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Original Research Article

# CLINICO PATHOLOGY OF OVARIAN TUMOURS: A PROSPECTIVE STUDY IN A TERTIARY CARE CENTRE

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ABSTRACT

**Background:** Ovary is a complex organ with respect to embryology, steroidogenesis, histology, and tumour incidence. Ovarian tumours are a heterogenous group of neoplasms comprising of epithelial, sex cord and germ cell origin with inherent heterogenicity and biological behavior ranging from benign to highly aggressive malignancy. The present study highlights the correlation between clinical features and histopathology for understanding the disease process and better management of patients.

**Aims and Objectives:** 1. To evaluate the clinical and histopathological characteristics of ovarian tumours. 2. To determine the incidence of ovarian tumours among different age groups.

**Materials and Methods:** A Prospective Study was conducted in OBG department, Government General hospital Kadapa, Andhra Pradesh for 14 months from April 2024 to May 2025. The data was entered in excel spreadsheet and tables generated. The results were analyzed in percentages.

**Results:** 71 cases of ovarian tumours were studied of which 61 (85.91%) were benign and 9 (12.67%) were malignant. 80% benign tumours were in age group of 20 -50 years whereas 77.7% malignant tumours in 40 -60 years age group. Pain abdomen was the most common symptom in both benign and malignant tumours.70.49% benign tumours were serous in nature .66.67% malignant tumours were serous type.

**Conclusion:** Clinical data and imaging modalities like ultrasound, MRI, CT abdomen can help narrow our differential diagnosis. But histopathology is the definitive diagnosis for all ovarian tumours and helps decide management and prognosis especially in malignant tumours.

**Keywords:** Benign ovarian tumours, Malignant ovarian tumours, Histopathology.

## INTRODUCTION

Ovarian tumours are among the most common neoplasms in women and are responsible for about 5% of all gynecological admissions. They can be benign or malignant, with benign lesions particularly common in reproductive-aged women (20–45 years). The most frequent histological type is the epithelial tumour group, which includes serous and mucinous cystadenomas/cystadenocarcinomas. Surface epithelial tumours account for the majority of cases (often cited as 60–70%). Other types include germ cell tumours (more common in younger women and children) and sex cord-stromal tumours.[1]

Malignant tumors of the ovaries occur at all ages with variation in histologic subtype by age. For example, in women younger than 20 years of age, germ cell tumors predominate, while borderline tumors typically occur in women in their 30s and 40s—10 or more years younger than in women with invasive epithelial ovarian cancers, which mostly occur after the age of 50 years.[2]

According to GLOBOCAN 2022 data for India, the total estimated number of new cancer cases in India for 2022 was about 1,461,427, with a crude rate of 100.4 per 100,000 population. Among females, the age-adjusted incidence rate for ovarian and other female genital organ cancers together was significant, ranking third overall in cancer sites for women after

breast and cervix cancers. Specifically for ovarian cancer, it is one of the leading cancers among Indian women. Ovarian cancer incidence accounts for a considerable proportion of female genital cancers, which collectively are the third highest site of cancer burden among Indian women.[3]

The inaccessibility of the ovaries for screening, complex nature with widely differing clinicopathological features, unpredictable behavior and prognosis poses a challenge to both gynecologist and pathologist. Ovarian neoplasms remain asymptomatic until massive ovarian enlargement cause compression of pelvic structures, ascites, abdominal distension, and distal metastasis. The ovary not only gives rise to a wide variety of malignancies but is also a favorite site for metastases from many other organs. Most ovarian cancers have spread beyond the ovary by the time of diagnosis, and account for a disproportionate number of deaths from cancer of the female genital tract.[4]

The most common symptoms are due to abdominal pain and distension or tumor compression on urinary and gastrointestinal tract. Other symptoms are bleeding per vagina and invasion of neighboring structures.[5] Determination of various histological patterns of primary ovarian tumour is very important in diagnosis, treatment as well as prognostication . Prognosis of the tumours can also be predicted from the degree of differentiation of the tumours. The stage and laterality of the tumour also indicates their nature; for example, tumours in the sex cord stromal category are almost always confined to a single ovary.[6]

This study was aimed to come up with different clinical presentations and age distribution patterns of ovarian neoplasms, the histopathological features of ovarian neoplasms, and the incidence of benign and malignant ovarian neoplasms in our hospital.

## MATERIALS AND METHODS

A Prospective Study was conducted in OBG department, Government general hospital, Kadapa, Andhra Pradesh for 14 months from April 2024 to May 2025 after getting approval from institutional Ethics Committee. (IEC no – 89/GMC/KDP/2024). A total of 71 patients with ovarian tumours were studied.

**Inclusion Criteria**

- All women diagnosed with ovarian tumours and undergoing surgery

**Exclusion Criteria**

1. Women diagnosed with para ovarian tumours
2. Conservatively managed ovarian tumours

After taking informed consent patients were enrolled into the study. On admission clinical data regarding age, parity, obstetric history, marital history, menstrual history, history of usage of oral contraceptives, family history regarding malignancies, any personal history of previous malignancies, clinical symptoms, duration of symptoms were recorded in a proforma.

Clinical examination was done with special attention to breast examination, lymphadenopathy. Vital data like PR, BP RR, CVS, and respiratory system examination was done. Abdominal, bimanual and per rectal examination was done. Routine investigations required for surgery like complete blood picture, Blood grouping and typing, RBS, RFT, LFT, BT, CT, viral markers screening- HIV, HBS Ag, urine albumin and sugar, chest X ray PA view, ECG, Echocardiogram was done. Specific investigations like CA125, thyroid profile, ultrasound and Doppler abdomen and pelvis, CT/MRI abdomen and pelvis, pap smear was done. After pre anesthetic checkup , patient was posted for surgery. Either ovariotomy alone or along with hysterectomy was done and the specimen was sent to pathology lab for histopathological examination and categorized according to WHO histopathological classification.

The data was entered in MS EXCEL spreadsheet and tables generated. Results were presented in number and percentages.

## RESULTS

Out of 1181 gynecological admissions in our hospital from April 2024 to May 2025, 71 cases of ovarian tumours were studied giving an incidence of 6%. The following results were obtained.

**Table 1: Distribution of Ovarian Tumour**

| Type of Tumour | No of Cases | Percentage (%) |
|---|---|---|
| Benign Tumour | 61 | 85.91 |
| Border line Tumour | 01 | 1.40 |
| Malignant Tumour | 09 | 12.67 |
| Total | 71 | 100 |

In the present study out of 71 patients with ovarian tumours 61 (85.91%) were benign and 9 (12.67%) were malignant.

**Table 2: Age Distribution of Ovarian Tumours**

| Age (Years) | Benign(n) | Border Line (n) | Malignant (n) |
|---|---|---|---|
| < 20 | 04 | 0 | 0 |
| 21 - 30 | 17 | 0 | 01 |
| 31 - 40 | 15 | 0 | 01 |
| 41 - 50 | 17 | 01 | 04 |
| 51 - 60 | 04 | 0 | 03 |
| 61-70 | 03 | 0 | 0 |
| >70 | 01 | 0 | 0 |
| Total no of cases | 61 | 01 | 09 |

49 (80.32%) patients with benign tumours were in the age group 20 – 50 years and 7 (77.77%) of malignant tumours were in 40 -60 years.

**Table 3: Clinical Presentation**

| Clinical Presentation | Benign Tumours(n) | Border line Tumours(n) | Malignant Tumours(n) | Percentage (%) |
|---|---|---|---|---|
| Pain Abdomen | 39 | 01 | 03 | 60.56 |
| Mass per Abdomen | 06 | 0 | 04 | 14.08 |
| Pain Abdomen With Mass | 01 | 0 | 0 | 1.4 |
| Menstrual Disturbances | 09 | 0 | 02 | 15.49 |
| Urinary Symptoms | 01 | 0 | 0 | 1.4 |
| Pain Abdomen +GI symptoms | 05 | 0 | 0 | 7.04 |

Pain abdomen was the most common presenting symptoms in both benign and malignant tumours accounting for 60.56%. Menstrual disturbances were seen in 9 patients with benign tumours and 2 patients in malignant tumours accounting for 15.49%.

**Table 4: Laterality of Ovarian Tumours**

| Laterality | Benign Tumours(n) | Border line Tumours(n) | Malignant(n) |
|---|---|---|---|
| Unilateral | 54 (88.52%) | 0 | 07(77.77%) |
| Bilateral | 07 (11.47%) | 01 (100%) | 02 (22.22%) |
| Total | 61 (100%) | 01 (100%) | 09 (100%) |

88.52 % patients with benign tumours were unilateral. 77.77% patients with malignant tumours were unilateral.

**Table 5: Histo morphological Type of Ovarian Tumours**

| Type of Tumour | No of cases | Percentage (%) |
|---|---|---|
| **I Epithelial Tumours** | | |
| **A. Serous Tumours** | | |
| a. Benign | 43 | 70.49 |
| b. Low border line Malignancy | 0 | - |
| c. Malignant | 06 | 66.66 |
| **B. Mucinous Tumours** | | |
| a. Benign | 08 | 13.11 |
| b. Low border line Malignancy | 01 | - |
| c. Malignant | 01 | 1.63 |
| **C. Mixed Epithelial Tumours** | | |
| a. Benign | 05 | 8.19 |
| b. Malignant | 0 | - |
| **D. Endometrioid Carcinoma** | 02 | 22.22 |
| **E. Transitional Carcinoma** | 0 | - |
| **F. Undifferentiated Carcinoma** | 0 | - |
| **II Sexcord Stromal Tumours** | | |
| A. Granulosa Cell Tumour | 0 | - |
| B. Sertoli-leydig Cell Tumours | 0 | - |
| C. Fibroma/Thecoma | 01 | 1.6 |
| **III Germ Cell Tumours** | | |
| A. Dysgerminoma | 0 | - |
| B. Endodermal Sinus Tumour | 0 | - |
| C. Embryonal Carcinoma | 0 | - |
| D. Teratoma, Mature Cystic | 04 | 6.55 |
| E. Immature Teratoma | 0 | - |
| IV **Metastatic Tumours** | | |
| Krukenberg Tumour | 0 | - |

43 (70.49%) benign tumours were of serous type followed by 8 (13.11%) mucinous and 4 (6.55%) were mature cystic teratoma. 6 (66.66%) malignant tumours were serous type of surface epithelial tumours followed by endometroid carcinoma seen in 2 (22.22%) patients.

## DISCUSSION

Ovarian tumours are the most notorious of all tumours of female genital tract with respect to clinical presentation, malignant potential and histogenesis and hence poses a great challenge to gynecologists. It is very difficult to arrive at diagnosis just by clinical examination and imaging studies. Histopathology is the gold standard for arriving at definitive diagnosis and helps in further management. In the present study 71 patients with ovarian tumours were analyzed.

In the present study out of 71 patients with ovarian tumours 61 (85.91%) were benign tumours, 1 (1.4%) was borderline and 9 (12.67%) were malignant tumours. A study by Nirali Patel et al showed similar results. In their study out of 200 patients studied 148 (74%) were benign and 52 (26%) were malignant.[7] In another study by Upreti. P. Reddy et al 82.6% cases were benign, 12.8% were malignant and 4.6% were borderline.[8]

In our study 49 patients (80.32%) with benign tumours were in the age group of 20 -50 years and 7 of 9 patients (77.77%) with malignant tumours were in 40-60 years age group. A study by Upreti. P. reddy showed that benign tumors were more in the reproductive age group of 21-30 years (28.2%) followed by 25.4% in 31-40 years. The malignant neoplasms were seen more commonly in the age group of 51-60 years (36.3%).[8] Age has a strong correlation to ovarian cancer risk and 80% cases of ovarian malignancy are diagnosed after 50 years of age. Advancing age increases the possibility of malignant transformation.

Pain abdomen was the most common presenting symptom in both benign and malignant tumours in the present study accounting for 60.56% of cases. Menstrual disturbances were seen in 9 patients with benign tumours and 2 patients in malignant tumours accounting for 15.49 patients. Similar results were seen in a study by Baru L et al which showed that among the patients with benign tumors the most common presenting symptom was pain abdomen 35/44 (79.55%) followed by mass per abdomen 14/44 (31.81%). The common presenting symptoms with malignant ovarian tumour were pain abdomen 77.05%, swelling of abdomen 70.49%, ascites 57.38%, mass per abdomen 45.9%.[9]

In another study by Agrawal P et al of 226 cases, the most common presenting complaint was pain in abdomen (115 cases, 50.9%) followed by the lump in abdomen (66 cases, 29.2%) irrespective of the nature of the tumour. Ascites, anorexia, and weight loss were more commonly observed in borderline and malignant tumours. Menstrual irregularities, excessive bleeding, and postmenopausal bleeding were the presenting complaints in 27 cases (11.9%).[10]

88.52% patients with benign tumours were unilateral in our study. It was also found that 77.77% patients with malignant tumours were unilateral and22.22% bilateral. Only one case of borderline tumour was seen in our study which was bilateral. In one study conducted by Varsha Deshmukh et al bilaterality was a feature of both malignant cases (46.4%) and borderline cases (71.4%) whereas only 20% benign ovarian tumors were bilateral.[11] In another study by Swamy et al, fifteen out of thirty malignant tumors were bilateral, but only 25 out of 86 benign tumors were bilateral. Bilaterality was not observed in borderline tumors in this study.[12]

In the present study, surface epithelial tumors were the most common of all ovarian tumours of which serous tumors were seen in 69.01 % cases and 14.08% cases were mucinous. We also had 8.19 % (5 cases) of mixed epithelial tumours which was in concordance with a study by Upriti P. Reddy et al, showing epithelial tumors forming 61.6% (n = 106) the main bulk of neoplasms followed by germ cell tumors (32.6%) and sex cord stromal tumors in 5.8% (n = 10). Most of the surface epithelial tumors (60.6%) and germ cell tumors (36.6%) were benign, and majority of sex cord stromal tumors were malignant. Most epithelial tumors were serous tumors (54.7%) followed by mucinous (41.5%) and endometroid tumour and Brenner tumor (2 cases each).[8]

Serous cystadenoma was the most common benign tumour in our study constituting about 70.49% of cases followed by mucinous cystadenoma comprising of 13.11% cases. Mature cystic teratoma was the only germ cell tumours seen in our study which comprised about 6.55% of all ovarian tumours. This was like study conducted by Deshmukh. V et al which showed that serous cystadenoma was the commonest benign ovarian tumour (33.3%), followed by mucinous cystadenoma.[11] In contrast to our study, mature cystic teratoma was the most common type of benign tumour (30.2%) followed by serous cystadenoma (29.1%) and mucinous cystadenoma (19.7%) in a study by Upriti P. Reddy et al.[8]

Serous cystadenocarcinoma was seen in six cases (66.66%) of all malignant tumours in the present study. Only one case of malignant mucinous cystadenocarcinoma was seen in our study. We had 2 cases of endometroid carcinoma and 1 case of fibroma in sex cord stromal tumours. Our results were consistent with a study by Upriti P. Reddy et al which showed that serous cystadenocarcinoma was the most common type of malignant neoplasm followed by granulosa cell tumour.[8] In another study by Deshmukh V et al, malignant tumors constituted 57.1% of serous cystadenocarcinoma which was the most common tumour followed by sex cord tumors (20%).[11]

## CONCLUSION

Ovarian tumours exhibited a wide variety of clinical and histopathological features in the present study. It is very difficult to differentiate between benign and malignant ovarian tumours clinically. Histopathology is the gold standard for diagnosing different types of ovarian malignancy and helps in better management and follow up of patients.

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