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Research Article

HISTOPATHOLOGICAL ANALYSIS OF UTERINE APPENDAGEAL LESIONS: A 2-YEAR STUDY AT TERTIARY HEALTH CENTRE

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ABSTRACT

Objective: The objective of the study was to evaluate the various histopathological patterns of uterine adnexal lesions and their prevalence in different age groups.

Methods: This is a prospective study conducted in the Department of Pathology, Sardar Patel Medical College and associated group of hospitals, Bikaner, on specimens of uterine appendageal lesions received from November 1st, 2020 to October 31st, 2022 for histopathological examination. The tissues were processed, then stained sections were examined microscopically and histopathological analysis done.

Results: A total of 376 cases were included in the study. Out of these, 212 were ovarian lesions, 149 were tubal lesions, and 4 cases showed involvement of both tube and ovary, whereas 11 showed the lesion of broad ligament. 32% of the lesions were tumorous, of which 73% tumors were benign, 26.2% tumors were malignant, and 0.8% were borderline tumors. Maximum uterine adnexal lesions were encountered in 21–30-year age group. Maximum (55.7%) benign tumors were in 21–40-year age group, whereas maximum (53.1%) malignant tumors were in 41–60-year age group. Mean age was 58.53±12.62 years.

Conclusion: Non-neoplastic lesions were more common as compared to neoplastic lesions and benign neoplasms outnumbered the malignant neoplasms. Tubal ectopic pregnancy was the most common non-neoplastic lesion. Ovarian teratoma was the most common benign tumor and serous cystadenocarcinoma was the most common malignant tumor encountered. Malignant tumors affect older age group compared to benign tumors.

Keywords: Uterine appendages, Histopathology, Ovary, Fallopian tube.

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INTRODUCTION

The uterine appendages are the structures which are most closely related structurally and functionally to the uterus. The uterine appendages consist of ovaries and fallopian tubes with supporting tissues. The appendages of uterus are collectively known as adnexa uteri.

Functional ovarian cysts are a common gynecological problem in women of reproductive age worldwide [1]. Ovarian tumors are common form of neoplasia in women and account for about 30% of female genital can Almost 8% of asymptomatic women aged between 25 and 40 years have ovarian tumor. Ovarian cancer is the sixth most common cancer among women and is also the seventh leading cause of cancer deaths among women worldwide [3].

About 80% of ovarian tumors are benign and these occur mostly in young women between 20 and 45 years, whereas 20% are malignant tumors common in older women between ages of 40 and 65 years and have poor prognosis [4].

Familiarity with the uterine adnexal diseases is of utmost importance for accurate and timely diagnosis. The present study is focused on the evaluation of various histopathological patterns of uterine adnexal lesions that are prevalent in north western part of Rajasthan. The study has been conducted in the department of pathology, Sardar Patel Medical College and associated group of hospitals, Bikaner.

Aim

The aim of the study was to evaluate histopathological features of various uterine appendageal lesions and to ascertain their relative frequency with age distribution.

METHODS

This study is a prospective study conducted on biopsies of uterine appendageal lesions submitted for histopathological examination. The study has been carried out in the department of pathology, Sardar Patel Medical College and associated group of hospitals, Bikaner. This histopathological study has been carried out on the specimens of uterine appendages received from November 1st, 2020 onward for 2 years. Ethical approval was obtained from the ethical committee of Sardar Patel Medical College, Bikaner, Rajasthan. The biopsies have been processed and stained sections examined under microscope.

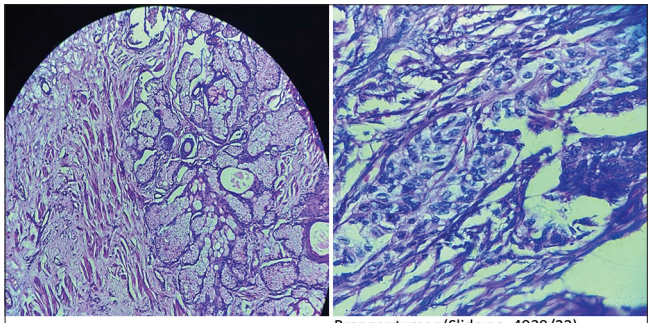
All the uterine appendage specimens and review biopsies of uterine appendageal lesions submitted in pathology department from November 1st, 2020 to October 31st, 2022 have been included in this study irrespective of age of the patient. Autolyzed/decomposed tissue specimens and inadequate tissues were excluded from the study.

Clinical data have been obtained from hospital record of the patient and from requisition form submitted along with the tissue specimens in the department of pathology. Tissues were processed; sections made from paraffin blocks and stained with H&E stain. Special staining has been performed whenever necessary. Tissue sections were examined microscopically, and histopathological analysis was done.

RESULTS

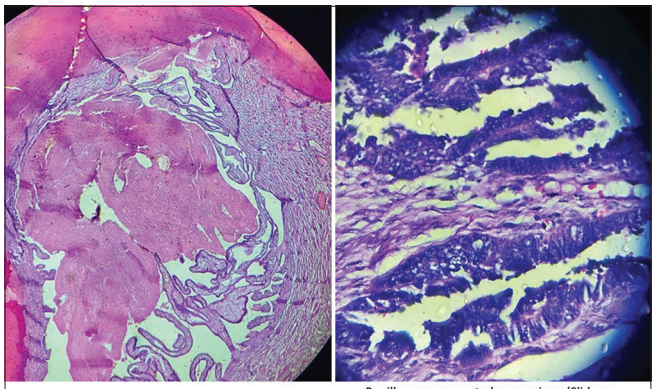
A total of 376 cases of uterine appendageal lesions have been included in the study. 212 of these were ovarian lesions, 149 were tubal lesions, 4 showed involvement of both tube and ovary, whereas 11 showed

lesion of broad ligament (Table 1). The mean age of the study population was 58.53±12.62 years. 121 lesions (32%) were tumorous, 88 of these tumors (73%) were benign, 32 of these tumors (26.2%) were malignant, and 1 (0.8%) case was borderline. 49 out of the 88 benign uterine adnexal tumors (55.7%) were in 21–40-year age group, whereas 17 out of the 32 malignant tumors (53.1%) were in 41–60-year age group (Table 2).



Teratoma (slide no. 7980/22). Shows squamous epithelium, sebaceous glands, hair follicles, brain tissue and mesenchymal components

Brenner tumor (Slide no. 4939/22). Shows nests of bland transitional epithelium within fibromatous stroma. Transitional cells have uniform oval nuclei and many have a longitudinal nuclear groove.



Ruptured ectopic pregnancy (Slide no. 4493/20). Show extrauterine chorionic villi and hemorrhage.

Papillary serous cystadenocarcinoa (Slide no. 4186/22) shows nuclear pleomorphism with large, bizarre nuclei, papillary branching also seen.

Maximum ovarian lesions were follicular cysts and corpus luteum hemorrhagicum (14.6% each), followed by teratoma (13.33%), serous cystadenoma (10.83%), mucinous cystadenoma (10.41%), adenocarcinoma (8.75%), and simple serous cyst (6.24%), whereas minimum (0.41%), that is, 1 case each was of oophoritis, hemorrhagic cyst, simple mucinous cyst, borderline mucinous tumor, Brenner tumor, and undifferentiated carcinoma.There were 0.83% cases each of endometriosis, struma ovarii, fibrothecoma, and mixed germ cell tumor, 1.66% cases of torsion ovary, 2.1% cases of corpus luteum cyst, and 2.1% cases of granulosa cell tumor. No lesion was seen in 9.6% of ovaries in the study (Fig. 1).

Maximum tubal lesions were ectopic pregnancy (42.76%), followed by chronic salpingitis (4.04%), acute on chronic salpingitis (1.69%), acute salpingitis (1.02%), and 0.67% cases each of endometriosis, Walthard cell nest, and metastasis, whereas minimum case (0.33%) was of papillary adenocarcinoma (Fig. 2). No lesion was seen in 48.15% of the fallopian tubes in the study.

Out of 11 broad ligament lesions, maximum (54.54%) were paratubal cysts, followed by 36.36% cases of paraovarian cysts, whereas minimum 9.1% were of ectopic pregnancy (Fig. 3).

DISCUSSION

In our study, maximum (135) adnexal lesions were in 21–30-year age group (35.90%), followed by 107 (28.45%) in 31–40-year age group,

Table 1: Site wise frequency of uterine adnexal lesions

Site of lesions	Number of cases	Percentage
Ovary	212	56.4
Tube	149	39.6
Broad ligaments	11	2.9
Both ovary and tube	4	1.1
Total	376	100

66 (17.55%) in 41–50 years, 27 (7.18%) in 51–60 years, 18 (4.79%) in 11–20 years, 16 (4.26%) in 61–70 years, and 6 (1.60%) in 71–80-year age group. There was no case in 0–10-year age group and 1 case (0.27%) in >80-year age group. Mean age of the study population was 58.53 ± 12.62 years.

Bhatia and Bhargava (2021) [5], similarly found in their study that most of the patients were in 21–40-year age group which comprised 58.18% of cases of adnexal masses. The youngest patient in their study was 15 years of age and the oldest was 75 years of age.

In our study, maximum 212 cases were ovarian lesions (56.4%), followed by 149 (39.6%) tubal lesions, 11 (2.9%) cases were lesions of broad ligament, whereas minimum 4 (1.1%) cases showed lesions of both, ovary as well as fallopian tube.

Our study was in concordance with that conducted by Bhatia and Bhargava (2021) [5] who found that maximum adnexal masses were due to ovarian pathology (79%), followed by tubal lesions (15.45%), mostly due to ectopic gestation, whereas only 5.45% of cases had combined pathology such as tubo-ovarian abscess and endometriosis.

In our study, maximum ovarian lesions were follicular cysts and corpus luteum hemorrhagicum (14.6% each), followed by teratoma (13.33%), serous cystadenoma (10.83%), mucinous cystadenoma (10.41%), adenocarcinoma (8.75%), simple serous cyst (6.24%), 2.1% cases of corpus luteum cyst and granulosa cell tumor, and 1.66% cases of torsion ovary followed by 2 cases each (0.83%) of endometriosis, struma ovarii, fibrothecoma, and mixed germ cell tumor, whereas minimum 1 case each (0.41%) of oophritis, hemorrhagic cyst, simple mucinous cyst, borderline mucinous tumor, Brenner tumor, and undifferentiated carcinoma. No lesion was seen in 9.6% cases.

In our study, most common benign tumor was mature cystic teratoma, followed by serous cystadenoma and most common malignant tumor was adenocarcinoma. Similarly, Singh *et al.* (2017) [6] found that mature cystic teratoma was the most common benign tumor followed by serous cystadenoma. Serous cyst adenocarcinoma was the most common occurring malignant tumor followed by mucinous cystadenocarcinoma in their study.

Patil *et al.* (2017) [7] in their study found that serous cystadenoma (41.93%) was the most common benign tumor followed by mucinous cystadenoma (32.25%). Serous cystadenocarcinoma (38.46%) was the most common malignant tumor. Most common germ cell tumor was mature cystic teratoma (73.3%), whereas granulosa cell tumor (50%) was the most common sex cord stromal tumor.

Jindal *et al.* (2017) [8] found that serous adenocarcinoma (85.05%) was the most prevalent type of malignant tumor followed by mucinous carcinoma (7.1%), clear cell (6.1%), and endometrioid carcinoma (1.75%).

Nair and Sughija (2020) [9], in contrast to our study, found that the most common benign neoplasm was serous cystadenoma followed by mucinous cystadenoma. There were 2 cases of mucinous cystadenocarcinoma with borderline malignancy and 1 case of serous papillary cystadenocarcinoma in their study.

Table 2: Age-wise distribution of uterine adnexal tumors

Benign	0–20 year	21–40 year	41–60 year	61–80 year	81–100 year
Serous cystadenoma	3	14	6	3	0
Mucinous cystadenoma	2	13	8	2	0
Brenner tumor	0	0	1	0	0
Teratoma	0	21	10	1	0
Struma ovarii	0	1	0	1	0
Fibrothecoma	0	0	0	2	0
Total	5	49	25	9	0
Malignant					
Borderline mucinous tumor	0	0	1	0	0
Granulosa cell tumor	0	1	3	1	0
Mixed germ cell tumor	1	0	1	0	0
Undifferentiated carcinoma	0	0	1	0	0
Adenocarcinoma	0	5	11	4	1
Metastasis	0	0	0	2	0
Total	1	6	17	7	1

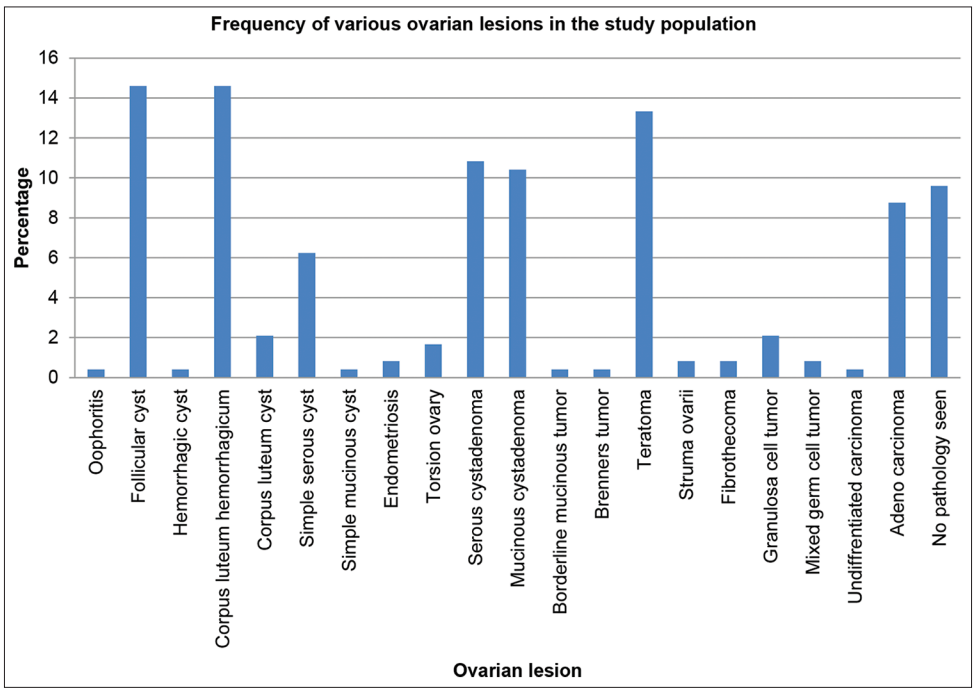


Fig. 1: Distribution of ovarian lesions

In our study, benign ovarian tumors were found to be more common than the malignant ones. Wills and Mathew (2016) [10] also found a higher incidence of benign tumors compared to malignant ones. They found that, among the neoplastic lesions, benign tumors were 91.1%, malignant tumors were 7.1%, and borderline tumors were 1.8%.

Singh *et al.* (2017) [6] also found a higher incidence of benign tumors compared to malignant tumors. Among the 193 neoplastic ovarian lesions in their study, 181 (94 %) were benign, whereas 4 (2%) were borderline and 8 (4 %) were malignant.Similarly, Patil *et al.* (2017) [7] observed that there were more benign tumors compared to malignant tumors. Out of 151 cases, 124 (82.1%) were benign, 1 case (0.7%) was borderline, and 26 cases (17.2%) were malignant.

Similarly, Barbhuiya *et al.* (2021) [11] found that, out of 76 cases in their study, 22 (28.9%) were malignant. Mukhiya *et al.* (2021) [12] in their study found that out of 157 ovarian neoplasms, 63.06%, 33.76%, and 3.18% of neoplasms were benign, malignant, and borderline, respectively.

In our study, maximum lesions of fallopian tube (42.76%) were ectopic pregnancy followed by chronic salpingitis (4.04%), acute on chronic salpingitis (1.69%), acute salpingitis (1.02%), and 0.67% cases each of endometriosis, Walthard cell nests, and metastasis, whereas minimum 1 case (0.33%) was of papillary adenocarcinoma. No lesion was seen in 48.15% of cases.

Similarly, Bagwan *et al.* (2004) [13] found that most common lesion was ectopic pregnancy (11.79%). Chronic salpingitis was seen in 4.22% cases, acute on chronic salpingitis (6%), acute salpingitis (2.62%), primary malignancy and endometriosis (0.15%), Walthard cell nest cases (1.45%), and no pathology seen in 66.52%.

Mahajan *et al.* (2016) [14] also found in their study that maximum 10.5% of cases were of ectopic pregnancy. This was followed by chronic salpingitis (10% cases) endometriosis and metastasis (2% each), whereas minimum (0.5%) cases were of acute salpingitis. There was no lesion in 69% of cases.

Ahmad *et al.* (2020) [15] found tubal ectopic to be the most common pathology similar to our study. Out of total 439 fallopian tube specimens, 269 (61.28%) were normal, whereas in 170 cases (38.72%) fallopian tubes were abnormal. The most common histopathological findings

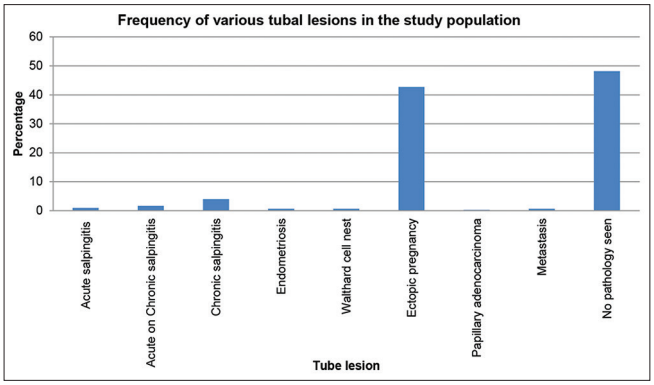


Fig. 2: Distribution of fallopian tube lesions

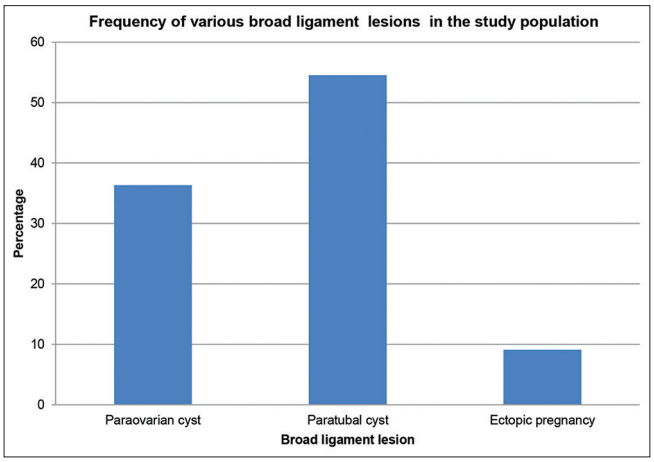


Fig. 3: Distribution of lesions of broad ligament

observed were tubal ectopic seen in 77 out of the 170 (17.54%) cases, chronic salpingitis accounting for 55 cases (12.53%), paratubal cysts in 22 cases (5.01%), hydrosalpinx in 3 cases (0.68%), hematosalpinx in 2 (0.46%), pyosalpinx in 1 case (0.23%), fimbrial cysts in 5 (1.14%), Walthard cell rest, granulomatous salpingitis, and endometriosis in 1 case each (0.23%).

On the contrary, Devi *et al*. (2017) [16] found that the most common lesion was chronic salpingitis which accounted for 33.2% cases with ectopic pregnancy being the 2nd most common lesion which was seen in 21.6% of cases. Borgohain *et al.* (2020) [17] also found in their study that 3% of cases were unremarkable, 77.4% were diagnosed as chronic salpingitis, 8.95% as hydrosalpinx, and 2.47% as ectopic pregnancy.

In our study, out of 11 broad ligament lesions, maximum 54.54% were paratubal cysts, followed by 36.36% paraovarian cysts, whereas minimum 9.1% were of ectopic pregnancy. Oliveira *et al*. (2020) [18] also found that paratubal and paraovarian broad ligament cysts represent approximately 10% of adnexal masses.

In our study, maximum (107) cases of ovarian lesions were in 21–40-year age group, whereas minimum (1) case was in >80-year age group. There was no case of below 10 years age. 10 cases were in 0–20-year age group, out of which maximum 4 cases were of corpus luteum hemorrhagicum, whereas minimum 1 case was of mixed germ cell tumor. In 20–40-year age group, maximum 21 cases were of teratoma and 20 cases were of follicular cyst, whereas minimum 1 case each of struma ovarii, granulosa cell tumor, and simple mucinous cyst were seen. In 41–60-year age group, maximum (14) cases were of corpus luteum hemorrhagicum and follicular cyst, whereas minimum (1) case each was of hemorrhagic cyst, corpus luteum cyst, endometriosis, borderline mucinous tumor, Brenner tumor, undifferentiated carcinoma, and mixed germ cell tumor. In 61–80-year age group, maximum (4) cases were of adenocarcinoma, followed by 3 cases of serous cystadenoma and simple serous cyst, whereas minimum (1 case each) was of oophoritis, follicular cyst, corpus luteum hemorrhagicum, endometriosis, teratoma, struma ovarii, and granulosa cell tumor. In 80–100-year age group, there was only one case of adenocarcinoma. In our study, age range encountered was 11 years to 86 years.

Mukhiya *et al.* (2021) [12] likewise found that age range was 14 to 84 years.

Patil *et al.* (2017) [7] found that most common age group affected was 31 to 45 years.

Singh *et al.* (2017) [6] found that the age of patients with non-neoplastic lesions and neoplastic lesions varied from 13 to 72 years.

In our study, maximum (128) cases of tube lesions were in 21–40 year age group, whereas minimum (6) cases were in 61–80-year age group. In the age group 0–20 years, maximum (6) cases had ectopic pregnancy and 1 had acute on chronic salpingitis. In 21–40-year age group, maximum (119) cases had ectopic pregnancy, whereas minimum (1) case had Walthard cell nest. There were two cases each of acute salpingitis and acute on chronic salpingitis and 4 cases of chronic salpingitis. In the 41–60-year age group, maximum (6) cases were of chronic salpingitis, whereas minimum (1) case each was of Walthard cell nest, endometriosis, and acute salpingitis. There were two cases each of ectopic pregnancy and acute on chronic salpingitis. In 61–80-year age group, there were maximum (2) cases each of chronic salpingitis and metastasis and minimum 1 case each of endometriosis and papillary adenocarcinoma. There was no tubal lesion in the age group of 81–100 years.

This was in concordance with the study of Devi *et al*. (2017) [16] who found that the most common age group involved was between 20–30 years. Ahmad *et al*. (2020) [15] also observed that ectopic pregnancy was most common in the age group of < 30 years in their study.

In our study, 68% of uterine appendageal lesions were non tumorous, whereas 32% were tumorous lesions and out of the 32% (121) tumorous lesions, 88 (73%) were benign, 1 (0.8%) case was borderline, and 32 (26.2%) were malignant.

CONCLUSION

Adnexal masses often pose diagnostic dilemma to the treating doctors. Appendageal non-neoplastic lesions are more common compared to neoplastic lesions and the benign neoplasms are more common than malignant neoplasms. Site-wise, ovarian lesions were the most commonly encountered uterine appendageal lesions in the study population. Malignant uterine adnexal tumors usually affect older age group compared to benign tumors. Tubal ectopic was the most common non-neoplastic lesion, ovarian teratoma was the most common benign tumor and ovarian serous cystadenocarcinoma was the most common malignant tumor in the study. Detailed knowledge of the histomorphological spectrum of uterine adnexal lesions aids in timely and accurate diagnosis, thereby helping to reduce morbidity and mortality due to these lesions.

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AUTHORS' CONTRIBUTION

All the authors have contributed equally.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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