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Original Research Article

Study of Patterns of Ovarian Cystic Lesions: Experience from a Rural Tertiary Care Hospital

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Abstract

Introduction: Ovarian cystic lesions represent a diverse group of gynecological disorders ranging from functional cysts to malignant neoplasms. Accurate histopathological evaluation is essential for diagnosis and management, particularly in resource-limited rural settings.

Materials and Methods: This study analyzed 114 cases of ovarian cystic lesions at BKL Walawalkar Rural Medical College & Hospital, Ratnagiri. Each case was assessed for demographic profile, clinical presentation, laterality, histological type, and cyst size. Statistical correlations were performed between lesion size and histological type.

Results: The majority of patients were aged 41–60 years (57%). Abdominal pain (24.6%) and abnormal uterine bleeding (12.3%) were the most common presenting symptoms. Unilateral lesions predominated (88.6%). Non-neoplastic lesions (63.2%) were more frequent than neoplastic ones (36.8%). Follicular cysts were the most common histological type (28.1%), followed by corpus albicans (14%) and corpus luteal cysts (10.5%). Malignant lesions accounted for 11.4% of cases and were significantly associated with larger cyst size (>10 cm, $p < 0.01$).

Conclusion: Ovarian cystic lesions are predominantly benign, with follicular cysts being the most frequent. Malignant lesions, though less common, tend to present at larger sizes, underscoring the importance of early detection and histopathological evaluation. Systematic clinicopathological assessment remains vital for improving patient outcomes in rural healthcare settings.

Keywords: Ovarian cystic lesions, follicular cyst.

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Introduction

Ovarian cystic lesions constitute a heterogeneous group of gynecological disorders that encompass both functional and pathological entities. They are among the most frequently encountered adnexal masses in women of reproductive and postmenopausal age groups, with presentations ranging from incidental findings on imaging to symptomatic cases requiring surgical intervention[1]. Functional cysts such as follicular and corpus luteal cysts are generally self-limiting, whereas neoplastic lesions—including serous and mucinous cystadenomas, teratomas, and malignant adenocarcinomas—carry significant clinical implications[2]. The clinical spectrum is broad, with patients presenting with abdominal pain, abnormal uterine bleeding, menstrual irregularities, or palpable abdominal masses[3].Histopathological examination remains the cornerstone for accurate diagnosis, as it allows differentiation between benign, borderline, and malignant lesions[4]. This distinction is critical because ovarian malignancies, though less frequent, are associated with high

mortality rates due to late-stage detection[5]. Globally, ovarian cancer ranks as the eighth most common cancer among women and is a leading cause of gynecological cancer-related deaths, underscoring the importance of early recognition and intervention[6]. Analyzing the clinicopathological spectrum of ovarian cystic lesions provides valuable insights into their age distribution, laterality, clinical presentation, and histological diversity. Such studies not only highlight the predominance of benign lesions but also identify subsets of malignant cases that warrant heightened clinical vigilance[7].

Furthermore, correlating lesion size with histological type can aid in predicting the likelihood of neoplastic transformation, thereby guiding surgical decision-making and patient counselling [8]. In resource-limited rural settings, where access to advanced diagnostic modalities may be restricted, systematic clinicopathological evaluation plays a pivotal role in improving patient outcomes[9]. With this background present study was planned to analyze the clinicopathological spectrum of ovarian cystic lesions

Aim & Objectives

Aim: To analyze the clinicopathological spectrum of ovarian cystic lesions,

Objectives

1. To study the age distribution, clinical presentation, laterality of patients presenting with ovarian cystic lesions
2. To classify ovarian cystic lesions histologically and analyze their relative frequencies.
3. To analyze the size distribution of ovarian cystic lesions (<5 cm, 5–10 cm, >10 cm) and correlate lesion size with histological type.
4. To highlight the predominance of benign lesions while identifying the subset of malignant lesions that require early detection and intervention.

Material and Methods

Present study is a cross sectional prospective study conducted on patients presenting with ovarian cystic lesions at BKL Walawalkar Rural Medical College & Hospital, Ratnagiri. A total of 114 cases were included based on predefined inclusion and exclusion criteria. All patients underwent thorough clinical evaluation, including history taking, physical examination, and relevant investigations.

The specimens obtained during surgery were subjected to gross and microscopic examination in the Department of Pathology. Each case was analyzed for demographic details, clinical presentation, laterality, histological type, and size distribution of the cystic lesion. Statistical analysis was performed to establish correlations between histological type and lesion size, as well as between neoplastic and non-neoplastic categories.

Inclusion Criteria: All patients with ovarian cystic lesions confirmed clinically, radiologically, or surgically and subsequently subjected to histopathological examination were included.

Exclusion Criteria: Cases with inadequate tissue samples, incomplete clinical data, or lesions not primarily arising from the ovary were excluded.

Procedure: Each patient was assessed for age, presenting symptoms, and relevant gynecological history. Particular attention was given to complaints such as abdominal pain, abnormal uterine bleeding, lump in abdomen, and menstrual irregularities. Laterality of the lesion (unilateral or bilateral) was recorded.

Specimen Collection: Surgical specimens were obtained either through cystectomy, oophorectomy, or hysterectomy with salpingo-oophorectomy, depending on the clinical indication. Each specimen was labeled with patient details and transported promptly to the pathology department.

Gross Examination: The cystic lesions were examined macroscopically for size, shape, external surface, wall thickness, and contents (serous, mucinous, hemorrhagic, or solid areas). Measurements were taken in centimeters, and lesions were categorized into small (<5 cm), medium (5–10 cm), and large (>10 cm).

Tissue Processing: Representative sections were taken from the cyst wall, solid areas, and any suspicious regions. These were fixed in 10% neutral buffered formalin, processed through graded alcohols, cleared in xylene, and embedded in paraffin wax.

Microscopic Examination: Sections of 4–5 µm thickness were cut and stained with hematoxylin and eosin (H&E). Histological classification was performed according to standard WHO guidelines, identifying benign, borderline, and malignant lesions. Each case was documented with demographic profile, clinical presentation, laterality, histological type, and cyst size. The relative frequencies of different histological types were calculated.

Statistical Analysis: Data were analyzed using chi-square tests to determine associations between variables. Specifically, correlations between lesion size and histological type, and between laterality and neoplastic versus non-neoplastic categories, were tested. A p-value <0.05 was considered statistically significant.

Observation and Result

Table 1: Demographic and Clinical Profile

Sr No	Variables	Number of cases n=114	Percentage 100 %
1	Age (Years)		
	1. ≤20	4	3.5 %
	2. 21 to 40	36	31.6 %
	3. 41 to 60	65	57.0 %
	4. >60	9	7.9 %
2	Presenting Symptoms		
	1. Abnormal uterine bleeding	14	12.3 %
	2. Pain in abdomen	28	24.6 %
	3. Lump in abdomen	9	7.9 %
	4. Tubectomised	8	7.0 %
	5. Pain in abdomen &tubectomised	4	3.5 %
	6. Abnormal bleeding &tubectomised	6	5.3 %
	7. Meno-metrorrhagia	22	19.3 %
	8. Multiple uterus fibroid	3	2.6 %
	9. Dysmenorrhea	4	3.5 %
	10. Pain in abdomen &menometrorrhagia	3	2.6 %
	11. Vaginal discharge	2	1.8 %
	12. Disfunctional uterine bleeding	1	0.9 %
	13. Other symptoms	10	8.8 %
3	Laterality of Ovarian Cystic Lesions		
	1. Unilateral	101	88.6 %
	2. Bilateral	13	11.4 %

Out of 114 cases studied, the majority of patients were between 41–60 years of age (57%), followed by those aged 21–40 years (31.6%). Only 3.5% were ≤20 years, and 7.9% were above 60 years. The most common presenting symptom was pain in abdomen (24.6%), followed by abnormal uterine bleeding (12.3%) and meno-metrorrhagia (19.3%). Other symptoms such as lump in abdomen (7.9%), dysmenorrhea (3.5%), and vaginal discharge (1.8%) were less frequent.

Regarding laterality, unilateral ovarian cystic lesions were predominant (88.6%), while bilateral lesions were relatively rare (11.4%).

Table 2: Neoplastic vs Non-Neoplastic Lesions

Sr No	Type	Unilateral n (%)	Bilateral n (%)	Total N (%)	Chi Square	P value
1	Neoplastic	36 (31.6%)	6 (5.3%)	42 (36.8%)	0.54	0.459 (NS)
2	Non-Neoplastic	65 (57.0%)	7 (6.1%)	72 (63.2%)	df = 1	
Total N (%)		101 (88.6%)	13 (11.4%)	114 (100%)		

Among the ovarian cystic lesions, non-neoplastic lesions were more common (63.2%) compared to neoplastic lesions (36.8%). Unilateral presentation was again dominant in both groups: 31.6% of neoplastic and 57% of non-neoplastic lesions were unilateral. Bilateral involvement was seen in 5.3% of neoplastic and 6.1% of non-neoplastic cases.The chi-square test showed no statistically significant difference (p = 0.459) between neoplastic and non-neoplastic lesions in terms of laterality.

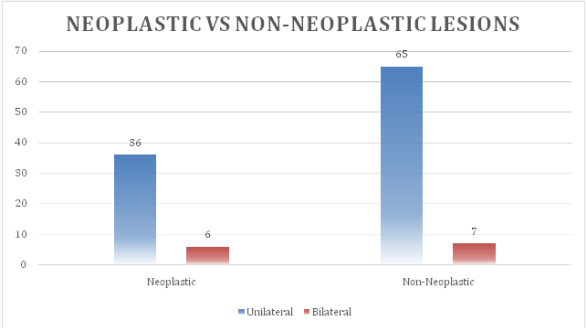

Figure 1: Neoplastic vs Non-Neoplastic Lesions

Table 3: Histological Types

Sr No	Histological Types	Number of cases n=114	Percentage

			100 %
1	Follicular Cyst	32	28.1 %
2	Teratoma	9	7.9 %
3	Mucinous cystadenoma	12	10.5 %
4	Heamorrhagic cyst	2	1.8 %
5	Mucinous Adenocarcinoma	2	1.8 %
6	Serous Adenocarcinoma	6	5.3 %
7	Serous Cystadenoma	7	6.1 %
8	Corpus Albicans	16	14.0 %
9	Endometriosis cyst	2	1.8 %
10	Simlpe Cyst	8	7.0 %
11	Corpus Leuteal Cyst	12	10.5 %
12	Serous Cystadenocarcinoma	4	3.5 %
13	SeroMucinouscystadenoma	1	0.9 %
14	Fibroma	1	0.9 %

The most frequent histological type was the follicular cyst (28.1%), followed by corpus albicans (14%), mucinous cystadenoma (10.5%), and corpus luteal cyst (10.5%).Neoplastic lesions such as teratoma (7.9%), serous cystadenoma (6.1%), and serous adenocarcinoma (5.3%) were also observed. Malignant types like mucinous adenocarcinoma (1.8%), serous cystadenocarcinoma (3.5%), and rare lesions such as fibroma (0.9%) were less common. This distribution highlights that benign cystic lesions dominate the spectrum, with malignant lesions forming a smaller proportion.

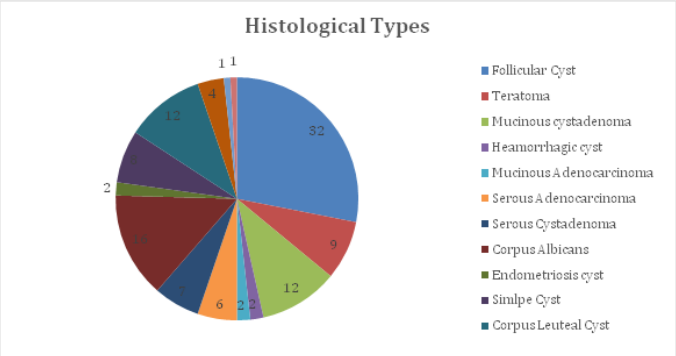

Figure 2: Histological Types

Table 4: Size Distribution of Lesions

Sr No	**Histological Types**	**Small (<5 cm)**	**Medium (5–10 cm)**	**Large (>10 cm)**	**Total N (%)**
1	Follicular Cyst	20 (17.5%)	10 (8.8%)	2 (1.8%)	32 (28.1%)
2	Corpus Luteal Cyst	8 (7.0%)	3 (2.6%)	1 (0.9%)	12 (10.5%)
3	Teratoma	2 (1.8%)	5 (4.4%)	2 (1.8%)	9 (7.9%)
4	Mucinous Cystadenoma	2 (1.8%)	6 (5.3%)	5 (4.4%)	13 (11.4%)
5	Serous Cystadenoma	2 (1.8%)	4 (3.5%)	1 (0.9%)	7 (6.1%)
6	Malignant Lesions	1 (0.9%)	4 (3.5%)	8 (7.0%)	13 (11.4%)
7	Endometriotic Cyst	0 (0%)	2 (1.8%)	0 (0%)	2 (1.8%)
8	Others	1 (0.9%)	1 (0.9%)	0 (0%)	2 (1.8%)
Total N (%)		36 (31.6%)	35 (30.7%)	19 (16.7%)	114 (100%)
Statistical test		$\chi^2 = 28.6$, df = 14, $p < 0.01$ (S)			

When classified by size, small cysts (<5 cm) were most common (31.6%), followed by mediumsized cysts (30.7%), and large cysts (>10 cm) (16.7%).Follicular cysts were mostly small (17.5%), while mucinous cystadenomas and malignant lesions tended to be larger, with 7% of malignant lesions exceeding 10 cm. The chi-square test showed a statistically significant association ($p < 0.01$) between histological type and cyst size, indicating that certain lesion types are more likely to present at larger dimensions.

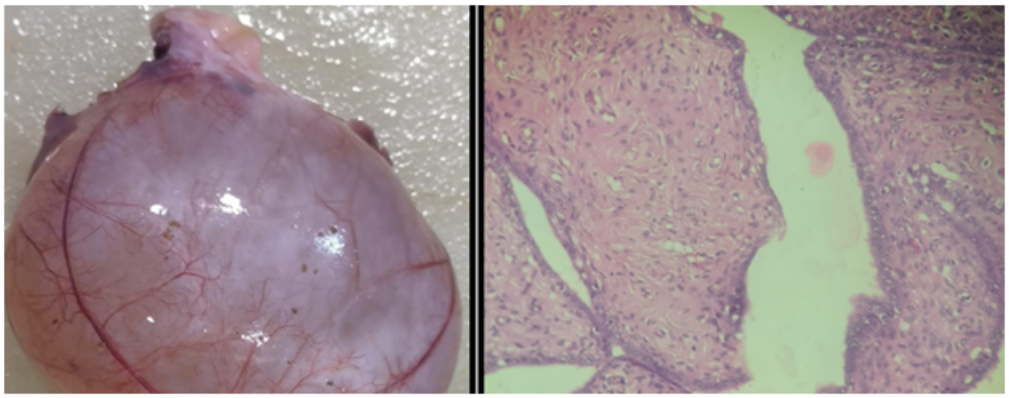

Figure 3: Serous cystadenoma

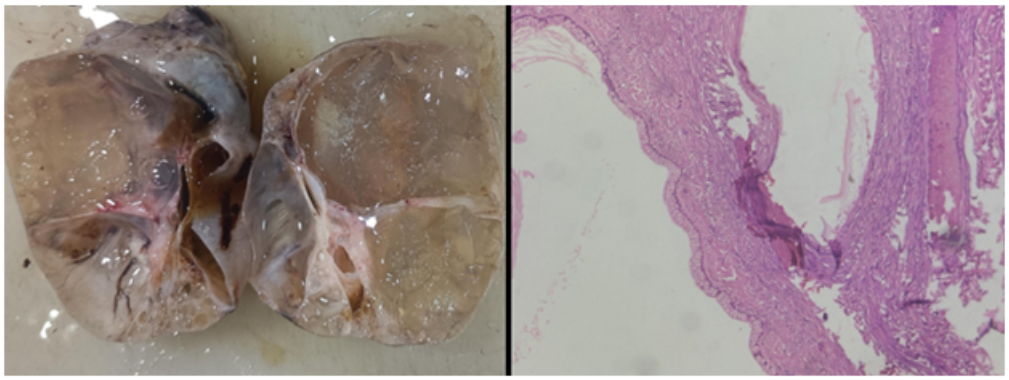

Figure 4: Mucinous cystadenoma

Discussion

The present study, conducted on 114 cases of ovarian cystic lesions, provides important insights into the clinicopathological spectrum of these conditions in a rural Indian setting. The majority of patients were between 41–60 years of age, with abdominal pain and abnormal uterine bleeding being the most common presenting complaints. Unilateral lesions predominated, and benign cystic lesions were more frequent than malignant ones. Follicular cysts emerged as the most common histological type, while malignant lesions formed a smaller subset, often presenting at larger sizes.

When compared with other studies, our findings show both similarities and differences. The predominance of benign lesions is consistent with the observations of Gupta et al., who reported functional cysts as the most frequent ovarian lesions in their cohort [3]. Likewise, Pradhan and Sinha emphasized that follicular and corpus luteal cysts accounted for a significant proportion of cases in reproductive-age women[1]. However, the age distribution in our study, with peak incidence in the 41–60 year group, differs slightly from reports by Sharma et al., who found a higher prevalence in younger reproductive-age women in rural India[9]. The predominance of unilateral lesions (88.6%) is in agreement with Rosai, who noted that most functional and benign neoplastic cysts are unilateral[4]. Histologically, the frequency of follicular cysts (28.1%) and corpus luteal cysts (10.5%) in our study is comparable to WHO classification data presented by Kurman et al., which highlight functional cysts as the most common category[2]. Malignant lesions, though less frequent (11.4%), showed a tendency to present at larger sizes (>10 cm), a finding corroborated by Bhatla and Denny, who noted that advanced ovarian malignancies often manifest as large adnexal masses [8]. The possible mechanisms underlying these results can be explained by the pathophysiology of ovarian cyst formation.

Functional cysts such as follicular and corpus luteal cysts arise due to disturbances in normal ovulatory processes, often resolving spontaneously but occasionally persisting and enlarging[2]. Neoplastic cysts, including mucinous and serous cystadenomas, develop from epithelial proliferation, while teratomas originate from germ cell differentiation. Malignant lesions, such as adenocarcinomas, are associated with genetic mutations, abnormal cell cycle regulation, and angiogenesis, which contribute to their larger size and aggressive behavior[5].

The significant correlation between cyst size and histological type observed in this study ($p < 0.01$) supports the theory that malignant lesions tend to grow larger due to unchecked proliferation and reduced apoptotic control, while functional cysts remain relatively small and self-limiting [6].

Conclusion

Present study demonstrates that ovarian cystic lesions are predominantly benign, with follicular cysts being the most common type. Malignant lesions, though less frequent, tend to present at larger sizes, underscoring the importance of early detection and histopathological evaluation.

Comparative analysis with other studies confirms the predominance of functional cysts across populations, while variations in age distribution and lesion size highlight the influence of demographic and biological factors. Overall, systematic clinicopathological assessment remains essential for accurate diagnosis, timely intervention, and improved patient outcomes, particularly in resource-limited rural settings.

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