts.^[30] Bottomley *et al* showed that a majority of the respondents, 27 (42.9%) are within 19 - 27 days of menstrual period while those that have regular menstrual cycle are 38 (60.3 %). Usually the impaired ovarian function, uterine pathology and other disorders are responsible for the menstrual irregularities.^[31,20] Ovarian cysts are also often accompanied by menstrual cycle irregularities; it is also one of the causes of ovarian cyst as shown in previous study (America).^[32,33] The formation of ovarian cyst also affects the normal menstrual cycle, the duration is increased, and flow in some patients may be light or heavy (Pakistan).^[34,35]

The study revealed that, most of women with O.C 223 (74.3%) have cramping or pain during M.C. Two third of women with O.C 201 (67%) have not bled or spotting in between M.C. In agreement with these finding, some studies (Jordan, Indonesia) also proposed that, the commonest presentation had cramping or pain during M.C.^[36,21,37] While Tlefih (Karbala)^[10] showed that, 40% of OCs were asymptomatic discovered incidentally when abdominal U S was performed for other reason. In a study done by Modesitt *et al*^[20] showed that, a majority of the respondents suffer pain during menstrual period and when they were asked about bleeding or spotting in between menstrual periods, the value was significant with respect to worsening symptoms. Severe intensity of the pelvic pain in ovarian cyst patients was recorded and other studies had shown this pain to be dull heavy sensation because of the increased size of the cyst.^[31]

Table 6 shows that women who not use contraception 258 (86%) more liable for O.C. Grimes *et al*^[3] also indicated that majority of women with OC were didn't use oral contraceptive. Moreover, Jensen *et al* (North America)^[32] reported that, 85% given oral contraceptives, 23 (85%) had resolution of the cyst within one menstrual cycle. Schlaff *et al* (America)^[33] reported a protective effect of oral contraceptives against

functional ovarian cysts by high-dose monophasic pills attenuated with lower hormonal potency.

Table 7 shows that, majority of women with O.C 264 (88%) have not Difficult to walk because of pain. But one third of women with O.C 93 (31%) had mood swing. Azhar et al (Pakistan)^[34] also reported that, majority of women who found it difficult to walk as a result of the pain with respect to severity of the pain and treatment taken and as far as swing in mood is concerned a majority of the respondents experienced this ($p=0.002$) with respect to severity of pain.

The study showed that, half of women with O.C 160 (53.3) have Knowledge of cyst from Physician and 120 (40%) still don't know, and 20 (6.7%) have Knowledge from Family and friends. In this way, Azhar et al (Pakistan)^[34] study showed that, when women were asked if they had prior knowledge about the ovarian cyst, 37 (58.7 %) responded that they were first told by the physician during their visit to the clinic or hospital while the patients responded, "Still don't know" are 22 (34.9 %). With respect to educational level of the patients, they seemed to be less aware of the disease.

Table (9) shows that, most of women with O.C 266 (88.7%) have good, very good general health. Two third of women with O.C 195 (65%) Visit to physician in the past 6 months and majority of them 272 (90.7%) not Visit E.D in the past 6 months. These were in agreement with Freij et al (Jordan)^[36] study, who found that, most OC women visited to physician in the past 6 month.

The study showed that, 45% of studied patients were with follicular type of cyst, 22.3% PCO and 20% serous cyst. The study also demonstrated that, 45% of patients were with right site of cyst, 29.3% left and 25% bilateral. Table 10. Hashim et al (Tikrit)^[38] found that most of the cysts were on the right side. Zahra (Qatar)^[5] indicated that, there was bilateral ovarian involvement in 11.1% patients and unilateral ovarian involvement 88.9% (right ovary was involved in 48.1% cases and the left ovary was involved in 40.7%). Abduljabbar et al (Saudi)^[6] indicated that, the most common clinical presentation was abdominal pain in 142 patients (58.2%). The most common ovarian cyst was the follicular cyst which is consistent with other studies (56-58).

The study found that, 63.7% of patients need only medication for ovarian cyst, 17.3% need surgical interaction and 19% didn't need any type of treatment, Table 3.12.

In agreement with our finding, Tlefih (Karbala)^[10] study showed (20%) of OCs resolved spontaneously, which is much less than that mentioned by Janet Cochrane Miller et al which was (69%). 225 (75%) of women underwent laparotomy, which was much higher than that documented in U.S. which was 5% – 10%.^[39] This difference might be due to that most of our cases were

symptomatic and some of asymptomatic women asked for operative treatment due to anxiety and fear of malignancy.^[40]

Janet Cochrane Miller et al recommended surgical removal of any simple OC that is larger than 5-6 cm, because these cysts can tors, and Nagele Ahmad et al (Pakistan) stated that Large ovarian cysts are conventionally treated by laparotomy.^[41] It is stated that in the presence of family history of cancer, the current recommendation is that the lesion should be resected rather than followed.^[42,43] Our decisions were similar to the above studies. Unnecessary surgery represents a significant cost to the patient and to society, surgery in young patients may interfere with fertility and increase the risk of ectopic pregnancies, laparoscopy is becoming an alternative to laparotomy for benign adnexal masses.^[20]

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