



Histopathological Spectrum of Ovarian Lesions: A Retrospective One Year Study at JLN Medical College Ajmer Rajasthan, India

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Abstract

Aim: The aim of this study is to highlight the histopathological spectrum of ovarian both benign and malignant and to compare our study with findings of other centers.

Materials and Methods: Hematoxylin and eosin stained slides of ovarian biopsies diagnosed at JLN Medical College Ajmer, Rajasthan for 1 year (January 2022 to December 2022) were archived, scrutinized, and studied. Clinical biodata and diagnosis were obtained from the Histopathology section.

Results: A total of ovarian biopsies were reviewed. Of this, 232(70.30%) were nonneoplastic. Again 67 (20.30%) were benign neoplastic tumours and 31(9.39%) were malignant tumours.

Out of the 232 nonneoplastic (functional cysts) lesions, cystic follicle was the most commonly encountered, constituting 160 cases (28.78%). The peaks age incidence for nonneoplastic and benign neoplastic lesions occurred in the 3rd decade. Two peaks age incidence was noted for malignant tumors-5th and 7th decades. Germ cell tumor constituted the most common neoplastic ovarian tumour (n = 113; 57.65%) diagnosed.

Conclusion: Functional ovarian cysts were the most commonly encountered ovarian lesions in our study population. The most common variety of functional cyst were follicular cyst and corpus luteum cyst with majority occurring in the reproductive age groups. Among the ovarian tumors, germ cell tumors followed by surface epithelial tumours were most commonly seen

Keywords: Follicular cyst, luteal cysts, germ cell tumour, surface epithelial tumour

INTRODUCION

Ovarian masses consist of functional and pathological lesions. Functional lesions, mainly cystic, are the most commonly encountered lesions in the retroperitoneal organ. The majority of these functional cysts are simple cysts, while a minority exhibit complex cystic architecture. Studies have shown that 90% of these cysts resolve spontaneously. They are frequently observed in young females in their 2nd decades, resulting from ovulation failure. However, they can also occur in perimenopausal and postmenopausal women.

Pathological lesions, on the other hand, are predominantly tumors that can be benign, borderline, or malignant. These tumors are generally rarer in childhood and adolescent age groups, accounting for only about 2% of ovarian tumors in children. Most benign ovarian lesions occur in childbearing age groups and are often cystic, while malignant tumors are more common in elderly women. Ovarian malignancy globally constitutes approximately 23% of all gynecological tumors, with a high fatality rate. However, in developing countries like

India, there is a low epidemiological reporting of ovarian cancers despite being a common gynecological problem.

The incidence of ovarian cancer varies across countries, with higher rates in industrialized western nations and lower rates in developing countries. In India, although the incidence is low, there is a steady increase in age-standardized prevalence of ovarian cancer. Ovarian cancer remains the third leading cause of cancer among women in most population-based cancer registries in India. The age-adjusted incidence rates of ovarian cancer range from 5.4 to 8.0 per one lakh in different parts of the country.

The aim of this study is to evaluate the histopathological patterns of ovarian lesions, both benign and malignant, in a tertiary care center in Jharkhand, an eastern state of India. The study aims to compare its findings with those of other researchers worldwide.

MATERIALS AND METHODS

It was a one year study done retrospectively from January 2022 to December 2022. It was done in the histopathology section of Department of Pathology of JLN Medical College Ajmer Rajasthan, India. Histopathological data pertaining to the specimens maintained in the histopathology

section was retrieved and reviewed. Histology slides of all such cases were reviewed. Staining was done with Haematoxylin and Eosin stains. Each case was analysed with respect to age, clinical presentation and microscopic diagnosis. Ovarian carcinoma were classified using World Health Organisation (WHO) histological classification(2020).

RESULTS

232(70.30%) of non-neoplastic(functional cysts), 67(20.30%) benign neoplastic tumors and 31 (9.39%)malignant tumours giving a total of 330 ovarian biopsies were reviewed at Department of Pathology of JLN Medical College Ajmer.Out of the 232 non-neoplastic lesions,Cystic follicle was the most commonly encountered lesion accounting for 92 cases(39.65 %).This was followed by corpus luteal haemorrhagicum which accounted 59 cases (25.43 %) and corpus luteal cyst which consisted of 39 cases(16.81%).Others included simple cyst constituting 16 cases (6.89%) and follicular cyst 16 cases(6.89%).Other less common non-neoplastic lesions were simple serous cyst and hemorrhagic cyst accounting for 5 cases(2.15%)and 5cases(2.15%) respectively as shown in table 1.

Type of cyst	Total number of cases (n)	Frequency (%)
Simple serous cyst	5	2.15
Follicular cyst	16	6.89
Simple cyst	16	6.89
Hemorrhagic cyst	5	2.15
Corpus luteal cyst	39	16.81
Corpus luteal haemorrhagicum	59	25.43
Cystic follicles	92	39.65

Age distribution for functional ovarian cyst was most common in 5th decade(49.56%) and the least being 2nd and 7th decade each equally accounting (0.43%) shown in Table 2.

Functional Ovarian cyst	No.of cases	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Simple serous cyst	5	1		1		3			
Follicular cyst	16		2	6	8				
Simple cyst	16		6	3	7				
Hemorrhagic cyst	5		1	1	2			1	
Corpus luteal cyst	39		4	6	22	5		2	
Corpus luteal haemorrhagicum	59		3	16	33	7			
Cystic follicles	92		1	36	43	11	1		
TOTAL cases	232	1	17	69	115	26	1	3	
Age %		0.43%	7.32%	29.74%	49.56%	11.20%	0.43%	1.29%	

Out of 67 (20.30 %) benign neoplastic tumors, Benign serous cystadenoma was the most common accounting 22 case (n=32.83%) followed by Benign mucinous cystadenoma 19 case (28.35%).Ovarian Fibroma was the least common with 4 cases(2.98%) shown in table 3.

Table 3: Frequency and pattern of Benign ovary lesion”

Benign ovary lesion	Total number of cases(n)	Frequency (%)
Serous cystadenofibroma	8	11.94
Benign serous cystadenoma	22	32.83
papillary serous cystadenoma	6	8.95
Benign mucinous cystadenoma	19	28.35
Ovarian Fibroma	2	2.98
Dermoid cyst	4	5.97
Benign cystic teratoma	6	8.95

Age distribution of benign ovary lesion was most common seen in 4th and 5th decade with equal percentage (23.88%) and the least seen in 6th decade (4.47%) as shown in Table 4.

“Table 4: Age distribution of benign ovary lesion”

Benign ovary lesion	No.of cases	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Serous cystadenofibroma	8		2	2	4				
Benign serous cystadenoma	22	3	3	3	8	1	3	1	
papillary serous cystadenoma	6	1			3		1	1	
Benign mucinous cystadenoma	19	1	3	10		3	1	1	
Fibroma	2					2			
Dermoid cyst	4		1			3			
Benign cystic teratoma	6	1	3	1	1				
TOTAL	67	6	12	16	16	9	5	3	
Age %		8.95 %	17.91 %	23.88 %	23.88 %	13.43 %	7.46 %	4.47 %	

Out 31 (9.39 %) malignant tumours, Germ cell tumor was the most common accounting 15 cases, Teratoma being the highest 11 case(35.48%).The second commonest tumor being surface epithelial tumor with high grade serous cystadenoma being the highest case among these accounting 7 cases (22.5%) and mucinous adenocarcinoma being the least case 1(3.22%). Other tumors include sex cord stromal tumor and metastatic tumors as shown in Table 5.

“Table 5: Frequency and pattern of Malignant ovary lesion”

Malignant ovary lesion	Total number of cases(n)	Frequency (%)
Surface epithelial tumor:		
High grade serous cystadenocarcinoma	7	22.5
Papillary serous cystadenocarcinoma	3	9.67
Mucinous adenocarcinoma	1	3.22
Sex cord stromal tumor:		
Granulosa cell tumor	3	9.67
Germ cell tumor:		

Dysgerminoma	2	6.45
Teratoma	11	35.48
Straumi Ovari/Carcinoma mesodermal	2	6.45
Metastatic tumor:		
Metastatic Krukenberg tumor	1	3.22
Metastatic deposit of poorly differentiated adenocarcinoma	1	3.22

Age distribution for Malignant ovary lesion was highest in 7th decade(29.03%) followed by equal distribution in 3th and 5th decade(25.80%).The least being in 6th decade(3.22%) as shown in Table 6.

“Table 6: Age distribution of Malignant ovary lesion”

Malignant ovary lesion	No.of cases	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Surface epithelial tumors:									
High grade serous cystadenocarcinoma	7		1		2		4		
Papillary serous cystadenocarcinoma	3				1		2		
Mucinous adenocarcinoma	1				1				
Sex cord stromal tumor:									
Granulosa cell tumor	3			1	2				
Germ cell tumor:									
Dysgerminoma	2		1	1					
Teratoma	11	2	5	1	2		1		
Straumi Ovari/Carcinoma mesodermal	2		1				1		
Metastatic tumor:									
Metastatic Krukenberg tumor	1						1		
Metastatic deposit	1					1			

of poorly differentiated adenocarcinoma									
TOTAL	31	2	8	3	8	1	9		
Age%		6.45%	25.80%	9.67%	25.80%	3.22%	29.03%		

Table 7 illustrates that 5th decade was the most common peak age of incidence for non neoplastic lesions (n= 115; 45.15 %) followed by 4th decade(n= 69; 29.74 %). Benign neoplastic lesions also showed similar peak age of incidence, with 4th and 5th decade being most common each (n= 16 ; 23.88 %) followed by 3rd (n= 12 ; 17.91 %) which was 2nd most common. 7th decade(n=9;29.03%) was the most common for malignant tumors followed by 5th and 3rd Decade 8 cases each (n=8;25.80%).

“Table 7: Age distribution and Frequency of ovarian lesions”

Age group(years)	Non neoplastic Lesion (n) with Age in %	Benign Neoplastic Lesion (n) with Age in %	Malignant Neoplastic Lesion(n) with Age in %
10-19	1 (0.43%)	6 (8.95%)	2 (6.45%)
20-29	17 (7.325%)	12 (17.91%)	8 (25.80%)
30-39	69 (29.74%)	16 (23.88%)	3 (9.67%)
40-49	115 (49.56%)	16 (23.88%)	8 (25.80%)
50-59	26 (11.20%)	9 (13.43%)	1 (3.22%)
60-69	1 (0.43%)	5 (7.46%)	9 (29.03%)
70-79	3 (1.29%)	3 (4.46%)	
80+			

DISCUSSION

In our study cystic follicle(n=92;39.65%) was the most common non neoplastic lesions. The results are comparable with other similar studies done by Swati Swati et al7. In other similar studies done by Dr.Rakesh kumar Srivastava et al8, Gaikwad S.L et al9, corpus luteum cyst was the commonest functional cyst whereas simple cyst was observed to be the most frequent non neoplastic lesion in study done by Tadayon M et al10. In all these studies, functional cyst were the commonest ovarian lesion comparable to our study. The peak age incidence of functional cyst was 5th decade in our study compared to 3rd decade in study done by Dr.Rakesh kumar Srivastava et al8. According to WHO classification 2020 of ovarian tumors, surface epithelium tumors

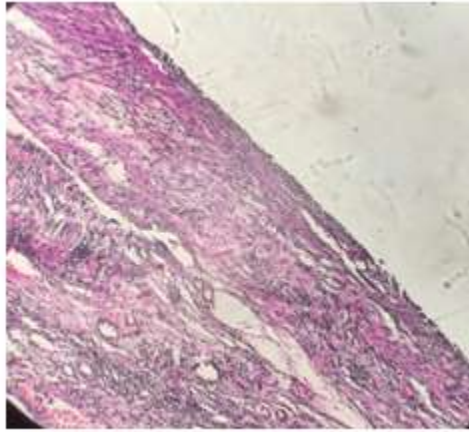
are the common neoplastic lesion of ovary worldwide. Similar result was observed in our study. Serous cystadenoma(n=22;32.83%) was the commonest benign ovarian tumor . The results were comparable to studies done by Swati Swati et al7 and Gaikwad S.L et al9. However in study done by Tadayon M et al10, mature cystic teratoma was the commonest benign neoplastic ovarian tumor .The peak age incidence of benign ovarian lesion was found to be 4th and 5th

decade in our study (each 23.88%) .Similar age incidence was found in study done by Tadayon M et al10 in which 4th decade was the peak age incidence of benign ovarian tumors while

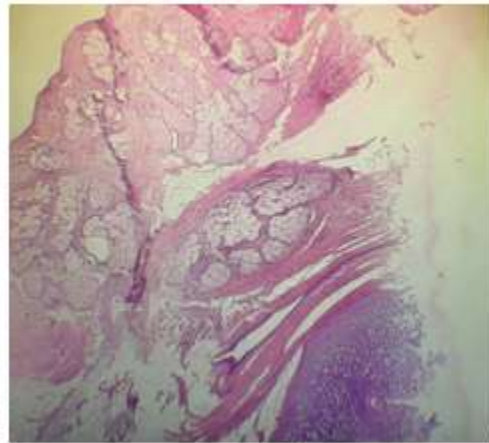
3rd decade was the peak age for benign ovarian tumors in study done by Gaikwad S.L et al9 and

Dr.Ramesh Kumar Srivastava *et al*8. Out of 31 malignant ovarian tumors ,teratoma was the commonest(n=11;35.48%).This is similar to study done by Dr.Ramesh Kumar Srivastava *et al*8 .However in most studies serous cystadenocarcinoma was the commonest ovarian malignancy as seen in studies done by Gaikwad S.L *et al*9 and Tadayon M

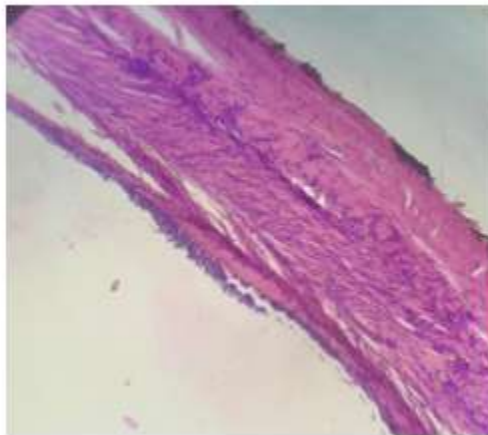
et al 10and Swati Swati *et al*7. Peak age incidence was found to be 3rd (25.80%) and 7th decade (29.03%).Similar age incidence was reported in studies done by Tadayon M *et al* 10in which 3rd decade was commonest age incidence while 7th decade was found to be more common in study done by Dr.Ramesh Kum ar Srivastava *et al*8.



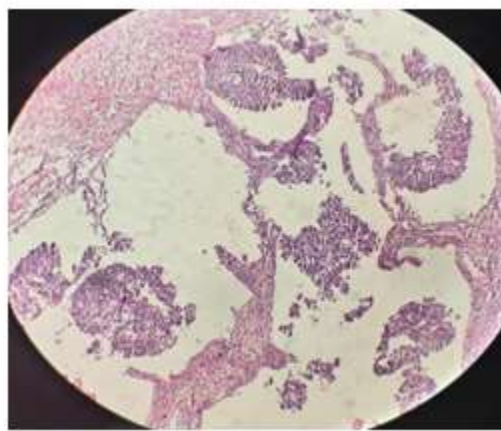
“Fig.1: Lining of Cystic follicle”



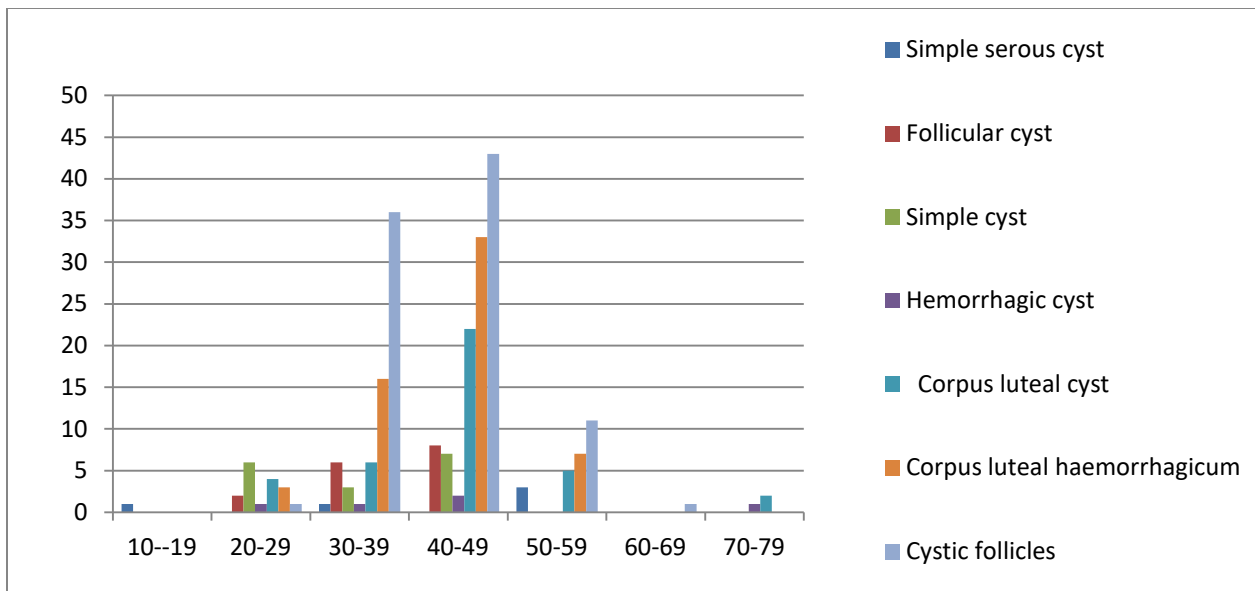
“Fig.3: Mature cystic teratoma”



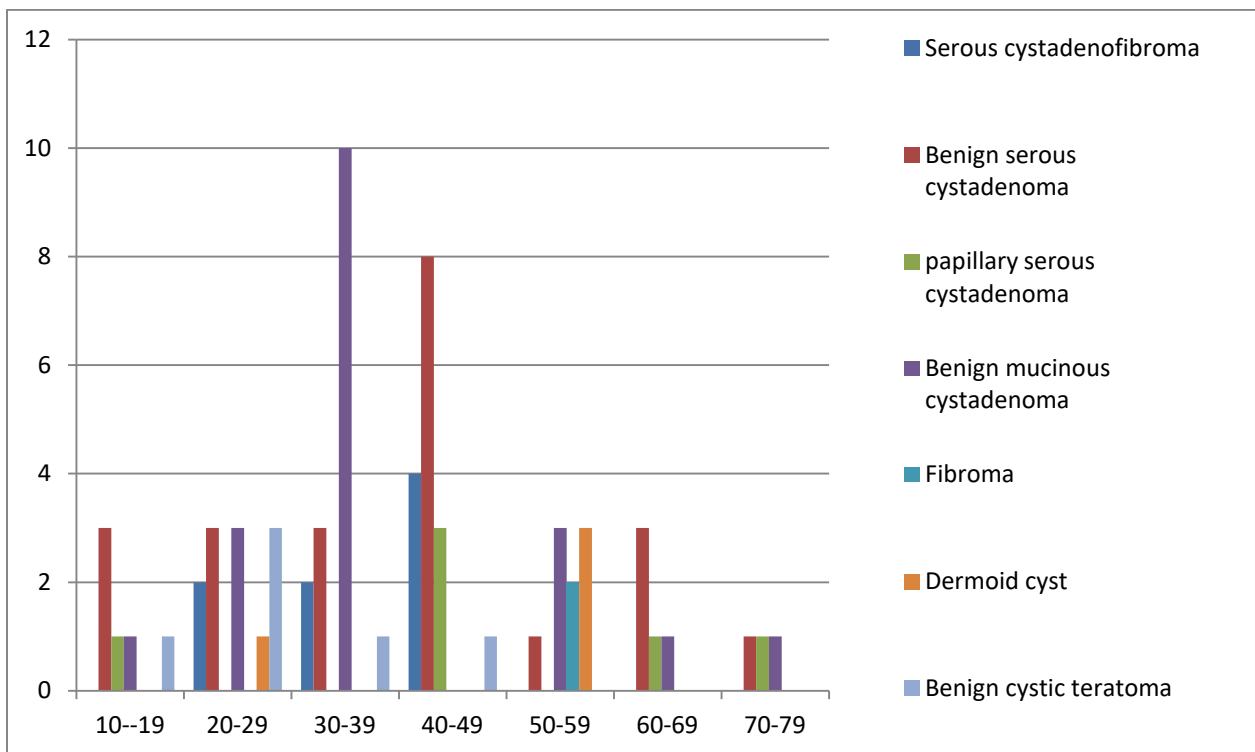
“Fig.2: Benign serous cystadenoma”



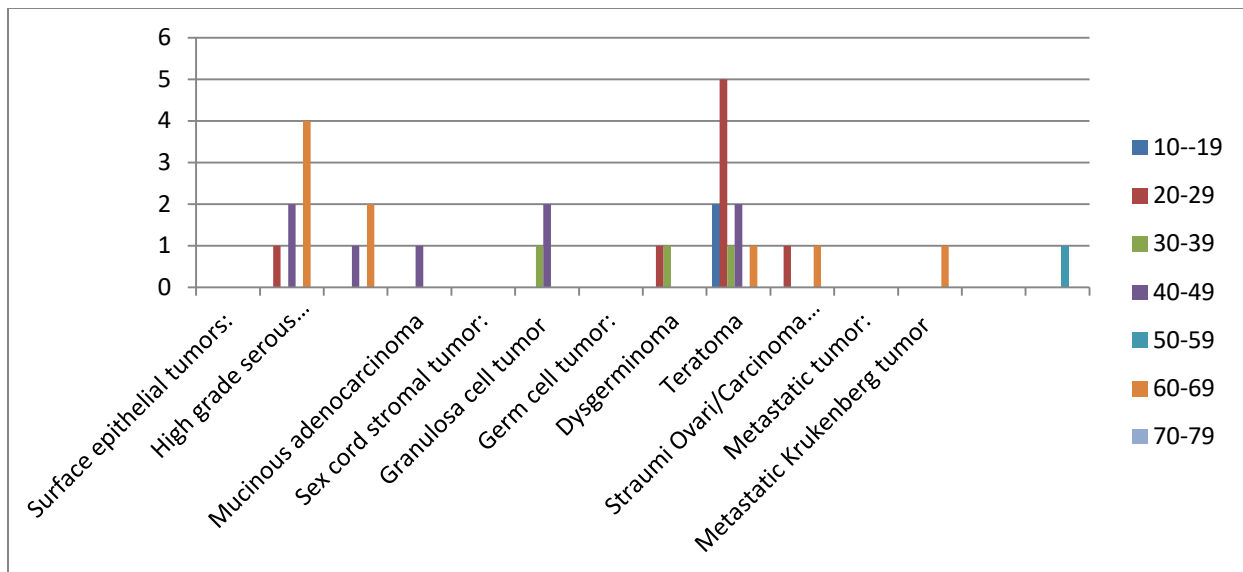
“Fig.4: Papillary serous cystadenocarcinoma”



“Graph 1: Age distribution of Functional Ovarian cyst”



“Graph 2: Age distribution of benign ovary lesion”



“Graph 3: Age distribution of Malignant ovary lesion”

CONCLUSION

In conclusion, functional ovarian cyst were the most commonly encountered ovarian lesions. The cystic follicle followed by the corpus luteal haemorrhagicum and corpus luteum cyst were the most commonly encountered functional cyst in the ovary. Majority of this functional cyst occurred in the reproductive age groups. Among the benign ovarian tumors, serous cystadenoma was the most common followed by mucinous cystadenoma, the least being ovarian fibroma which were all seen in majority of reproductive years. Among the malignant ovarian tumours, germcell tumours were most commonly seen. This finding is in contrast to common findings where surface epithelial tumours were the most commonly encountered tumours globally.

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