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Presenting Complaint and Histopathological Types of Ovarian Masses in Patients Undergoing Laparotomy in Reproductive Age

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ABSTRACT

Objectives: To determine the frequency of presenting complaints and histopathological types of ovarian masses in patients undergoing laparotomy in reproductive age. **Methodology:** This study was conducted in the Department of Obstetrics and Gynecology at a tertiary care hospital during February to May 2025. A total of 202 patients aged 15–45 years undergoing laparotomy for ovarian masses were enrolled. Clinical presentation and demographic details were recorded. Histopathological examination was performed postoperatively, and tumor types were classified as benign, borderline, or malignant, along with identification of histological subtypes. **Results:** The most frequent presenting complaint was abdominal mass (36.6%), followed by increased urinary frequency (20.3%) and nausea (18.3%). Histologically, 64.4% of the tumors were benign, 10.9% borderline, and 24.8% malignant. Epithelial tumors were the most common histological type (52.5%), followed by germ cell tumors (32.2%) and sex cord-stromal tumors (15.3%). The majority of cases were in the 15–30 year age group (52%) and had low parity (83.7%). **Conclusion:** Abdominal mass is the most common presenting symptom among reproductive-age women undergoing laparotomy for ovarian masses. Benign epithelial tumors predominate, highlighting the importance of early clinical evaluation and histopathological confirmation for optimal management.

INTRODUCTION

Ovarian masses are frequently encountered in females across all age groups globally. Their occurrence tends to rise with advancing age, with a notably higher prevalence among women in their reproductive years.[1] In adolescents, functional cysts, ovarian torsion, and benign neoplasms are the predominant findings. However, distinguishing between benign and malignant ovarian tumors can be challenging preoperatively, as approximately 1% of childhood ovarian neoplasms are malignant.[2] Among gynecological malignancies, ovarian cancer presents a significant clinical concern and ranks as the second most common reproductive tract malignancy in women. It typically includes epithelial, germ cell, and sex cord-stromal tumors.[3]

The clinical manifestations of ovarian malignancies are often vague and nonspecific, complicating early recognition. Ovarian tumors may vary in consistency, presenting as either cystic or solid masses. While benign tumors are usually cystic in nature, nearly 80% of solid ovarian neoplasms tend to be malignant.[4] Anatomically, the ovaries are located in the pelvic cavity, adjacent to the uterus, anterior to the rectum, and posterior to the broad ligament. The global incidence of ovarian cancer is rising, and it has now become the fifth leading cause of cancer-related mortality in women. Early-stage disease often lacks overt symptoms, resulting in many cases being diagnosed at an advanced stage, where prognosis remains poor despite the availability of comprehensive and aggressive treatment options. A combination of patient history, clinical examination, and ultrasonography is essential for initial evaluation, while histopathological examination of biopsy remains the gold standard for definitive diagnosis.[5]

A study reported the presenting complaint and histopathological types of ovarian masses in patients undergoing laparotomy in reproductive age. The study was conducted on 130 women. Presenting complaint was nausea in 22 (16.9%), weight gain in 9 (6.9%), abdominal mass in 49 (37.7%) and increased urinary frequency in 28 (21.5%).[6] A study by Qureshi et al. reported the histological pattern of distribution of ovarian tumour shows that most of ovarian tumour were surface epithelial tumour in 53 patients (50%) followed by germ cell tumour in 36 patients (33.96%) and sex cord tumors in 17 (16.04%).[7]

Aim of study is to assess the presenting complaint and histopathological types of ovarian masses in patients in reproductive age as no local data is available. The findings of this study will support the medical professionals in counseling the patients preoperatively with provision of good management plan.

METHODOLOGY

This descriptive cross-sectional study was conducted at the Department of Gynecology, Independent University Hospital, Faisalabad, from February to May 2025 following approval from the institutional ethical review board. A total of 202 patients were enrolled using non-probability consecutive sampling. The sample size was calculated using the WHO sample size calculator with a 95% confidence interval, an anticipated proportion of 6.9%, and a 3.5% margin of error.

Women aged 15 to 45 years, both married and unmarried, who presented with ovarian masses and underwent laparotomy were included. Patients with prior ovarian surgery or comorbidities such as diabetes mellitus, hypertension, or chronic obstructive pulmonary disease were excluded. Following informed written consent, each eligible participant was assessed for presenting complaints, including nausea, weight gain, and abdominal mass, defined according to pre-established operational criteria. Transabdominal ultrasonography was performed to confirm the presence of ovarian masses, which were identified by low impedance flow within the wall on Doppler ultrasound.

All patients underwent laparotomy performed by a consultant gynecologist with at least three years of post-fellowship experience. Intraoperatively obtained specimens were sent for histopathological examination. Tumors were classified as benign (lacking exuberant cellular proliferation and invasive behavior), borderline (showing cellular proliferation without invasion), or malignant (with evident invasive features). Histological classification was performed as epithelial, germ cell, or sex cord-stromal tumors based on microscopic morphology.

All clinical, radiological, and histopathological data were recorded using a predesigned proforma. Data were entered and analyzed using SPSS version 25. Mean and standard deviation were calculated for quantitative variables such as age and duration of symptoms. Frequencies and percentages were reported for qualitative variables, including parity, marital status, hormonal history, presenting complaints, tumor type, and histological pattern. Stratification was carried out for potential effect modifiers such as age, duration of symptoms, parity, marital status, tumor type, and hormone use. The chi-square test was applied post-stratification, and a p-value less than 0.05 was considered statistically significant.

RESULTS

Table 1 describes the baseline characteristics of the 202 participants included in the study. The age distribution shows a slightly higher proportion of patients between 15 and 30 years, accounting for 52.0% of the sample, while those aged 31 to 45 made up the remaining 48.0%. The majority of the study population (83.7%) had a parity of 0 to 3, indicating fewer childbirth experiences, whereas women with parity ranging between 4 and 5 constituted 16.3%. Regarding marital status, most participants were married (69.3%), and 30.7% were unmarried. When evaluating hormone use, 42.1% of patients reported prior or current hormonal therapy, while a larger segment (57.9%) did not use hormones. As for symptom duration, 55.9% had experienced symptoms for more than five weeks prior to presentation, and the remaining 44.1% had symptom durations ranging from one to five weeks.

Table 1

Frequency Distribution of Baseline Variables (n = 202)

Variable	Group	Count	Percent (%)
Age Group	15–30	105	52.0
	31–45	97	48.0
Parity	0–3	169	83.7
	4–5	33	16.3
Marital Status	Married	140	69.3
	Un-Married	62	30.7
Hormone Use	Yes	85	42.1
	No	117	57.9
Duration of Symptoms	1–5 weeks	89	44.1
	>5 weeks	113	55.9

Table 2 focuses on the primary clinical and pathological features observed in the cohort. Among presenting complaints, an abdominal mass was the most commonly reported symptom, seen in 36.6% of the cases. Increased urinary frequency followed, reported by 20.3%, while nausea (18.3%), other complaints (14.9%), and weight gain (9.9%) were less frequent. In terms of tumor classification, two-thirds (64.4%) of the masses were benign. A smaller subset (10.9%) was categorized as borderline, and nearly a quarter (24.8%) were malignant. Histologically, epithelial tumors were predominant, accounting for 52.5% of cases. Germ cell tumors made up 32.2%, and sex cord-stromal tumors were observed in 15.3% of the patients.

Table 2

Distribution of Main Study Outcome Variables (n = 202)

Variable	Group	Count	Percent (%)
Presenting Complaint	Nausea	37	18.3
	Weight Gain	20	9.9
	Abdominal Mass	74	36.6
	Increased Urinary Frequency	41	20.3
	Others	30	14.9
Tumor Type	Benign	130	64.4
	Borderline	22	10.9
	Malignant	50	24.8
Histological Type	Epithelial	106	52.5
	Germ Cell	65	32.2
	Sex Cord-Stromal	31	15.3

Table 3 presents descriptive statistics for continuous variables. The mean age of patients was approximately 30.28 years with a standard deviation of 9.27, indicating a moderate spread around the mean. The average duration of symptoms prior to diagnosis was 6.25 weeks (±3.58), suggesting that many patients sought medical attention after more than a month of symptoms. The mean parity was 1.96, with a standard deviation of 1.49, reflecting a relatively low parity in the cohort.

Table 3
Descriptive Statistics of Quantitative Variables (n = 202)

Variable	Mean	Standard Deviation	n
Age (years)	30.28	9.27	202
Duration of Symptoms (weeks)	6.25	3.58	202
Parity	1.96	1.49	202

Table 4 offers a stratified view of the most common presenting complaint, the abdominal mass, across various demographic and clinical factors. The comparison by age suggests that younger women (15–30 years) presented with abdominal mass at a slightly higher proportion (56.8%) compared to older women (31–45 years), although the difference was not markedly pronounced. With regard to symptom duration, both shorter and longer durations showed relatively balanced distributions of abdominal mass cases, suggesting that duration alone may not distinctly influence presentation. Similarly, among women with lower parity (0–3), abdominal mass presentation remained high, while those with higher parity (4–5) had relatively fewer instances. Marital status showed a higher number of abdominal mass cases among married individuals, though the difference across groups did not imply a clear trend. Hormonal therapy history also did not yield contrasting proportions between those presenting with or without abdominal mass. Interestingly, when examining tumor types, both benign and malignant lesions were comparably distributed in patients with abdominal masses and those presenting with other complaints, suggesting no evident association between tumor behavior and clinical symptoms.

Table 4
Stratified Analysis of Presenting Complaint

Variable	Groups	Abdominal Mass (n, %)	Others (n, %)	Total (n, %)	P-value
Age Group	15–30	42 (56.8%)	63 (51.2%)	105 (52.0%)	0.606
	31–45	32 (43.2%)	60 (48.8%)	97 (48.0%)	
Duration of Symptoms	1–5 weeks	32 (43.2%)	57 (46.3%)	89 (44.1%)	0.985
	>5 weeks	42 (56.8%)	66 (53.7%)	113 (55.9%)	
Parity	0–3	66 (89.2%)	103 (83.1%)	169 (83.7%)	0.428
	4–5	8 (10.8%)	21 (16.9%)	33 (16.3%)	
Marital Status	Married	45 (60.8%)	95 (76.0%)	140 (69.3%)	0.319
	Unmarried	29 (39.2%)	30 (24.0%)	62 (30.7%)	
Hormone Use	Yes	30 (40.5%)	55 (44.0%)	85 (42.1%)	0.975
	No	44 (59.5%)	70 (56.0%)	117 (57.9%)	
Tumor Type	Benign	49 (66.2%)	81 (65.3%)	130 (64.4%)	0.313
	Malignant	17 (23.0%)	33 (26.6%)	50 (24.8%)	

Table 5 extends the stratification to histological types, highlighting their distribution across demographic and clinical variables. Among epithelial tumors, a slightly higher proportion was seen in the younger age group (15–30 years), while germ cell tumors had more cases in the older group (31–45 years), indicating a slight age-related variation. The duration of symptoms did not reflect a consistent pattern for any specific histological type. Patients with lower parity (0–3) comprised the majority across all tumor types, particularly among those with sex cord-stromal tumors. Marital status distribution appeared relatively uniform among the three histological categories. Hormone use showed a marginally higher proportion of sex cord-stromal tumors among hormone users compared to the other types, although the difference was not striking. When correlated with tumor type (benign or malignant), epithelial and germ cell tumors were predominantly benign, while a larger share of sex cord-stromal tumors appeared in the malignant category, although the overlap was broad.

Table 5
Stratified Analysis of Histological Type

Variable	Groups	Epithelial (n, %)	Germ Cell (n, %)	Sex Cord (n, %)	P-value
Age Group	15–30	59 (55.7%)	28 (43.1%)	18 (58.1%)	0.212
	31–45	47 (44.3%)	37 (56.9%)	13 (41.9%)	
Duration of Symptoms	1–5 weeks	51 (48.1%)	22 (33.8%)	16 (51.6%)	0.124
	>5 weeks	55 (51.9%)	43 (66.2%)	15 (48.4%)	
Parity	0–3	85 (80.2%)	56 (86.2%)	28 (90.3%)	0.327
	4–5	21 (19.8%)	9 (13.8%)	3 (9.7%)	
Marital Status	Married	74 (69.8%)	42 (64.6%)	24 (77.4%)	0.439
	Unmarried	32 (30.2%)	23 (35.4%)	7 (22.6%)	
Hormone Use	Yes	44 (41.5%)	24 (36.9%)	17 (54.8%)	0.247
	No	62 (58.5%)	41 (63.1%)	14 (45.2%)	
Tumor Type	Benign	67 (63.2%)	45 (69.2%)	18 (58.1%)	0.439
	Malignant	24 (22.6%)	16 (24.6%)	10 (32.3%)	

DISCUSSION

Ovarian masses remain a diagnostic challenge in women of reproductive age due to their diverse clinical presentations and varying histopathological profiles. Our study was designed to evaluate the frequency of presenting complaints and histological types among women undergoing laparotomy for ovarian masses, aiming to provide insights that could guide early detection and management strategies.

In our study population, the majority of patients were within the 15–30 year age group (52%), and most had a parity of 0–3 (83.7%). This demographic trend is consistent with findings reported by Mehra et al., who observed that the majority of ovarian tumors occurred in younger women, particularly in the second and third decades of life, aligning with the peak reproductive years[8]. Similar reproductive-age predominance was noted by Mahaur et al., who also found that benign tumors were more frequent in women below 35 years[9]. Additionally, Chawla et al. highlighted that younger age and low parity were significantly associated with benign histologies, whereas increasing age tended to correlate with a rise in malignant lesions[10]. These patterns reinforce the age-related biological behavior of ovarian masses, emphasizing the need for heightened clinical vigilance in reproductive-age patients presenting with abdominal symptoms.

Abdominal mass emerged as the most frequent presenting complaint in our study (36.6%), followed by increased urinary frequency and nausea. This pattern mirrors observations by Nivedha et al., who reported abdominal pain and palpable mass as dominant complaints in adolescent ovarian mass cases[11]. Jagan et al. also noted that a substantial proportion of women presented with abdominal distension and discomfort, often leading to

delayed diagnosis due to the non-specific nature of symptoms[12]. In the study by Pandey et al., abdominal mass and pain were leading causes of referral, with many patients undergoing surgery only after symptoms worsened[13]. This overlap in symptomatology across studies highlights the importance of considering ovarian pathology in the differential diagnosis of vague lower abdominal complaints in young women.

Regarding histopathological findings, our results showed that 64.4% of the masses were benign, 24.8% malignant, and 10.9% borderline. Epithelial tumors were the most common (52.5%), followed by germ cell (32.2%) and sex cord-stromal tumors (15.3%). These trends are consistent with the findings of Mehra et al., who documented a predominance of epithelial neoplasms, particularly serous cystadenoma, among benign tumors[8]. Likewise, Pandey et al. reported epithelial tumors as the most frequent histological type in reproductive-age women, with malignancies more common in the serous subtype[13]. A study by Farag et al. examining ovarian tumors across different age groups also emphasized the dominance of epithelial types and a gradual rise in malignant transformation with age progression[14]. Kashif et al. reported similar histological patterns, with a high frequency of benign epithelial lesions and fewer cases of malignant transformation in younger women[15]. Germ cell tumors, although less common overall, were notably prevalent among women in their early reproductive years, as confirmed by Al-Sabbagh et al. and Mahaur et al., supporting our stratified findings based on age and histological subtypes[9] [16].

Interestingly, our study reported a notable proportion of borderline tumors (10.9%), which is slightly higher than what was documented in prior literature. While many studies do not differentiate borderline tumors as a separate entity, Chawla et al. identified their presence in a similar proportion, advocating for clear pathological classification given their uncertain malignant potential[10]. Such findings underline the importance of meticulous histopathological evaluation, particularly in masses that do not exhibit overt malignant features on imaging.

Our study is strengthened by its focused analysis of laparotomy-confirmed ovarian masses with histopathological correlation, offering a reliable diagnostic profile. However, it has limitations, including its single-center design and moderate sample size, which may affect the generalizability of results. Additionally, no long-term follow-up was available to assess recurrence or malignant transformation of borderline or benign lesions.

Based on our findings, we recommend that clinicians maintain a high index of suspicion for ovarian pathology in reproductive-age women presenting with persistent abdominal complaints, especially when imaging reveals adnexal anomalies. Early referral and surgical intervention can significantly alter outcomes, particularly in potentially malignant cases. Furthermore, classification of borderline tumors should be emphasized in histopathological reporting to guide appropriate postoperative management and follow-up.

CONCLUSION

Our study demonstrates that abdominal mass is the most common presenting symptom, and epithelial tumors constitute the most frequent histological type of ovarian masses in reproductive-age women. These findings are broadly consistent with regional and international literature and underscore the importance of early recognition and accurate histopathological diagnosis for effective management.

REFERENCES

1. Mehra P, Aditi S, Prasad KM, Bariar NK. Histomorphological analysis of ovarian neoplasms according to the 2020 WHO classification of ovarian tumors: a distribution pattern in a tertiary care center. *Cureus*. 2023;15(4):e38273. https://doi.org/10.7759/cureus.38273
2. Nivedha A, Onimi S. A clinicopathological study on ovarian masses and their tumor markers in adolescents. *Int J Clin Obstet Gynaecol*. 2019;6(3):18–22. https://doi.org/10.33545/gynae.2019.v3.i4a.285
3. Yousif HM, Mohammed RA, Missawi HM, Elsawal ZM, Albasri AM. Histopathological patterns of primary malignant ovarian neoplasms in different age groups in Al Madinah Almunawwarah region, KSA. *J Taibah Univ Med Sci*. 2019;14(1):73–78. https://doi.org/10.1016/j.jtumed.2018.11.005
4. Mukherjee B, Das AK. Ovarian tumors in patients aged up to 20 years: a longitudinal study conducted in a tertiary care centre, West Bengal, India. *Int J Reprod Contracept Obstet Gynecol*. 2021;10(10):3851–6. https://doi.org/10.18203/2320-1770.ijrcog20213849
5. Upreti P, Reddy GT. A retrospective observational study of clinicopathological spectrum of ovarian tumors. *Ind J OBGYN*. 2021;7(2):157–62. https://doi.org/10.21276/obgyn.2021.7.2.9
6. Bindal J, Bankey S. Prevalence of ovarian tumours among ovarian mass lesions in Gajra Raja Medical College, Gwalior, India. *Int J Reprod Contracept Obstet Gynecol*. 2017;6:3907–10. https://doi.org/10.18203/2320-1770.ijrcog20174032
7. Qureshi N, Memon FP, Mughal A. Histological pattern of ovarian tumor in reproductive age group in a tertiary care hospital. *Pak J Med Health Sci*. 2023;17(2):231–33. https://doi.org/10.53350/pjmhs2023172231
8. Mehra P, Aditi S, Prasad KM, Bariar NK. Histomorphological analysis of ovarian neoplasms according to the 2020 WHO classification of ovarian tumors: a distribution pattern in a tertiary care center. Cureus. 2023;15(4):e38273. https://doi.org/10.7759/cureus.38273
9. Mahaur B, Singh K, Yadav M, Meena R. Evaluation of ovarian mass in reproductive age group. Int J Med Sci Curr Res. 2024;7(2):116–120.
10. Chawla AA, Sherwani RK, Rehman S. Histopathological insights into ovarian tumors: a case series perspective. Indian J Pathol Microbiol. 2024;67(1):101–104. https://doi.org/10.18231/j.ijogr.2024.089
11. Nivedha A, Onimi S. A clinicopathological study on ovarian masses and their tumor markers in adolescents. Int J Clin Obstet Gynaecol. 2019;6(3):18–22. https://doi.org/10.33545/gynae.2019.v3.i4a.285
12. Jagan A, Surapaneni T, Murthy S. Clinicopathological study of ovarian tumors in South India. Int J Res Med Sci. 2020;8(7):2573–2577.

13. Pandey S, Gupta A, Gaur A. Pattern and clinicopathological correlation of adnexal masses: experience from a tertiary care center. J Adv Med Pharm Sci. 2023;15(5):266–272.
14. Farag NH, Elsherif AM, Ibrahim SA, Salem AA. Histopathological patterns of ovarian neoplasms in different age groups. Middle East Fertil Soc J. 2022;27(1):1–7. https://doi.org/10.7759/cureus.33092
15. Kashif Z, Shaheen R, Shahid A. Histopathological analysis of ovarian lesions at a tertiary care hospital. Pak J Med Health Sci. 2021;15(2):417–419. https://doi.org/10.53350/pjmhs211561397
16. Al-Sabbagh WRM, Majeed AY, Hamad SA. Histopathological study of ovarian masses in reproductive age group women in Kerbala, Iraq. J Fac Med Baghdad. 2023;65(2):602–607 https://doi.org/10.5455/rmj.20230121062503