Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 2s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Unveiling The Spectrum : A Clinico-Pathological Analysis Of Ovarian Cysts

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Cite this paper as: Devyani Bhagirath Gadakh, Sujit Hanumant Gore, Snehal Narayan Bansode, Dr. Vijay Dombale, Prutha Sharad Aware, (2025) Unveiling The Spectrum : A Clinico-Pathological Analysis Of Ovarian Cysts. *Journal of Neonatal Surgery*, 14 (2s), 661-669.

ABSTRACT

Background: Ovarian cysts are among the most prevalent gynecological conditions, manifesting across all age groups. These cysts range from benign functional types to potentially malignant lesions. Clinico-pathological evaluation is essential for appropriate diagnosis, management, and prognosis.

Objectives: To study the clinico-pathological profile of ovarian cysts based on histopathological analysis, clinical presentation, and demographic characteristics.

Methods:A retrospective observational study was conducted in the Department of Pathology, BKL Walawalkar Hospital, Dervan, from January 2020 to August 2021. A total of 114 cases of ovarian cysts were analyzed. Data were collected from histopathology records, radiology reports, and patient files. Parameters studied included age distribution, laterality, histopathological type, and clinical presentation.

Results: The majority of ovarian cysts occurred in the 41–50 years age group (46.49%). Non-neoplastic cysts (63.15%) were more prevalent than neoplastic (36.84%). The most common histological types were follicular cysts (28.07%), corpus albicans (14.03%), and corpus luteal cysts (10.52%). Malignant lesions constituted only 10.52% of the total. Most cysts were unilateral (88.59%), and abdominal pain (24.56%) and menometrorrhagia (19.29%) were the predominant symptoms.

Conclusions: Benign and non-neoplastic ovarian cysts are most common in perimenopausal women. Histopathological evaluation, combined with clinical and radiological assessment, is crucial in ensuring accurate diagnosis and guiding treatment decisions.

Keywords: *Ovarian cysts, Histopathology, Benign lesions, Non-neoplastic cysts, Perimenopausal women*

1. INTRODUCTION

Ovarian cysts are one of the most frequently encountered gynecological conditions, presenting in women of all age groups. These cysts are fluid-filled sacs within or on the surface of the ovary, and their clinical importance varies from being entirely benign to potentially malignant. Understanding the clinico-pathological profile of these cysts is essential for early diagnosis, appropriate treatment, and prevention of complications, especially in the Indian context where healthcare access and regional variations can affect outcomes.

The ovary is a dynamic organ composed of germinal and somatic cells, and due to its cyclic activity, it is prone to a variety of cystic lesions. Functional cysts are especially common among women of reproductive age and often resolve spontaneously

without medical intervention [1]. In contrast, complex or persistent cysts may require surgical evaluation, particularly in postmenopausal women, where the risk of malignancy is significantly higher [2].

A retrospective study conducted in Tamil Nadu over three years observed that among 53 women diagnosed with ovarian cysts, the most common type was serous cystadenoma (39.6%), followed by granulosa cell tumors (13.2%) and simple ovarian cysts (11.3%). The majority of these cases occurred in women aged 20–40 years, indicating the predominance of benign lesions in the reproductive age group [1]. These findings mirror broader clinical trends in India, where benign cysts outnumber malignant lesions, particularly in younger women.

Another Indian study from the Kashmir Valley analyzing 160 patients revealed a mean age of presentation at 33.9 years. Benign tumors constituted 71.87% of all cases, with serous and mucinous cystadenomas being the most prevalent. However, malignant tumors were also observed in 28.12% of cases, suggesting potential regional differences in risk factors and pathology [3]. These findings highlight the importance of localized data in understanding ovarian pathology.

Ovarian cysts often remain asymptomatic and are detected incidentally during pelvic imaging. Ultrasonography has significantly improved the ability to detect both simple and complex cysts during routine examinations for unrelated complaints such as abdominal pain or irregular menstruation [4]. In fact, studies show that up to 7.8% of fertile-aged women and 2.5% to 18% of postmenopausal women may harbor asymptomatic cysts identified on ultrasonography [5].

Despite high detection rates, most simple cysts—especially those measuring under 5 cm—are benign and do not require surgical management. This has led to an increasing shift toward conservative monitoring, especially in the absence of alarming features like septations, solid components, or papillary projections [6]. These features are considered while evaluating malignancy risk, yet studies have shown that even complex cysts in postmenopausal women often do not correlate with traditional cancer risk factors such as family history or low parity [6].

In extreme cases, cysts can grow to massive sizes. A striking example from South India documented a 66-year-old woman with a 23 kg serous cystadenoma, causing significant abdominal distension and disability. Despite its size, the cyst was benign and successfully removed via laparotomy [7]. This case underscores the importance of timely diagnosis, particularly in underserved regions where patients may delay seeking care.

India's traditional medicine system, Ayurveda, has also contributed alternative perspectives on cyst management. Several case studies demonstrate the effective use of Ayurvedic formulations in reducing cyst size and alleviating symptoms, with no adverse effects. One case involving an 18-year-old woman showed significant reduction in cyst dimensions after three months of treatment based on the "KaphaDushti" model [8]. Similarly, a 35-year-old woman with a hemorrhagic ovarian cyst showed substantial clinical improvement after following an Ayurvedic protocol tailored to her constitutional type [9].

The increasing prevalence of ovarian cysts in young Indian women is attributed to various lifestyle and hormonal factors. Sedentary behavior, poor dietary habits, and stress are known to influence the hormonal milieu and contribute to the development of cysts. A recent case study documented complete resolution of a 37×33 mm cyst in a young woman following a three-month regimen of Ayurvedicherbomineral therapy, emphasizing the potential of integrative approaches in management [10].

Ovarian cysts exhibit a wide clinico-pathological spectrum influenced by age, hormonal status, and geographic variation. Benign cysts are more common in younger women, while postmenopausal cysts warrant careful evaluation due to increased malignancy risk. In the Indian setting, a combination of early ultrasonographic diagnosis, histopathological assessment, and—in selected cases—Ayurvedic treatment, offers a comprehensive framework for managing these prevalent gynecological entities.

The study aimed to evaluate the clinico-pathological profile of ovarian cystic lesions, focusing on their age distribution, laterality, histological types, and clinical presentation, to aid in accurate diagnosis and management.

2. METHODOLOGY

1. Study Design

This was a retrospective observational study conducted to evaluate the clinico-pathological profile of ovarian cystic lesions using histopathology records and preserved tissue samples.

2. Study Setting

The study took place in the Department of Pathology at BKL Walawalkar Hospital and Rural Medical College, Dervan, a tertiary care center serving a rural population.

3. Study Duration

All eligible cases received between January 2020 and August 2021 were included, covering a total duration of 20 months.

4. Participants – Inclusion and Exclusion Criteria

Inclusion criteria were all ovarian cystic lesions (neoplastic and non-neoplastic) confirmed radiologically and histologically. Poorly fixed or unfixed specimens were excluded.

5. Study Sampling

Purposive sampling was used, including all qualifying ovarian cyst cases submitted to the pathology department during the study period.

6. Study Sample Size

A total of 114 ovarian cyst cases that met the inclusion criteria were included in the final analysis.

7. Study Groups

Cases were grouped into neoplastic (benign, borderline, malignant) and non-neoplastic categories based on histopathological findings.

8. Study Parameters

Key parameters studied included patient age, laterality of cyst, size, clinical presentation, and histological subtype.

9. Study Procedure

Tissue specimens were fixed in formalin, processed, sectioned, and stained with Hematoxylin and Eosin, then examined microscopically.

10. Study Data Collection

Data were retrieved from histopathology records, radiology reports, and patient files, then compiled in a structured format.

11. Data Analysis

Descriptive statistics were performed using Excel and SPSS to summarize frequencies, percentages, and mean values.

12. Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee, and patient confidentiality was strictly maintained.

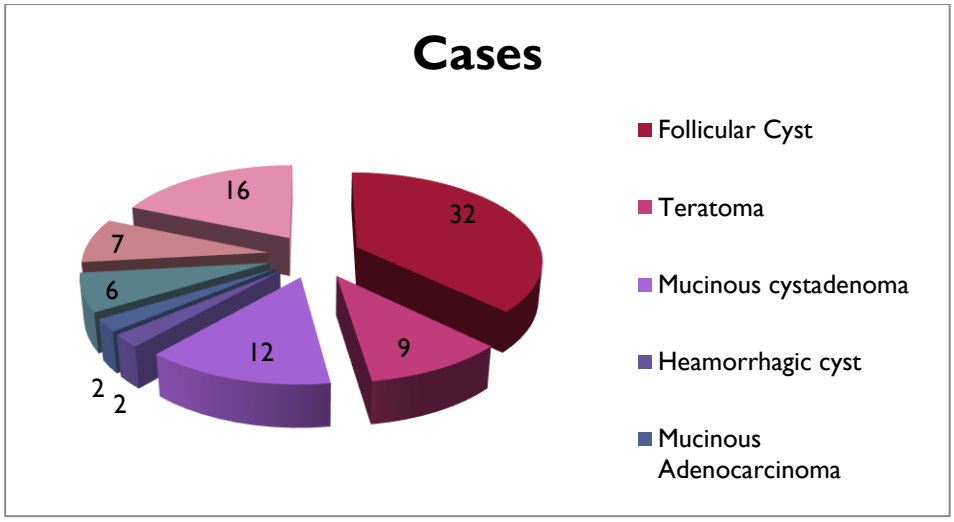
3. RESULTS

1. Age Incidence of Ovarian Cyst

The highest incidence of ovarian cysts was found in the 41–50 years age group (46.49%), followed by 31–40 years (22.80%) (Table1).

Table 1: Age Incidence of Ovarian Cyst

Age Range	No.of Cases	Percentage
0-10	0	0.00%
11-20	04	3.50%
21-30	10	8.77%
31-40	26	22.80%
41-50	53	46.49%
51-60	12	10.52%
61-70	6	5.26%
71-80	3	2.63%
Above 80	0	0.00%

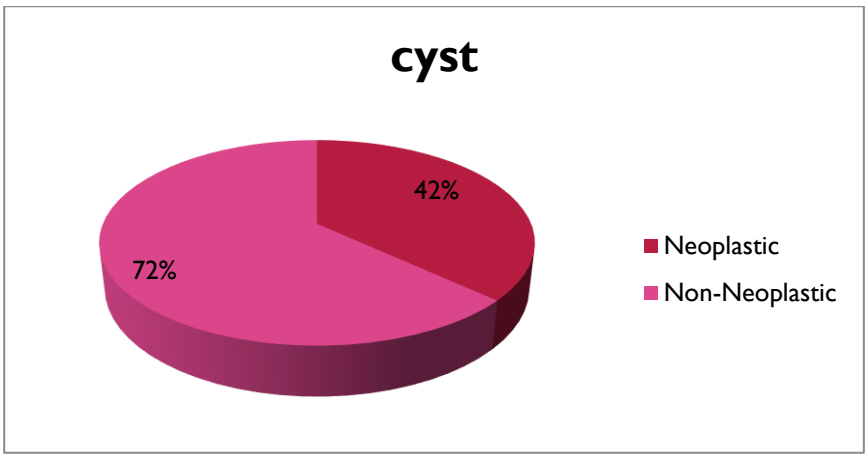


2. Incidence of Neoplastic and Non-Neoplastic Ovarian Cysts

Among 114 cases, non-neoplastic cysts were more common (63.15%) than neoplastic ones (36.84%) (Table2).

Table 2: Incidence of Neoplastic and Non-Neoplastic Ovarian Cysts

Types	**Cyst**	**Percentage**
Neoplastic	42	36.84%
Non-Neoplastic	72	63.15%
Total	114	100%



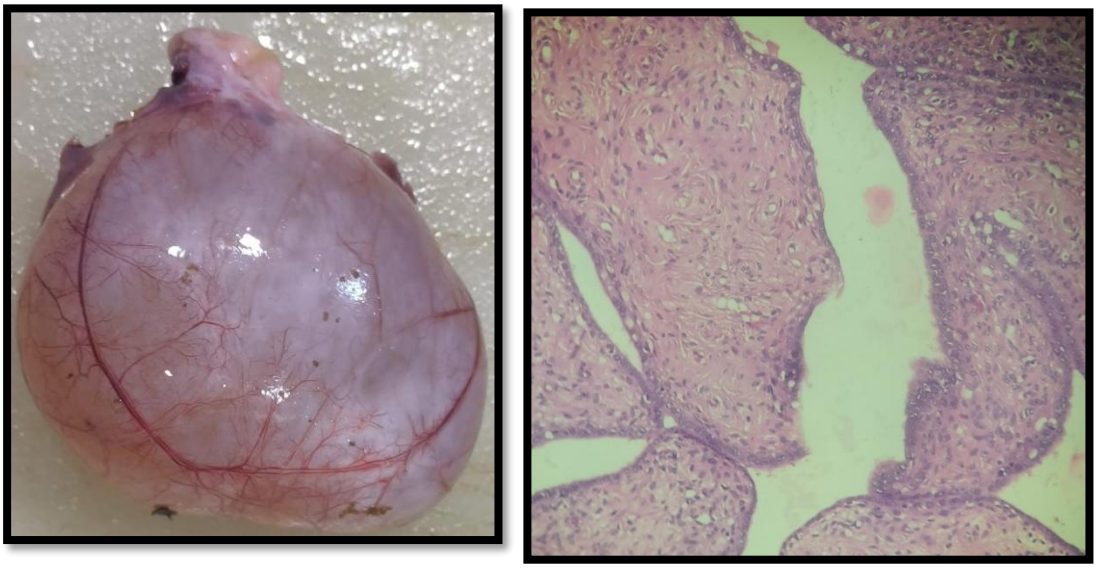
3. Histopathological Diagnosis of Ovarian Cysts

Follicular cysts (28.07%) and corpus albicans (14.03%) were the most common types observed (Table 3).

Table 3: Histopathological Diagnosis of Ovarian Cysts

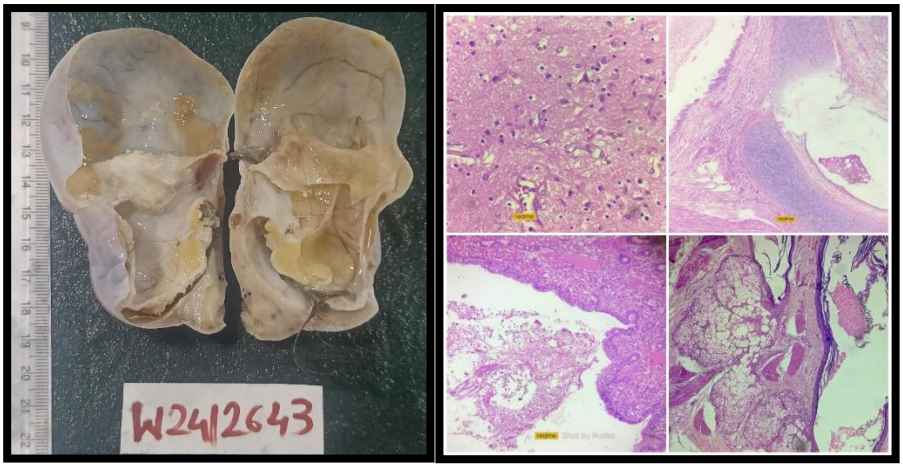
Histological Types	**Cases**	**Percentage**
Follicular Cyst	32	28.07%
Teratoma	9	7.89%
Mucinous cystadenoma	12	10.52%

Heamorrhagic cyst	2	1.75%
Mucinous Adenocarcinoma	2	1.75%
Serous Adenocarcinoma	6	5.26%
Serous Cystadenoma	7	6.14%
Corpus Albicans	16	14.03%
Endometriosis cyst	2	1.75%
Simlpe Cyst	8	7.01%
Corpus Leuteal Cyst	12	10.52%
Serous Cystadenocarcinoma	4	3.50%
SeroMucinouscystadenoma	1	0.87%
Fibroma	1	0.87%
Total	114	100%

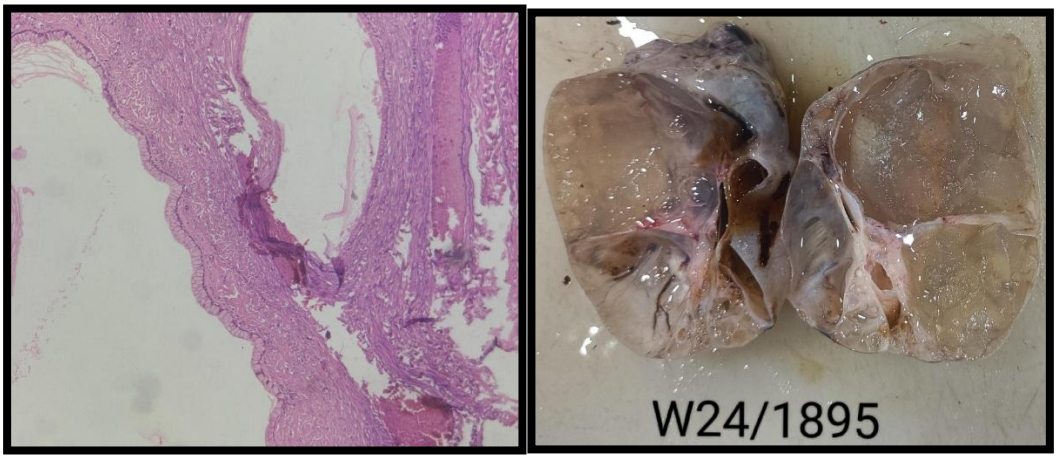


Serous cystadenoma

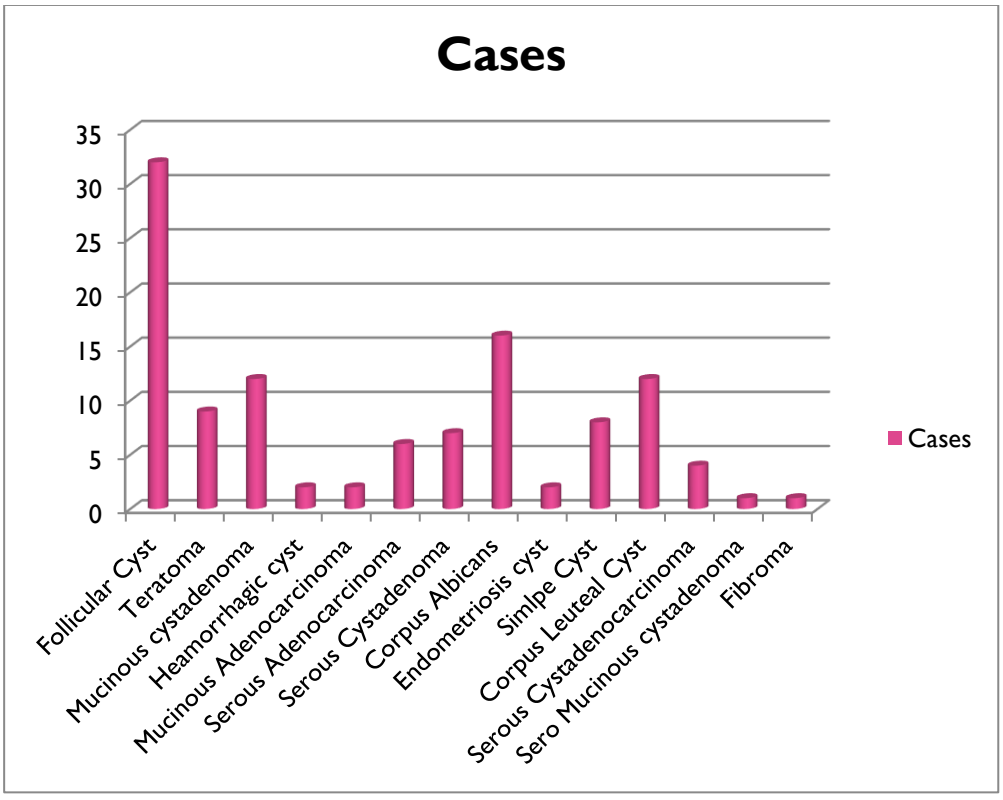
Hemorrhagic cyst



Teratoma



Mucinous cystadenoma

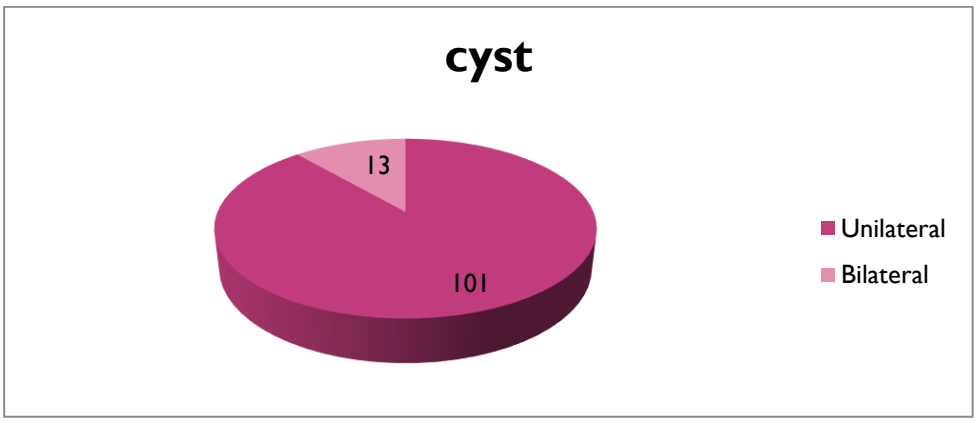


4. Laterality of Ovarian Cystic Lesions

Unilateral ovarian cysts accounted for 88.59% of cases, while bilateral cysts were present in only 11.40% (Table 4).

Table 4: Laterality of Ovarian Cystic Lesions

Sides	Cyst	Percentage
Unilateral	101	88.59%
Bilateral	13	11.40%
Total	114	100%

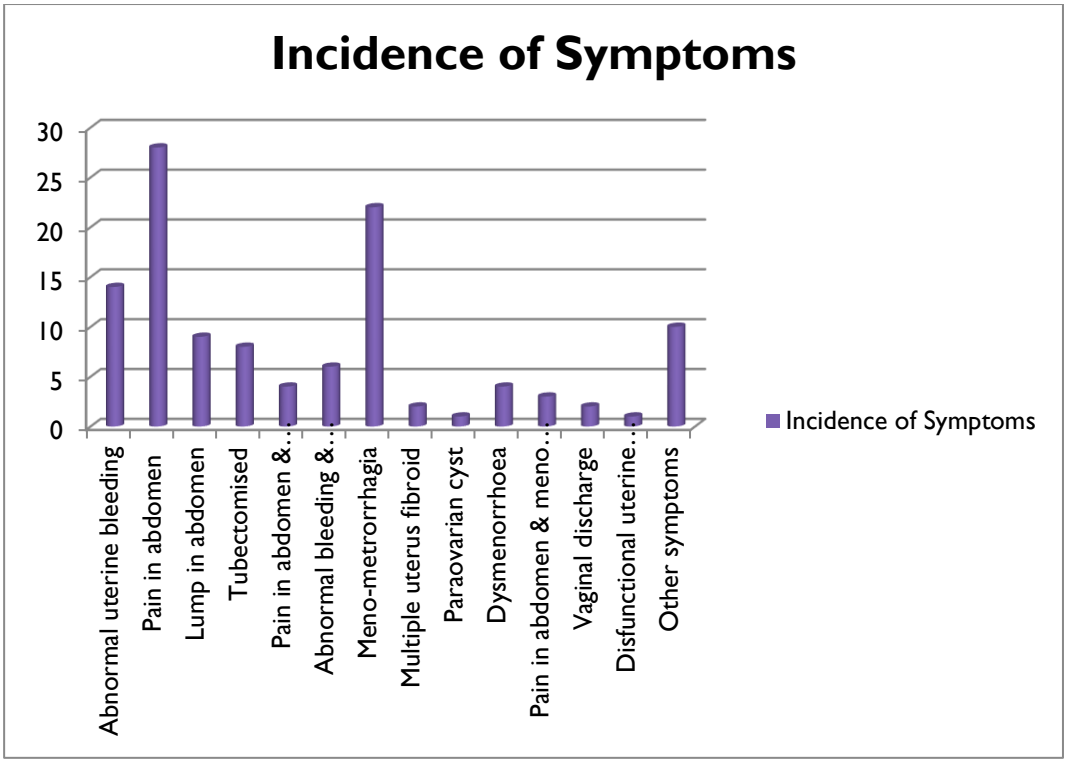


5. Presenting Symptoms of Ovarian Cystic Lesions

The most frequent presenting symptoms were abdominal pain (24.56%) and menometrorrhagia (19.29%) (Table5).

Table 5: Presenting Symptoms of Ovarian Cystic Lesions

Presenting Symptoms	Abbreviation	No.of Cyst	Percentage
Abnormal uterine bleeding	AUB	14	12.28%
Pain in abdomen	P/A	28	24.56%
Lump in abdomen	L/A	9	7.89%
Tubectomised	T	8	7.01%
Pain in abdomen&tubectomised	P/A+T	4	3.50%
Abnormal bleeding &tubectomised	AB + T	6	5.26%
Meno-metrorrhagia	M-M	22	19.29%
Multiple uterus fibroid	MUF	3	2.63%
Dysmenorrhea	D-M	4	3.50%
Pain in abdomen &menometrorrhagia	P/A + M-M	3	2.63%
Vaginal discharge	V-D	2	1.75%
Disfunctional uterine bleeding	DUB	1	0.87%
Other symptoms	O	10	8.77%
Total		114	100%



4. DISCUSSION

The present study evaluated the clinico-pathological profile of 114 ovarian cyst cases over a 20-month period, highlighting key demographic and histological patterns. The highest age incidence was observed in the 41–50 years group (46.49%), followed by the 31–40 years group (22.80%). This aligns with findings by Kant et al. (2016), who also reported a higher incidence of ovarian cysts among women in their 40s, indicating that perimenopausal women are more frequently affected due to hormonal fluctuations [3].

Non-neoplastic lesions constituted 63.15% of all cases in our study, consistent with Sweetha Singh et al. (2022), who reported a predominance of non-neoplastic cysts, especially in the reproductive age group [1]. This suggests that physiological cysts, such as follicular and corpus luteal cysts, remain common among women of reproductive and perimenopausal ages.

Histologically, follicular cysts (28.07%) were the most common, followed by corpus albicans (14.03%) and corpus luteal cysts (10.52%). This distribution supports previous reports by Kuivasaari-Pirinen and Anttila (2011), which noted that functional cysts are often detected incidentally and typically resolve spontaneously [4]. Our study observed fewer malignant tumors (10.52%) compared to benign and non-neoplastic lesions, which is also consistent with the findings of Kant et al., who recorded benign tumors in over 70% of their cases.

Regarding laterality, the present study showed that 88.59% of ovarian cysts were unilateral. This is comparable to findings in other studies where unilateral presentation is significantly more common than bilateral, further supporting the notion that most ovarian cysts are localized to a single ovary.

Clinically, abdominal pain (24.56%) and menometrorrhagia (19.29%) were the most common presenting symptoms. These findings are similar to those reported by Sujatha and Babu (2009), where abdominal discomfort and menstrual irregularities were frequently associated with ovarian masses [7].

Our study corroborates the patterns observed in earlier research, emphasizing the predominance of benign and non-neoplastic cysts in women aged 30–50 years. Regular monitoring and early histopathological evaluation remain critical in differentiating benign from malignant lesions and guiding appropriate management.

5. CONCLUSION

This study highlights that the majority of ovarian cysts are benign or non-neoplastic, particularly affecting women in their 30s and 40s. Follicular and corpus luteal cysts remain the most frequently encountered types, with malignant cases being relatively rare. Early detection through imaging and confirmatory histopathology is essential for optimal management. Unilateral cysts and symptoms such as abdominal pain and menstrual irregularities dominate the clinical presentation. The findings emphasize the need for region-specific data to guide tailored diagnostic and treatment approaches.

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