



Management of unilocular or multilocular cysts more than 5 centimeters in postmenopausal women



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ABSTRACT

Objective: To evaluate the malignancy potential of large unilocular and multilocular ovarian cysts in postmenopausal women and to discuss their appropriate management.

Study design: This retrospective study included 204 postmenopausal patients who underwent surgery for simple adnexal cysts or cysts with isolated septal structures at the Gynecology and Obstetrics Clinic of Bakirkoy Dr Sadi Konuk Training and Research Hospital. Data obtained from patient and computer records included patient age, follow-up period, ultrasonography reports, surgery information, histopathological evaluation results, and cancer antigen-125 (CA-125) levels at diagnosis and during follow-up. The Kruskal–Wallis test was used to compare three or more groups. The Chi-square test or Fisher's exact test was used to compare qualitative parameters, while relationships between parameters were analyzed by using Spearman's correlation analysis.

Results: A total of 236 cysts were identified in 204 postmenopausal women who underwent surgery. The cysts were categorized as having unilocular cyst morphology or complex structures without morphological abnormalities other than septa in 182 (77.1%) and 54 cases (22.9%), respectively. The mean cyst diameter was 6.6 ± 3.1 cm (range, 2.7–30 cm) with diameters ≥ 5 cm in 176 cysts (75%). The median cyst volume was 88.5 cm^3 (range, 10–2636; interquartile range: 81) and the mean morphology index was 1.2 (range, 1–6), with 16 cysts (6.8%) ≥ 5 . No malignancy or borderline histology was observed in any patient.

Conclusions: Among postmenopausal women, cysts that are unilocular or contain isolated septa, have a low-risk of malignancy even when they are larger than 5 cm. Rather than undergoing emergency surgery, these patients may be followed up conservatively with intermittent transvaginal ultrasonography.

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Introduction

Ovarian cancer has reportedly been diagnosed after age 55 in 85% of cases [1]. Therefore, postmenopausal adnexal cysts are particularly associated with an increased rate of unnecessary surgical intervention due to malignancy concerns. Although postmenopausal women have a greater risk of malignancy than do premenopausal women, the majority of adnexal cysts, without absolute malignancy characteristics, such as solid areas, papillary structures or thick irregular septations, in postmenopausal women are benign [2].

Recent developments in imaging and the routine use of ultrasonography in gynecological examinations have increased the identification of adnexal cysts in asymptomatic postmenopausal women. Unilocular cysts are found in 18% of asymptomatic postmenopausal women [3]. As ultrasonography was not routinely used in the past, any pelvic cysts found in postmenopausal women were accepted as indications for surgery [4]. Several recent studies have reported that unilocular cysts < 5 cm in diameter, have a very low risk of malignancy, even in the postmenopausal period, making surgery unnecessary [5–7]. However, management of cysts > 5 cm in diameter remains controversial. While some guidelines [8] recommend surgical removal of cysts > 5 cm in postmenopausal women, others [2,9] have reported that simple cysts up to 7 or 10 cm in diameter could be managed conservatively.

This study assessed the histopathological results of cysts from 204 postmenopausal patients who underwent surgery for

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unilocular or multilocular cysts, the majority of which were >5 cm in diameter. The aim of this study was to determine the management of adnexal cysts without malignant features, such as papillary structures or solid areas, in postmenopausal women based on histopathological results.

Materials and methods

All participants provided informed consent, and the study was considered exempt from institutional review board approval. All data of the postmenopausal women who underwent surgery, due to any gynecological indications or incidentally diagnosed with adnexal mass during the time period between 2008 and 2014 were reviewed for the study. Menopause was defined as the absence of menses for at least 1 year in women ≥ 40 years of age. Patients with a history of ovarian or any other cancer or salpingo-oophorectomy for any reason were excluded from the study. Transvaginal ultrasonography was performed in all patients using a General Electric Logiq 200 PRO (General Electric, Milwaukee, Wisconsin, USA) and Toshiba Xario SSA-660A (Toshiba Medical Systems Corporation, Tokyo, Japan) unit equipped with 5–7.5-MHz endovaginal probes and 5-MHz color and spectral Doppler capabilities. Unilocular or multilocular cysts are defined considering ultrasonographic morphologic criteria of IOTA group [10].

The study initially enrolled all postmenopausal patients with unilocular and multilocular cysts with regular septa, that did not present with features of malignancy, such as papillary structures, solid areas, or other abnormal echogenic areas, during preoperative evaluations. Patients were excluded for cysts with irregular septa or with papillary structures or solid areas on the internal or external surfaces. The largest diameter of each cyst was recorded. Ovarian volume was calculated according to the prolate ellipsoid formula (height \times width \times length \times 0.523). Morphology indexing was performed according to the classification proposed by Ueland et al. [11].

For all patients with cysts diagnosed by ultrasonography, cancer antigen-125 (CA-125) levels were measured on the same day using a Cobas-Core CA-125 II (Roche Laboratories, Basel, Switzerland). CA-125 values >35 kU/L were considered abnormal.

At our clinic, two different methods were applied before and after 2011 for postmenopausal adnexal cysts with no malignancy criteria. Before 2011, emergency surgery was recommended for cysts ≥ 5 cm, while patients with <5 cm underwent conservative monitoring. After 1 year of monitoring, surgery was recommended for persistent cysts. From 2011 onwards, our clinic adopted the recommendations of the 2010 consensus of the American Radiology Association [9]. Monitoring is recommended for unilocular cysts <7 cm in diameter, and surgical removal is recommended as the first choice in cysts ≥ 7 cm. Surgery was also recommended for cysts that did not resolve spontaneously. Elevated CA-125 levels combined with an adnexal cyst of any dimension were considered indications for surgery.

Patients under observation were initially examined twice at 3-month intervals, twice at 6-month intervals, and annually thereafter. At each follow-up examination, cyst dimensions and morphology as evaluated by ultrasonography were recorded; CA-125 levels were also measured. Progression was defined as an increase of >1 cm in diameter compared to the previous evaluation. Patients with a change in cyst morphology or progression in cyst dimensions during follow-up or with abnormal CA-125 values determined at any time were referred for surgery. Patients who did not meet the above-mentioned surgical criteria either initially or in the follow-up period but who rejected the conservative approach and requested surgical intervention were fully informed of the procedure and underwent surgery after providing informed consent. Similarly, patients who did not accept

a surgical approach were monitored at 3-month intervals after providing informed consent.

The Number Cruncher Statistical System (NCSS) 2007 (Kaysville, Utah, USA) was used for the statistical analyses in this study. Descriptive statistical methods (means, standard deviations, medians, frequencies, rates, minimums, and maximums) were used to evaluate the study data, and the Mann–Whitney *U*-test was used to compare two groups without normal data distributions. The Kruskal–Wallis test was used to compare three or more groups not showing normal distribution, while the Mann–Whitney *U*-test was used to determine in which group the differences originated. Qualitative data comparisons were performed using the Pearson chi-squared, Fisher–Freeman–Halton, Fisher's exact, and Yates' continuity correction tests. Relationships between parameters were analyzed using Spearman's correlation analysis. Statistical significance was evaluated at the levels of $p < 0.01$ and $p < 0.05$.

Results

A total of 236 cysts were removed from 204 postmenopausal patients undergoing surgery for adnexal cysts. The mean age of the patients was 56 ± 9.6 years (range, 40–98 years). Bilateral cysts were identified in 32 (15.7%) cases.

The majority ($n = 137$, 67.2%) of patients were underwent surgery within 2 months of presentation, and 67 underwent surgery after a follow-up period of a mean 17 months (range, 3.5–65 months). The most common reason for cyst removal was size ≥ 5 or ≥ 7 cm. The reasons for patients who underwent surgery after a follow-up period ($n = 67$) included persistence of the cyst in 42 patients (73%) and growth, or change in morphology of the cyst, or an increase in CA-125 levels in 25 patients (27%) (Table 1).

Unilocular cyst morphology was observed in 182 (77.1%) cysts from 161 patients, while multilocular structure that did not include any morphological abnormalities (except for those in the septa) were observed in 54 (22.9%) cysts from 43 patients. The mean cyst diameter was 6.6 cm (range, 2.7–30 cm) with diameter of ≥ 5 and ≥ 7 cm in 176 (75%) and 89 (38%) cysts, respectively. The median cyst volume was 88.5 cm^3 (range, 10–2636; interquartile range: 81), and the mean morphology index was 1.2 (range, 1–6). In 16 cysts (6.8%), the morphology index was ≥ 5 .

No malignant or borderline histology was observed in any patient. The most common histopathology was serous cystadenoma (46%; Table 2).

There was a significant relationship between cyst histology and size. Mucinous cysts had larger diameter than did paratubal, inclusion, and follicular cysts, while serous cysts were larger than inclusion and follicular cysts (Table 3).

Table 1
Clinical characteristics of postmenopausal patients with unilocular or multilocular ovarian cysts ($n = 204$).

	N (%) or mean \pm SD
Age (years)	56.4 \pm 9.6
Parity	3.7 \pm 2.6
CA-125 (U/ml)	18.6 \pm 21.4
Follow-up period ($n = 67$) (month)	17.2 \pm 14.6
Bilaterality	
Unilateral	172 (84.3)
Bilateral	32 (15.7)
Indication for surgery	
Cyst size	105 (51.5)
CA-125 level	14 (6.8)
Patient's own decision	18 (8.8)
Persistence	42 (20.6)
Progression	25 (12.3)

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