

Clinicopathological analysis of ovarian cysts in Tikrit

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Abstract

The ovary is normally a cystic structure and the risk of its developing a malignancy is low. The general surgeons and gynecologists that do laparotomy may remove the ovarian cyst with the hope that a pathological process will be found to justify the symptoms, signs and surgery indications. A case control study was carried out in obstetrics and gynecology department at Tikrit Teaching Hospital, through the period of June – 2004 to December – 2007, to identify the types of surgically removed ovarian cysts in the hospital and verifying the risk factors, clinical presentation and pathological diagnosis of these cysts. A total of 166 patients with ovarian cysts in the group 1 (cyst group) and 50 women in the group 2 (control group) are enrolled in the study, and a structural questionnaire was administered to each woman with ages 11–74 years. Functional ovarian cyst occurs in n=70 patients {corpus luteum cyst n=40 patients (22.2%) and follicular cyst n=30 patients (16.6%)}, while benign epithelial tumors are n=45 patients {Serous n=31 patients (17.2%) and mucinous n=14 patients (7.8%)}. However, dermoid cyst was found in n=29 patients (16.1 %), endometriosis in n=21 patients (11.7%), and fibroma in n=3 patients (1.7%). Yet, mucinous cyst adenocarcinoma, thecoma, infectious cysts and ovarian ectopic pregnancy are found in n=2 patients (1.1%) respectively. Nevertheless, serous cyst adenocarcinoma, granulosa cell tumor, and malignant transformation of mature cystic teratoma have been seen in 1 patient (0.6 %) for each tumor. Single female, nulliparity, low parity and infertility were associated with ovarian cysts. Blood group A+ was the most blood group that is associated with them n= 57 patients (34.4 %). Fatty diet and salty diet are also associated with them, but these results were not significant except for caffeine use. Smoking appears to be not a risk factor in this study because it is not acceptable for female in our society. The size of each tumor or cyst and the complication of it such as torsion and rupture would be related to its type.

Key words: ovarian cyst, risk factors, functional, neoplastic.

Introduction

A cyst is a collection of fluid like structure usually more than 3 cm in size. It may be few millimeters in diameter, or it may grow to a very large size, weighing up to several kilograms. The fluid with it may be clear fluid, blood, thick mucous or sebaceous material.⁽¹⁾

The ovaries are quite common sites in the body for cysts to develop. The incidence of ovarian cysts in the general population is difficult to estimate, and regarded as one of the important surgical diseases in clinical practice in addition to inflammations and neoplasms⁽²⁾. What is surprising that there is mixture between ovarian cysts and neoplasms, as a result of the same presentation? Some of the ovarian tumors presents as cystic structures and others solid but misinterpreted radiologically,

clinically and even preoperatively as cyst and vise versa.^(2,3,4)

To classify cysts, it is broadly said as non neoplastic cysts and neoplastic. More commonly seen in clinical practice is to see physiological follicular and corpus luteum cyst. Tumors that can present as cysts or solid tumors are classify according to cell of origin into:⁽⁵⁾

1-Epithelial origin which include the followings:- Serous, Endometrioid, Mucinous, Clear Cell, Brenner, Mixed & Undifferentiated.

2-Sex cord / stromal in origin which include :- Granulosa / theca cell tumors, Fibroma, Androblastoma & Gonadoblastoma

3-Germ cell which include:- Teratoma, Dysgerminoma, Yolk sac tumor & Choriocarcinoma

4-Mixed

5-Metastatic

Different risk factors have been reported to be associated with them such as: smoking, fatty diet, early age of menarche, late menopause, nulliparity, infertility, and contraception use ^(6,7,8,9,10). Family history of breast or colonic cancer is associated with ovarian cancer ⁽⁹⁾. Genital powder with unknown mechanism may be associated with them ⁽¹¹⁾. Treatment of ovarian cyst or tumor either medical, conservative and follow up or surgery depending on different factors. ^(2,3,4)

Material and Methods

The study design was case control study. It was done at obstetrics and gynecology department and the laboratory in Tikrit Teaching Hospital through the period of June-2004 to December-2007.

Sample size: The total number of enrolled patients in the study was 166 patients in the group 1 (cyst group) and 50 women in the group 2 (control group). Those 166 patients were admitted to obstetrics and gynecology department complaining of ovarian cyst and prepared for surgery. The causes of surgery would be either: -

- 1- Failed cyst to resolve after treatment more than 6 month.
- 2- Size >5 cm.
- 3- Increase the size during follow up.
- 4- Symptoms and signs due to cyst.
- 5- Ultrasound finding such as solid components, inner wall papillary structures size > 5 cm and suspicion of malignancy. ^(2,3,4)

The age of enrolled patients from 11-74 years old and there is no exclusion criteria for age except that the women should have a menarche.

A structured questionnaire was administered in the hospital that included age, work, and residency, and blood group, details of menstrual history, marital status, and date of marriage. Full obstetrical history which was included (gravidity, parity, abortion and it is types, ectopic pregnancy and

obstetrical surgeries), gynecological operations such as (ovarian cystectomy, oophorectomy, hysterectomy), family history of ovarian cyst, details of contraception use, diet history, smoking, use of caffeine and presenting symptoms of the disease.

Details of surgery were reported, the side of ovaries which involved, size of cyst and the surgical procedures were done, were also reported in addition to the histopathological reports that included information on an ovary or portion of an ovary were reviewed by the study pathologist.

The exclusion criteria, when the cyst is not related to ovary and presented as adnexial mass such as tubal cyst, while infectious cyst, ovarian ectopic pregnancy were included. All surgical specimens were examined and processed for histopathological examination. Type of cyst was classified on the basis of histopathology criteria recommended by both The World Health Organization and The International Federation of gynecology and obstetrics. ⁽⁵⁾

Statistical analysis of data were done using SPSS manager system version 10. The level of significance was 0.05.

Results

The age mean $\pm$ SD of the group 1 was (30.02 $\pm$ 10.35) years while it was (32.2 $\pm$ 12.61) years for group 2 (this result was not significant). Table (1) shows the characteristics of the patients in both groups such as age, job, marital status, residence, smoking and previous pelvic surgical history. The relation of ovarian cyst with parity is shown in table (2).

Mean $\pm$ SD age of menarche in the study population is (12.52 $\pm$ 1.63) years in 145 patients and (12.98 $\pm$ 1.5) years in 43 women whom know their menarche (this result was not significant) while mean $\pm$ SD menopausal age was (45.9 $\pm$ 4.22) years in 10 patients and (49.17 $\pm$ 2.04) years in 4 women (this result was significant) in group 1 and 2 respectively.

Histopathological examination revealed the presence of 70 patients (38.9 %) functional ovarian cyst {corpus luteal cyst 40 patients (22.2 %) and 30 patients (16.6%) follicular cyst}, while benign epithelial cyst 45 patients (25%) {(serous cyst 31 patients (

17.2%) and mucinous cyst 14 patients (7.8%)), dermoid cyst 29 patients (16.1 %) endometriosis 21 patients (11.7%), fibroma 3 patients (1.7%), fibroma, mucinous cyst adenocarcinoma 3 patients (1.7%), ovarian ectopic pregnancy, infectious, thecoma 2 patients (1.1%) and granulosa cell carcinoma, serous cyst adenocarcinoma, malignant transformation of dermoid cyst are 1 patients (0.6 %) for each type (Table 3). One pregnant patient was found in first trimester with benign serous cyst and three pregnant are in second trimester with two follicular cysts and one dermoid cyst. Table (4) shows distribution of age to tumor types.

Blood group distribution among study population was shown in table (5) and the most common blood group in the group (1) was A+ n= 57 patients (34.4%) while O+ is the most blood group n= 10 women (20%) in group (2).

Group (1) infertility period mean $\pm$ SD whether primary or secondary more than 1 year was (3.28 ± 2.43) years while group (2) was (4.43 ± 3.96) years (this result was not significant). The relation of infertility period with ovarian cyst was shown in table (6). The relation of infertility drugs with ovarian cyst was shown in table (7).

Table (8) the relation of contraception type with ovarian cyst .The natural method was the most method associated with ovarian cyst n=10(43.5%) in group (1) and 2(10%) in the group (2), other types of contraception also is shown in table (9).

Diet type including salt intake, fatty diet, vegetables diet and caffeine use were shown in table (10). Table (11) shows the sequence of presenting symptoms and signs of ovarian cysts.

The right side ovary was involved in 83 patients (50%), left side ovary was in 69 patients (41.6%) and 14 patients (8.4%) bilateral cysts. Figure (1) shows surgical procedures that had been done at operations such as cystectomy n= 107 patients (59.4%), salpingectomy and oophorectomy n=24 patients (13.3%), cystectomy and appendectomy n=20 patients (11.1%), total abdominal hysterectomy n=19 patients (10.6) especially for malignant cyst and oophorectomy n=10 patients (5.6 %). The complications of these cysts were torsion

n=34(18.9%) and rupture n=10(5.6%).Table (12) shows the relation of type of cyst with its complications.

Discussion

Ovarian cyst is one of the common Gynecological problems in Iraq. This study is case control study that suggests some risk factors in relation to the occurrence of ovarian cyst and most of the studies concentrate on malignant disease of ovary only. In some studies regarding benign ovarian tumors concluded the etiology of ovarian cyst and benign epithelial ovarian neoplasm may differ and benign borderline and malignant epithelial ovarian neoplasm may be similar or shared some risk factors. (6,12,13)

The distribution of cyst histopathological types is in order:- Functional ovarian cyst (corpus luteum cyst and follicular cyst), benign epithelial cyst(both serous and mucinous cysts), dermoid cyst, endometriosis and malignancies and this distribution is dissimilar for benign tumors that found in other studies done by Demont et al (2001) in which the distribution was 30-40% Follicular cyst, 20-30% serous and mucinous cyst, 10-20% dermoid cyst and 11% endometriosis also katsubeyet (1979) who found that the most single tumor is cystic teratoma dermoid (26.3%) while the epithelial tumors constituted the most frequent group(57.6%) of all tumors and (93.8%) of all malignant. (14)

Malignant disease of ovary varies in different geographic locations through the world. Western countries have high incidence of them that is 3-7 times more than Japan where epithelial malignancy is lower in Asia. The incidence of germ cell tumors of the ovary appears to be higher than in the west (3)and because the epithelial ovarian malignancies are one and one half times greater in white than black. (14)

The age distribution showed in the study done by booth M et al (1992) showed that women with benign epithelial ovarian neoplasm were older than those with a functional ovarian cyst who in turn older than those with dermoid cyst which tends to occur in younger women which agreed with our result. (6) Most ovarian cysts occur in

reproductive life and about 2/3 are functional, endometriosis, dermoid, and epithelial tumors while 5-18% only malignancies in patients less than 45 years old.⁽¹⁵⁾

The incidence of malignancy increases with age and 30-60% of women more than 50 years (50-60years)^(6,15). The majority of them is epithelial in origin while germ cell origin occurs in young age < 35 years old.⁽³⁾

Blood group A is a risk factor for ovarian malignancies, while group O is a protective factor.⁽¹⁶⁾ Most blood group is A +ve and Rh-ve is very low appearance in the study and this may be due to general distribution of Rh type which is low regarding negative types in our population.

The relationship of parity, age of first child delivery, infertility, and infertility drugs usage is very complex and discussed by differed studies. Single female is risk factor in our study but because the early marriage and more than one wife in the family in our society might decrease this risk factor and give more chance for infertility and infertility drugs to play a role in ovarian tumor formation, this agreed with booth M etal (1992) who found that nulliparity and infertility were associated with an increased risk and multiparity with an increased risk of benign epithelial ovarian neoplasm⁽⁶⁾.

Infertility and pelvic inflammatory disease were associated with increased risk of all tumor types.⁽⁶⁾ The ovulation may increase the surface of ovary to disruption and when healing is by proliferation, spontaneous mutation in tumor suppressor or proto-oncogenesis that might contribute to oncogenesis.⁽¹⁴⁾

While ovarian malignancies risk factors may include low parity, infertility, early menarche, and late menopause. Studies about infertility have not been consistent and have not adequately distinguished the influence of infertility perse from the use of fertility stimulating agents as shown in our study.⁽¹⁴⁾

Different studies showed protective effect of oral contraceptive pills from ovarian tumor because inhibition of ovulation due to chiefly to the dose of estrogen and progesterone in contraceptive pills and with low does the suppression of LH surge and disruption of endometrial cycle to inhibit

ovulation occur. Modern oral contraception do not inhibit follicular cyst or epithelial types but protect from endometriosis cyst and ovarian cancers and in both cases the protection lasts for up to 2 decades after stopping its use while other studies showed a protective effect against all ovarian cysts especially endometriosis cyst while intrauterine contraceptive device had no benefit effect on them.^(2,7, 11,17,18)

Other risk factors such as smoking^(19, 20) were not found in our study because this habit is not well common in our society especially for reproductive age group. Caffeine use is very high in our society that were used to be a good drinker of soft drinks, and the caffeine use also associated with malignancy⁽¹⁰⁾. High vegetable diet and moderate fat intake in our population were not appear as a risk factor because most of our patients from rural area and these people eat vegetables rather than fatty diet and this disagree with low vegetables diet and high fatty diet for benign and malignant ovarian tumors.^(10,13)

The symptoms and signs of ovarian cyst depend on its sizes which depend on tumor type. Most of them had pain or discomfort in the lower abdomen. The pain may be constant or intermittent. Pain may only occur with sex. Severe unrelenting pain, sometimes accompanied by nausea and vomiting, of on one side or the other could be a symptom of an ovarian cyst. Ovarian cyst rarely causes severe pain like this, although if an ovarian cyst twists, it can do so. Sometimes a cyst may bleed into itself, or burst. This can cause a sudden severe pain in the lower abdomen.

Occasionally, a cyst which is growing on a stalk from an ovary may twist the stalk on itself torsion') such. This stops the blood flowing through the stalk to the cyst and causes the cyst to lose its blood supply. This can cause sudden severe pain in the lower abdomen. Periods sometimes become irregular, or may become heavier or lighter than usual. Large cysts can cause the abdomen to swell, or press on nearby structures. For example, on the bladder or rectum which may cause urinary symptoms or constipation? Although most cysts are benign, some types have a risk of becoming cancerous. Rarely, some ovarian cysts make abnormal amounts of female (or male)

hormones which can cause unusual symptoms^(2,3,4,6).

A follicle can sometimes enlarge and fill with fluid. They can grow up to 5 cm across. They usually go away by themselves within a few months. The corpus luteum is a normal cystic structure that forms after ovulation each month. There is a physiologic in-growth of capillaries into the corpus luteum after several days, which sometimes is a bit excessive and which can rarely result in severe bleeding and pain (A blood filled cyst is sometimes called a hemorrhagic cyst.) These kinds of cysts can grow up to 6 cm across.

They usually go away on their own within a few months. Follicular cyst and luteal cyst may reach > 10cm and may rupture. Dermoid cysts often contain odd contents such as hair, parts of teeth or bone, fatty tissue, etc. This is because these cysts develop from cells which make eggs in the ovary. An egg has the potential to develop into any type of cell. So, these cysts can make different types of tissue. In about 1 in 10 cases a dermoid cyst develops in both ovaries. Dermoid cysts tend to occur in younger women, may reach <15cm and may be torted in 3.5-10%. Cystadenomas is the most epithelial tumor.

These develop from cells which cover the outer part of the ovary. There are different types. For example, 'serous cystadenomas' fills with a thin fluid and 'mucinous cystadenomas' fills with a thick mucus type fluid. These types of cysts are often attached to an ovary by a stalk more than growing within the ovary itself. Some grow very large. They are usually benign but some are cancerous. They rarely become large while mucinous cystadenoma 15-25% of all ovarian tumors may reach a large size. Endometriosis which arises from ectopic endometrial tissue and bilateral involvement of the ovaries has been reported in 1/3- 1/2 of cases.

They are less than 15cm in diameter. The cyst did not grow large in size overnight and most endometriosis cysts don't rupture cataclysmically. They occasionally will leak slightly, then the cyst wall can re-seal. When they leak, they may cause pain for a few days, which then improves. Such leakage can occur every few months in some patients, sometimes only once in others. There is no

evidence a leaking endometriosis cyst causes endometriosis to spread^(2,3,4,11,16). Serous carcinoma often affect both ovaries while mucinous carcinoma may reach a large size^(3,4). All these information agreed with our results.

The present study concludes that different types of ovarian cyst that need surgical intervention occurred in our society. Nullparity, infertility, low parity, high caffeine use, fatty and salty diet may be a risk factors for them. Oral contraceptive pills appear to be a protective factor since its low usage in the study population. Smoking is not a risk factor in our study because it is not acceptable for female in present society. Further large - controlled studies of different risk factors are needed to evaluate these risk factors.

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Table (1) The sample characteristics.

Characteristics	Case distribution						P value (Degree of freedom)
	Group 1		Group 2		Total		
	No.	(%)	No.	%	No.	%	
Age							
10-19 year	24	14.5	4	8	28	13.0	0.057(4)
20-29 year	64	38.5	23	46	87	40.3	
30-39 year	41	24.7	15	30	56	25.9	
40-49 year	28	16.9	2	4	30	13.9	
>50	9	5.4	6	12	15	6.9	
Job							
house wife	133	80.1	40	80.0	173	80.1	0.865(2)
Worker	20	12.1	7	14	27	12.5	
Student	13	7.8	3	6	16	7.4	
Marital status							
Married	123	74.1	44	88	167	77.3	0.04(1)*
Not married	43	25.9	6	12	49	22.7	
Residence							
Rural	109	65.7	25	50	134	62.04	0.04(1)*
Urban	57	34.3	25	50	82	37.96	
smoking							
not smoker	153	92.2	42	84	195	90.3	0.08(1)
Smoker	13	7.8	8	16	21	9.7	
previous pelvic surgery							
No history	124	74.8	42	84	166	76.8	0.125(7)
Cesarean section	18	10.8	4	8	22	10.2	
Appedecectomy	8	4.8	1	2	9	4.2	
TAH*	7	4.2	1	2	8	3.7	
Ectopic pregnancy	5	3.0			5	2.3	
Ovarian cystectomy	4	2.4	0	0	4	1.8	
Laparoscopy			1	2	1	0.5	
Tubal ligation			1	2	1	0.5	
Total	166	100	50	100	216	100	

*Significant statistical relation

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**TAH=Total abdominal hysterectomy

Table (2) The relation of parity with ovarian cyst.

No. of children	Case distribution				Total	
	Group 1		Group 2			
	No.	(%)	No.	%	No.	%
Nullipara	30	24.4	9	20.5	39	23.4
one child	6	4.9	2	4.5	8	4.8
two child	18	14.6	6	13.6	24	14.4
three child	20	16.3	6	13.6	26	15.6
four child	17	13.8	5	11.4	22	13.1
> 5 child	32	26.0	16	36.4	48	28.7
Total	123	100	44	100	167	100

Df=5, P.value=0.883(not significant)

Table (3) the type of cyst in the study.

Type of the cyst	Frequency	(%)
Corpus luteum	40	22.2
Serous cyst adenoma	31	17.2
Follicular	30	16.6
Dermoid	29	16.1
Endometriosis	21	11.6
Mucinous cyst adenoma	14	7.8
Fibroma	3	1.7
Mucinous cyst adenocarcinoma**	3	1.7
Thecoma	2	1.1
Infectious	2	1.1
Ovarian ectopic pregnancy	2	1.1
Serous cyst adenocarcinoma **	1	0.6
Granulosa cell carcinoma**	1	0.6
Malignant transformation of Dermoid cyst**	1	0.6
Total	180*	100

*The number of ovarian cyst is 180 cysts in 166 patients because of 14 of the patient had bilateral cysts. **malignant type

Table (4) The relation of ovarian cyst type with age.

Type of the cyst	Age										Total	
	10-19 year		20-29 year		30-39 year		40-49 year		>50 year			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Corpus luteam cyst	10	40	18	24.7	10	23.3	2	6.9	0	0	40	22.2
Serous cyst adenoma	4	16	9	12.3	9	20.9	6	20.68	3	30	31	17.2
Follicular	4	16	12	16.4	6	14.0	5	17.24	3	30	30	16.6
Dermoid	4	16	16	21.9	4	9.3	5	17.24	0	0	29	16.1
Endometriosis	1	4	12	16.4	6	14.0	2	6.9	0	0	21	11.6
Mucinous cyst adenoma	1	4	3	4.1	5	11.6	4	13.79	1	10	14	7.8
Fibroma	0	0	0	0	2	4.6	1	3.45	0	0	3	1.7
Mucinous cyst adenocarcinoma			1	1.4			1	3.45	1	10	3	1.7
Thecoma	0	0	0	0	1	2.3	0	0	1	10	2	1.1
Infectious	0	0	1	1.4	0	0	1	3.45	0	0	2	1.1
Ovarian ectopic pregnancy	0	0	1	1.4			1	3.45			2	1.1
Serous cyst adenocarcinoma*	1	4	0	0	0	0	0	0	0	0	1	0.6
Granulosa cell carcinoma*	0	0	0	0	0	0	0	0	1	10	1	0.6
Dermoid malignancy*	0	0	0	0	0	0	1	3.45	0	0	1	0.6
Total	25	100	73	100	43	100	29	100	10	100	180	100

D f=52, p= 0.01(significant) **malignant type

D f=52, p= 0.01(significant) **malignant type

Table (5) the relation of blood group with ovarian cyst

Blood group	Case distribution				Total	
	Group 1		Group 2			
	No.	%	No.	%	No.	%
A+	57	34.4	10	20	67	31.0
O+	41	24.7	19	38	60	27.7
B+	34	20.5	10	20	44	20.4
AB+	7	4.2	6	12	13	6.0
O-	9	5.4	3	6	12	5.6
A-	8	4.8	1	2	9	4.2
B-	8	4.8	1	2	9	4.2
AB-	2	1.2			2	0.9
Total	166	100	50	100	216	100

D f=7, P value = 0.140 (Not significant)

Table (6) the relation of infertility period with ovarian cyst.

Infertility period	Case distribution				Total	
	Group 1		Group 2			
	No.	%	No.	%	No.	%
1 year	8	17.02	5	35.7	13	20.97
>1year	39	82.98	9	64.3	49	79.03
Total	47	100	14	100	62	100

D f=1, P value = 0.134 (Not significant)

Table (7) The relation of infertility drug use with ovarian cyst

Infertility drug	Case distribution				Total	
	Group 1		Group 2			
	No.	Percent	No.	Percent	No.	Percent
Not taking drugs	8	17.02	4	35.7	13	20.97
Taking drugs	39	82.98	10	64.3	49	79.03
Total	47	100	14	100	62	100

D f=1, P value = 0.34 (Not significant)

Table (8) The relation of contraception use with ovarian cyst

Contraception use	Case distribution				Total	
	Group 1		Group 2			
	No.	%	No.	%	No.	%
No	100	81.3	24	54.54545	124	74.2515
Yes	23	18.7	20	45.45455	43	25.7485
	123	100	44	100	166	100

Df=1, P value = 0.001 (significant)

D f=1 ,P value = 0.001 (significant)

Table (9) The relation of contraception type used with ovarian cyst

Contraception type	Group 1 no. (%)	Group 2 no.(%)
Natural method	10(43.5%)	2(10%)
Depo-Provera	6(26.1%)	2(10%)
Intrauterine device	4(17.4%)	1(5%)
Oral contraceptive pills	3(13%)	10(50%)
Tubal ligation	0(0%)	5(25%)
Total	23(100%)	20(100%)

D f=4 ,P value = 0. 004 (significant)

Table (10) The relation of diet type and ovarian cyst.

Table (10) The relation of diet type and ovarian cyst.							
Diet type	Case distribution				Total		P value (Df)
	Group 1		Group 2				
	No.	%	No.	%	No.	%	
Salt intake							
No excess intake	94	56.6	29	58	123	56.9	0.863(1)
Excess intake	72	43.4	21	42	93	43.1	
Vegetables intake							
No excess intake	49	29.5	10	20	59	27.3	0.185(1)
Excess intake	117	70.5	40	80	157	72.7	
Fat intake							
No excess intake	96	57.8	30	60	126	58.3	0.785(1)
Excess intake	70	42.2	20	40	90	41.7	
Caffeine intake							
No excess intake	51	30.7	36	72	87	40.3	0.0005(1)*
Excess intake	115	69.3	14	28	129	59.7	
Total	166	100	50	100	216	100	

* significant

* significant

Table (11) presenting symptoms and signs of ovarian cyst

Symptoms and signs	No.	%*
Abdominal pain	135	81.33
Menstrual irregularities	78	46.99
Nausea and vomiting	54	32.5
Mass	27	16.27
Acute abdomen	20	12.05
Backache	20	12.05
Fever	16	9.64
Leg pain	11	6.63
Dysuria	10	6.02
Dysmenorrhea	5	3.01
incidentally diagnosed	5	3.01
Edema	2	1.21

* denominator = 166

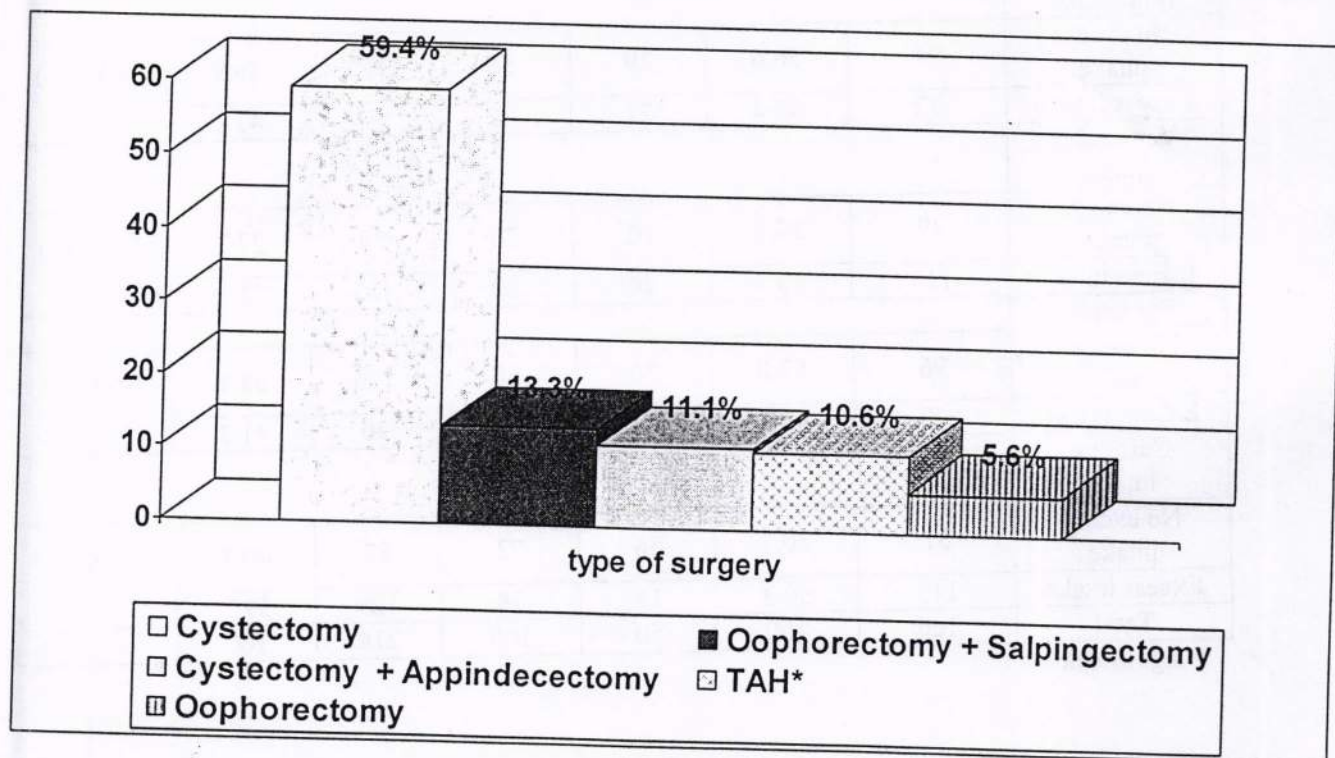


Fig (1): Surgical treatment of ovarian cyst.

*TAH=Total abdominal hysterectomy

Table(12) The relation of the type of the cyst with complications.

Type of the cyst	Complications						Total	
	No complications		Torsion		Rupture			
	No.	%	No.	%	No.	%	No.	%
Corpus Luteum	29	21.3	6	17.7	5	50	40	22.2
Follicular	21	15.4	5	14.7	4	40	30	16.7
Serous cyst adenoma	22	16.2	8	23.5	1	10	31	17.2
Dermoid	22	16.2	7	20.6	0	0	29	16.1
Endometriosis	18	13.2	3	8.8	0	0	21	11.7
Mucous cyst adenoma	11	8.1	3	8.8	0	0	14	7.8
Fibroma	3	2.2	0	0	0	0	3	1.6
Mucinous cyst adenocarcinoma	2	1.5	1	2.95	0	0	3	1.6
Thecoma	2	1.5	0	0	0	0	2	1.1
Infectious	2	1.5	0	0	0	0	2	1.1
Ovarian ectopic pregnancy	2	1.5	0	0	0	0	2	1.1
Serous cyst adenocarcinoma*	1	0.7	0	0	0	0	1	0.6
Granulosa cell carcinoma*	0	0.0	1	2.95	0	0	1	0.6
Dermoid malignancy*	1	0.7	0	0	0	0	1	0.6
Total	136	100	34	100	10	100	180	100

D f=26, p= 0.719(not significant) **malignant type

Table (13) The mean± SD cyst size according to the type of the cyst.

Type of the cyst	No.	Mean(cm)	Std. Deviation
Corpus Luteum	40	6.06	4.38
Serous cyst adenoma	31	11.89	10.38
Follicular	30	6.5	4.39
Dermoid	29	8.92	4.82
Endometriosis	21	6.05	2.13
Mucinous cyst adenoma	14	18.8	14.76
Fibroma	3	9.33	5.13
Mucinous cyst adenocarcinoma**	3	14.3	18.01
Thecoma	2	6.5	4.95
Infectious	2	5	0
Ovarian ectopic pregnancy	2	3.5	0.71
Serous cyst papillary adenocarcinoma**	1	9	
Granulosa cell tumor**	1	30	
Malignant transformation of dermoid cyst**	1	25	
Total	180	9.00	8.20

D f=11, p value = < 0.001(very significant) ANOVA test **malignant type