Vietnam Journal of Community Medicine, Vol. 67, English version No. 1, 2026, 315-320

CLINICAL AND SUBCLINICAL CHARACTERISTICS OF PATIENTS WITH OVARIAN TUMORS SURGICALLY TREATED AT HA DONG GENERAL HOSPITAL

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Received: 28/04/2026
Revised: 11/05/2026; Accepted: 27/05/2026

ABSTRACT

Objective: To describe the clinical and paraclinical characteristics of patients with ovarian tumors who underwent surgery at Ha Dong General Hospital from 2021 to 2023.

Methods: A retrospective descriptive study was conducted on the medical records of 93 patients diagnosed with ovarian tumors who underwent surgical intervention at Ha Dong General Hospital from January 1, 2021, to December 31, 2023.

Results: Among the 93 patients, the mean age was 39.5±14.2 years, with the 30–39 age group accounting for 43.0%. Most patients had ≥2 children (63.4%); 16.1% had never been pregnant, and 17.2% had a history of miscarriage. A history of abdominal surgery was reported in 34.4% (mainly cesarean section). The majority were still menstruating (78.5%). The main symptom was lower abdominal pain (84.9%), while abnormal vaginal bleeding was rare (2.2%). Tumors were typically soft (60.2%), mobile (63.5%), well-defined (82.8%), and tender on palpation (77.4%). Ultrasound findings showed that most tumors measured 5–10 cm (63.4%), with a mean size of 67.1±28.1 mm. Echogenic characteristics included anechoic/hypoechoic (40.9%), hyperechoic (30.1%), and mixed echogenicity (29.0%); papillary projections were observed in 2.2% of cases, and 7.5% had ascites. Tumors were located on the right side in 52.7%, left side in 38.7%, and bilaterally in 8.6%. In patients who underwent CT scans and MRI, no radiological findings suggestive of malignancy were identified. CA-125 levels were elevated (>35 U/mL) in 17.8% (mean 37.8 U/mL), while HE4 was elevated in 1.0%. Histopathological results showed that most tumors were benign: serous cystadenoma (57.0%) and dermoid cysts (34.4%). Malignancy accounted for 2.1% of cases. One case of corpus luteum cyst with torsion was recorded.

Conclusion: The main clinical symptom of ovarian tumors is lower abdominal pain; tumors are typically soft, mobile, and well-defined. On ultrasound, most tumors measure 5–10 cm with diverse echogenic features. No cases suggested malignancy on CT or MRI. CA-125 and HE4 levels were rarely elevated. Histopathological findings confirmed that most tumors were benign serous cystadenomas and dermoid cysts, with a low rate of malignancy.

1. INTRODUCTION

Ovarian tumors can occur at any age, from the fetal period to the elderly[1], but are most common in women of reproductive age. The majority of these tumors are benign and are often incidentally detected on ultrasound due to the lack of specific clinical symptoms[2]. However, ovarian tumors are the most common type among female genital tract tumors, accounting for approximately 15–20%(3), and may lead to serious complications such as adnexal torsion and cyst rupture if not promptly diagnosed and managed, potentially affecting reproductive function. The evaluation of clinical and paraclinical characteristics of ovarian tumors plays an important role in diagnosis and treatment planning. In recent years, with advances in medical science and technology, diagnostic and therapeutic modalities have been increasingly improved, contributing to better management outcomes for this condition. Ha Dong General Hospital is a Grade I hospital with a long-standing history of development, where the Department of Obstetrics and Gynecology has continuously enhanced its professional capacity, implemented advanced techniques, and received a large number of patients with ovarian tumors for examination and treatment. However, a systematic assessment of the clinical and paraclinical characteristics of this patient population in recent years remains necessary. Therefore, we conducted the study entitled: "Clinical and Paraclinical Characteristics of Patients with Ovarian Tumors Undergoing Surgery at Ha Dong General Hospital" with the objective of describing the clinical and paraclinical features of patients with ovarian tumors who underwent surgical treatment at Ha Dong General Hospital from 2021 to 2023.

2. METHODS

A retrospective descriptive study was conducted on the medical records of patients diagnosed with ovarian tumors who underwent surgery at Ha Dong General Hospital from January 1, 2021, to December 31, 2023. Inclusion criteria: Medical records of patients who received surgical intervention, had histopathological

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confirmation of ovarian tumors, and contained complete research data. Exclusion criteria: Patients with a preoperative diagnosis of ovarian tumor that was not confirmed by histopathology, and patients who had been operated on at other facilities before being transferred to the hospital. Sample size: A convenience sampling method was employed, including all eligible medical records during the study period. Study variables: These included general characteristics (age, menstrual status, obstetric history, history of abdominal surgery, and medical comorbidities); clinical characteristics (subjective symptoms and tumor features on physical examination); and paraclinical characteristics (ultrasound, CA-125, HE-4, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI)). Data collection and analysis: Data were collected using a standardized research form from medical records and processed using SPSS software version 20.0. Categorical variables were presented as frequencies and percentages, while quantitative variables were expressed as mean ± standard deviation. Comparisons were performed using the Chi-square (χ^2) test and T-test, with statistical significance set at $p \leq 0.05$.

3. RESULTS

3.1. General characteristics

3.1.1. Age

Table 1. Age distribution of patients with ovarian tumors

Age	n	%
Mean±SD	39,5±14,2	
<20	4	4,3
20–29	15	16,1
30–39	40	43,0
40–49	16	17,2
50–59	10	10,8
>60	8	8,6

Observation: The mean age of the study population was 39,5±14,2 years. The 30–39 age group accounted for the highest proportion (43,0%), while the group under 20 years of age represented the lowest percentage (4,3%).

3.1.2. Obstetric history

Table 2. Obstetric history

Obstetric history		n	%
Gravidity (Number of pregnancies)	None	15	16,1%
	01 time	15	16,1%
	02 times	34	36,6%
	≥ 03 times	29	31,2%
Parity (Number of births)	None	17	18,3%
	01 time	17	18,3%
	02 times	41	44,1%
	≥ 03 times	18	19,4%
Number of miscarriages	None	77	82,8%
	01 time	9	9,7%
	≥ 02 times	6	6,5%
Number of living children	None	17	18,3%
	01 child	17	18,3%
	≥ 02 children	59	63,4%

Observation: The majority of patients had a history of pregnancy, primarily 2 times (67.8%), while only 16.1% were nulligravida. The most common parity was two births (44.1%). A large majority had no history of miscarriage (82.8%), and over 50% of the patients had 2 or more living children (63.4%).

3.1.3. Menstrual Characteristics

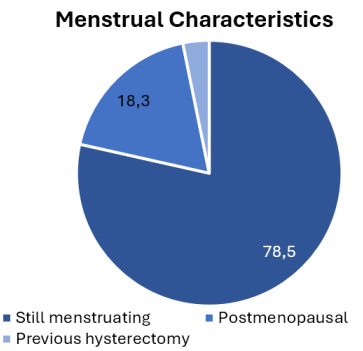


Chart 1. Menstrual Characteristics

Observation: The majority of patients with ovarian tumors were in the menstruating age group (accounting for 78.5%). There were no recorded cases of patients who had not yet reached menarche.

3.2. Clinical and Paraclinical Characteristics

3.2.1. Distribution of patients by functional symptoms

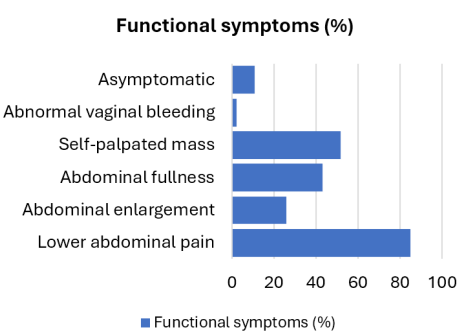


Chart 2. Distribution of patients by functional symptoms

Observation: Among the 93 patients, many cases presented with ≥ 2 functional symptoms. The most common symptom was lower abdominal pain (84.9%), followed by a self-palpated mass (51.6%) and abdominal fullness (43.0%). Additionally, 25.8% of patients experienced abdominal enlargement, while 10.8% were asymptomatic. Abnormal vaginal bleeding was the least frequent symptom (2.2%).

3.2.2. Physical Examination

Table 3. Physical Signs

Characteristics		n	%
Tumor consistency	Soft	56	60,2
	Firm	37	39,8
Tumor mobility	Mobile	78	83,9
	Limited mobility	11	11,8
	Fixed	4	4,3
Tumor borders	Well-defined	77	82,8
	Ill-defined	16	17,2
Tenderness on Palpation	Tender	72	77,4
	Non-tender	21	22,6

Observation: The majority of tumors were soft in consistency (60.2%), mobile (83.9%), and had well-defined borders (82.8%). Most patients experienced tenderness during the examination (77.4%). Tumors with limited/no mobility and ill-defined borders accounted for a low proportion.

3.2.3. Ovarian Tumor Size on Ultrasound

Table 4. Ovarian tumor size on ultrasound

Tumor size (cm)	n	%
<5	23	24,8
5–10	59	63,4
>10	11	11,8
Mean	67,1±28,1mm	
Minimum	19mm	
Maximum	169mm	

Observation: On ultrasound, the mean tumor size was 67,1±28,1mm, with the majority of tumors measuring between 5–10 cm (63.4%). Tumors < 5 cm accounted for 24.8%, while those > 10 cm represented 11.8%; the overall size ranged from 19 to 169 mm.

3.2.4. Ultrasound Results

Table 5. Ultrasound findings

Ultrasound Characteristics		n	%
Anechoic and homogeneous hypoechoic		38	40,9
Hyperechoic		28	30,1
Mixed echogenicity		27	29,0
Presence of septae and papillary projections		2	2,2
Presence of ascites		7	7,5
Tumor Location	Right	49	52,7
	Left	36	38,7
	Bilateral	8	8,6

Observation: The ultrasound images primarily showed anechoic or homogeneous hypoechoic features (40.9%), followed by hyperechoic (30.1%) and mixed echogenicity (29.0%). Signs suggestive of malignancy (septae, papillary projections) were rare, occurring in only 2.2% of cases, while 7.5% of patients presented with associated ascites. Regarding tumor location, right-sided tumors (52.7%) were more frequent than left-sided ones (38.7%), with bilateral tumors found in 8.6% of patients.

3.2.5. CA–125 test

Table 6. Results of CA–125 levels

Characteristic	n	%
Number of patients tested for CA – 125	73	78,5
≤ 35 U/ml	60	82,2
> 35 U/ml	13	17,8
Mean	37,8U/ml	
Minimum	3,3U/ml	
Maximum	1000U/ml	

Observation: Among the 93 patients, 73 cases underwent CA-125 testing; 17.8% of these had CA-125 levels > 35 U/ml. The mean value was 37.8 U/ml, ranging from 3.3 to 1000 U/ml.

3.2.6. HE4 test

Table 7. HE4 test results

HE4 test	Malignant		Benign		Total patients	
	n	%	n	%	n	%
Elevated	0	0	1	1,1	1	1,0
Normal	2	100	52	57,1	54	58,1
Not performed	0	0	38	41,8	38	40,9

Observation: The majority of patients either did not undergo HE4 testing (40.9%) or had normal results (58.1%). Only one case of elevated HE4 (1.0%) was recorded in a 31-year-old patient (70,7 pmol/L), whose histopathology revealed a benign serous cystadenoma.

3.2.7. Histopathology Results

Table 8. Histopathology Results

Histopathology Results	n	%
Benign serous cystadenoma	53	57,0
Dermoid cyst	32	34,4
Ovarian fibroma	3	3,2
Endometrioma	1	1,1
Corpus luteum cyst	1	1,1
Borderline serous cystadenoma	1	1,1
Ovarian cancer	2	2,1

Observation: Histopathological results indicated that the majority of cases were benign serous cystadenomas (57.0%) and dermoid cysts (34.4%). Ovarian cancer was rare, accounting for only 2.1% of cases. One case of a corpus luteum cyst was recorded, which required surgical intervention due to ovarian torsion.

4. DISCUSSION

4.1. General characteristics

Ovarian tumors can occur at any age but are primarily concentrated within the reproductive years. In this study, the 30–39 age group accounted for the highest proportion (43.0%), with a mean age of 39.5 (range: 15–86) and a relatively normal age distribution (Skewness = 0.07). The groups aged < 20 and > 60 years accounted for 4.3% and 8.6%, respectively. These findings are consistent with the study by Vaidya S. and Sharma P. (2014)[4], which recorded an age range of 10–82 with a mean of 33 years, and the research by Minh Hieu Tran (2023), where the highest prevalence was in the 20–49 age group (67.64%), with benign tumors being most common in the 30–39 age group (27.26%) and a mean age of 37±15.8 years[5].

Regarding obstetric history, the majority of patients had a history of pregnancy (83.9%) and childbirth (81.7%), of whom 63.4% had ≥ 2 children. However, the groups of nulliparous women and those with only one child both accounted for 18.3%, reflecting a significant proportion of women who still have reproductive desires. This result is consistent with studies by Thi Thanh Hong Tran (2019) [6], Thi Huong Dang (2020) [7], Thi Thuy Ha Nguyen (2022) [8], and Viet Linh Nguyen (2023) [9]. Some authors, such as Harlap, Fleischer, Gordon, Page, Goffinet, and Goh S. M., suggest that ovarian tumors are more prevalent in nulliparous women, whereas pregnancy and oral contraceptives serve a protective role [10]. In the present study, two pregnant patients underwent surgery due to ovarian torsion; both underwent ovarian cystectomy with ovarian preservation, highlighting the crucial role of conservative management in patients with future fertility needs.

In terms of menstrual characteristics, 78.5% of patients were premenopausal (still menstruating), 18.3% were postmenopausal, and no cases of pre-menarche were recorded. These results align with previous studies by Thi Huong Dang (2020)[7], Thi Thuy Ha Nguyen (2022)[8], and Viet Linh Nguyen (2023)[9], indicating that the majority of ovarian tumors particularly benign tumors and functional cysts occur in women of reproductive age. Consequently, regular gynecological screenings for menstruating women are essential for early detection and timely intervention to minimize complications.

4.2. Clinical and Paraclinical Characteristics

4.2.1. Distribution of patients by functional symptoms

Ovarian tumors in the early stages often progress silently with sparse and non-specific symptoms, making it difficult to determine the exact time of onset. Many cases are only identified when menstrual disorders, infertility, or complications such as torsion or cyst rupture occur. In our study, the primary functional symptoms were lower abdominal pain (84.9%) and self-palpated mass (51.6%), while abnormal vaginal bleeding was rare (2.2%). Additionally, 10.8% of patients were asymptomatic and were discovered incidentally during routine health check-ups.

These results are consistent with previous studies: Thi Hong Nguyen (2020) noted that lower abdominal pain (53.8%) and detection through gynecological examination (43.7%) were predominant, with menstrual disorders accounting for only 1.7%[8]; Hong Quang Ngo (2019) also showed that lower abdominal pain accounted for 50.7%, detection via periodic examination for 35.1%, and menstrual disorders for 8.5%[11]; Nu Phu Xuan Hoang (2023) recorded abdominal pain in 39.6%, self-palpated masses in 9.9%, menstrual disorders in 2.0%, and incidental discovery in 15.3%[12]. In cases involving complications, symptoms are typically more acute, particularly acute abdominal pain. Burnett L.S. et al. noted that 100% of patients with ovarian torsion experienced abdominal pain, accompanied by nausea/vomiting in 60% of cases [13]; Hassan S. Abduljabbar et al. also found that abdominal pain was the most common manifestation (58.2%) [10].

Overall, the functional symptoms of ovarian tumors are atypical, with abdominal pain being the most frequent sign. Therefore, regular gynecological examinations, especially for women of reproductive age, play a vital role in the early detection of the disease and the prevention of complications.

4.2.2. Physical Examination

Ovarian tumors are primarily unilateral, with the right side (52.7%) being more common than the left side (38.7%), while bilateral tumors account for 8.6%. This finding is consistent with other studies: Thi Thuy Ha Nguyen (2022) recorded bilateral tumors in 17.6%, with right-sided prevalence exceeding left-sided (43.8% vs. 37.3%) [8]. Research by Hassan S. Abduljabbar et al. also showed that the right ovary was more frequently affected (63.1%), with bilateral tumors accounting for 18.9% [10]. Overall, the majority of studies report that ovarian tumors are predominantly unilateral.

Regarding size, the tumors are mainly between 5–10 cm (59.8%), similar to the findings of Viet Linh Nguyen (2023), who recorded 67.3% of tumors in the 5–10 cm range with a mean size of 69 mm [9]. In this study, tumors < 5 cm accounted for 24.8%, those 5–10 cm for 63.4%, and those > 10 cm for 11.8%. This suggests that the majority of patients are diagnosed only when the tumor has exceeded 5 cm, likely due to a lack of routine health check-up habits.

The mobility of the tumor during clinical examination is significant for selecting the surgical approach and determining the prognosis. This result is consistent with Thi Thanh Quynh (2012) Pham, who demonstrated that the degree of clinical mobility is closely related to the extent of adhesions during laparoscopy (p<0,001) [14]; Thi Thanh Hong Tran (2019) recorded 82.5% mobile tumors [6]; and Viet Linh Nguyen (2023) reported 63.5% with good mobility [9].

In summary, while the physical signs of ovarian tumors are often atypical, characteristics such as location, size, and particularly tumor mobility are of great value in diagnosis, treatment planning, and surgical prognosis.

4.2.3. Ovarian Tumor Size on Ultrasound

The morphology of ovarian tumors is highly diverse, ranging from cystic lesions to solid masses. Malignant epithelial tumors typically present as cystic structures with solid components, whereas sex cord-stromal or germ cell tumors are more frequently characterized as solid masses. Conversely, benign epithelial tumors are predominantly cystic; however, certain benign lesions, such as adenofibromas, cystadenofibromas, Brenner tumors, and specific stromal or germ cell tumors, can manifest as solid or mixed masses, thereby reducing the specificity of a diagnosis based solely on solid characteristics. Consequently, Doppler ultrasound, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI) are often utilized in combination to evaluate vascular proliferation and contrast enhancement patterns to differentiate between benign and malignant lesions.

Ultrasound remains the most common diagnostic modality due to its non-invasive nature, safety, and cost-effectiveness, facilitating the assessment of tumor location, size, morphological features, and vascular

perfusion. However, diagnostic challenges may arise as solid tissue can be occasionally misidentified as blood clots within hemorrhagic cysts or hyperechoic components in dermoid cysts.

In this study, the tumor size was primarily within the 5–10 cm range (59.8%), with a mean dimension of 67,1±28,1mm. These findings align with those of Minh Hieu Tran (2023), who reported that tumors measuring 50–100 mm accounted for 70.23% with a mean of 96,53±56,7mm[5], and Viet Linh Nguyen (2023), who noted 67.3% in the 5–10 cm group with a mean of 69 mm[9].

Regarding echogenicity, anechoic and hypoechoic tumors accounted for 40.9%, hyperechoic for 30.1%, and mixed echogenicity for 29%, while the presence of septae or papillary projections was observed in 2.2%. These results are comparable to Viet Linh Nguyen (2023): anechoic/hypoechoic (47.4%), mixed (39.3%), and septae/papillary projections (22.7%)[9]; and Minh Hieu Tran (2023): anechoic/hypoechoic (78.64%), septae/papillary projections (31.72%), mixed (18.12%), and hyperechoic (3.24%) [5].

4.2.4. CA-125 test

CA-125 is a high-molecular-weight mucinous glycoprotein (MUC16) expressed in the female genital tract epithelium as well as other epithelial tissues. This biomarker may be elevated in ovarian cancer and various other malignancies, including endometrial, cervical, breast, colorectal, and bronchial cancers, albeit at lower frequencies [10]. While CA-125 demonstrates higher sensitivity than specificity [15], its diagnostic value as a standalone parameter remains limited. However, in patients with existing ovarian masses, its integration with clinical findings and ultrasonography facilitates preoperative differentiation between benign and malignant lesions. A threshold of > 35 UI/ml is generally considered indicative of potential malignancy [16].

Elevated CA-125 levels are also observed in several benign conditions, such as endometriosis, pelvic inflammatory disease, cirrhosis, and peritonitis, as well as in 0.6–1.4% of the healthy population. Consequently, the marker possesses a relatively low positive predictive value, whereas its negative predictive value is more clinically significant. For these reasons, CA-125 is primarily utilized for post-treatment monitoring in ovarian cancer.

In the present study, CA-125 levels < 35 UI/ml accounted for 82.2% of cases, with a mean concentration of 37.8 U/ml. These results align with the findings of Thi Ha Phuong Nguyen (2022), who reported 84.1% < 35 UI/ml and 15,9% ≥ 35 UI/ml [17]; Viet Linh Nguyen (2023), who noted 84% < 35 UI/ml and 16% ≥ 35 UI/ml (9). Among the two cases of ovarian cancer, one exhibited a CA-125 level > 1000 UI/ml, while a case of borderline serous cystadenoma presented with 135.2 U/ml. Notably, one case of ovarian cancer was recorded with a CA-125 level < 35 UI/ml.

In conclusion, although CA-125 is not a definitive diagnostic tool, it serves as a crucial suggestive indicator and should be included in routine clinical assessments. For the 17.8% of cases with elevated CA-125, the concurrent use of the HE4 marker is recommended to enhance diagnostic accuracy.

4.2.5. HE-4 test

Human Epididymis Protein 4 (HE4) is a biomarker for ovarian cancer belonging to the protease inhibitor family. It provides clinical utility when combined with CA-125 and the Risk of Malignancy Algorithm (ROMA) for the detection, monitoring of progression, and recurrence of the disease. The established cut-off thresholds are > 70 pmol/L for premenopausal women and >140 pmol/L for postmenopausal women[16].

In our study, 54 out of 93 patients underwent HE4 testing. Only one case of slightly elevated HE4 (70.7 pmol/L) was recorded in a 31-year-old patient (1.0%); however, the histopathological result confirmed a benign serous cystadenoma. Notably, both cases of ovarian cancer exhibited HE4 levels within the normal range; consequently, there were insufficient data to evaluate the sensitivity of this marker in this study.

Tuan Minh Nguyen et al. (2023), in a study of 414 patients, reported that among premenopausal women, 50% of those with ovarian cancer had elevated HE4 levels (sensitivity 50%, specificity 91.9%), while in the postmenopausal group, 61.5% of cases showed elevated HE4 [15]. Van Khoa Vo and Vu Quoc Huy Nguyen (2018) observed in 30 cases of ovarian cancer (10.83%) that the median values for CA-125, HE4, and ROMA were 214.20 U/ml, 90.00 pM, and 55.20%, respectively—significantly higher than those in the non-malignant group. The sensitivity/specificity ratios for CA-125, HE4, and ROMA were 83.33%/78.14%, 50%/98.38%, and 80%/84.62%, respectively [18].

In conclusion, HE4 is a valuable marker in the preoperative assessment of malignancy risk, particularly when utilized in conjunction with CA-125.

4.2.6. Histopathological Results

In this study, serous cystadenoma accounted for the highest proportion (57.0%), followed by mature teratoma (34.4%). Malignant tumors were identified in two cases (2.2%), comprising one mucinous adenocarcinoma and one borderline serous cystadenoma (1.1%).

These findings align with the results reported by Viet Linh Nguyen, who primarily recorded serous cystadenomas (39.8%) and dermoid cysts (41.7%), with ovarian cancer accounting for 1.4% [9]. According to Van Hue Phung, in a study of 112 patients with benign ovarian tumors, serous cystadenomas accounted for 27.0%, mucinous cystadenomas for 12.6–14.4%, and dermoid cysts for 11.7–20.7% [19]. Conversely, Thi Thanh Hong Tran reported that dermoid cysts constituted the highest proportion, at 73.8% [6].

5. CONCLUSION

Ovarian tumors in patients undergoing surgery at Ha Dong General Hospital during the 2021–2023 period occurred predominantly in women aged 30–39 years. Clinical manifestations were typically sparse, with lower abdominal painbeing the primary symptom. The majority of tumors measured 5–10 cm in size; ultrasonography frequently revealed anechoic or hypoechoic patterns, and the rate of elevated CA-125 was low. Regarding histopathology, the vast majority were benign tumors, with serous cystadenoma being the most prevalent type, followed by dermoid cysts.

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