



## Study of Adnexal Mass in Postmenopausal Women: A Case Series in a Tertiary Care Setting

Juhi Patel, Shilpa Sapre\* and Charmi Shah

Department of Obstetrics and Gynecology, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India

### \* Corresponding Author

Shilpa Sapre, Department of Obstetrics and Gynecology, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India, Phone: +91 7043010502, e-mail: shilpasapre14@gmail.com

### Citation

Juhi Patel (2025) Study of Adnexal Mass in Postmenopausal Women: A Case Series in a Tertiary Care Setting. J Women Health Care Reprod Med 1(1):103

### Publication Dates

**Received date:** October 05, 2025

**Accepted date:** October 22, 2025

**Published date:** October 31, 2025

### Abstract

**Context:** Adnexal masses represent a spectrum of disorders arising from the ovaries, fallopian tubes, broad ligament and soft tissues surrounding the uterus. They can be classified as gynaecological or non-gynaecological, benign, borderline or malignant. Symptomatology of adnexal mass ranges from completely vague symptoms to acute abdomen hence early diagnosis and management can lead to favourable outcomes.

**Objectives:** To study the clinical profile of post-menopausal women undergoing surgical intervention for adnexal masses and to classify adnexal masses as benign and malignant based on clinical, biochemical and radiological criteria.

**Settings and Design:** This is a retrospective study design carried out at a tertiary care rural medical college in Gujarat.

**Subjects and Methods:** Data was collected from medical record files of all post-menopausal women admitted to our hospital for surgical management of adnexal mass. Clinical profile, radiological, biochemical and histopathological records of these patients were studied in detail.

**Statistical Analysis:** Statistical programme used for analysis was STATA 14.2.

**Results:** 16 patients fulfilled the inclusion criteria. About 13 patients with adnexal mass had presented with abdominal pain as chief complain. And 4 patients having post-menopausal bleeding. Most common site of origin of adnexal masses was ovary followed by fallopian tube. Most common adnexal

mass on histopathological diagnosis was serous variety (9 cases, 56.25%) followed by mucinous cyst adenoma (3 cases, 18.75%), mature cystic teratoma (1 case, 6.25%), paraovarian cyst (1 case, 6.25%), hydrosalpinx (1 case, 6.25%), fibroma (1 case, 6.25%). Among 16 patients, 4 (25 %) patients were diagnosed with borderline or high-grade ovarian tumours. In the search of malignant adnexal mass Sensitivity of Ca-125 (Cancer antigen- 125) was 75% and Specificity of Ca-125 was found to be 81%. Sensitivity of RMI (Risk of Malignancy Index) >100 was 75% and specificity was 75 while Sensitivity and Specificity of RMI>200 was 75% and 91% respectively.

**Conclusion:** Adnexal masses have been a challenge for the treating gynaecologist. Detailed history, clinical examination, biochemical markers & imaging gives a fair idea about the site of origin & also helps in differentiating benign from malignant masses. Ovarian origin of adnexal masses is the most common & majority of them are benign but a high index of suspicion should be kept for malignancy in case of post-menopausal age group. Ca-125 and RMI definitely helps to differentiate between benign and malignant potential.

**Keywords:** Adnexal Mass; Postmenopausal Women; Risk of Malignancy Index; Ovarian Tumours

## Introduction

Adnexal masses have always been an enigma for the treating gynaecologist. They present a diagnostic dilemma because of varied differential diagnosis. The close proximity to small & large bowel also poses a problem in clinching the diagnosis. Majority of these adnexal masses are benign but without histopathological tissue diagnosis, a definitive diagnosis is generally precluded. The differential diagnosis of adnexal mass ranges from benign cysts, Para tubal cysts, ectopic pregnancy, appendicular lump, hydrosalpinx, endometriotic cysts and borderline ovarian tumours & malignant ovarian tumours. Since ovaries produce physiological cysts in menstruating women, the likelihood of a benign mass is higher in women of reproductive age group. In contrast, the presence of an adnexal mass in prepubertal girls and postmenopausal women increases the likelihood of a malignant neoplastic aetiology [1].

Symptoms of adnexal mass are nonspecific and they are mostly vague in nature like abdominal bloating, epigastric pain, retching etc. so, patient presents late to the gynaecologist. Common symptoms associated with adnexal masses include lower abdominal pain, irregular vaginal bleeding, bloating or abdominal distension, dyspareunia, urinary symptoms and altered bowel habit [2]. Determining the exact frequency of adnexal masses is not possible because most of these, particularly simple ovarian cysts develop and resolve spontaneously. Radiological testing allows detailed evaluation of the location and character of the mass. Overall, approximately 10% of ovarian cancers are hereditary. As such, patients with a history suggestive of a hereditary breast-ovarian cancer syndrome (BRCA1-BReast CAncer gene1 or BRCA2-BReast CAncer gene2) or (HNPCC-hereditary nonpolyposis colorectal cancer or Lynch syndrome) are at increased risk for malignancy [3]. Other Risk factors for ovarian cancer are age more than 60 years; early menarche; late menopause; nulliparous women and infertility. The initial detection and evaluation of an adnexal mass requires a high index of suspicion, a detailed history taking, thorough physical examination, appropriate laboratory and radiographic investigations, and keeping low threshold of diagnosis specially for postmenopausal women [4]. In clinical examination, peri-menopausal and postmenopausal women presenting with pelvic or lower abdominal symptoms should undergo thorough examination based on their presenting complain. A cancer antigen 125 (Ca 125) test may assist in the evaluation of an adnexal mass in appropriate patients. Ca 125 levels also are elevated in other conditions like menstruation, pelvic inflammatory disease, endometriosis etc. [5]. Because of substantial overlap

in Ca 125 levels between pre- and postmenopausal women may occur, this level alone is not recommended for differentiating between a benign and a malignant adnexal mass [6]. Other tumour markers like CEA (carcinoembryonic antigen), CA-19-9 (carbohydrate antigen- 19-9), also help in differentiating mucinous ovarian tumours from serous ovarian Tumours. Transvaginal Ultrasonography remains the standard imaging modality for evaluation of adnexal masses [7]. The possibility of ovarian malignancy increases with ovarian mass size greater than 10 cm, bilateral masses, solid components, thick septation, and presence of ascites. CT (Computed Tomography) scan of whole abdomen pelvis and MRI (Magnetic Resonance Imaging) both have value in the diagnosis of extra pelvic extension of adnexal mass and accordingly, the treatment can be planned. Large ovarian or adnexal masses, whether cystic or solid should be imaged by MRI [8]. The Risk of Malignancy Index (RMI) uses menopausal status, ultrasound characteristics, and the Ca 125 level to predict the probability of malignancy in an ovarian mass. RMI threshold of greater than 200 is highly suspicious of malignant ovarian mass [9]. Hence this tool helps in discriminating between benign and malignant adnexal mass.

### Objectives:

1. To study the clinical profile of post- menopausal women undergoing surgical intervention for adnexal masses.
2. To classify adnexal masses as benign and malignant based on biochemical and radiological features.
3. To analyse the accuracy of RMI score in classifying adnexal masses as benign or malignant.

## Material and Methods

We conducted this retrospective observational study from Jan 2017 to Dec 2010 in the Department of Obstetrics and Gynaecology of a Tertiary Care rural Hospital in Gujarat.

We obtained ethical clearance from the Institutional Ethics Committee of Bhaikaka university. All the patients gave their consent and signed the informed consent form before they are enrolled in the study.

### Inclusion criteria

All postmenopausal women who were operated for adnexal mass in emergency or electively were included in the study.

## Exclusion criteria

Patients with incomplete records were excluded from the study. Patients with Pancreatic, colon, breast, cervix, endometrium and gastrointestinal carcinomas were also excluded.

Patients with previous operative interventions were also excluded from study.

We had used a Microsoft excel sheet for data collection. Data was collected from medical record files of last 3 years. Statistical analysis by done by using chi-squared test. Statistical programme used for analysis was STATA 14.2. Detailed history, Clinical findings, ultrasonography and biochemical parameters were recorded. Histopathological reports were also co-related. Risk Malignancy Index [RMI= U\*M\*125] was also noted.

## Result

A total of 16 patients have been identified, and their ages ranged from 47 to 71 years old, with an average of 57 years. Clinical features and outcomes of the patients are summarized in Table 1. About 11 patients with adnexal mass had presented with abdominal pain as chief complain. And 4 patients having post-menopausal bleeding. 1 patient had presented with urinary complaints. 1 patient diagnosed having adnexal mass in routine health check-up as an incidental finding. Majority of women were multiparous having 3 or more than 3 children. Only 2 women were nulliparous. Most common site of origin of adnexal masses was ovary followed by fallopian tube. The indications for surgery were adnexal mass in post-menopausal women. 8 patients undergone staging laparotomy in suspicion of malignancy. In 7

patients total abdominal hysterectomy, cystectomy with bilateral salpingo-oophorectomy were performed. In one patient bilateral salpingo-oophorectomy was done. 13 patients operated successfully with no complications and minimal blood loss. 13 patients had uneventful recovery, and their subsequent post-operative courses were uncomplicated. In one patient of staging laparotomy intraoperatively sigmoid colon injured and sigmoid colon repair was done. 3 patients underwent relaparotomy for burst abdomen during post-operative period. Two wererecovered well with relaparotomy but 1 patient expired after prolonged Intensive care unit stay because of sepsis. Most common adnexal mass on histopathological diagnosis was serous epithelial origin (9 cases, 56.25%) followed by mucinous cyst adenoma (3 cases, 18.75%), mature cystic teratoma (1 case, 6.25%), paraovarian cyst (1 case, 6.25%), hydrosalpinx (1 case, 6.25%), fibroma (1 case, 6.25%). In 9 cases of serous epithelial ovarian origin 4 patients had borderline or high-grade malignant mass. Among those 4, one patient was having high grade serous carcinoma of bilateral ovaries with Ca- 125 value >1000 and RMI value >3000, second patient was having poorly differentiated serous papillary carcinoma of left ovary, third patient was having serous papillary cystic tumour of borderline malignancy and fourth one was having serous cystadenocarcinoma. Among 16 patients, 4 (25 %) patients were diagnosed with borderline or high-grade ovarian tumours. In the search of malignant adnexal mass Sensitivity of Ca-125 was 75% and Specificity of Ca-125 was found to be 81%. Sensitivity of RMI>100 was 75% and specificity was 75% while Sensitivity and Specificity of RMI>200 was 75% and 91% respectively (Table 2).

**Table 1:** Clinical Features and Outcomes of postmenopausal women having Adnexal

case	Age	Symptoms and signs	Radiological findings	Ca-125 value	RM I value	Histopathological findings	Surgicalmanagement	
1	47	increasing frequency and burning while micturition	Usg- 15*14*10cm large, fairly defined, ovalcystic lesion s/o serous cystadenomaof Ro, Lo small follicles	20.9	20.9	serous papillary cystadenoma of Ro, disordered proliferative endometrium, sub mucosal leiomyoma, chronic cervicitis	Total abdominal hysterecto my with b/l salpingo-oophorectomy	None

2	54	Post- menopausal bleeding for 15 days,22 weeks size firm to hard mobile mass	Usg- large anechoic areawith multipleseptations & free floating internal echoes withinshowing an eccentric mural nodule; from which both ovaries are not seen separately- p/o large complex adnexallesion	7.2	21.6	mature cystic teratoma (dermoid cyst) of lo, proliferative endometrium, inclusioncyst - Ro, chronic cervicitis with Nabothian cyst	left ovarian cystectomy with Total abdominal hysterecto my with b/l salpingo- oophorectomy	None
3	48	lower abdominal pain with nausea and vomiting for 1 week,	Usg- well defined cystic lesionmeasures 8.4*6.2*5.5cm with internal septations noted in Lo,no evidence of soft tissuenodule	20.7	20.7	hydrosalpinx in first adnexa with follicular cyst, cystic follicles in second adnexa	b/l salpingo- oophorectomy	None
4	55	abdominal pain for 3 months	Usg- post- menopausal uterus, large anechoic cystic area measuring 7.07*6.54*9.86cm in rt adnexa p/o read nexal cyst	4.8	14.4	mild degree of adenomyosis in myometrium, serous cystadenoma of Ro, inclusion cyst of Lo	Total abdominal hysterecto my with b/l salpingo- oophorectomy	None
5	62	chronic lower abdominal pain,16-18 weeks size ballotable mass	Usg- large hypoechoic area seen in the midline of pelvis withno significant internal vascularity p/o pelvic lesion/? thickoculated collection Ct scan- a lesion of 54*80.5*94.2mm present in pelvis, uterus is not visualized separately situated over vault, so p/o fibroid arising from uterine cervix or broadligament	44.1	132.3	ascitic fluid: paucicellular, malignant cells are not seen. large biopsy: fibroma, cystic follicle in Lo	laparotom y f/b pelvic mass removal	None

6	70	Post- menopausal bleeding and lower abdominal pain for 15 days, soft nontender mass in left iliacfossa	12*16*12cm huge left ovarian cyst, large ovarianmass lesion arising from left ovary, b/lovarian cystadenoma	12.2	109.8	proliferative endometrium, mild degree of adenomyosis, inclusion cysts in Ro, mucinous cystadenoma of Lo	Exploratory laparotomy f/b left ovarian cystectomy f/b Totalabdominal hysterectomy with b/l salpingo oophorectomy	None
7	47	abdominal pain for 1 month, 8-10cm mass arising from rt side of pelvis, not moving with uterus	mucinous cystadenocarcinoma of rt ovary in usg	7	7	serous papillary cystic tumor of borderline malignancy with foci of invasion, omentum is free from tumor, chronic cervicitis/ in peritoneal fluid no malignant cells seen	Exploratory laparotomy f/b total abdominal hysterectomy with both sidedsalpingo-oophorectomy +rt sided ln dissection and omentalbiopsy	No
8	50	abdominal distension for 1 month	Usg- dermoidcyst of left ovary	9.5		serous cystadenoma of Lo, intramural and sub serosal fibroid, chronic cervicitis/ intraop frozensection sent omentum shows unremarkablehistology/ peritoneal wash-no malignant cells	staging laparotomy	constipation, burst abdomen, relaparotomy
9	55	abdominal pain with urinary retention	Usg- rt sided 12*11cm ovarian cyst	23.8	71.4	serous cystadenoma of Lo, cystic follicle in Ro,atrophy of endometrium, chronic active cervicitis	Total abdominal hysterectomy with b/l salpingo-oophorectomy with left ovarian cystectomy	None
10	62	postmenopausal bleeding for 3 months, pallor, obesity	primary malignant lesion in leftovary	278.6	835.8	poorly differentiated papillary carcinoma of left ovary	staging laprotomy +omentectomy+3 cycles of chemotherapy	burst abdomen, relaparotomy

11	68	lower abdominal pain for 2 months	complex ovarian cyst 45*33mm size	33.7	33.7	serous cyst adenoma of left ovary	Total abdominal hysterectomy with b/l salpingo-oophorectomy	None
12	55	postmenopausal bleeding for 2 months, mass reaching up to umbilicus, soft	Usg- 17.1x15.5x13.4cm large well defined cystic area arising from rt adnexa Ct - 12x19x14.2cm right complex ovarian neoplasm	29.2	29.2	mucinous cyst adenoma of rt ovary	right ovarian cystectomy w/ total abdominal hysterectomy with b/l salpingectomy and left oophorectomy	None
13	71	routine health check up	Ct scan- cystic lesion of size 65x46mm seen in rt adnexa with multiple septation	78.7	236.1	endometrial polyp, subserosal leiomyoma, paraovarian cyst, chronic cervicitis	Total abdominal hysterectomy with b/l salpingo-oophorectomy	None
14	60	abdominal pain for 10 days. dyspnea, pedal edema 15 days.	usg-large cystic lesion, 9.9x7.7cm in left adnexa. moderate ascites and changes of portal	>1000	>3000	high grade serous carcinoma of b/l ovaries, capsular invasion is seen in the left ovarian mass and Ro, lymphovascular embolization and perineural invasion are	staging laparotomy with sigmoid colon repair	colon injury, prolonged intensive care unit stay,
		left sided chest pain and body ache mass of 7x8cm, mobile, soft and non tender in left adnexa	hypertension Ct- 10.5x8.3x9.8 cm lesion in left adnexa			not seen, cervix rt parametrium and rt fallopian tube are free from the tumor, left fallopian tube, endometrium, left parametrium and omentum are involved by tumor. stage t3a n1 mx. Figo stage :iii2		
15	50	abdominal distension, tense ascites+	Usg-lesion seen on rt. ovary measuring 110x101x93cm large cystic mass	290.1	870.3	serous cystadenocarcinoma of rt ovary	Total abdominal hysterectomy with b/l salpingo-oophorectomy with low anterior resection	None

**Table 2:** Pathological examination of specimens

Serous cyst adenoma	5	31.25%
Serous papillary cystic tumor of borderline malignancy	1	6.25%
Poorly differentiated serous papillary carcinoma of left ovary	1	6.25%
High grade serous carcinoma of b/l ovaries	1	6.25%
Serous cystadenocarcinoma of rt ovary	1	6.25%
Mucinous cyst adenoma	3	18.75%
Mature cystic teratoma	1	6.25%
Paraovarian cyst	1	6.25%
Hydrosalpinx	1	6.25%
Fibroma	1	6.25%

## Discussion

Ovarian masses are the commonest adnexal pathology in the perimenopausal & post- menopausal age group. They usually present with vague symptoms & hence are commonly missed or diagnosed late. In our study 68.75% patient presented with abdominal pain or distension which correlate with Shivani Khandelwal and, *et al.* study of 2021[10]. Comparison of our

study with Shivani Khandelwal, *et al.*, Bhagde, *et al.* and Jyoti Das and Phukan studies on adnexal mass were tabulated in Table 3 [10-12]. In all of these studies they had taken all age group female who had presented to them with adnexal mass while in our study we had included only postmenopausal women as an inclusion criterion.

**Table 3:** Comparison with other studies

	Bhagde, <i>et al.</i>	Khandelwal and, <i>et al.</i>	Jyoti Das and Phukan study	Our study
Age in years	All (19-58)	All (19-74)	All (16-68)	Postmenopausal (47-71)
Incidental		7(3%)		1(6.25%)
Abdominal pain	46(92%)	115(63.88%)	72.41%	11(68.75%)
Menstrual disturbances	25(50%)	17(8%)	15.17%	4(25%)
Urinary complains			5.51%	2(12.5%)
Bowel disturbances			9.65%	0
Ovary	39(78%)	167(92.77%)	134(92.40%)	14(87.5%)
Fallopian tube	8(16%)	4(2.11%)	9(6.20%)	1(6.25%)
Paraovarian	1(2%)	2(1.11%)		1(6.25%)
Conservative surgery		157		8(50%)
Radical surgery		23		8(50%)
Total numberof cases	50	180	145	16

SRadhamani and M V Akhila in 2017 studied Correlation of Clinical, Sonological and Histopathological Findings in Adnexal Masses. The specificity of combined clinical, laboratory and radiological investigations was 96% which is comparable with our study. Ca-125 as a laboratory test showed a sensitivity

of 62.5% and specificity of 84.25% in their study while the sensitivity and specificity for Ca-125 was 75% and specificity was 81% in our study. RMI >200 showed a sensitivity of 75% and specificity of 91% in our study comparable to 66% and 96% respectively in study by Radhamani, *et al.* [13]. Ca- 125

is also a non-specific tumour marker for ovarian malignancy as it is raised in various other conditions causing peritoneal inflammation like endometriosis, Pelvic inflammatory disease, menstruation etc. [14]. In 2017 S Radhamani and M V Akhila studied 17 to 80 age group women for adnexal mass, an incidence of ovarian mass was 93% of which 84% were neoplastic and 16% were non-neoplastic. The incidence of malignancy was 9.5%. In present study, from 16 patients of adnexal mass 87.5% found to be ovarian origin. From ovarian origin 72% was benign neoplasm and 28% was borderline or high grade malignant. After seen histopathological types of tumours, 74% found to be surface epithelial tumours and 6.25% were germ cell in origin. The risk of ovarian malignancy increases with age. Particularly above the age of 50 years chances of ovarian origin of adnexal mass to be malignant is high. It is highly recommended that women above 50 years should be screened for ovarian malignancy when they present to us with suggestive symptoms. Incidence of malignancy increases with post- menopausal status [15].

**Limitations of the study:** Small sample size.

**Strength of the study:** Postmenopausal women as an inclusion criterion as they are high risk for ovarian carcinoma.

## Conclusion

Adnexal masses have been a challenge for the treating gynaecologist. Detailed history, clinical examination, biochemical markers & imaging gives a fair idea about the site of origin & also helps in differentiating benign from malignant masses. Ovarian origin of adnexal masses is the most common & majority of them are benign but a high index of suspicion should be kept for malignancy in case of post-menopausal age group. Ca-125 and RMI definitely helps to differentiate between benign and malignant potential. This study highlights the importance of RMI scoring as a routine for every post-menopausal woman having adnexal pathology. Any post-menopausal women presenting with vague nonspecific abdominal symptoms should be thoroughly evaluated.

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