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HISTOPATHOLOGICAL STUDY OF NON-NEOPLASTIC AND NEOPLASTIC OVARIAN LESIONS IN A TERTIARY CARE HOSPITAL IN GUJARAT, INDIA

Pathology

Dr. Mayuri Bhalodi* Second Year Resident Doctor, GMERS Medical College Gotri, Vadodara *Corresponding Author

Dr. Savitri Chauhan Professor (HG), GMERS Medical College Gotri, Vadodara

Dr. Komal Patel Second Year Resident Doctor, GMERS Medical College Gotri, Vadodara

ABSTRACT

Background: The ovary is a vital organ of the female reproductive system, responsible for hormone production and the regulation of fertility. Ovarian lesions encompass a wide spectrum, ranging from non-neoplastic to neoplastic conditions that vary in presentation, prognosis and treatment. Due to the lack of specific symptoms in early stages, ovarian malignancies are often detected late, affecting overall outcomes. Histopathological analysis plays a pivotal role in the accurate diagnosis and categorization of ovarian lesions. **Methods:** A retrospective study was carried out in the Department of Pathology, GMERS Medical College and Hospital, Gotri, Vadodara (Gujarat), over a two-year period from April 2023 to March 2025. A total of 100 ovarian specimens were analyzed through gross examination and routine hematoxylin and eosin(H&E) staining. Cases were evaluated based on clinical history, age distribution, lesion type, frequency, and laterality. **Results:** Among the 100 cases, 93% were unilateral and 7% bilateral. Non-neoplastic cysts constituted the majority (60%), followed by benign neoplasms (36%), and borderline and malignant tumors (4%). The most affected age group was 40–59 years, accounting for 64% of the cases. **Conclusion:** Ovarian lesions, both non-neoplastic and neoplastic, present a diverse range of morphological patterns and are often associated with specific age-related incidence trends. Histopathology plays a crucial role in differentiating between non-neoplastic and neoplastic lesions, particularly in identifying malignant changes early, thereby facilitating timely and effective treatment.

KEYWORDS

Ovarian Lesions, Histopathology, Non-neoplastic Lesion, Malignant Tumors, Age Distribution

INTRODUCTION

The ovary plays a vital role in reproduction, being primarily responsible for the production of offspring. It is composed of germ cells and mesenchymal (stromal) cells, which possess totipotent and multipotent capabilities, respectively. Ovarian masses are common forms of neoplasms in women. Ovarian tumors that present in the reproductive age group are mostly benign while about 30% in the postmenopausal age group are malignant [1]. Ovarian enlargements, whether cystic or solid, can present at any age. These enlargements are broadly classified into non-neoplastic and neoplastic categories. Non-neoplastic lesions encompass a range of conditions such as simple follicular cysts, corpus luteal cysts, endometriotic (chocolate) cysts, haemorrhagic cysts with torsion, polycystic ovarian disease (PCOD), and various inflammatory processes. Ovarian cysts are commonly encountered lesions. They are amongst the most frequent cause of hospitalization and surgery in gynecologic practice.[2] Ovarian neoplasms often exhibit varied behavior and typically remain undetected until they reach a considerable size. This is primarily due to the reason that either the symptoms are vague or most of these are asymptomatic therefore they manifest over a time period due to no definite screening program.[3] Accurate diagnosis of various histological patterns is crucial for effective treatment and prognosis.[4] On gross examination, the presence of solid components within a tumor often raises suspicion for malignancy, while completely cystic lesions are more likely to be benign or non-neoplastic. However, Final diagnosis usually made on histopathological examination.

AIM AND OBJECTIVE

- To evaluate the histopathological spectrum of neoplastic and non-neoplastic ovarian lesions in a tertiary care hospital.
- To classify ovarian lesions into neoplastic and non-neoplastic based on histopathology.
- To study the frequency, age distribution, and laterality of these lesions.
- To study histopathological findings in various ovarian lesion.
- To provide diagnosis for further management of patient.

MATERIALS AND METHODS

This retrospective observational study was carried out in the Department of Pathology at GMERS Medical College and Hospital, Gotri, Vadodara, Gujarat, over a period of two years, from April 2023 to March 2025. A total of 100 ovarian specimens received from the Department of Obstetrics and Gynecology were included in the study. All specimens were subjected to a thorough gross examination, noting characteristics such as size, external surface, consistency, presence of cystic or solid areas, and other relevant features. Tissues were processed using standard histopathological protocols. Formalin-fixed specimens were embedded in paraffin blocks, sectioned at 3–5 microns thickness, and stained with Hematoxylin and Eosin (H&E) for microscopic evaluation.

Each case was assessed for patient age, laterality (unilateral or bilateral), and categorized into non-neoplastic, benign, borderline, and malignant lesions based on Histomorphological features. The findings were correlated with clinical history wherever available.

Nature of Specimens

- Solitary Salpingooophorectomy specimens, Unilateral or Bilateral
- Hysterectomy with Unilateral Salpingooophorectomy specimens
- Hysterectomy with Bilateral Salpingooophorectomy specimens

Inclusion Criteria:- All ovarian specimens received for histopathological examination.

Exclusion Criteria:- Poorly preserved specimens unsuitable for histological evaluation

RESULTS

A total of 100 specimens of ovarian lesions have been received for histopathological evaluation at our department & out of them, 93 lesions are unilateral and 7 lesions are bilateral. (Figure 1) 36% lesions are Benign Neoplasms, 60% lesions are Non neoplastic Cysts and 4% lesions are Borderline and Malignant Neoplasms.

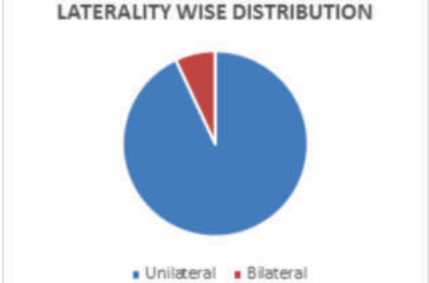

Figure1: Laterality Wise Distribution of Non-neoplastic and Neoplastic Ovarian Lesions

Histopathological Categorization of Various Ovarian Lesions is given below in Table no.1 and their Age-wise incidence is given below in Figure 2.

Table No-1: Histopathological Categorization of Various Ovarian Lesions

Sr No.	Histopathological Diagnosis or Category	Number of Cases and %
NON-NEOPLASTIC LESIONS		
1	Follicular Cysts	44
2	Corpus Luteal Cysts	8
3	Hemorrhagic Twisted Ovarian Cysts	3
4	Endometriosis & Chocolate Cysts	5
	Total	60
BENIGN NEOPLASM		
5	Serous Cystadenoma	18
6	Mature Cystic Teratoma	8
7	Mucinous Cystadenoma	5
8	Serous Cystadenofibroma	4
9	Brenner's Tumour	1
	Total	36
BORDERLINE & MALIGNANT NEOPLASM		
10	Borderline Mucinous Tumour	1
11	Papillary Serous Cystadenocarcinoma	1
12	Granulosa Cell Tumor	1
13	Dysgerminoma	1
	Total	4
Overall Total- 100		

Table 1 shows that Simple Follicular Cysts are the commonest among all non-neoplastic cystic lesion and often bilateral.

Among the different types of benign ovarian neoplasms, serous cystadenoma is the most frequently encountered and is often bilateral. The second most common benign tumor is the mature cystic teratoma, also known as a dermoid cyst, which typically presents unilaterally. These tumors can arise across a wide age range.

Other benign ovarian neoplasms, such as mucinous cystadenoma and serous cystadenofibroma, are also commonly observed in younger women. Brenner tumor, a rare variant of surface epithelial tumors of the ovary, is predominantly benign in most reported cases. This tumor is particularly seen between age group of 40-60 years.

Among 3 malignant ovarian lesion 1 case was papillary serous cystadenocarcinoma, 1 case was granulosa cell tumor of adult type and 1 case was Dysgerminoma.

Table No-2: Number of Neoplastic and Non-neoplastic Lesion of Ovary

Type of lesion	No of cases and %
Non-neoplastic	60
Neoplastic 1.Benign Neoplasm 2. Borderline & Malignant neoplasm	40 36 4
Total	100

Total 100 cases studied during study period, 60 were non-neoplastic and remaining 40 were neoplastic. (Table-2)

The highest number of cases were observed in the 40-59 years age group, accounting for 63% of the total, followed by the 21–39 years age group with 31%. The lowest number of cases occurred in the <20 years of age and >60 years. (Figure 2)

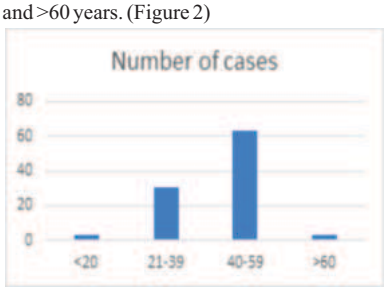

Figure 2: Age-wise Incidence of Various Ovarian Lesions

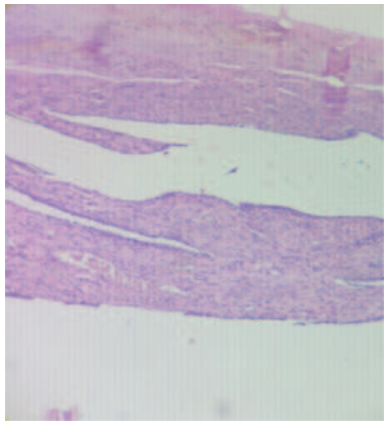

Image 1: Serous Cystadenoma (H&E Stain)

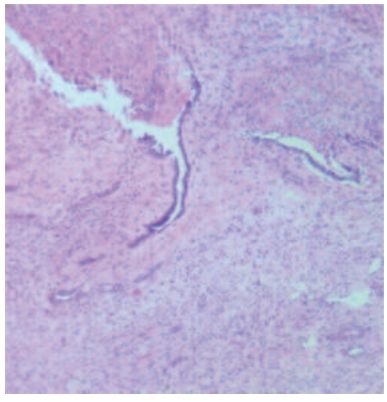

Image 2: Endometriosis (Chocolate Cyst) (H&E Stain)

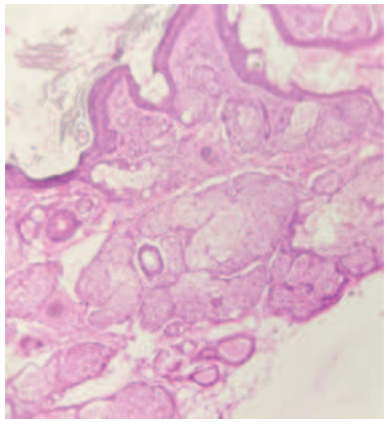

Image 3: Dermoid Cyst (H&E Stain)

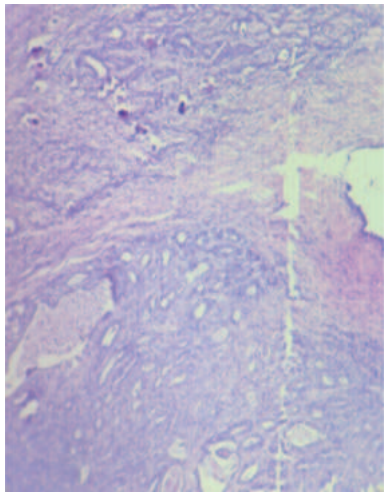

Image 4: Papillary Serous Cystadenocarcinoma (H&E Stain)

Image 5: Gross of Mucinous Cystadenoma of Ovary (H&E Stain)

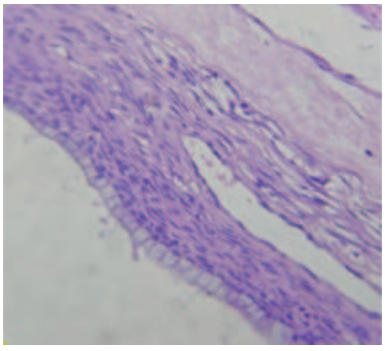

Image 6: Mucinous Cystadenoma (H&E Stain)

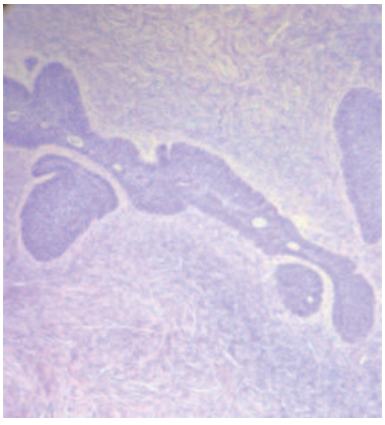

Image 7: Brenner's Tumour of Ovary (H&E Stain)

Discussion

Ovarian cancer is one of the most common gynecologic cancers that rank third after cervical and uterine cancer.[5] These tumors can develop at any age, including during infancy and childhood. Incidence rate, however increase with age, with the greatest number of new cases being diagnosed beyond 4th decade. [6].

In the present study, a total of 100 ovarian specimen were analysed over a two-year period, which was finally diagnosed on histo-pathological basis. Out of them, 93% cases show unilateral lesion and 7% cases show bilateral lesions. Couto F et al reported comparable findings in their stud, noting that 91.2% of the lesions were unilateral, while 8.7% were bilateral.[7] Laterality of ovarian neoplastic lesions in various studies in comparison with present study is illustrated in Table 3. So, [8,9,10,11] Unilateral lesions occur more frequently than bilateral lesions, and findings across multiple studies indicate comparable clinical outcomes.

Table No-3: Laterality of Ovarian Neoplastic Lesions in Various Studies

Name of study	Unilateral lesion	Bilateral lesion
Couto F et al	91.2%	8.7%
Prabhakar et al	90.9%	9.1%
Misra et al	95.5%	4.5%
Kar et al	73.13%	26.8%
Gurung P et al	88.15%	11.85%
Present study	93%	7%

In our study, the majority of patients (63%) were between 40 and 59 years of age, followed by those aged 21 to 39 years (31%). A smaller proportion of patients were aged 60 years or older (3%) and under 20 years (3%). When compared with existing literature, our findings reveal a distinctive pattern in age distribution. Previous studies conducted by Ramachandran et al. [12], Pilli et al. [13]and Prakash A et al [14] commonly reported the highest incidence of ovarian lesions in the 20–39 years age group, with frequencies ranging from 41.7% to 58%. In contrast, our study shows a significant shift towards a higher prevalence in the 40–59 years cohort, indicating that middle-aged women may represent a more at-risk group in our population sample. This variation could be attributed to demographic differences, referral patterns, or health-seeking behavior that may influence the age at which ovarian pathology is detected and investigated histologically.

A broad classification of these lesions includes non-neoplastic cysts, benign neoplasms, and borderline or malignant neoplasms. Our present study shows that non-neoplastic cysts account for 60% of the cases, which is comparable to the findings of Zaman et al. [15], who reported 68.87% of lesions as non-neoplastic. Among all non-neoplastic cystic enlargement, simple follicular cyst is the commonest which is followed by corpus luteal cysts. Our current study reveals that 36% of the cases were benign neoplasms, while 4% were identified as borderline and malignant neoplasms. The study conducted by Prakash A et al. [14] reported 54.14% cases of benign neoplasms and 1.74% cases of borderline and malignant neoplasms. Among the benign neoplasms, serous cystadenoma was the most common, followed by either mature cystic teratoma (dermoid cyst) or mucinous cystadenoma. Our present study shows 18% cases of Serous Cystadenoma, 8% cases of Mature Cystic Teratoma and 5% cases of Mucinous Cystadenoma respectively. Mondal et al. [16] reported 29.9% cases of serous cystadenoma, 15.9% cases of mature cystic teratoma, and 11.1% cases of mucinous cystadenoma. In the present study, four cases of borderline and malignant ovarian lesions were observed. All were unilateral and exhibited age-specific distribution. A case of Borderline Mucinous Tumor was identified in a 48-year-old woman. Similarly, Prakash A et al. [14] documented a case of Borderline Mucinous Tumor in a 35-year-old patient. Additionally, we reported one case of Papillary Serous Cystadenocarcinoma in a 55-year-old female, which aligns with the findings of Prakash A et al. [14], who also noted a comparable case in a 56-year-old patient. Our study includes a single case of ovarian dysgerminoma in a 34-year-old patient. In comparison, Modi D et al. [3] reported a case of dysgerminoma occurring in a patient under 20 years of age. Therefore, it can be concluded that the findings of these comparable studies are consistent with the results of our present study.

CONCLUSION

Ovarian lesions or enlargements, whether non-neoplastic or neoplastic, exhibit diverse morphological characteristics and tend to occur within specific age groups. Among non-neoplastic lesions, simple follicular cysts are the most prevalent, while serous cystadenomas are the most frequently encountered benign tumors. Both types often present bilaterally. Although malignant ovarian tumors are less common compared to benign and non-neoplastic lesions, they demand careful clinical and pathological evaluation due to their potential severity and life-threatening nature.

Histopathological examination plays a crucial role in the accurate diagnosis and effective management of these cases, complementing clinical and radiological assessments. It provides valuable insight into the biological behavior and progression of ovarian lesions, facilitating timely intervention and helping to prevent adverse outcomes through early detection and the use of relevant biomarkers.

REFERENCES

[1] Howkins J, Bourne G. Shaw's Textbook of Gynecology. 15th ed. New Delhi: Elsevier; 2010. p. 376-89.
[2] Snehal Radadiya, Pankti Soni, Priyanka Gangani, Hitesh Rathod, Histopathological Study of Non-Neoplastic and Neoplastic Ovarian Lesions, International Journal of Pharmaceutical and Clinical Research 2024; 16(9); 1056-1061
[3] Modi D, Rathod GB, Delwadia KN, Goswami HM. Histopathological pattern of neoplastic ovarian lesions. IAIM, 2016; 3(1): 51-57.
[4] Benson RC. Diagnosis and treatment. Current Obste Gynaecol., 1976; 1: 236.
[5] Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer

statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394–424.
[6] Jha R, Karki S. Histological pattern of ovarian tumors and their age distribution. Nepal Med Coll J. 2008 Jun 1; 10(2):81-5.
[7] Couto F, Nadkarni NS, Rebello MJ. Ovarian tumors in Goa. A Clinicopathological study. J Obstet Gynecol of India. 1993; 43(3):408-12.
[8] Prabhakar BR, Maingi K. Ovarian tumours prevalence in Punjab. Indian J Pathol Microbiol. 1989 Oct; 32 (4):276-81.
[9] Misra RK, Sharma SP, Gupta U, Gaur R, Misra SD. Pattern of ovarian neoplasm in eastern U.P. Journal of obstetrics and Gynaecology, 1990; 41(2): 242-246
[10] Kar T, Kar A, Mohapatra PC. Intra-operative cytology of ovarian tumors. J Obstet Gynecol India. 2005; 55(4):345-9.
[11] Gurung P, Hirachand S, Pradhanang S. Histo pathological study of ovarian cystic lesions in Tertiary Care Hospital of Kathmandu, Nepal. Journal of Institute of Medicine 2013, 35(3):44-47.
[12] Ramachandran G, Harilal KR, Chinnamma K, Thangavelu H. Ovarian neoplasms- A study of 903 cases. J Obstet Gynecol India 1972; 22:309 -15.
[13] Pilli GS, Suneeta KP, Dhaded AV, et al. Ovarian tumours: a study of 282 cases. J Indian Med Assoc. 2002 Jul;100(7):420, 423-4, 447.
[14] Prakash A, Chinthakindi S, Duraiswami R, Indira V. Histopathological study of ovarian lesions in a tertiary care center in Hyderabad, India: a retrospective five-year study Int J Adv Med. 2017; 4(3):745-49.
[15] Zaman S, Majid S, Hussain M, et al. A retrospective study of ovarian tumours and tumour-like lesions. J Ayub Med Coll Abbottabad. 2010Jan-Mar;22(1):104-8.
[16] Mondal SK, Et al. Histologic pattern, bilaterality and clinical evaluation of 957 ovarian neoplasms: a 10 years study in a tertiary hospital of Eastern India. J Can Res Ther2011; 7:433-7.