

# Surgical management of ovarian cysts in postmenopausal women

## Abstract

Many ovary cysts are asymptomatic especially in postmenopausal women. In the case of large cysts, the risk of malignancy becomes increase and if conservatively treated could remain unchanged. Although the laparoscopy still represents the main abort pathway, in the cases when cysts present the signs of malignancy or even extraovarian dissemination, the treatment should involved laparotomy. Anyway, the technique which should be applied in ovarian cysts should take into consideration the patient will and the surgeon's experience in which the staging can be performed when indicated. The present review systematizes the pathology, ovarian masses evaluation, laparoscopy vs. laparotomy techniques, the role of CA125 marker and surgical management of the cysts in postmenopausal women.

**Keywords:** ovary, cyst, laparoscopy, laparotomy, cancer, management

## Introduction

Ovarian cancers present higher mortality rates and in 2010 about 1, 529, 560 new cases were diagnosed and more than 569, 490 Americans were protected against morbidity<sup>(1)</sup>. Therefore, it is important to acknowledge about the history of ovarian cancer starting from ovary cysts, especially in the postmenopausal period. Interestingly, the majority of the functional cysts are discovery after intake of contraceptives, and in many cases the approach becomes aggressively<sup>(2)</sup>.

Along with the apparition of new techniques, like transvaginal sonography (TVS) and computed tomography (CT), the rate of diagnoses was becoming more precisely which could lead to early stages detection. Although many postmenopausal women present asymptomatic cysts especially in early stages, the surgical treatment becomes the main alternative. It is also important that in each individual case first to detect or to exclude the malignancy of the ovaries based more on the screening effect, images studies and new medical services<sup>(3)</sup>.

Many ovarian pathology are treated by using laparotomy, becoming in the last decades the "gold standard" technique, especially when the cancer is detected<sup>(4)</sup>. In this respect some studies have shown that in the case of ovarian cysts, the treatment could be chosen as conservatively (i.e. intra- or trans-parietal cystectomy) or radically (i.e. ovariectomy or adnexectomy)<sup>(5)</sup>. Some authors have sustained the laparoscopy technique to be the safer and less expensive with little post-operative complications than laparotomy when the ovarian cysts should be mandatory removed<sup>(6)</sup>.

In the screening evaluation from International Ovarian Tumor Analysis (IOTA) strategies in early stages of ovarian malignancy on 1653 patients, it was found that all IOTA strategies present a higher ability to distinguish between stage I and stage II ovarian malignancy and benign disease<sup>(7)</sup>.

The alternative of surgery in postmenopausal women which present different adnexal pathological masses is re-

presented by ultrasound evaluation, aiming to maximize the benefit. When the masses are too large (i.e. >10 cm), and the patients complains of symptomatology, the surgery should be involved<sup>(8)</sup>.

It seems that based on experience the stage I of epithelial and borderline tumors are better detected using ultrasonography technique in comparison with stage 2, considering the morphological changes over time in these classes<sup>(9)</sup>. Moreover, patients from the Ist stage with low and medium risk do not necessitate chemotherapy. In contrast, at high-risk patients with ovarian cancer the chemotherapy treatment should be more properly intake<sup>(10)</sup>.

One study which included 166 premenopausal women, found that 38.5% to be adnexal benign cysts with rapidly resolution comparing with 25.5% which remain without any changes and 20.8% which were surgically removed. The surgical approaches were taken into consideration in respect to increase the cyst size, and the possibility of adnexal torsion<sup>(11)</sup>.

Furthermore, unilocular cysts were in the main percentage, comparing with other modifications like solid components or papillary projection observed using the macroscopy<sup>(12)</sup>.

In the same context, it should be considered the history of the patient, like breast cancer, ovarian cancer or the presence of hemorrhage, which sustain the malignant appearance of the cysts. The management of postmenopausal ovarian cysts still remain a controversial issue for the practitioner, although based on new detection techniques, it was passed from aggrieve removal of the ovary to a conservative pathway<sup>(13)</sup>.

The main issue is represented by the lesion's size, the risk of torsion, features by which are based the diagnosis and for how long the management should be advise. The present review highlight the main issue from literature regarding the pathology of ovarian cysts, evaluation of ovarian masses, laparoscopy versus laparotomy techniques, the role of CA125 marker and the surgical management.

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## Pathology of ovarian cysts

Although many pathologic signs like morphology, ascites fluid or neovascularization sustain the cysts malignancy, many percentages could reveal the contrary<sup>(14)</sup>.

In respect with the vascular appearance of the cysts, these morphologic features sustain the positive malignancy frequently. The new vessels present in many situations a low resistance. The cysts which do not grow in diameter more than 2-3 mm are represented by the solid tumors, without having neovascularization. In contrast, the solid components appear in cysts ovarian metastases which can develop from colon cancer presenting a multiloculated masses<sup>(15)</sup>.

The TSV can be the basic technique for the detection, becoming a real technique in achieving the diagnosis. The malignant cysts usually present a low-vessel resistance with a strange architecture of the walls. In contrast, benign cysts present new-blood vessels with higher resistance<sup>(16)</sup>.

Another study determined the prevalence of one thousand seven hundred and sixty-nine postmenopausal women. The cysts which were less than 5 cm were considered simple cysts. In this case, the decision for a surgery was made by the physician based on morphological changes. Among all ovarian cysts, 23% resolved spontaneously, 59% were still present and 17% have not succeeded to follow during the study. The results of the study showed that the higher prevalence was for the simple cysts, especially in postmenopausal women<sup>(17)</sup>.

The results of the study showed that all were benign and regarding the new vessel scoring, the vascularization showed to be in normal range. Further, some researchers have putted into question to distinguish between benign and malignant state by using only Doppler technique. Therefore, it should be noted that the Doppler analysis cannot be used as a sole analysis in measuring the malignant state. In this respect, one study found that small cysts like unilocular cysts presented a low malignant appearance from 28 tissues. The authors suggested the fact that the simple ultrasound management without surgical intervention could play a key role in diagnosis and staging<sup>(18)</sup>.

When surgically removed the ovarian cysts, some authors have been develop the pathology meaning of the tissues. One elegant study showed that complex ovarian cysts from postmenopausal women over 50 years in which the wall presented different abnormalities were mainly associated with high grade of malignant tissue. The results of this study sustain the optimal strategies in operative interventions<sup>(19)</sup>.

Rodriguez and contributors showed at pathological evaluation after the surgery that only 3 were malignant and 2 were neoplasms. Only one ovary presented areas of Brenner tumor, although the ultrasound and then the surgical exam did not reveal the same results<sup>(16)</sup>.

## Evaluation of ovarian masses

Usually the clinical examination for the ovarian cysts could better detect higher masses in comparison with small cysts, which are often missed by the practitioner. Although many techniques are nowadays used for the cysts detection, some are more invasive than others. Clinically, the uterine masses are hard to be distinguishing from ovarian masses<sup>(20)</sup>.

More recent data from United States were used to estimate the incidence of ovarian cancer mortality, based on screening programs. From the general test used almost 50% were false positive. The results of this study showed that the screening programs is more than universal, and most of these tests should be taken more periodically<sup>(21)</sup>.

The characteristic features of the ovarian masses for the malignancy state include a higher size, septation, papillary formation, solid components and fluid of the pouch of Douglas<sup>(22)</sup>.

Whatsoever, in the screening trials, the TSV can't be used as a unique method of detection. Another study showed that National Institutes of Health Consensus Development Conference on ovarian cancer-screening sustained the fact that current screening test based on CA125 marker and TSV can be sufficient in order to reduce mortality of ovarian cancers, although other studies are undergoing to verify this hypothesis<sup>(23)</sup>.

Another study showed that into sonographically evaluation of simple cysts only 0.8% have been found to be malignant. The same study showed that the routine control after 6 weeks from clinical signs will reduce the number in the future of the surgery intervention, especially in simple cysts<sup>(24)</sup>.

In the last decades, for the risk of malignancy index detection of ovarian cysts it was used the scoring system which comprises the ultrasound scan, menopausal status and levels of serum CA125<sup>(25)</sup>. In the case when the score was less than 200, the risk could be considered insignificant or very low. When the score was more than 200, the risk for malignancy was increased and the management should be attempt together with an oncologist surgeon<sup>(25)</sup>.

The cytological analysis from ovarian masses which is usually aspirated can also predict the detection of malignancy<sup>(26)</sup>. The sensitivity of aspirated cells has been found to be about 25% having a 12% of false negative rate of detection and 73% being false positive<sup>(26)</sup>. When using Doppler imaging, it was found to be very hard to distinguish between benign and malignant masses, which could probably be due to the presence of neoangiogenesis process in some functional tumors<sup>(27)</sup>.

## Laparoscopy vs. laparotomy techniques

The ovarian cysts management is usually treated using laparoscopy technique, in which the laparotomy could be considered only in cases when there is the suspicion of malignancy, or the laparoscopy is not fit well for the patient. The main exclusion criteria is represented by obesity or abdominal scarring after other previously surgery. The advantages of the laparoscopic management in the ovarian cysts are represented by low postoperative complications, decreased in hemorrhage or morbidity together with a shorter hospitalization of the patient<sup>(28,29)</sup>.

One study which used laparoscopy for adnexal ovarian masses found ovarian cancer only in four cases from 1011 of the total patients<sup>(29)</sup>.

The laparoscopic technique it has also the positive reaction from the women who undertake such intervention, considering the better cosmetic results. Even in the cases when the patient will is for laparoscopy, the surgeon

should explain also the risk of the technique and that in some cases, the laparotomy could be applied in the same intervention<sup>(30)</sup>. In another study, it was seen the risk for the major vessel rupture when laparoscopy technique was applied during diagnostic of laceration of abdominal vessel<sup>(31)</sup>.

Another study sustained the negative impact given by the chemical peritonitis after laparoscopy technique for the removal of some dermoid cysts<sup>(32)</sup>. Moreover, the cysts could be spilled during laparoscopy depending on the size, and the adhesions degree. In the case of some extra-ovarian vegetations presence during laparoscopy, laparotomy technique should be immediately approach under the same intervention. If some signs are discovered and are limited only at the ovaries like abnormal vascularization, the adnexectomy must be considered. Moreover, the malignant lesions have been showed to exceed 3% of all cases in which the TSV indicated a single, anechogenic or septa cysts<sup>(33)</sup>.

The first pathological results from the opened ovary cysts should indicate the proper technique. If the surgery was planned from the beginning to be radical, the next step should be the laparoscopic adnexectomy. In contrast, when a more conservative treatment was planned, then the cysts can be easily opened. Different signs observed as the cystic vegetation presence will require adnexectomy<sup>(34)</sup>.

Also in this case when the cyst should be extracted in the same manner as previously described, other complications should be avoided. In the case when pathological examination reveals that the tissue is in normal range, then the laparoscopic cystectomy can be further applied.

In another study, thirty-one dermoid cysts were removed after cystectomy in 28 cases, and 3 cysts after salpingo-oophrectomy. The authors conclude that there was only 0.2% of chemical peritonitis following laparoscopic approaches. The exposure of cul de sac presents a better forceful lavage aspiration besides cysts excision. The same situation could be presented during laparotomy technique<sup>(35)</sup>.

There are other conditions when pre-operatively, the patient present signs of ovarian tumor, without any extension. In this case, the pre-operatively detection is possible either by TVS, either by the positive CA125 marker, without any signs of ascites. In such conditions, especially when the ovary is less than 8 cm, the laparoscopy applied for the diagnosis purpose should be considered. In one study it was showed that the laparoscopy second-look was necessary for ovarian carcinoma and only one microscopic change was noted<sup>(36)</sup>.

While the laparoscopic technique should be recommended in the case of fertile young women with small diameter cysts, in the case of large cysts, which mostly appear in the postmenopausal period, the laparotomy can be the electing technique.

### The role of CA-125 marker

During research, some studies establish a normal value for the CA 125 to be less than 35 UI/mL<sup>(37)</sup>, but the values were mostly establish during follow-up trials without interventions<sup>(38)</sup>.

These studies reported the fact that the value do not change even in the cases when TSV presented some morphological changes of the cysts<sup>(39)</sup>. One study found 7 from 8 patients with CA125 raised levels before clinical examination, with a time median of 3.5 months. The results showed that CA125 marker could be used in patients when ovarian cancer is suspected<sup>(40)</sup>.

Before looking for the level of this tumor marker, the analysis of TVS previously becomes mandatory since some small lesion from the ovary could be missed<sup>(41)</sup>. In the case of postmenopausal women, to undergo the tumor marker is necessary that before the previously clinical history and other gynecological surgical to be taken into consideration. Considering the fact that at premenopausal state, the women could present residual ovarian activity, these cysts could still be functional cysts explaining somehow the probability of spontaneous resolution appearance. In the case when patient had history of pelvic surgery, the risk of peritoneal cysts becomes higher<sup>(41)</sup>.

However, there is no other study in literature regarding the timing of follow-up which should be consider in ovarian cysts, which haven't resolve immediately. Anyway, most of the practioners sustain the application of laparoscopy as the first intention. Moreover, the application of endoscopy showed to promote the adequate diagnosis according to microsurgery<sup>(42)</sup>.

Although both the laparoscopy or laparotomy should be indicated in the ovarian cysts treatment, the risk of malignancy in postmenopausal women was not showed to be increased comparing with postmenopausal women without such ovarian cysts<sup>(43)</sup>.

### Surgical management of ovarian cysts

In the meaning of surgical management, it was noted that recurrence of the ovarian cysts was 4% when the cysts were excised and 84% when the cysts were aspirated<sup>(44)</sup>, considering the fact that the cytologic analysis of the aspirated fluid has not been a reliable method of achievement<sup>(45)</sup>.

In the case when the ovary cysts would not present any morphological changes or decreasing in size, especially after 2-3 months, surgical intervention should be applied<sup>(46)</sup>.

In the same context, ovarian cysts which are greater than 8 cm or could cause different severe symptomatology to the patient, could serve the same management. The evaluation of adnexal masses together with the tumor markers is further recommended, especially when other features of malignant specimen could be present<sup>(47)</sup>.

There is a body of evidence in the literature concerning the fact that ovarian cysts greater than 5 cm associated with severe symptomatology should resort the same surgical management<sup>(48)</sup>. However, if the cysts do not decreased with even 1-2 cm in about 2 weeks, the diagnostic becomes a debate. Furthermore, in the cases when ovarian cysts torsion could appear, the surgery should be taken into consideration<sup>(48)</sup>.

If an TSV analysis of the ovarian cysts the images are discutible, and present different changes after some months from the initial evaluation, surgical approach should be involved. The evaluation of symptom index comprises increased abdominal measure, abdominal pain, or the fullness sensation of the patient. That's way is important

and further sustained the preoperative discussion of the surgeon with the patient<sup>(48)</sup>.

Usually to assess a better surgical management especially if there are some doubts regarding the existence of ovarian cancer, staging along with lymphadenectomy should be undertaken. One study found that in 6152 patients with stage I and II ovarian cancer that performed lymphadenectomy, the improvement in survival rates was not achieved. Lymphadenectomy can be classified as an independent prognostic factor in reducing the mortality, although the use of this technique has doubled in the last decades<sup>(49)</sup>.

Concerning the statistically difference regarding the survival free-rate between patients with borderline tumors who underwent radical surgery or to maintain fertility, the results were not significant<sup>(50)</sup>.

## Conclusions

In postmenopausal women, the ovary cysts management usually starts with the laparoscopic technique, being more devoted to achieve the diagnosis and possible clinical signs of malignancy, which will be followed by the laparotomy technique under the same anesthesia.

Although the laparoscopy still represents the main abort pathway, in the cases when cysts present the signs of malignancy or even extraovarian dissemination, the treatment should involve laparotomy. Anyway, the technique which should be applied in ovarian cysts should take into consideration the patient will and surgeon's experience. Based on the technique used, the staging should be easily performed, and management easy to follow. ■

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