

Clinicopathological Spectrum of Ovarian Lesions in Tertiary Care Hospital-Retrospective Study

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Abstract

Introduction: Ovary is one of the commonest organs to be involved in both neoplastic and non-neoplastic lesions in females for all age groups. Most of the ovarian tumours have similar clinical, radiological and morphological presentation, thus making diagnostic modality challenging. The histopathological examinations play a major role in both diagnostic as well as in therapeutic interventions. **Objective:** In the semiurban population attending the tertiary care centre to determine the following characteristics of ovarian lesions a) The age wise distribution b) Histomorphological patterns. c) Frequency of occurrence. **Materials and Methods:** The present study is a retrospective study done at Trichy SRM medical college hospital from January 2019 to January 2021 and includes 640 cases of ovarian lesions. Clinical and Histopathological details were recorded, analysed and compiled. **Results:** Total gynaecological specimens received in the Department of pathology, during this period of study was 1200. Out of these ovarian specimen were 640. Among 640 cases, 345 cases (54.1%) were Non-neoplastic and 295 cases (46.1) were neoplastic. The age group ranges from 10 to 70 yrs with 4th decade being the commonest age group involved. Among the Non-neoplastic lesions, follicular cysts (42.7%) were the commonest and found frequently being unilateral with left side involvement. Among the neoplastic lesions, serous cystadenoma (80 cases) is the commonest benign neoplasm and serous cystadenocarcinoma (16 cases) is the commonest malignant neoplasm. **Conclusion:** Histopathological evaluation is mandatory to validate the clinical and radiological diagnosis and categorization of ovarian lesions for effective treatment and patient care.

Keywords: Neoplastic, Non neoplastic, follicular cyst, serous cystadenoma.

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INTRODUCTION

The ovaries are paired, oval organs attached to the posterior surface of the broad ligament of uterus by mesoovarium. The average normal size is 3.5 X 2.5 X 1.5 cms. The main function is to produce oocytes and hormones synthesis [1]. The ovary is the commonest site for both neoplastic and Non-neoplastic lesions in females with age group ranging from childhood to post-menopausal age [2, 3]. Cystic lesions of ovary may be non-neoplastic (physiological) or neoplastic (pathological). Physiological or functional cyst is defined as size more than 3 cm but less than 7 cm [4]. Neoplastic cyst may be benign, borderline or malignant [5, 6].

The ovarian tumour is classified based on tissue of origin [7] according to WHO as Surface Epithelial (65%), Germ cell (15%), Sex cord stromal

(10%), Metastasis (5%) and Miscellaneous. Most malignant tumours are surface epithelial (90%). Ovarian cancer constitute the third most common cancer among the Indian women and usually present in the age group of 45 to 50 years. It accounts for 5% cancer death in females due to its lack of early detection, until it reaches advanced stages [8, 9].

Most of the ovarian tumours have similar clinical, radiological and morphological presentation. Few Non-neoplastic lesions may present as pelvic mass with abnormal hormonal manifestations and often mimic as malignancy. Distinguishing a neoplastic lesion is challenging for gynecologists and oncologists [10].

The diverse morphological spectrum and nonspecific clinical presentation make diagnostic modality challenging and thus histopathological

evaluation plays a major role in both diagnostic as well as in therapeutic intervention[11].

AIMS AND OBJECTIVES

Among the ovarian lesions presenting at this tertiary care centre in the specific study period to determine

1. The frequency of ovarian lesions
2. The agewise distribution.
3. The histomorphological patterns.

MATERIALS AND METHODS

Setting: Department of Pathology, Trichy SRM Medical College Hospital and Research Centre, Trichy.

Duration: January 2019 to January 2021

Type of study: Retrospective study

Sampling Size calculation: Based on previous studies and statistical formula, sample size was determined with alpha error of 0.05 and power of 0.95

Sample size: 640

Inclusion criteria

The entire ovarian specimen sent as unilateral or bilateral salpingoophorectomy and hysterectomy specimen with unilateral or bilateral salpingoophorectomy received at the time of study period were included in the study.

Exclusion criteria

Previously treated cases of ovarian lesion and previous history of exposure to chemotherapy or radiotherapy cases were excluded.

Data collection procedure

Clinical data were recorded retrospectively. The entire specimen received in histopathology section was processed by routine histotechniques and microscopic slides were stained with hematoxylin and eosin. Microscopy was performed; histopathological details were recorded and compared with clinical data. Data were plotted and statistical analysis was carried out with the help of SPSS 21.

Observation and result

Total Gynaecological Specimens received in the Department of Pathology, during this period of study was 1200. Out of these ovarian specimen were 640. Among 640 cases, 345 cases (54.1%) were Non-neoplastic and 295 cases (46.1%) were neoplastic.

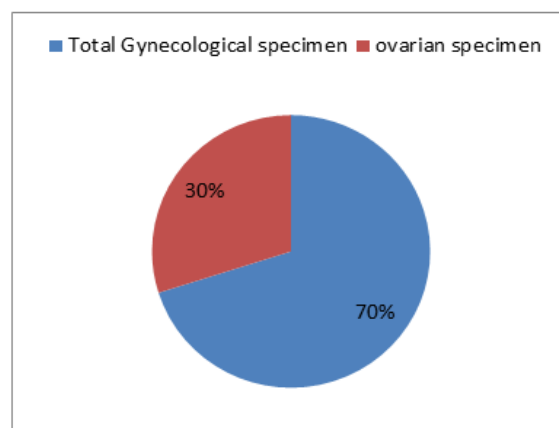


Fig-1: Showing Occurrence of Ovarian Lesions in the Study Period

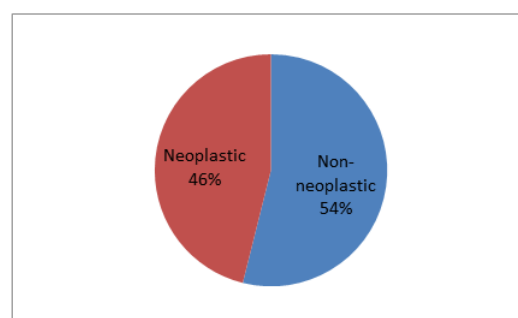


Fig-2: Showing Distribution of Ovarian Lesions

Table 1 represents the occurrence of non-neoplastic lesions of ovary. Most of the non-neoplastic lesions were incidental findings. The most common non-neoplastic lesion found was follicular cyst followed by corpus luteal cyst.

Table-1: Showing Occurrence of Non Neoplastic Lesions of Ovary

Non-neoplastic lesions of ovary	No of cases	Percentage
Follicular cyst	126	42.71%
Corpus luteal cyst	93	26.9%
Endometriotic cyst	59	17.01%
Inclusion cyst	44	12.75%
Ovarian edema	10	2.89%
Torsion hemorrhagic cyst	9	2.6%
Tuboovarian abscess	4	1.15%
Total	345	54.1%

Table 2 represents the histomorphological categorization of neoplastic lesions of ovary. Among

the 295 neoplastic ovarian lesions, 83.05% were benign, 5.42% were border line, 9.15% were malignant

and 3.3% were metastatic. As mentioned in table 2, serous cystadenoma were the commonest benign lesion

followed by mucinous cystadenoma and mature cystic teratoma.

Table-2: Showing Distribution of Neoplastic Lesions of Ovary

Histomorphological diagnosis	Number of cases	Total	Percentage
I.Surface epithelial tumors		205	69.4%
A.Serous tumors		113	
1.Serous cystadenoma	80		27.1%
2.Serous cystadenofibroma	10		6.1%
3.Borderline serous tumor	12		4.06%
4.Serous cystadenocarcinoma	16		5.4%
B.Mucinous tumors		53	17.96%
1.Mucinous cystadenoma	44		14.9%
2.Mucinous cystadenofibroma	7		2.3%
3.Mucinous cystadenocarcinoma	2		0.6%
4.Seromucinous cystadenoma	10		3.3%
C.Endometrioid tumour		5	1.69%
Endometrioid borderline tumor	4		1.3%
Endometrioid carcinoma	1		1.0%
D.Transitional cell tumours		14	4.74%
Benign brenner tumour	14		4.74%
E.Clear cell tumours		1	
Clear cell carcinoma	1		0.03%
II.Sex cord stromal tumours	32		10.84%
1.Adult granulosa cell tumour	9		3.05%
2.Fibroma	13		4.4%
3.Fibrothecoma	7		2.3%
4.Leydig cell tumour	3		1.01%
III.Germ cell tumours		57	19.32%
1.Mature cystic teratoma	35		11.86%
2.Dysgerminoma	14		4.74%
3.Mixed germ cell tumour	3		1.01%
4.struma ovarii	3		1.01%
5.Embryonal carcinoma	2		0.6%
IV.Metastatic		7	2.3%
Metastatic tumour	7		
Total	295	295	46.1%

Table 3 represent the gross morphology of ovarian lesions. On gross examination 55.1 % were

cystic, 34% were partially cystic and solid, 11.4% were predominantly solid.

Table-3: Showing Gross Morphology of Lesions of Ovary

Gross Morphology	Cystic	Solid	Partially Cystic and Solid	Total
Non-neoplastic	221(34.5%)	4(0.6%)	120(18.7%)	345
Benign	132(20.6%)	10(1.5%)	83(12.9%)	225
Borderline	-	9(1.4%)	7(1.1%)	16
malignant	-	43(6.7%)	14(2.18%)	57
Metastasis	-	7(1.09%)	-	7
Total	353(55.1%)	73(11.4%)	224(34%)	640

A total of 549 cases (85%) were unilateral and 14.2% were bilateral [Table 4]. Among unilateral

lesions, 205 cases (32.2%) were seen on right side while 344 cases (53.1%) were seen on left side.

Table-4: Showing Laterality of Ovarian Lesions

Laterality	Side	Non- Neoplastic	Neoplastic	No. of Cases	Percentage	Total	Percentage
Unilateral	Right	119	86	205	32.25	549	85
	Left	165	179	344	53.1		
Bilateral		51	37	91	14.75	91	14.2
Total		345	295	640		640	

Minimum age of the patients presenting with ovarian lesion was 13 years while maximum age was 77 years. Ovarian lesions were most common in the age group of 30 to 40 years. Table 5 represents agewise distribution of ovarian lesions. Maximum number of

non-neoplastic and neoplastic benign lesions seen in 30-40 years. Maximum number of malignant ovarian lesion seen in 40 to 60 years and 6 cases reported in 20 to 30 years.

Table-5: Showing Agewise Distribution of Ovarian Lesions

Nature of Ovarian Lesions	Age							Total
	10-20yrs	20-30yrs	30-40 yrs	40-50 yrs	50-60 yrs	60-70 yrs	70 & above	
Non-neoplastic	5	122	166	52	-	-	-	345
Benign	12	39	86	40	30	6	2	215
Borderline	-	1	1	10	4	-	-	16
Malignant	-	6	12	15	15	9	-	57
Metastasis	-	-	-	1	2	3	1	7

Table 6 represents clinical presentation of ovarian lesions. 279 cases (43.6%) presented with mass per abdomen followed by pain abdomen.

Table-6: Showing Clinical Presentation of Ovarian Lesion

Clinical Presentation	No. of cases	Percentage %
Mass per abdomen	279	43.6
Pain abdomen	155	24.2
Bleeding pv	109	17.03
Bleeding pv with pain	59	9.2
Asymptomatic	38	5.8

Associated pathological finding in hysterectomy specimen received along with salpingo-oophorectomy were noted. Table 7 represents

pathological finding noted in hysterectomy specimen received. Most common associated finding was leiomyoma followed by adenomyosis.

Table-7: Showing Pathological Findings Associated With Ovarian Lesion

Associated lesions	no of cases	Percentage %
Leiomyoma	254	39.6
Adenomyosis	175	2.35
Chronic cervicitis	94	14.6
Simple hyperplasia of endometrium	42	6.5
Complex hyperplasia of endometrium	21	3.28
Cervical intraepithelial neoplasia	34	5.31
Endometrial carcinoma	12	1.87
Carcinoma of cervix	8	1.25
Total	640	



Fig-3: Shows Gross Picture of Endometrioid Carcinoma

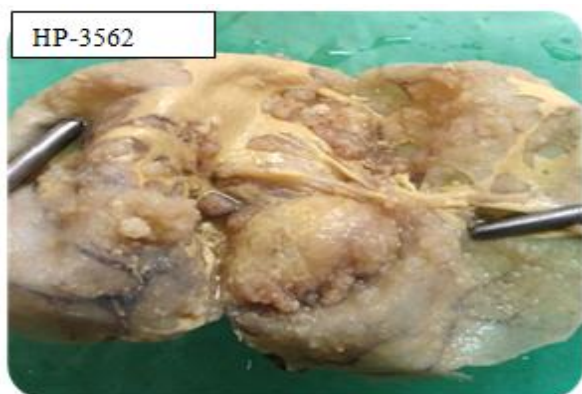


Fig 4: Shows Gross Picture of Borderline Serous Tumour

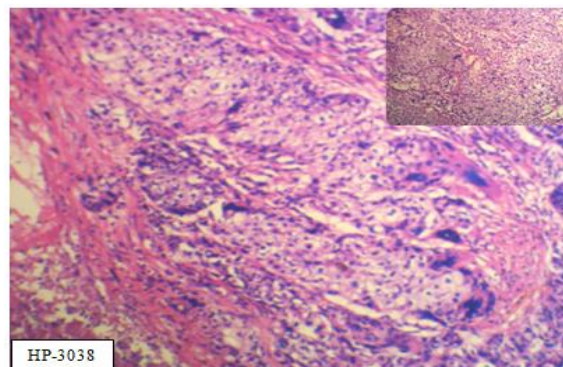


Fig-7: Shows Microscopic Image of Clear Cell Carcinoma, Inlet Shows High Power View

Figure no 3,4, 5,6 & 7 shows gross image and microscopic image of various lesions under low power magnification (H & E stain, 100X).

DISCUSSION

Ovarian cancers form the third leading cause of mortality among female genital cancer [8, 9]. The diverse histomorphological pattern with similar clinical and radiological presentation leads to confusion in diagnosis [12, 13].

A total number of 640 cases were included in the present study. The most commonest age group for non-neoplastic and neoplastic lesions was 30-40 yrs. This is comparable to the study conducted by Nehal ahmad *et al.* [14], farooq *et al.* [15] and Mondal S K *et al.* [16]. This study shows that majority of malignant lesion were found in women more than 4th to 5th decade. This is concordance with previous study by murthy NS *et al.* [17], M.Thirukumar *et al.* [18].

Our study revealed 549 cases (85%) out of 640 specimens were unilateral and only 91 cases (14.2%) were bilateral, which is similar to the study conducted by nehal *et al.*, Kanithkar SN *et al.* [19], prabhakar [20] and reported 91% were unilateral and 9 % were bilateral, which is concordance with our study. Table 8 showing comparison of clinical presentation of present study with other studies.

The most common clinical presentation of both Neoplastic and Non neoplastic lesions were mass abdomen (279 cases) followed by pain abdomen (155 cases), which is similar to the study conducted by kanithkar SN *et al.* [18], Pilli *et al.* [21] & Jagadeshwari *et al.* [22].

Table-8: Showing Comparison of Clinical Presentation of Present Study with Other Studies

Clinical presentation	Kanthikar SN. <i>et al.</i>	Jagadeshwari <i>et al.</i>	Bhuvanesh <i>et al.</i>	Present study
Mass per abdomen	50.91	50.8	51.9	43
Abdominal pain	45.45			25
bleeding pv				17.3

Out of 640 cases, 345 (54.1%) were non-neoplastic and 295 cases (46.1%) were neoplastic, similar to that of study conducted by Thakar *et al.* [23] and Kreuzer GF *et al.* [24] reported (40.39%) non-neoplastic lesions.

Among the Non-neoplastic lesion, Functional cyst were the most common lesion followed by corpus luteal cyst. The present study was concordant with previous study conducted by Kreuzer GF *et al.* [24], Gupta N *et al.* [25] and Kanithkar SN *et al.*

reported 74.6 % follicular cyst. However, these similar reports are in contrast to the study conducted by Guerriero *et al.* [26] reported endometriotic cyst was the most common non-neoplastic lesion.

In present study, among 295 neoplastic lesions, 72.8% were benign, 16 cases (5.42%) were borderline and 57 cases (19.32%) were malignant. This is in synchrony with the study conducted by Nehal Ahamad *et al.* & Shiekh *et al.* [27]. Table 9 showing comparison of nature of tumour with various studies.

Table-9: Showing Comparison of Neoplastic Lesions of Ovary in Present Study with Other Studies

Nature of tumour	Kanthikar S.N. <i>et al.</i>	Gupta <i>et al.</i>	Pilli <i>et al.</i>	Present study
Benign	78.50%	72.5	75	72.88
Borderline	1.42%	4.1	2.8	5.42
Malignant	20%	22.9	21.8	19.32
Metastasis			6.7	3.37

According to WHO classification of ovarian tumour, Surface epithelial tumour was the most common neoplastic lesion seen world-wide [7]. In our present study, Surface epithelial tumour (67.4%) were the most commonest ovarian tumour followed by Germ

cell tumour (19.3%). Similar observation seen in Nehal Ahmed *et al.*, Gupta *et al.* and Pilli *et al.* Table 10 showing comparison of categorization of ovarian tumour with various studies.

Table-10: Showing Comparison of Histomorphological Pattern of Ovarian Tumour in Present Study with Other Studies

Ovarian tumours	Kanthikar S.N. <i>et al.</i>	Gupta <i>et al.</i>	Pilli <i>et al.</i>	Present study
Surface epithelial tumour	67.1	65.6	70.2	67.4
Germ cell tumour	22.85	23.9	21.2	19.3
Sex cord stromal tumour	5.71	8.3	6.7	10.8
Metastatic tumour	4.28	2	0.7	3.3

In surface epithelial tumour, Serous Cystadenoma was the most common benign neoplasm followed by mucinous cystadenoma and mature cystic teratoma which is synchrony with study conducted by Gupta *et al.*

Borderline ovarian tumour is of low malignant potential with favourable outcome. In our study, we diagnosed 16 cases (5.42%) of borderline tumour, Out of which 12 cases (4.06%) were serous borderline tumour and 4 cases were endometrioid tumour.

In the present study, serous cystadenocarcinoma was the most commonest malignant ovarian tumour which is synchrony with

study conducted by Thirukumar *et al.*, and Krishna M *et al.* [28] reported 10.4% cases. Our present study includes 9 cases of granulosa cell tumour, 1 case of endometrioid carcinoma and 2 cases of embryonal carcinoma. Thirukumar *et al.* reported 5 cases of granulosa cell tumour which is closely related to the present study.

The commonest malignant tumour metastasis to ovary is from the Endometrium, Breast, Colon and Stomach. Present study reported 7 cases of metastatic tumour which is concordance with study conducted by Thirukumar *et al.*, Kanithkar SN *et al.* and Zaman *et al.* [29].

Table-11: Showing Comparision of Overall Features of Present Study with Other Studies.

Features		Kanthikar SN <i>et al.</i>	Maru A.M	Thirukumar <i>et al.</i>	Present study
No. of cases		145	100	537	604
Laterality	Unilateral	78.1	89	-	85
	Bilateral	21.82	11	-	14.2
Region of study		North maharastra	Junagadh, Gujarat	Srilanka	Trichy, Tamilnadu
Age group	Benign	20-40 yrs	20-39 yrs	20-40 yrs	20-40 yrs
	Malignant	>40 yrs	>40 yrs	>40 yrs	>40 yrs
Clinical presentation-Mass per abdomen		(50.9 %)	-	-	43.6%
Non neoplastic lesions	Percentage	51%	44%	40%	54.1%
	Commonest lesions	Follicular cyst (74.6%)	20%	Endometriotic cyst (60%)	42.7%
Percentage of neoplastic lesions		48%	56%	60%	46%
Benign lesions	Percentage	78.5%	59%	80%	72.8%
	Commonest lesions(serous cystadenoma)		28%	43%	27.3%
Malignant lesions	Percentage	20%	4%	12%	19.3%
	Commonest lesions(serous Cystadenocarcinoma)	20%	1%	58%	5.4%

SUMMARY & CONCLUSION

- The distribution, laterality, clinical presentation and Histomorphological pattern in this study are comparable to other studies.
- In our study, we compared the ovarian lesion with parameters like clinical findings, radiological imaging, Gross morphology and histopathological diagnosis.
- The current study shows that most of the ovarian lesions are Non-neoplastic (Functional cyst) followed by benign neoplasm in all age groups.
- Both Neoplastic as well as Non-neoplastic lesions have similar clinical, radiological and surgical characteristic. So, histopathological diagnosis plays a major role in diagnosis and sub categorization of ovarian lesions, thereby aiding better clinical outcome.

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