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Original Research Article

# A Hospital-Based Assessment of the Spectrum of Ovarian Lesions: A Retrospective Histopathological Assessment

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**Abstract**

**Aim:** This study was undertaken to study the various histopathological patterns of ovarian lesions, their classification and relative distribution of these lesions.

**Methods:** The study was undertaken as a retrospective systematic study using existing patient data retrieved from the records of the Department of Pathology, Nalanda Medical College and Hospital, Patna, Bihar, India during the period of 2 years. 200 ovarian mass specimens were received for evaluation, either as solitary specimens, or as part of total abdominal hysterectomy (TAH) specimens.

**Results:** Majority of the Patients were in the age group of 10-39 years. A total of 170(85%) cases were unilateral while 20(15%) cases were bilateral. 39 cases were asymptomatic. Associated findings in specimens of Hysterectomy with salpingo-oophorectomy were also found. Most common was leiomyoma either alone or in combination with adenomyosis. Other associated findings were chronic cervicitis, carcinoma endometrium, carcinoma cervix; hydrosalpinx etc. Other non-neoplastic lesion were Cystic follicle (14 cases), Follicular cyst and Parovarian cyst (6 cases each), hemorrhagic cyst, ectopic gestation, Torsion ovary, Inclusion cyst and oophoritis.

**Conclusion:** Ovarian lesion comprises of wide spectrum of lesions and their presenting clinical, radiological and gross features are very similar. Hence Histopathology forms the mainstay of definitive diagnosis and categorization of these lesions.

**Keywords:** Neoplastic Lesion, Non-neoplastic lesion, Ovary, Ovarian cyst, serous cystadenoma

## Introduction

The ovaries are paired organs on either side of the uterus close to the lateral pelvic wall. A wide spectrum of pathological conditions – non-neoplastic and neoplastic can be seen in the ovary in routine surgical pathology.[1] Tumors of the ovary are a common neoplasm in women.[2] The most common lesions encountered in the ovary are functional or benign cysts and tumors.[3]

Ovarian cancer is the sixth most common female cancer and is seen predominantly after the third decade of life.[4] Ovarian neoplasms are usually detected at a late stage and are large in size, because of their presentation with mild symptoms.[5] An accurate and early diagnosis of malignant lesions will go a long way in optimal management of these cases.

Ovaries are complex organs with unique physiology. The constant cyclical changes from puberty to menopause have made the ovary a site with a variety of cell types, each of which can give rise to tumors.[6,7] Though 80% of ovarian neoplasms are benign, the rest are malignant which causes significant mortality.[8] Malignant ovarian tumors represent the sixth most common cancer among females and the second most common cancer of the female reproductive system.[9] India has the 2nd highest burden of ovarian cancers with poor survival outcomes, demonstrating low survival after 5 years (29%).[10]

Neoplastic lesions are categorized into Benign, Borderline and Malignant. The histogenesis of ovarian tumours revolves around the four main components namely Surface epithelium, Germ cell, Sex cord and Ovarian stroma, specialized and nonspecific.[11] There also are histologic differences in the type of tumors found in the younger and older populations, germ cell neoplasms predominate in prepubertal children and young adults, whereas lesions of epithelial origin are rare in this age group but are predominantly seen in elderly and postmenopausal women. Among all the ovarian neoplasm about 80% are benign having cystic, solid or mixed characteristics.[4] The remaining 20% of these tumours are malignant in nature leading to fatal prognosis.[12] Distinguishing non-neoplastic lesion from a neoplastic lesion is a challenge clinically and is important in guiding therapy. Even non neoplastic cystic lesions are also frequently responsible for a pelvic mass and associated with abnormal hormonal manifestations often mimicking a neoplasm thus causing diagnostic confusion.

This study was undertaken to study the various histopathological patterns of ovarian lesions, their classification and relative distribution of these lesions.

## Methods

The study was undertaken as a retrospective systematic study using existing patient data retrieved from the records of the Department of Pathology, Nalanda Medical College and Hospital, Patna, Bihar, India during the period of 2 years. 200 ovarian mass specimens were received for evaluation, either as solitary specimens, or as part of total abdominal hysterectomy (TAH) specimens.

All samples were received from the operation theater in buffered formol saline as per protocols given in the Standard Operating Procedure (SOP) for Histopathology of the Hospital. Samples were grossed on the same day that they were received, after ensuring adequate tissue fixation.

Tissue slices were taken and processed as per SOP. Microsections of 5 microns thickness were taken onto glass slides and stained by standard Hematoxylin and Eosin stains as per protocols. After mounting and labeling, all slides were viewed by at least two Pathologists before final reporting.

All lesions were classified using WHO guidelines. For the purpose of this study, all records pertaining to the study period were retrieved. Details of the histopathological diagnoses of the ovarian masses evaluated, as well as the age distribution of the patients, were analyzed. All patient data were kept confidential. Data was analyzed using an MS Excel worksheet and calculations of incidence made from the same.

## Results

**Table 1: Age wise distribution of patients operated for ovarian masses**

| Age in years | Number of patients (total=200) | Patients (%) |
|---|---|---|
| <19 | 12 | 6 |
| 20-39 | 108 | 54 |
| 40-59 84 36.6% | 70 | 35 |
| >60 | 10 | 5 |

Majority of the Patients were in the age group of 10-39 years.

**Table 2: Laterality of ovarian Lesion**

| Laterality | Side | Number & %age | Total No. & %age |
|---|---|---|---|
| Unilateral | Right | 108(54) | 170(85) |
| | Left | 62(31) | |
| Bilateral | | 30(15) | 30(15) |

A total of 170(85%) cases were unilateral while 20(15%) cases were bilateral.

**Table 3: Clinical presentation of all the cases of Ovarian Lesions**

| Clinical presentation | Number of cases |
|---|---|
| Pain Abdomen | 75 |
| Swelling abdomen | 32 |
| Pain abdomen and swelling abdomen | 15 |
| Abnormal uterine bleeding (AUB) | 28 |
| Pain abdomen and AUB | 3 |
| Infertility | 15 |
| Amenorrhoea | 2 |
| Asymptomatic | 30 |
| Total | 200 |

39 cases were asymptomatic. Associated findings in specimens of Hysterectomy with salpingo-oophorectomy were also found. Most common was leiomyoma either alone or in combination with adenomyosis. Other associated findings were chronic cervicitis, carcinoma endometrium, carcinoma cervix; hydrosalpinx etc.

**Table 4: Non-neoplastic lesions of ovary with laterality and number**

| Types of cyst | Right | Left | Bilateral | Total |
|---|---|---|---|---|
| Cystic follicle (CF) | 3 | 5 | 6 | 14 |
| Follicular cyst (FC) | 1 | 3 | 2 | 6 |
| Corpus Luteal Cyst (CLC) | 12 | 12 | 2 | 26 |
| Hemorrhagic cyst (HC) | 3 | 1 | 0 | 4 |
| Endometriotic cyst (EMC) | 11 | 6 | 4 | 21 |
| Ectopic Gestation (EG) | 1 | 1 | 0 | 2 |

| | | | | |
|---|---|---|---|---|
| Inclusion Cyst (IC) | 2 | 0 | 0 | 2 |
| Parovarian Cyst (PC) | 4 | 2 | 0 | 6 |
| Simple Cyst (SC) | 12 | 9 | 0 | 21 |
| Ovarian Abscess (OA) | 0 | 1 | 0 | 1 |
| Chronic nonspecific oophoritis (CO) | 0 | 1 | 0 | 1 |
| Xanthogranulomatous oophoritis (XO) | 1 | 0 | 0 | 1 |
| Torsion ovary | 0 | 1 | 0 | 1 |

Other non-neoplastic lesion were Cystic follicle (14 cases), Follicular cyst and Parovarian cyst (6 cases each), hemorrhagic cyst, ectopic gestation, Torsion ovary, Inclusion cyst and oophoritis.

**Table 5: Neoplastic lesions with laterality and number**

| Category of Neoplastic lesion | Type of Neoplastic Lesion | Right | Left | Bilateral | Total |
|---|---|---|---|---|---|
| **Benign** | Serous cystadenoma | 31 | 9 | 0 | 40 |
| | Dermoid cyst | 11 | 5 | 2 | 18 |
| | Mucinous Cystadenoma | 7 | 4 | 0 | 11 |
| | Serous Cystadenofibroma | 1 | 0 | 0 | 1 |
| | Seromucinous Cystadenoma | 1 | 0 | 0 | 1 |
| | Brenner Tumour | 0 | 1 | 0 | 1 |
| | Thecoma | 1 | 0 | 0 | 1 |
| | Benign Lipomatous lesion | 1 | 0 | 0 | 1 |
| **Borderline tumour** | Borderline Serous cystadenoma | 2 | 0 | 0 | 2 |
| | Atypical proliferative endometrioid tumour | 0 | 1 | 0 | 1 |
| **Malignant** | Serous carcinoma | 2 | 0 | 1 | 3 |
| | Endometroid carcinoma | 1 | 0 | 0 | 1 |
| | Metastatic Carcinoma | 0 | 0 | 3 | 3 |

Among the Benign lesion, Serous cystadenoma was the most commonly encountered lesion with 40 cases, followed by Dermoid cyst, and Mucinous cystadenoma, one case each of Serous Cystadenofibroma, Seromucinous cystadenoma, Brenner's tumour and Thecoma is also seen. Among Borderline lesions, two cases of Borderline Serous cystadenoma and one case of Atypical proliferative endometrioid tumour were recorded. Among the malignancies, Serous carcinoma was the most common comprising of three cases, while three cases of Metastatic carcinoma from different sites to bilateral ovary recorded. One case of Endometroid carcinoma was also seen.

## Discussion

Ovarian lesions are unusual because of their diverse morphology and association with relatively mild symptoms. Neoplastic disorders can arise from (1) mullerian epithelium, (2) germ cells or (3) sex cord stromal cells. Tumors of the ovary are a common neoplasm in women. The most common lesions encountered in the ovary are functional or benign cysts and tumors. Typically, ovarian masses consist of functional and pathological lesions.[13] Given the location of these paired organs and the mildness of symptoms associated with lesions arising in them, these lesions usually attain a fairly large size before they are detected and removed.[14,15] Ovarian lesions are unusual because of their diverse morphology and association with relatively mild symptoms. Neoplastic

disorders can arise from (1) mullerian epithelium, (2) germ cells or (3) sex cord stromal cells.[16] In this study, it was identified that irrespective of the laterality, normal histology of ovaries including the presence of cortical inclusion cyst, corpus luteum, and corpus haemorrhagicum was more frequently encountered than other non-neoplastic and neoplastic lesions in surgically resected specimens.

Overall most common age group affected were young reproductive female (21-30 years). Both non-neoplastic and neoplastic benign lesions were common to this age group. This is similar to other reports where most of the benign ovarian lesions occur in women of reproductive age groups.[13,17] Our study revealed that 170 out of 200 ovarian specimens were unilateral (85%) and only 20 (10.5%) were bilateral, similar to study by Gurung et al. (88.15% unilateral and 11.85% bilateral)[18] and Thakkar and Shah (88.4% unilateral).[19] Our findings vary slightly by the study done by Kanithkar et al. in which 78.18% tumours were unilateral and 21.82% tumours were bilateral.[20]

Grossly, it was found in our study that non-neoplastic as well as benign tumours were mostly cystic as compared to malignant, which were solid in consistency followed by partly cystic and partly solid which is in accordance with other studies.[21] In present study, out of 200 cases, 106 lesions were non-neoplastic (53%) while 94 lesions (47%) were neoplastic lesion. This is similar to study by Martinez-Onsurbe P et al. who reported 55 cases (41.67%) of non-neoplastic lesions, out of total 132 ovarian lesions and Kreuzer GF et al. reported 82 (40.39%) non-neoplastic lesions, out of 203 ovarian lesions.[22,23] Gurung et al. found 43.7% non-neoplastic lesions and 56.3% neoplastic lesion in their study.[18]

Among non-neoplastic lesions, Functional cysts were the most common lesions. Corpus luteal cysts including hemorrhagic corpus luteum cysts was the most commonly encountered ovarian lesions. This is followed by Simple cysts and Endometriotic cysts. This finding is similar to studies done by Choi and Kim where corpus luteum cyst was the most commonly encountered ovarian lesions.[23] In current study among 94 neoplastic lesions, 80 cases were benign, 6 cases were of borderline nature while 8 cases were malignant. This is in synchrony with the study of Sheikh et al. N Gupta et al.[24,25] while contradictory to study by Ahmad Z et al. where malignant lesion was comparatively high(40.6%).[26] In surface epithelial tumour, Serous Cystadenoma was the most common benign neoplasm followed by Mucinous Cystadenoma. This finding coincided with previous studies by Gupta et al.[25]

Borderline ovarian tumours are of low malignant potential having favorable prognosis and relatively early age at onset.[27] They comprise 4%–14% of all epithelial ovarian neoplasms.[28] In our study, we diagnosed 3 cases (3.6%) of borderline ovarian tumour including 2cases of Borderline serous papillary neoplasm and one case of Atypical proliferative endometrioid tumour. Metastases to the ovaries are relatively frequent with the most common being from the endometrium, breast, colon, stomach, and cervix.[29] Metastatic tumour (3 cases) constituted 3.61% of all the neoplastic ovarian lesion in our study and all of them were bilateral. Zaman et al. in his study reported single case of Metastatic tumour from breast.[30] Among sex-cord stromal tumour, a single case of Thecoma was diagnosed in our study.

## Conclusion

Ovary, despite being a small pair of organs in female genital system has complex architecture with different cell types. Hence it encompasses broad group of lesions from non-neoplastic to neoplastic benign, borderline and malignant lesion. In our study we have compared these lesions

with multiple parameters like age, clinical presentation, and location of lump, associated lesions, and different histological subtypes. All these clinical and histomorphological parameters and advanced newer diagnostic modalities can help to arrive at early definitive diagnosis and to plan the line of treatment and also have prognostic significance. Both non-neoplastic as well as neoplastic lesions of ovary often present with similar clinical, radiological and surgical features. So histopathological study is essential to diagnose ovarian tumours and predict their prognosis. In cases of benign functional cysts spontaneous resolution may take place, so symptomatic treatment and observation may help to minimize surgery in these patients. Since most of the malignant cases are detected at a later stage, their early diagnosis can help in patient long survival and prognosis.

## References


1. Gilks B. Ovary. In: Goldblum JR, Lamps LW, McKenney JK, Myers JL, Juan R, Ackerman L, editros. Rosai and Ackerman's Surgical Pathology. 11th ed., Vol. 1. Philadelphia, PA: Elsevier; 2018. p. 1367-431.
2. Young RH. The ovary. In: Sternberg S. Diagnostic Surgical Patholo. 17th Ed. New York: Raven Press. 1994:2195.
3. Ellenson LH, Pirog EC. Ovaries. In: Robbins and Cotran- Pathologic Basis of Disease. South Asia Edition. New Delhi: Reed Elsevier India. 2014: 1022.
4. Tortolero-Luna G, Mitchell MF, Rhodes-Morris HE. Epidemiology and screening of ovarian cancer. Obstetrics and gynecology clinics of North America. 1994 Mar 1;21(1):1-23.
5. Bhattacharya MM, Shinde SD, Purandare VN. A clinicopathological analysis of 270 ovarian tumours. Journal of postgraduate Medicine. 1980 Apr 1;26(2):103.
6. Cui J, Shen Y, Li R. Estrogen synthesis and signaling pathways during ageing from periphery to brain. Trends Mol Med. 2013;19(3)197-209.
7. Thirukumar M, Ahilan S. Histopathological pattern of ovarian lesions- a hospital based study in Batticaloa, Sri Lanka. J Diagnos Pathol. 2018;13(1)16-21.
8. National Cancer Institute 2005. SEER cancer statistics review (1975-2002). Ovarian epithelial cancer (PDG)-Treatment health professionals.
9. Puri S, Chadha V, Pandey AK. Epidemiology of ovarian tumors in North India – A tertiary hospital-based study. Indian J Comm Fam Med. 2018;4(2)37-41.
10. Rosai J. Rosai and Ackerman's surgical pathology e-book. Elsevier Health Sciences; 2011 Jun 20.
11. Lalrinpuii E, Bhageerathy PS, Sebastian A, Jeyaseelan L, Thomas A, Chandy R, Peedicayil A. Ovarian cancer in young women. Indian journal of surgical oncology. 2017 Dec;8(4):540-7.
12. Rashid, S., Sarwar, G., & Ali, A. (1998). A clinicopathological study of ovarian cancer. Mother Child, 36, 117-25.
13. Forae GD, Aligbe JU. A histopathological overview of ovarian lesions in Benin City, Nigeria: How common are the functional cysts? International Journal of Medicine and Public Health. 2014;4(3).
14. Bhattacharya MM, Shinde SD, Purandare VN. A clinicopathological analysis of 270 ovarian tumours. Journal of postgraduate Medicine. 1980 Apr 1;26(2):103.
15. Pachori G, Meena US, Sunaria RK, Pachori P, Jethani N, Bayla T. Histopathological study of ovarian tumors in Ajmer region. International Journal of Medical Science and Public Health. 2016 Jul 1;5(7):1400-4.
16. Modi D, Rathod GB, Delwadia KN, Goswami HM. Histopathological pattern of neoplastic ovarian lesions. IAIM. 2016;3(1):51-7.

17. Mondal, S. K., Banyopadhyay, R., Nag, D. R., Roychowdhury, S., Mondal, P. K., & Sinha, S. K. (2011). Histologic pattern, bilaterality and clinical evaluation of 957 ovarian neoplasms: A 10-year study in a tertiary hospital of eastern India. Journal of Cancer research and Therapeutics, 7(4), 433.
18. Gurung, P., Hirachand, S., & Pradhanang, S. (2013). Histopathological study of ovarian cystic lesions in tertiary care hospital of Kathmandu, Nepal. Journal of Institute of Medicine, 35(3), 44-7.
19. Thakkar, N. N., & Shah, S. N. (2015). Histopathological Study of Ovarian Lesion. International journal of Science and Research (IJSR), 4(10), 1745-9.
20. Kanthikar, S. N., Dravid, N. V., Deore, P. N., Nikumbh, D. B., & Suryawanshi, K. H. (2014). Clinico-histopathological analysis of neoplastic and non-neoplastic lesions of the ovary: a 3-year prospective study in Dhule, North Maharashtra, India. Journal of clinical and diagnostic research: JCDR, 8(8), FC04.
21. Pilli, G. S., Suneeta, K. P., Dhaded, A. V., & Yenni, V. V. (2002). Ovarian tumours: a study of 282 cases. Journal of the Indian Medical Association, 100(7), 420-423.
22. Martínez-Onsurbe, P., Villaespesa, A. R., Anquela, J. M. S., & Ruiz, P. L. V. (2001). Aspiration cytology of 147 adnexal cysts with histologic correlation. Acta cytologica, 45(6), 941-947.
23. Choi, H. J., Kim, S. H., Kim, S. H., Kim, H. C., Park, C. M., Lee, H. J., ... & Jeong, J. Y. (2003). Ruptured corpus luteal cyst: CT findings. Korean journal of radiology, 4(1), 42-45.
24. Sheikh, S., Bashir, H., Farooq, S., Beigh, A., Manzoor, F., & Reshi, R. (2017). Histopathological spectrum of ovarian tumours from a referral hospital in Kashmir valley, Jammu and Kashmir, India. Int J Res Med Sci, 5(5), 2110-14.
25. Gupta, N., Bisht, D., Agarwal, A. K., & Sharma, V. K. (2007). Retrospective and prospective study of ovarian tumours and tumour-like lesions. Indian journal of pathology & microbiology, 50(3), 525-527.
26. Ahmad, Z., Kayani, N., Hasan, S. H., Muzaffar, S., & Gill, M. S. (2000). Histological pattern of ovarian neoplasma. Journal of Pakistan Medical Association, 50(12), 416.
27. Levi, F., La Vecchia, C., Randimbison, L., & Te, V. C. (1999). Borderline ovarian tumours in Vaud, Switzerland: incidence, survival and second neoplasms. British journal of cancer, 79(1), 4.
28. Burkholz, K. J., Wood, B. P., & Zuppan, C. (2005). Borderline papillary serous tumor of the right ovary. Radiographics, 25(6), 1689-1692.
29. Lee-Jones L. Ovarian tumours: an overview. Atlas of Genetics and Cytogenetics in Oncology and Haematology. 2003 Dec 1;8(2):115-9.
30. Zaman, S., Majid, S., Hussain, M., Chughtai, O., Mahboob, J., & Chughtai, S. (2010). A retrospective study of ovarian tumours and tumour-like lesions. Journal of Ayub Medical College Abbottabad, 22(1), 104-108.