Laparoscopic treatment of ovarian dermoid cysts

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ملخص البحث

المقدمة:

تشكل الاكياس الجلدانية للمبيض حوالي 21.8% من اورام المبيضوهذه الاورام اما ان تتكون من خلايانسيجية من كل المصادر الجنينية الثلاث (الاديم الظاهر، المتوسط و الباطن) او من مصدر جنيني واحد .
تكثر هذه الاورام بين النساء خلال سن الانجاب و خصوصا في الفترة بين (30-40) سنة و كذلك تعتبر من اكثر الاورام التي يتم اكتشافها خلال فترة الحمل.ان حوالي(10-15%) من الحالات تظهر الاورام في كلتا المبيضين.
ان 99% من هذه الاورام تكون حميدة حيث ان التغيرات السرطانية تحدث في 1% فقط و معظمها من نوع سرطان الخلايا الحرشفية.
معظم الحالات يتم تشخيصها بدون ظهور اي اعراض حيث تكتشف خلال الفحوصات الدورية مثل فحص الامواج فوق الصوتية للحوض حيث ان هذه الاورام تنمو ببطء و تبدا الاعراض بالظهور عندمايكبر حجمها او عندما تظهر المضاعفات و منها الالتواء او التمزق.
خلال العقود الثلاثة الماضية ، شكلت الجراحة التنظيرية طفرة نوعية في كافة الاختصاصات الجراحية و منها في علاج الاورام و اكياس المبض الحميدة .

هدف البحث:

مراجعة و متابعة العلاج بالجراحة التنظيرية لحالات مصابة بأكياس المبيض الجلدانيةو تقييم المرضى خلال العملية من مضاعفات و متابعتهم بعد العملية لفترة وجيزة.

طريقة البحث:

انها دراسة مستقبلية ل 43 حالة اصيبت بالمرض تم تشخيصها و علاجها في مستشفى البصرة العام بمحافظة البصرة للفترة بين كانون اول 2010 – نيسان 2014.
كل المرضى تم تشخيصهم من قبل اختصاصي الفحص بالموجات فوق الصوتية حيث ان هذه الاورام تعطي علامات مميزة بهذا الفحص . بعدها كل المرضى يتم احالتهم الى الجراح المختص لإجراء العملية بالجراحة التنظيرية تحت التخدير العام و لم يشمل البحث المرضى الذين يثبت عدم تحملهم التخدير العام او الذين يشكك في عدم حميدية هذا الورم.
التداخل الجراحي: يتم بوضع منفذ جدار البطن بإبرة خاصة حيث يتم ادخال غاز ثنائي اوكسيد الكاربون الى تجويف البطن ثم يعمل تجويفان لإدخال بقية الآلات الجراحية.
العملية تتكون من استئصال تام للكيس مع ابقاء بقايا انسجة المبيض بحالة جيدة .

النتائج:

تم استئصال الكيس في كل الحالات ما عدا خمس حالات تم اجراء استئصال جزئي للمبيض و حالة واحدة تم فيها استئصال المبيض بشكل تام.
معدل اعمار المريضات 31.3 سنة يتراوح بين (15-54)سنة . واحد وثلاثون مريضة متكررة الولادة و أثنا عشر امرأة غير ولودة.المريضات تم تشخيصهن اما من اعرض مزمنة كآلام البطن و اضطرابات الدورة الشهرية او من اعراض طارئة كآلام البطن الحادة و الام الظهر او النزف من المهبل.
مدة العملية استغرقت حوالي 54 دقيقة و تتراوح بين (35-120) دقيقة و فترة رقود المريض استغرق حوالي2.5 يوم كمعدل.
معدل اقطار الاكياس المستأصلة هو (7.2) سم. و تكون مزدوجة في كلتا المبيضين في 28% من الحالات.
كل الاورام المستأصلة قد أخذت الى الفحص النسيجي و تم التأكد من هذا التشخيص بنسبة 100% من الحالات.
لاحظنا بعض المضاعفات خلال و بعد العملية منها ارتفاع حرارة الجسم ، نزف من مكان ثقب جدار البطن ، تقيؤ بعد العملية بالإضافة الى التهاب مكان ثقب جدار البطن بنسب تتراوح بين (4-14)%.
في حواليأثنان و أربعون بالمئة من الحالاتتعرضت الى نضوح مكونات الكيس اثناء عمليةالاستئصالبالإضافة الى تمزق الكيس الذي يستعمل لأخرج الكيس في حواي 5% من الحالات. مثل هذه الحلات يتم علاجها بسحب السوائل و تنظيف تجويف البطن بغسلها بمادة المحلول الملحي بدون تعرض حالة المريض الى مضاعفات تذكر ما عدا حالة واحدة حيث تجمعت سوائل داخل تجويف البطن و سببت بعض الالام و التقيؤ بعد العملية و تمت معالجتها تحفظيا .

الاستنتاجات:

ان استئصال الاكياس الجلدانية بالجراحة التنظيرية هي من الطرقالمفيدة لعدد كبير من المرضى حيث تقلل من فترة رقود المريضات في المستشفى بالإضافة الى فوائدها الجمالية اذا ما قورنت التداخل الجراحي عن طريق فتح البطن. مع هذا يجب الالتزام بضوابط دقيقة لاختيار المرضى و متابعتهم قبل ،خلال و بعد التداخل الجراحي بالإضافة الى الخبرة في الجراحة التنظيرية.
ننصح بعمل بحوث حول تأثير استئصال الأكياس الجلدانية على التصاقات تجويف البطن التي تحدث بعد العملية و تأثير استئصال الاكياس الجلدانية بالجراحة التنظيرية على خصوبة المرأة أذا ما قورنت بالجراحة الاعتيادية.

Summary

Objectives:

Dermoid cyst which is also known as benign or mature cystic teratoma is a common disease and accounts about 21.8% of all ovarian tumors.They areone of the most common tumors in women during the reproductive yearsand they are not uncommon during pregnancy. They are mostly benign in nature but surgery is needed to relief of symptoms and to prevent complications.

In the recent years, the laparoscopic approach have greatly replaced most of the gynaecological operation and specially in benign ovarian diseases as it improved significantly the outcome of these lesions.

Aim of the study: reviewing the laparoscopic management of ovarian dermoid cysts and assessing the intra-operative complications, and early postoperative follow-up.

Material and MethodA prospective study of 43 patient who underwent laparoscopic management of ovarian dermoid cysts.

The patients are presented either with acute symptoms like pain , vaginal bleeding or chronic symptoms like abdominal pain or menstrual irregularities. This suspicion is documented by pelvic ultrasound . then the patients are qualified for laparoscopic management under general anasthesia.

Results:

A total of 43 women with ovarian dermoid cyst were included and treated laparoscopically . the main age is 31.31 years.Mean cyst diameter size that was measured by ultrasound was 7.24**. they are** bilateral in 28 % of cases**.** Patient age and size of cyst did not differ between those with left and right lesions**.**

Cystectomy with enuculation of the cyst was the most commonly applied procedure , while total adnexectomy and partial oophorectomy was the least frequent.The whole gonad was removed in one postmenopausal patients.

The mean duration of the operation was 53.48 minutes (± 20.61; range 35-120).The total number of days in the hospital excluding the period of preoperative examination (generally 1 day) was 2.54 days.All the extracted material was submitted for a final histopathological examination.

Intra-operatively;a minimal spillage occurred in 18 casesand rupture of retrieval bag occurred in 2 cases but none developed post-operative chemical peritonitis.In two cases we discover bleeding from the left ileac fossa 5 mm port .Port site infections were noted in six patient.No case of postoperative peritonitis was recorded. There was one case of post-operative paralytic ileus.

Discussion:

Laparoscopic removal of ovariandermoid cysts has increased in the last few years. But this need aproper early qualification, based on medical history, gynaecological and sonographic examination to assure the benignity of these lesions although malignant transformation of these benign lesion is rare and it is a contra-indication to the laparoscopic treatment.

Dermoid cysts occur not often during pregnancy, but caused their complications (high risk of torsion and rupture) demand immediate surgical intervention
Laparoscopic treatment consist of total cyst excision with preservation of the remaining ovarian tissue but partial oophorectomy or total oophorectomy can be indicated if there is suspected area specially in post-menopausal women .
Laparoscopic treatment of ovarian dermoid cyst may be complicated with port site haemorrhage , intra –peritoneal spillage of the cyst content and post-operative paralytic ileus . these are mostly minimal and can be managed conservatively.

Conclusion:

We concludes that the minimal access surgical treatment through the laparoscopic ovariandermoid cystectomy is a safe and beneficial method in selected patients. It offers the advantages of shorter hospital stay, and better cosmetic result in comparison to classical surgery.

Introduction

Dermoid cyst which is also known as benign or mature cystic teratoma is a common disease and accounts about 21.8% of all ovarian tumors[1]. Histologically , It composed of mature tissues that can contain elements of all three germ cell layers (ectoderm , endoderm and mesoderm). In some condition which is called monodermalteratomas in which only one of these tissue types predominates (e.g., thyroid tissue in strumaovarii, neuroectodermal tissue in carcinoid tumor). Ninety nine percent of ovarian teratoms are benign and can affect women in all age groups, while malignant types occurs in about 1% of the cases and predominate among elderly women[2-5] and usually of squamous cell carcinoma in type . Adenocarcinoma and the carcinoid form are much less frequent[6,7].

Dermoid cysts are recognized as one of the most common tumors in women during the reproductive years[8] with a maximal incidence between the age of (30-40)[9,10]. Also , ovarian teratoma is the most frequent ovarian tumors that can be presented during pregnancy (24-40%)[11].Ovarian teratoma is bilateral in 10-15% of cases [12].

Most of the patients are asymptomatic and the diagnosis is either accidentally during the evaluation of unrelated clinical presentations or complications appeared which are in the form of Torsion or spontaneous rupture (followed by acute chemical peritonitis). This occurs in 16% and 3–7% of patients, respectively[13].

Diagnosis is based on clinical examination and it is confirmed by the findings of abdominal and pelvic ultra sound which has a characteristic findings. Also the diagnosis is supported by the radiological evidence of solid cystic residues in the ovaries [14].

To establish the nature of the cyst ,an endovaginal ultrasound with Doppler enhancement are of great help. Is such cases , a more invasive pelvic MRI is needed.

Tumour markers like CA125 are specially indicated for postmenopausal patients . it appears of no benefit in young patients.

In order to treat such patients , both conservative and minimally invasive surgery can be done . the principle of conservative surgical management is to excise the cyst with preservation of an adequate functional ovarian tissue so as to preserve fertility.

In the recent years, the laparoscopic approach have greatly replaced most of the gynaecological operation and specially in benign ovarian diseases as it improved significantly the outcome of these lesions [12].

Aim of the study: reviewing the laparoscopic management of ovarian

dermoid cysts and assessing the intra-operative complications, and early postoperative follow-up .

Material and Method

A prospective study of 43 patient who underwent laparoscopic management of ovarian dermoid cysts admitted from January 2010 to April 2014 to the department of general surgery , Basra general hospital.

All the patients had pre-operative abdominal and pelvic ultrasound . Overianteratoma is suspected if the sonographic characteristics findings are an inhomogeneous mass with irregular hypoechoic and hyperechoic areas with posterior shadowing not separated by septa, or a homogeneous hyperechoic mass with regular capsule and posterior shadowing [15]. The diagnosis of ovarian dermoid cyst is also confirmed by the radiological findings. This diagnosis was compared with the histopathological diagnosis.

All the women with ovarian dermoid cyst whatever their diameter were qualified for laparoscopic management under general anasthesia.

Exclusion criteria: patients unfit for general anaesthesia or laparoscopy are excluded and surgery was done under spinal anaesthesia with open surgical management.

Patients with suspected malignancy like post-menopausal age, weight loss and the presence of ascites are also excluded from laparoscopic surgery.

Surgical procedure:

After insufflation of the abdominal cavity with CO2 through Veres needle ; A 10 mm umbilical port was put and 30º camera introduced to inspect the abdominal and pelvic cavity. In cases that had a scar of previous midline incision or those had cyst larger than 10 cm ; insufflation of CO2 and diagnostic laparoscopy were done through Palmer's point (left subcostal , mid clavicular line). Then; a change in patients' position into A Trendelinburge position with a pillow lifting the pelvis of affected site. Another 10 mm port was put in the suprapubic area and 5 mm port put in mid clavicular line opposite to site of the cyst. . Dermoid cyst enucleation was the most commonly applied procedure , while total adnexectomy and partial oophorectomy was the least frequent . the fluid component of the sac is sucked while the semi-solid and the solid part are put in a retrieval bag made from surgical gloves which then taken out in pieces through the 10 mm suprapubic port.

Adnexectomy and part oophorectomy was performed in 1 and 5 cases respectively by using Harmonic scissors and cautery during laparoscopy. The woman with adnexectomy was postmenopausal while the other five with part oophorectomy were peri-menopausal .Enucleating of the dermoids cysts in toto with preservation of the ovary was the set therapeutic goal for younger women.

In all cases (except one who needs adnexectomy) the wound in the ovary was left open after satisfactory haemostasis. An amount of 1 g third generation cephalosporine was given intravenously as prophylactic antibiotic in the operation theatre and repeated at 8 h intervals in three doses.in all cases the pelvic cavity was irrigated with 500-1000ml of isotonic saline until no fatty particles can be detected in the lavage .Pelvic drain was put in all cases.

No blood test was done to assess the benignity of ovarian tumours but clinical and laboratory assessment was done.

The size of the tumour, patient's age, gestational age at the time of surgery ,duration of the operation, hospital stay , intra-and postoperative complications following a laparoscopic approach were evaluated .the pot operative follow up till 30 days post-operatively.

Data analysis was performed using Microsoft excel,2010; and the data analyzed using *t*- test and simple descriptive statistics

Results

A total of 43 women with ovarian dermoid cyst were included and treated laparoscopically . the main age is 31.31 years (±6.9) range (15-54)years. There were 31 multipara and 12 nillipara.. Nineteen women (44.1%) had history of previous laparotomy for various causes.

The sonographic assessment of the size of the cyst is correlated with the intraoperative macroscopic finding.

Mean cyst diameter size that was measured by ultrasound was 7.24 cm (± 2.2 ; range 4.5-14.2cm).

Clinical symptoms	No. of patients	Percentage
Acute symptoms	28	65.1%
Localized Abdominal pain	28	65.1%
Vaginal bleeding	6	13.9%
Backache	4	9.3%
Chronic symptoms	15	34.9%
Localized abdominalpain	15	34.9%
Palpable abdominal mass	6	13.9%
Menstrual irregularities	2	4.6%

Table (1) the clinical presentation of patients.

No patients were completely asymptomatic but 15 (34.9%) patients had mild and chronic symptoms and the cysts were discovered after ultrasonographic examination.

Twenty eight (65.1%) patients present with acute localized abdominal pain with or without vaginal bleeding and backache(13.9%)and(9.3%) respectively.

Two pregnant patients (4.6%) presented with acute symptoms and had their surgical intervention done during second trimester pregnancy in the 14,15 week respectively. The immediate postoperative course was uncomplicated. No miscarriages occurred. The characteristics of the cyst was listed in table(2).

character	number	Percentage(%)
Unilateral	31	72
right	19	44
left	12	28
bilateral	12	28
size		
≤ 5cm	4	6.6
5-10cm	49	80.3
≥10cm	8	13.1

Table (2) characteristics of the dermoid cyst

Dermoid cysts were bilateral in 28 % of cases, and associated with cysts of other histotypeshomolaterally in two cases(4.7%) and contra laterally in one case (2.3%) .All the associated cysts were of a functional nature .. Unilateral cysts were more frequent in the right ovary (44%) than in the left (28%). Patient age and size of cyst did not differ between those with left and right lesions.

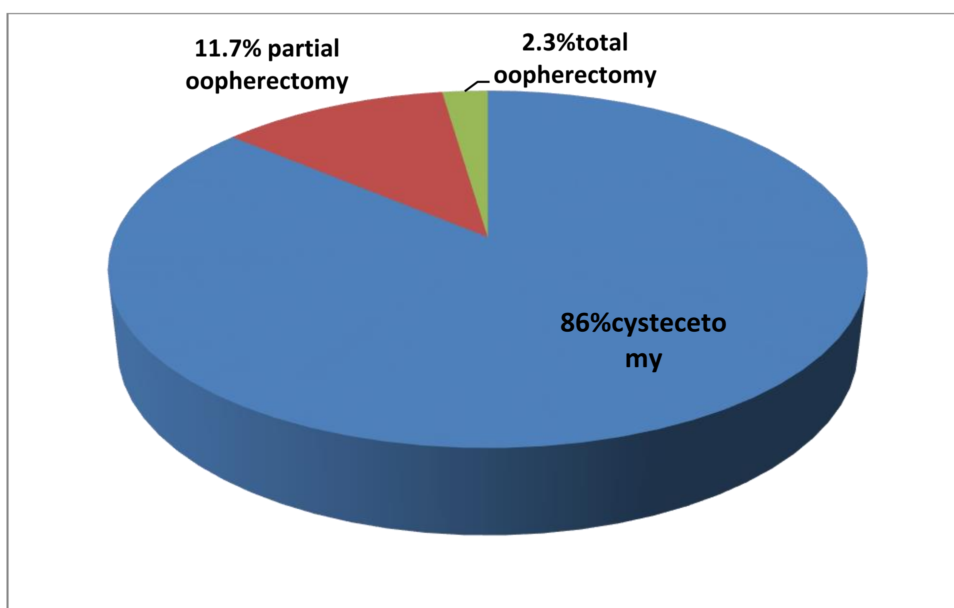

Figure (1) the surgical procedure of ovarian dermoid cyst.

Figure (1) shows the surgical management of the cyst. Cystectomy with enuculation of the cyst was the most commonly applied procedure , while total adnexectomy and partial oophorectomy was the least frequent.The whole gonad was removed in one postmenopausal patients (2.3%) generally because of the total loss of functional ovarian tissue surrounding the cyst .In five cases were partial oophorectomies performed ,because the cyst borders to the rest of the ovarian tissue were indistinct .

The surgical parameters in our study patients are as follows.

- The mean duration of the operation was 53.48 minutes (± 20.61; range 35-120).
- The total number of days in the hospital excluding the period of preoperative examination (generally 1 day) was 2.54 days.(± 1.02 ; range 1-4).
- All the extracted material was submitted for a final histopathological examination.
- The final histological diagnosis of mature ovarian cystic teratoma was received a few days postoperatively and confirmed in 100% of cases.
- All removed lesions histologically appeared benign cysts ovarian teratomas without any signs of malignancy.
- Intra-operatively;a minimal spillage occurred in 18 cases (41.8 %) of the cases and rupture of retrieval bag occurred in 2 cases 4.6% but none developed
- postoperative chemical peritonitis.

Table (4) shows the Postoperative complications .

Post-operative complications	number	percentage
Bleeding from port site	2	4.6%
Temperature above 38°c	3	6.9%
Post-operative vomiting	2	4.6%
Wound infection from suprapubic port	6	13.9%
Residual pelvic collection	1	2.3%

Table (4) the post-operative complications

In two cases we discover bleeding from the left ileac fossa 5 mm port which is managed intra – operatively with pressure and dressing and then appeared

as dark red and tender spot in the left lower abdomen and managed with antibiotics and analgesics for five days.
Port site infections were noted in six patient ; all of them was superficial infection that did not extend beyond deep fascia and all of them occurred in the suprapubic port (site of extraction of the specimen).

No case of postoperative peritonitis was recorded. There was one case of post-operative paralytic ileus presented in the third post-operative day with abdominal distension , repeated vomiting and low grade fever; investigations reveals hypokalemia and hyponitermia. Ultrasound mentioned a clear fluid collection of 95 ml average in the Douglas pouch . Readmission and fluid and electrolyte replacement done and the patient respond dramatically to these measures and discharged home after a week with complete resolution of the collection to become nil after 21 days.

Discussion:

Laparoscopic removal of dermoid cysts has increased in the last few years [16].Clinical studies in large patient populations show that most ovarian masses can be successfully treated by laparoscopy[17]. However, proper early qualification, based on medical history, gynaecological and sonographic examination is of great importance. The risk of unexpected malignancy of the masses reduced by accurate pre-surgical staging and an absence of spillage in expert hands [18,19].

The reliability of transvaginalultrasonographic diagnosis associated with negative CA 125 and clinical oncological examination provide a highly certain diagnosis of benign ovarian swelling and hence dermoid cysts.[20-22]. transvaginal ultrasound is capable of distinguishing between the different histopathological diagnoses of non-malignant ovarian masses . However serum CA-125 concentrations are an unreliable indicator of malignancy ,producing high rates of false –positive and false-negative results.[23] Benacerraf et al. report a 15% failure rate in the ultrasonographic diagnosis of malignant cysts.[24]. In women older than 40 years of age with uncertain ultrasonographic parameters and high tumour marker levels must be evaluated with great care. In these cases , laparoscopy is inadvisable and it is absolutely obligatory to operate on her with laparotomy [52]. Miaman et. al confirmed ,that in fact 31% of malignant tumors in sample had similar features to benign ones.[25]

In our study all cases diagnosed by the ultrasonic characteristics of benign ovarian dermoid was documented by the histopathological confirmation. Malignancy is rare and malignant transformation of an originally benign teratoma, which occurs mostly only with women at post menopause, occurs even less often[26].Each dermoid cyst ,which possible potential malignant should be removed surgically in toto according to the standards set in oncosurgery and every effort should be taken to avoid rupture. It is a contraindication to laparoscopic treatment due to high incidence of port tract metastasis [27-29].

In the literatures; laparoscopic treatment bears some disadvantages which is the spillage of the cystic content. Spillage can be as high as 80% of laparoscopic procedure[29]. In our experience ,spillage occurred in 46.5 % of the procedures , mostly minimal without causing any post-operative peritonitis.

A review of the literature reveals a 0.2% incidence of chemical peritonitis following laparoscopic removal of dermoid cysts [30].It is obligatory to undertake extensive rinsing of the abdominal cavity with isotonic sodium chloride solution at body temperature until no fatty particles can be detected in the lavage[31]). Only in a few cases had

been reported a bacterial peritonitis following treatment for dermoid cysts during laparoscopy[31,32]. To avoid this complication , it is important ,to not to allow for cyst contents to advance from the lower pelvis to the intestinal loops but with the aid of a salvage bag.

Dermoid cysts occur not often during pregnancy, but caused their complications (high risk of torsion and rupture) demand immediate surgical intervention[33,34]. Sergent et al reported that the discovery of an ovarian cyst has become relatively common in the beginning of pregnancy. After 16 weeks of pregnancy ,organic cysts are the most frequent ,mainly dermoid cysts. Their prevalence is estimated between 0.5 and 2 per thousand of pregnancies.[35]

The ideal period for scheduled surgery is probably the beginning of the second trimester and the rate of abortion is minimized .The rate of complications (rupture ,torsion ,obstruction of labour)resulting from dermoid cysts in pregnant women can be high as 22%.Their removal by laparoscopy has been reported as being safe and free or obstetric complications [36]

In our series we discover ovarian teratoma in two pregnant woman presented with acute symptoms in the beginning of their second trimester. In the first trimester of pregnancy ,ovarian cysts are often functional without complications . After 16 weeks of gestation ,frequency of ovarian cyst is reported between 0.5-3.0%.[37]. Approximately 2-5% ovarian tumours in gravid women are malignant [38-42].

Immediate treatment of symptomatic masses permits conservative, fertility-preserving surgery and has no adverse effect on pregnancy outcome [43] .Tawa and White reported that the frequency of dermoid cyst surgically resected in gravid women was 21.1 and 40.3% respectively [44,45].

Our evaluation of laparoscopic surgery showed that removal of the enucleated cyst from the abdominal cavity using a bag made from surgical glove is advantageous in terms of improving the cosmetic results compared with extraction of the cyst through an extended abdominal incision but it increase the operation time .

In the most cases we have successfully (with a reproducible laparoscopic technique) dissected all ovarian cysts without breakage and preserved the ovary. Whether the ovary needs to be closed after cystectomy is controversial. After laparoscopy the ovary was left open to allow healing by secondary intention.

According the following authors ovarian closure is unnecessary after laparoscopic cystectomy for cystadenomas and dermoid cysts because the postoperative adhesion rate appears to be minimal [46-47] The suture of ovarian tissue may increase adhesion formation [48]. However, this opinion is controversial for endometriotic cysts [49-52].

Conclusion:

We concludes that the minimal access surgical treatment through the laparoscopic ovariandermoid cystectomy is a safe and beneficial method in selected patients. It offers the advantages of shorter hospital stay, and better cosmetic result in comparison to classical surgery.

Before deciding the laparoscopic management ; A strict adherence to guidelines for preoperative clinical assessment and intra-operative management is needed in order to diagnose and manage an approximately half of the non-malignant ovarian cysts, here , laparoscopy is considered the method of choice for the removal of benign ovarian cystic teratomas

It should be performed by surgeons with considerable experience in advanced laparoscopic surgery. Laparoscopy is also a safe approach to other adnexal

masses and may decrease the rate of unnecessary laparotomies for benign cysts, which give no suspicious ultrasonographic signs[53]

We also conclude that laparoscopic dermoid cyst enucleation was the most commonly applied procedure .While the oophorectomy or adnectomy are the safest treatment for dermoid cysts , however; it is justified only in women at peri menopause orpostmenopausal respectively. We suggest this surgical procedure for women in reproductive age only when suspicion points to malignancy.

We also conclude that we need more researches to assess the effect of laparoscopic management of oveariandermoid cyst on post-operative adhesions and future pregnancy in comparison with open surgery.

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