

## To Study the Correlation of Surgical, Radiological and Histopathological Findings of Adnexal Masses

Urmila Tripathi<sup>1</sup>, Vaishali Singh<sup>2</sup>, Neelam Raghuwanshi<sup>3</sup>, Priyanka Paliwal<sup>4</sup>

<sup>1&4</sup>Department of Obstetrics and Gynaecology, G R Medical College and JA Group of Hospitals, Gwalior M.P.

<sup>2&3</sup>Department of Obstetrics and Gynaecology, SRVS Medical College, Shivpuri, M.P.

Received: 16-09-2023 / Revised: 28-09-2023 / Accepted: 16-10-2023

Corresponding author: Dr. Priyanka Paliwal

Conflict of interest: Nil

### Abstract:

**Background & Methods:** The aim of the study is to study the correlation of surgical, radiological and histopathological findings of adnexal masses. Adenxal mass is a very common clinical presentation in gynaecological practice. Adnexal masses can be ovarian masses and cyst, however, paratubal cyst, hydrosalpinx and other non-ovarian masses are also included. Complete general physical examination, per abdomen and bimanual examination (where permissible) were done to make provisional diagnosis. For further evaluation, USG either TAS or TVS was done with color doppler and CECT for suspicious cases of malignancy was done. Standard laboratory tests consisting of complete hemogram, fasting and postprandial blood sugar, CA125 and other tumor makers, liver and renal function test were done prior to surgery.

**Results:** Maximum 45% cases out of 100 found to be ovarian cyst. 12% cases were diagnosed dermoid cyst during surgery while 6 cases of ovarian cyst and 1 chocolate cyst also confirmed as dermoid cyst on histopathology. 1 broad ligament fibroid were diagnosed as paraovarian mass in radiological imaging found broad ligament fibroid during laparotomy also confirmed same on histopathology. On histopathology (gold standard), 14 cases were confirmed malignant. But on radiology only 11 cases of advance stage showed features of malignancy. During laparotomy, 16 cases were found malignant in which 14 were confirmed on HPE but and 2 cases (1 granulosa cell tumor and 1 tubercular TOA) found benign on HPE.

**Conclusion:** Inaccurate size determinations can lead to the impression of false-negative imaging reports, for example when a 3 cm mass found surgically was missed in USG reporting. CECT helps in diagnosing metastatic sites, bulk of disease and provide help in making decision that what should be extent of cytoreduction. Correlation of the lesion location and appearance at imaging with the surgical findings will aid in the detection of potential pathology reporting errors. In conclusion, imaging, surgical, and histopathological correlation is important in assessing the diagnostic accuracy of imaging of adnexal masses.

**Keywords:** histopathological, surgical, radiological & adnexal masses.

**Study Design:** Prospective Observational Study.

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### Introduction

The prevalence of adnexal masses is found significantly variable among different age groups of women but most commonly seen in reproductive age group. Many adnexal masses are asymptomatic which resolve spontaneously or by conservative treatment, however some asymptomatic masses can be early ovarian cancer and require early immediate detection.

The ultrasound with color doppler helps to identify tumor characteristics, the presence of ascites, hydronephrosis, enlarged lymph nodes, liver metastasis or an omental cake, surface neovascularization [1].

However now a days, CECT and MRI has been used primarily in patients with ovarian malignancies to reveal the stage of tumor, invasion to surrounding structures, response to recurrent disease and also demonstrate tumor response to therapeutic approach [2]. Surgery serves two roles both diagnostic and therapeutic [3]. The diagnostic role of surgery enables: identify the nature (benign or malignant) and location (ovarian, tubal and colonic), if malignant, defining the areas to which the disease has spread (stage); providing information on other poor prognostic variables such as grade and histological type. Therapeutic role of surgery is optimal debulking, for survival advantage.

The Ovaries have high capacity of producing both benign and malignant tumors throughout a woman's life. Due to the complex structure of ovaries, the histopathological findings of ovarian tumors are quite different [4]. The broad differential diagnosis of an adnexal mass includes lesions of infectious origin, such as a hydrosalpinx or tubo-ovarian abscess caused by pelvic inflammatory disease; physiologic or functional cysts; endometriosis; both benign and malignant neoplasms, and masses originating in organs or tissues proximal to the adnexa [5].

#### Material and Methods

The study was done in the Department of Obstetrics and Gynecology, Kamla Raja Hospital, Gwalior, M.P. The study was conducted with the data collection for a period of two calendar years with effect from November 2019 to June 2021.

#### Inclusion Criteria

- Female patients presenting with symptoms like lower abdominal pain, menstrual irregularity, palpable masses in abdomen.
- Asymptomatic female patients where adnexal mass detected at the time of routine per abdo-

men and pelvic examination or at the time of radiological examination.

#### Exclusion Criteria

- Women on ovulation induction drugs.
- Masses arising from urinary tract and gastrointestinal tract.
- Non-gynecological adnexal masses either on clinical or radiological examination.

#### Procedure

Ethical approval was taken from the institutional ethics committee. Informed consent was taken from all subjects willing to participate before enrolling them in study. Detailed history about presenting complaints and menstrual history was taken. Complete general physical examination, per abdomen and bimanual examination (where permissible) were done to make provisional diagnosis. For further evaluation, USG either TAS or TVS was done with color doppler and CECT for suspicious cases of malignancy was done. Standard laboratory tests consisting of complete hemogram, fasting and postprandial blood sugar, CA125 and other tumor markers, liver and renal function test were done prior to surgery.

#### Result

**Table 1: Age incidence**

Age Group	Number of cases	(%)
16-20 Year	7	7%
21-25 Year	21	21%
26-30 Year	16	16%
31-35 Year	18	18%
36-40 Year	8	8%
41-45 Year	14	14%
46-50 Year	4	4%
51-55 Year	3	3%
56-60 Years	2	2%
61-65 Years	5	5%
66-70 Years	2	2%
Mean±SD	35.53±12.55	

Age of the patients with adnexal masses ranged between minimum 16 years to maximum 70 years. Majority that is 21 out of 100 patients were in age group of 21 years to 25 years. Out of 100, 88 (88%) patients were in their reproductive phase, whereas 12 (12%) patients were already achieved their menopause. The mean age of the patients with adnexal masses was 35.53 years with standard deviation of 12.55.

**Table 2: Distribution of patients according to symptoms**

Symptoms	Number of cases	(%)
Abdominal mass	59	59%
Abdominal pain	69	69%
Bleeding PV	10	10%

All the cases studied were presented to us with the symptoms like abdominal pain, abdominal mass or bleeding per vaginum. As evidenced from Table 2, maximum cases 69% we encountered presented with abdominal pain/discomfort followed by palpable abdominal mass. Only 10% patients presented with bleeding per vaginum.

**Table 3: Distribution of patients according to laterality of adnexal mass (on radiological and surgical findings)**

Side of involvement	Number of cases	(%)
Left	36	36%
Right	53	53%
Bilateral	11	11%
Total	100	100%

Out of 100 cases only 11% cases were having bilateral adnexal mass. There was no discrepancy found regarding the side of adnexal masses between radiological findings and surgical findings.

**Table 4: Distribution of patients on the basis of consistency of adnexal masses (Surgical Finding)**

Investigation		Number of cases	(%)
Consistency	Cystic	54	54%
	Firm	3	3%
	Solid	9	9%
	Cystic Solid	5	5%
	Complex	29	29%

Out of 100 cases, 54% cases had cystic consistency of adnexal masses during laparotomy whereas 5% cases had cystic with solid consistency indicating towards malignant mass and 9% had solid consistency of ovarian origin all of which were diagnosed malignant on histopathological examination. Out of 100 patients, 29 patients have

complex consistency of adnexal masses, and 8 cases out of 29 were having tubercular abscess involving ovary and tubes. 3% cases with adnexal mass which were found firm in consistency, were confirmed as tubercular abscess on histopathology. So 11 cases have tubercular abscess with firm and complex consistency during laparotomy.

**Table 5: Distribution of patients according to Surgical findings**

Surgical findings		Number of cases	(%)
Provisional Diagnosis	Ovarian Cyst	45	45%
	Para ovarian Cyst	6	6%
	Dermoid Cyst	12	12%
	Chocolate cyst	10	10%
	Broad Ligament Fibroid	1	1%
	Ovarian Carcinoma	16	16%
	Other ( TO mass)	10	10%

Maximum 45% cases out of 100 found to be ovarian cyst. 12% cases were diagnosed dermoid cyst during surgery while 6 cases of ovarian cyst and 1 chocolate cyst also confirmed as dermoid cyst on histopathology. 1 broad ligament fibroid were diagnosed as paraovarian mass in radiological imaging found broad ligament fibroid during laparotomy also confirmed same on histopathology.

**Table 6: Comparison between radiological findings, surgical findings and HPE reports**

	Radiological	Surgical	HPE
Benign	89	84	86
Malignant	11	16	14

On histopathology (gold standard), 14 cases were confirmed malignant. But on radiology only 11 cases of advance stage showed features of malignancy. During laparotomy, 16 cases were found malignant in which 14 were confirmed on HPE but and 2 cases (1 granulosa cell tumor and 1 tubercular TOA) found benign on HPE.

### Discussion

Adnexal mass is a common entity in gynaecologic patients, second only to patients presenting with menstrual abnormalities and vaginal discharges [6,7]. A study done by Bhaggde AD et al., 2017 in 50 women presented with adnexal masses found that the mean age of patient as 31.5 yr and most of malignant masses in postmenopausal women [8].

In young patients with infertility an inflammatory benign pathology should be considered first. Our study is similar to the study of Walsh et al. 1979 [9], who reviewed 204 gynaecological masses. It was encountered that 8 masses were described as thick walled with necrotic centre to be abscesses which later on proved to be malignant neoplasm. Berland et al. in 1982 have mentioned in his study the difference between the pyogenic and tubercular PID [10]. In Tuberculosis where fallopian tube is patent and the relatively resistant ovary may develop deep infection. Pyosalpinx produces fluid collection with thick irregularly shaggy walls with fluid in the POD due to peritonitis, similar findings were noted in our study during exploratory laparotomy.

A study by Modesitt et al. [11], 2003 in postmenopausal women, no cancer were detected in 3259 simple ovarian cysts less than 10 cm. One of the other study reported that malignancy only occurred in simple cysts larger than 7.5 cm, and in those cases small nodularities visible at gross pathologic examination were missed at ultrasonography [12]. This study is similar to our study, where out of 14 malignant cases (confirmed by HPE), in 10 cases, the masses were of size >10 cm. In one case of endometroid carcinoma, the mass was of size of 15\*20 cm in surgical findings and same 15\*20 cm in US findings.

### Conclusion

Inaccurate size determinations can lead to the impression of false-negative imaging reports, for example when a 3 cm mass found surgically was missed in USG reporting. CECT helps in diagnosing metastatic sites, bulk of disease and provide help in making decision that what should be extent of cytoreduction. Correlation of the lesion location and appearance at imaging with the surgical findings will aid in the detection of potential pathology reporting errors. In conclusion,

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