

# Review of 244 cases of ovarian cysts

Hassan S. Abduljabbar, MD, FRCSC, Yasir A. Bukhari, MBBCH, Estabraq G. Al Hachim, MBBCH, ABOG, Ghazal S. Ashour, MBBCH, Afnan A. Amer, MBBCH, Mohammed M. Shaikhoon, MBBCH, Mohammed I. Khojah, MBBCH.

## ABSTRACT

**الأهداف:** مراجعة جميع حالات تكيس المبيض التي تم علاجها في مستشفى جامعة الملك عبد العزيز وذلك من أجل تحديد العوامل التي تستلزم عملية فتح البطن بدلاً من التنظير.

**الطريقة:** اعتمدت هذه الدراسة الاسترجاعية على مراجعة السجلات الطبية للحالات التي تم تشخيصها وعلاجها في قسم النساء والولادة، مستشفى جامعة الملك عبد العزيز، جدة، المملكة العربية السعودية وذلك خلال الفترة من يناير 2010م إلى أغسطس 2014م. ولقد قمنا بجمع البيانات من السجلات الطبية، بالإضافة إلى التفاصيل الخاصة بالمرضى فيما يخص الأعراض السريرية، ووصف الأكياس، ونوعيتها، وطرق علاجها سواء كان عن طريق التنظير أو فتح البطن. وقد حصلنا على موافقة اللجنة الأخلاقية للأبحاث على هذا البحث.

**النتائج:** شملت الدراسة 244 حالة مصابة بتكيس المبايض وذلك خلال فترة الدراسة، ولقد تراوح عمر المرضى من 3 أشهر إلى 77 عاماً. وبلغ عدد الحمل السابق 0-6 مرة. ولقد تراوح طول المرضى ما بين 180-37 عاماً، فيما تراوح الوزن ما بين 161-3 كغ حيث بلغ مؤشر كتلة الجسم 12-47. وكان عدد الحالات المتزوجة 165 (67.4%) وذلك من أصل 244 حالة حيث كان عدد الحمل بينهم 16 حالة (6.6%). ولقد كانت أكثر الأعراض السريرية شيوعاً ألم البطن الذي عانت منه 142 حالة (58.2%). وبلغت نسبة الإصابة بتكيس المبايض 79.9%، وكانت نسبة التكيس في المبيض الأيمن أو في الجهتين 17.5%. وقد تأثرت المبايض اليمنى لدى 63.1% من الحالات، فيما كانت ثنائية لدى 18.9% من الحالات. وكان نوع هذه الأكياس وظيفية لدى 33.2% من الحالات، وأكياس حميدة لدى 19.3%، فيما كانت جنينية لدى 12.3%.

**الخاتمة:** أظهرت الدراسة بأن العوامل التي أدت إلى علاج تكيس المبايض عن طريق فتح البطن بدلاً من التنظير قد كانت الفئات العمرية الأكثر من 35 عاماً، والنساء الغير متزوجات، والنساء الحامل، واللاتي يعانين من ألم في البطن، وكذلك المصابات بأكبر من كيس واحد في المبايض.

**Objectives:** To review cases of ovarian cysts managed at a University Hospital, and to identify the factors necessitating the use of laparotomy over laparoscopy.

**Methods:** We carried out a retrospective chart review of all cases of ovarian cysts diagnosed and managed at the Department of Obstetrics & Gynecology, King Abdulaziz University Hospital, Jeddah, Saudi Arabia between January 2010 and August 2014. All data collected from medical record charts, patents details, clinical presentations, ovarian cysts description, and pathology type were recorded, and management by laparoscopy or laparotomy was identified. Ethical approval was obtained from ethical hospital committee.

**Results:** There were 244 cases of ovarian cysts during the study period. The age ranged from 3 months to 77 years of age. The parity from 0-6. The height range from 37-180 cm. The weight range from 3-161 kg, and calculated body mass index ranged from 12-47. Out of 244 patients diagnosed, 165 were married (67.4%). Of those, only 16 patients were pregnant (6.6%). The most common presentation was abdominal pain in 142 patients (58.2%). Only 79.9% were ovarian cysts, and 17.5% were either para-ovarian or retroperitoneal. The right ovaries were affected in 63.1%, and only 18.9% were bilateral. The types of ovarian cysts included functional cysts 33.2%, benign cyst-adenoma 19.3%, and dermoid cysts 12.3%.

**Conclusion:** Factors associated with laparotomy management rather than laparoscopy included older age >35, single, pregnant, or patients presenting with abdominal pain, and more than one cyst.

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*From the Department of Obstetrics & Gynecology, Medical College, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.*

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*Address correspondence and reprint request to: Dr. Hassan S. Abduljabbar, Department of Obstetrics & Gynecology, Medical College, King Abdulaziz University, PO Box 80215, Jeddah 21452, Kingdom of Saudi Arabia. E-mail: profaj17@yahoo.com*

An ovarian cyst is a common gynecological problem and is divided into 2 main categories; physiological and pathological.<sup>1</sup> Physiological cysts are follicular cysts and luteal cysts. Pathological cysts are considered as ovarian tumors, which might be benign, malignant, and borderline. Benign tumors are more common in young females, but malignant are more frequent in elderly females.<sup>2</sup> 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.<sup>3</sup> The signs and symptoms of ovarian cysts may include; pelvic pain, dysmenorrhea, and dyspareunia. Other symptoms are nausea, vomiting, or breast tenderness, fullness and heaviness in the abdomen and frequency and difficulty emptying of the bladder.<sup>4</sup> Patients with clear, simple ovarian cysts diagnosed by ultrasound might not require any treatment. However, monitoring using serial ultrasonography was carried out in women with simple ovarian cysts smaller than 5 cm in diameter and a normal CA 125. There is a good evidence to suggest safety of observing even a 10 cm ovarian cyst.<sup>5,6</sup> The aim of this study is to review cases of ovarian cysts treated at a university hospital, and to analyze the method of management and factors affecting the decision regarding the method of management (laparoscopy versus laparotomy).

**Methods.** We carried out a retrospective medical charts review of all cases of ovarian cysts diagnosed and managed at the Department of Obstetrics and Gynecology, King Abdulaziz University Hospital (KAUH), Jeddah, Saudi Arabia, between January 2010 and August 2014. Ethical approval was obtained from the hospital ethical committee. The study included 244 cases diagnosed as ovarian cysts. The data collected from medical record charts included; age in years, nationality (Saudi or non-Saudi), parity, weight in kilograms, height in centimeters, body mass index (BMI), the patient's marital status (single, married, or having been married), whether patient was pregnant or not. Also, their clinical presentation, such as vaginal bleeding, abdominal pain or swelling, and infertility was reviewed and collected.

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In addition, asymptomatic women found to have an ovarian cyst as an "incidental" finding on ultrasound examination for other reasons, such as pregnancy, were included in this study. The number of cysts, unilateral or bilateral, clear cysts or complicated, plus the location or side of the cysts and type (functional, simple clear, dermoid, endometriosis, cystadenoma, malignant, and complicated) were all recorded. Finally, how they were managed either by laparoscopy or laparotomy was documented.

**Inclusion and exclusion criteria.** Patients admitted with a diagnosis of ovarian cysts and managed at KAUH were included. Exclusion criteria cases were those transferred to another facility, or if we found their chart was incomplete.

The IBM SPSS Statistics for Windows version 22.0 (IBM Corp, Armonk, NY, USA) was used to analyze data. Variables included age in years, nationality Saudi and non-Saudi, married or not, parity, height in cm, weight, BMI, and pregnant or not. Clinical presentation abdominal pain or otherwise, number of cysts, location and type of cysts was also included. The mean and standard deviation was calculated for the continuous variables. Frequency and percentage of other nominal variables were also computed. Using bivariate correlation, the different data variables were analyzed according to the surgical management; with the code 0 for laparoscopy, and 1 for laparotomy. In addition, Pearson correlation and logistic regression were carried out determining factors affecting the choice of surgical modality used.

**Results.** A total of 244 cases of ovarian cysts were included. The mean  $\pm$  standard deviation [SD] age of these patients was  $35.35 \pm 12.849$  years. The mean  $\pm$  SD parity was  $2.20 \pm 2.676$ . The height ranged was from 37-180 cm with a mean  $\pm$  SD of  $153.88 \pm 16.227$ . The weight ranged from 3-161 kg with a mean  $\pm$  SD of  $69.58 \pm 22.506$ . The calculated BMI ranged from 12-47 with a mean  $\pm$  SD of  $27.76 \pm 6.314$  (Table 1). Out of 244 patients diagnosed with ovarian cysts, 165 were married (67.4%), and of those only 16 were pregnant (6.6%). The most common clinical presentation was abdominal pain in 142 patients (58.2%). Only 79.9% were ovarian cysts, and 17.5% were either para- ovarian or retroperitoneal. The most common affected was the right ovaries (63.1%) and only 18.9% were bilateral (Table 2). The type of ovarian cysts were recorded accordingly; 33.2% were functional cysts, 19.3% benign cyst adenoma, and 12.3% dermoid cysts (Table 3).

Factors that are associated with the use of laparotomy for management rather than laparoscopy; older age >35 (odds ratio [OR] = 1.059; 95% confidence interval [CI]: 1.019-1.101), single (OR = 2.176; 95% CI: 0.859-1.509), pregnant (OR = 2.274; 95% CI: 1.027-3.796), patients presenting with abdominal pain (OR = 2.723; 95% CI: 1.257-5.899), and if more than one cysts (OR = 2.753; 95% CI: 1.130-6.711) (Table 4).

**Discussion.** Functional ovarian cysts are common in women of reproductive age, but rare after menopause.

**Table 1 -** Demographic characteristics of 244 cases diagnosed with ovarian cysts.

Variables	Minimum	Maximum	Mean	Standard deviation
Age	1	77	35.35	12.849
Parity	0	11	2.20	2.676
Height	37	180	153.88	16.227
Weight	3	161	69.58	22.506
BMI	12	47	27.76	6.314

**Table 2 -** Analysis of 244 cases diagnosed with ovarian cysts.

Demographic characteristics	n	(%)
<i>Marital status</i>		
Married	165	(67.6)
Single	79	(32.4)
<i>Pregnant</i>		
No	224	(91.8)
Yes	16	(6.6)
Not applicable	4	(1.6)
<i>Clinical presentation</i>		
Vaginal bleeding	47	(19.3)
Abdominal pain	142	(58.2)
Abdominal swelling	17	(7.0)
Incidental	24	(9.8)
Infertility	9	(3.7)
Not applicable	5	(2.0)
<i>Location</i>		
Ovarian	195	(79.9)
Para-ovarian	25	(10.2)
Retroperitoneal	17	(7.0)
Not applicable	7	(2.9)
<i>Side</i>		
Right	154	(63.1)
Left	79	(32.4)
Not applicable	11	(4.5)
<i>Unilateral versus bilateral</i>		
Unilateral	194	(79.5)
Bilateral	46	(18.9)
Not applicable	4	(1.6)

It can occur at any age including the fetus (in uterus).<sup>1</sup> In the present study, the patients were of all ages, the youngest 3-months-old, and the eldest 77 years old.<sup>7</sup> Treatment of ovarian cysts with laparoscopy was found to be a safe and effective method in young females provided that features of the cyst was benign and malignancy was not suspected clinically.<sup>8</sup> It was found clinical features of the cysts correlated well with the final pathology.

Symptomatic patients commonly present with abdominal pain, although most of the patients are asymptomatic and the cysts were found accidentally by bimanual examination or ultrasound. Pain can present as dull ache or pain in the lower back or abdomen. Acute severe pain can occur in complicated ovarian cysts, torsion, infarction, or hemorrhage.<sup>9</sup> The incidence of ovarian cysts in pregnant women is one out of 600. Most are benign cysts, and 50% are mature cystic teratoma, followed by benign cyst adenomas (20%). Ovarian cancer contributes to only 0.6% of cases and 13% of functional ovarian cysts.<sup>10</sup> When managing giant benign ovarian cysts, laparoscopy

**Table 3 -** Type of ovarian cysts including the frequency in number and percentage.

Type	n	(%)
Functional cysts	81	(33.2)
Dermoid	30	(12.3)
Endometriosis	26	(10.7)
Benign cyst adenoma	47	(19.3)
Malignant	10	(4.1)
Complicated cysts	22	(9.0)
N/A	28	(11.5)
<b>Total</b>	<b>244</b>	<b>(100)</b>
N/A - not available		

**Table 4 -** Factors affecting decisions of ovarian cysts.

Variables	Significant	Odds ratio	95% Confidence intervals
Age in years	0.003*	1.059	(1.019-1.101)
Nationality	0.723	0.863	(0.381-1.952)
Single	0.040*	2.176	(0.859-1.509)
Parity	0.750	0.972	(0.814-1.159)
Height in cm	0.297	0.947	(0.854-1.049)
Weight in gram	0.981	0.998	(0.856-1.164)
Body mass index	0.976	1.006	(0.695-1.455)
Pregnant	0.027*	2.274	(1.027-3.796)
Clinical presentation	0.011*	2.723	(1.257-5.899)
Number of cysts	0.0026*	2.753	(1.130-6.711)
Location	0.115	0.424	(0.146-1.230)
Type	0.307	1.635	(0.637-4.197)
N/A - Not available			

is considered a safe and minimally invasive surgical procedure.<sup>11</sup> Ultrasound-guided drainage with excision of giant ovarian cysts is a safe and appropriate modality of treatment. Even in suspected torsions; laparoscopy can be used to diagnose and treat these cases.<sup>12</sup> In an Iranian study,<sup>13</sup> functional cysts (57%) were the most common benign ovarian mass followed by serous cyst adenoma (13%), and dermoid cyst (10%). In a study from Ireland,<sup>14</sup> the most common was endometrioma (29%) followed by dermoid cyst (24%), and functional cyst (19%).<sup>14</sup> In an Italian study,<sup>15</sup> the most common was also endometrioma (19%) followed by functional cyst (18%).<sup>15</sup> In our study, the most common was functional cysts (33%) followed by cyst adenoma (19.3%), and endometriosis (10.7%).

In conservative management of ovarian cysts, the cysts can disappear or be under control. In a situation, where it has to be removed, this can be carried out laparoscopically or through a laparotomy.<sup>16</sup> The traditional option for ovarian cyst removal is laparotomy, and this approach is the oldest method, and is an entirely invasive procedure. Over the last 2 decades, gynecologists have aimed for less invasive procedures in the pelvis; namely, laparoscopy. The choice of which procedure to use in most cases, will be laparoscopy if possible, and laparotomy is only used if there are contraindications with the use of laparoscopy, such as cardiopulmonary disease, history of previous operations in the pelvis, known adhesion in the abdominal cavity, and late trimester of pregnancy.<sup>17</sup> One advantage of laparoscopic surgery of the ovary is that it is safe and effective and used for many indications for benign simple to more complicated hemorrhagic cysts, and many more gynecological problems.<sup>18</sup> Other advantages of laparoscopy over laparotomy include; small scar, less operative time, fast recovery, fewer adhesions, and lower cost. In addition, laparoscopy is associated with less postoperative pain, less febrile complications, a reduction in the number of days in the hospital, and total cost.<sup>19</sup>

Certain factors such as umbilical hernia or the presence of mesh or adhesion, in cases of pregnancy, and obese patients makes laparoscopy difficult or dangerous, and the surgeon may choose laparotomy for the procedure, or non-umbilical access.<sup>20,21</sup> In cases where adhesions are suspected in patients with a history of abdominal surgery or infection or others, micro laparoscopy is indicated instead of a blind trocar insertion or an alternate location for entry.<sup>22,23</sup> Large pelvic mass, pregnancy, obesity, extreme thinness, and abdominal wall laxity all can dictate the surgeon to shift to laparotomy or use a different approach.<sup>24</sup>

Limitations of this study included its retrospective design, and management of patient by different consultants. Future study should be prospective, and management should be by either one consultant or by a protocol followed by group of consultants to identify the relevant factors.

In conclusion, the types of ovarian cysts were functional cysts in 33.2%, followed by benign cyst adenoma, and dermoid cysts. Factors that are associated with laparotomy for management rather than laparoscopy are older age >35, single, pregnant, patients presenting with abdominal pain, and more than one cyst.

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