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Original Research Article

A clinico-histopathological review of ovarian masses at a tertiary care centre

Michelle N. Fonseca, Madhavi J.*

Department of Obstetrics and Gynecology, Lokmanya Tilak Municipal Medical College and General Hospital, Mumbai, Maharashtra, India

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***Correspondence:**
Dr. Madhavi J.,
E-mail: jmadhavi136@gmail.com

ABSTRACT

Background: Ovarian tumours can be seen at all stages of life but they differ in type, being mostly germ cell tumours in childhood, functional cysts in the reproductive age group (up to 45 years) and becoming increasingly malignant towards and after menopause. It also accounts for most prevalent cause of hospital admissions.
Methods: This is a retrospective study conducted in the Department of Obstetrics and Gynaecology at a tertiary care hospital in Mumbai from August 2017 to August 2018. All patients with ovarian masses who were surgically managed were included in the study. The data of 30 patients was collected in excel sheet and analyzed by descriptive statistics.
Results: Out of the 30 ovarian masses, 50 % were functional cysts, 46.6% were benign ovarian masses and 3.3% were borderline malignant. 46% of tumours were seen in the age group 21-30 years. More than 50 % tumours were seen in parous women. Most common presenting clinical symptom was pain in abdomen irrespective of the type of tumour. Most common complication was haemorrhage in the cyst. Laparoscopy was done in 4 patients and 26 required exploratory laparotomy. Most common surgery performed was unilateral cystectomy for functional ovarian cysts and benign ovarian tumours. Mucinous cystadenoma was the most common benign ovarian tumour, followed by dermoid cyst.
Conclusions: Pre-operative diagnostic approach to a patient with ovarian mass includes careful history taking, thorough clinical examination, ultrasound and tumour marker assays in selected cases. Conservative surgery should be the goal to preserve fertility in young patients with ovarian tumours.

Keywords: Conservative surgery, Mucinous cystadenoma, Ovarian tumours

INTRODUCTION

Adnexal masses are very commonly seen in gynecology, ovarian tumours constituting 2/3rd of these cases.[1] Ovarian masses can be benign, functional ovarian cysts or malignant and account for 30% of all cancers of female genital tract.[2] Up to 10% of women will have some form of surgery during their lifetime for the presence of an ovarian mass. The incidence of a symptomatic ovarian mass in a premenopausal woman that could be malignant is approximately 1:1000. It increases to 3:1000 at 50 years of age.[3] The vast majority of ovarian cysts in reproductive women are mostly physiological being functional cysts or corpus luteal cysts.[3] In postmenopausal women, 30% of the tumours are malignant of which most are asymptomatic, with cysts being discovered incidentally during pelvic examination or ultrasound. In premenopausal women only 7 % of the ovarian epithelial tumours are malignant.[4]

Of all the gynaecological cancers, ovarian tumours are a challenge to the clinicians due to their presentation as nonspecific symptoms such as abdominal pain or lower abdominal discomfort, bloating, back pain or urinary symptoms or may remain asymptomatic until they reach a later stage in case of a malignant tumour. Also, the dilemma of differentiating a benign from a malignant tumour always exists when examining a patient with an ovarian mass. Imaging by ultrasonography helps to locate the origin, size, consistency, internal architecture of the tumour and aids in the management of the same. The diagnosis of ovarian tumours is best done by clinical examination, ultrasonography and measurements of CA-125, together known as triple diagnostic method.[5] This study was performed to see the various clinical and histopathological presentations of ovarian masses at a tertiary care centre.

METHODS

This is a study conducted in the Department of Obstetrics and Gynaecology at a tertiary care hospital in Mumbai from August 2017 to August 2018. All patients with ovarian masses who were surgically managed were included in the study. Patients with simple ovarian cysts less than 5 cm diagnosed on ultrasound were given oral contraceptive pills for 3 months. After three months, these patients were evaluated and patients with persistent cysts on ultrasound, cysts more than 5 cm, cysts with solid areas, bilateral tumours, symptomatic patients and those with elevated with CA-125 levels were managed surgically. All patients with ovarian masses managed conservatively were excluded. A total of 30 patients were included in the study. Details of the patient like age, menstrual status, obstetric history, other medical and family history and presenting symptoms were noted. General examination, systemic and pelvic examination was done. All patients were subjected to Transabdominal ultrasonography and CT scan was done in selected cases. All necessary laboratory investigations were performed and after thorough evaluation, all patients were subjected for surgery. CA-125 levels were done for all patients. Histopathological examination of the surgically removed tissue was conducted in the Department of Pathology of the same institute. The data was collected in excel sheet and analyzed by descriptive statistics.

RESULTS

Out of the 30 patients, 50% patients (15/30) had functional ovarian cysts and 46.6% (14/30) had benign ovarian masses and the remaining 3.3% that is one patient had a tumor with borderline malignant potential. The histopathological distribution of functional tumours is shown in Figure 1.

The commonest functional cyst was simple serous cyst-6 cases (40%), followed by corpus luteal cyst- 4 cases (27%), the other less common types being hemorrhagic cyst- 3 cases (20%) and endometriotic cyst -2 cases (13%).

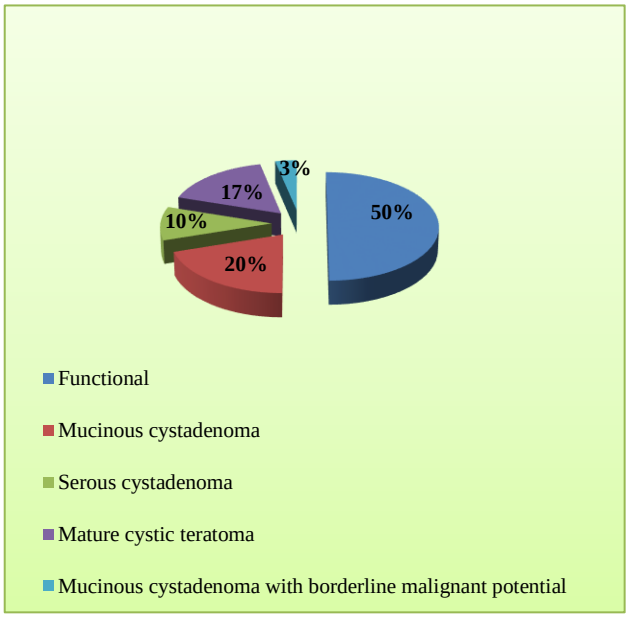

Figure 1: Histological pattern of ovarian tumours.

Among the neoplastic tumours, there were 9 cases of Surface Epithelial Tumours (SET). Mucinous cystadenoma was more common amongst the benign tumours accounting for 6 cases (43%) followed by 3 cases of Serous cystadenoma (21%). One patient was reported to have Mucinous cystadenoma with borderline malignant potential who was followed up closely. Mature cystic teratoma or Dermoid was the only germ cell tumour in present study with 5 cases (36%).

In this study, mean age of all the ovarian masses was 26.6 years, 46 % of the tumours were in the age group of 21-30 years. Figure 2 shows the age distribution of ovarian masses in present study.

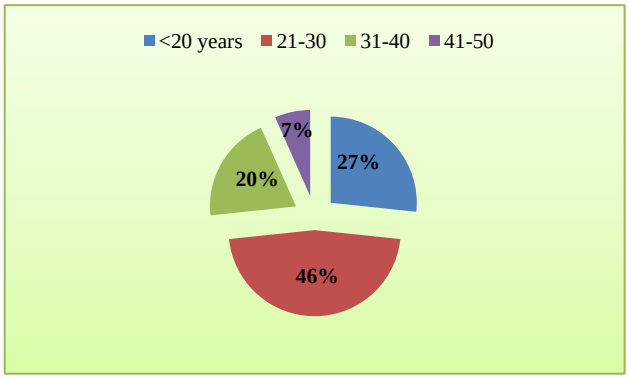

Figure 2: Age distribution.

Mean age of functional ovarian masses was 28.1 years and that of benign ovarian masses was 25.1 years. Functional tumours were most commonly seen in 21-30

years age group (60%) and were distributed equally in other age groups.

Five cases of Surface epithelial tumours were seen in 31-40 years of age and the remaining 4 cases in <20 years age group. All cases of dermoid were seen in less than 30 years of age. One patient with borderline malignant tumour was 26-year-old. This is shown below in Figure 3.

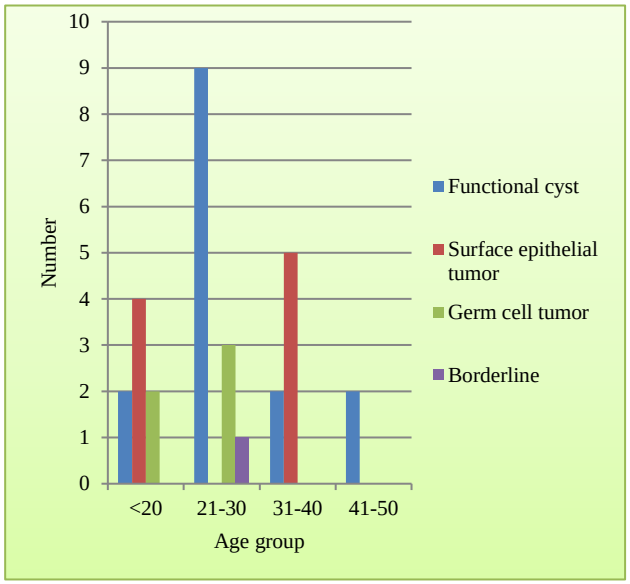

Figure 3: Age distribution in ovarian masses.

Ovarian tumours were more commonly seen in parous women in present study, shown in Table 1. Two cases were seen in pregnant women. One case was diagnosed incidentally during Caesarean section, which was a 6x5 cm dermoid cyst. The second patient presented at 12 weeks gestation with ovarian torsion.

Table 1: Parity status.

Parity	Number	Percentage
Unmarried	8	26.6
Nulligravida with infertility	4	13.3
Parous	16	53.3
Pregnancy with ovarian cyst	2	6.6

Most common presenting symptom irrespective of the type of tumour was pain in abdomen. Mucinous cystadenoma, which are known to grow into big sizes presented with lump in abdomen. Clinical presentation of ovarian masses is shown in Table 2.

Many patients presented with a combination of these symptoms. Ovarian masses observed in the patients with infertility were simple serous cyst of 6 cm size, endometriotic cyst and hemorrhagic cyst.

CA-125 was seen to be elevated in 3 functional tumours and 7 patients of surface epithelial tumours. Pre-operative ultrasonography was useful in identifying the ovarian lesion.

Out of the 30 patients, 23 had cystic lesions, 6 had solid cystic lesions and one cyst was diagnosed incidentally during Caesarean section and did not have an ultrasonography.

Table 2: Clinical presentation of ovarian tumours.

Clinical presentation	Functional cyst (%)	Benign/ borderline (%)
Abdominal pain	73.5	86.5
Nausea/vomiting	26	53
Lump in abdomen	0	54
Menstrual irregularities	27	20
Urinary symptoms	13	25
Infertility	26	0
3 months amenorrhea with acute abdominal pain and vomiting	3.3	
Asymptomatic	33	0

Minimal ascites was noted in 3 cases. Ultrasonography features of ovarian masses are shown in Table 3.

Table 3: Ultrasound features.

USG features	Number	Percentage
Cystic mass	23	77
Combined solid-cystic	6	20
Ascites	3	10
Multilocular cyst	6	20
Unilocular cyst	10	33
Thin Septations within cyst	3	10
Thick septations	2	6

Laparoscopic approach minimizes patient morbidity and aids speedy recovery and earlier discharge from hospital. In present study, laparoscopic cystectomy was done in 4 patients and the rest 26 patients required exploratory laparotomy. The corresponding findings noted intra-operatively are shown in Table 4.

Table 4: Intra-operative findings.

Findings	Number	Percentage
Unilateral	26	86
Bilateral	4	14
Cystic tumors	27	90
Combined solid cystic	3	10
Tumor size less than 8 cm	23	77
Tumor size more than 8 cm	7	23
Ascites	3	10

Intra-operatively, 26 tumours were unilateral (86%) and the rest of them were bilateral (14%). The bilateral tumours were endometriotic cysts and hemorrhagic cyst.

The intra-operative complications observed are listed in Figure 4. Most common complication observed was haemorrhage seen in 8 patients of both functional and benign tumours. Torsion was seen in 2 patients, one was a pregnant patient of 12 weeks gestation with torsion of right hemorrhagic corpus luteal cyst and the other was in a dermoid cyst.

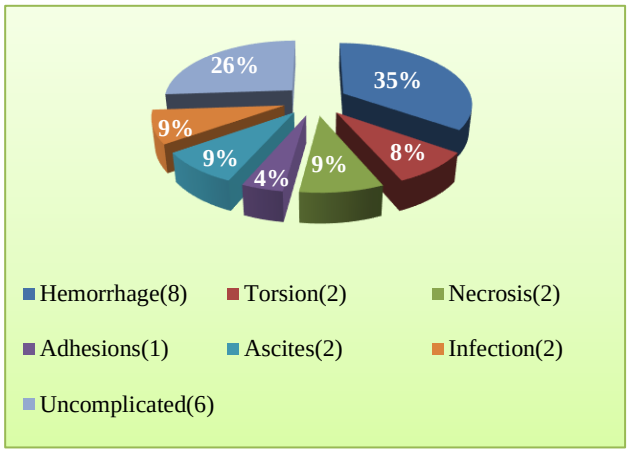

Figure 4: Complications of ovarian masses.

Figure 5 shows the torsion in the right ovary around the fallopian tube in an antenatal patient. Right salphingo-ophorectomy was performed as the ovary and fallopian tube was necrotic and hemorrhagic.

The patient was started on post-operative tocolysis and progesterone support and is doing well now. The second case with torsion was seen in a dermoid cyst in a 26 year old patient.

Blue arrow indicates the clamp applied at the infundibulopelvic ligament to perform unilateral salphingo-ophorectomy.

Figure 5: Right ovarian torsion in a 12 weeks pregnant patient with necrosis and haemorrhage in the ovary and fallopian tube.

The most common surgical procedure in functional and benign ovarian tumours was cystectomy with ovarian reconstruction constituting 80 % (12/15) and 36 % (5/14) respectively. Unilateral salphingo-ophorectomy was performed in 20 % of functional masses that included cysts with torsion and necrotic ovarian cyst. The bar diagram below (Figure 6) depicts the various operative procedures performed.

As it is a known fact that mucinous cystadenomas reach a huge size and excision of these tumours poses a great challenge due to the risk of cyst rupture and spillage of cyst fluid into the peritoneal cavity, we adopted a different technique for excision of these giant tumours.

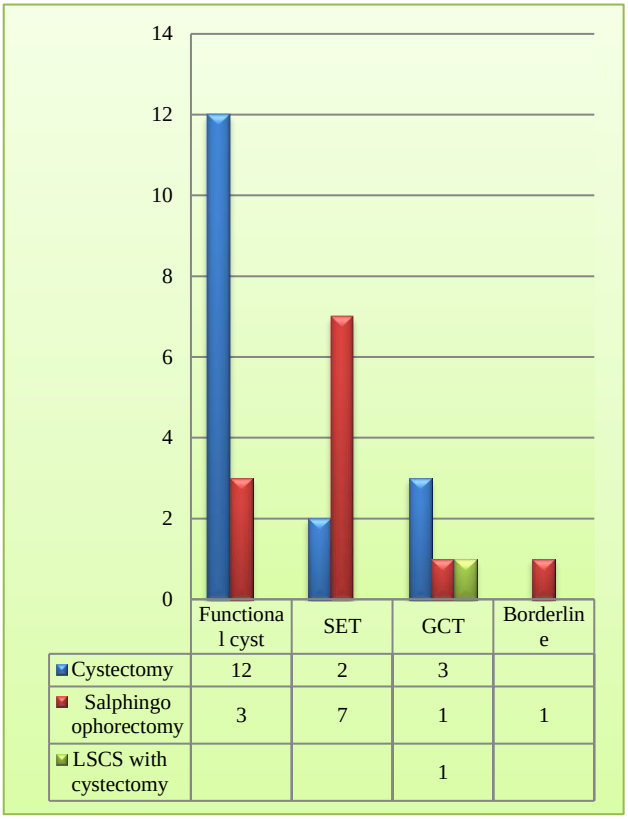

Figure 6: Operative procedures.

A small infraumbilical vertical incision was taken on the abdomen and abdomen was opened in layers till peritoneal cavity. After visualization of the cyst, mop isolation of the abdomen done to avoid spillage of cyst contents in the peritoneal cavity.

A small purse string suture is taken on the cyst wall as stay sutures and cyst wall is punctured in the centre. Cyst fluid is aspirated through the puncture site through a suction canula. This helps reduce the cyst size and hence, the tumour is removed through the small incision. The cyst fluid and peritoneal washings were sent for cytology.

Figure 7 shows cyst wall of the mucinous cystadenoma after aspiration of cyst fluid. The cyst was 18x10x12 cm in size and around 3 litres of mucinous fluid aspirated from the cyst.

Figure 7: Clamp applied at the base of the cyst wall including the ovary and the fallopian tube.

DISCUSSION

Ovarian cancer ranks seventh amongst the cancer related mortalities in women all over the world, the age standardized mortality rate being 4 per 1, 00, 000.[6] In India, it accounts for 8.7% of all the cancers in the country.[6,7] Ovarian tumours detected below 40 years of age generally fair better and have a good chance of recovery. Clinical examination has sensitivity of 15-51 % in detection of ovarian tumours, but it is important in the evaluation of mobility, nodularity and tenderness in the mass.[8] Due to these limitations in clinical examination, pre-operative assessment in the form of ultrasound helps to differentiate benign and malignant tumours. Transvaginal ultrasonography is the preferred mode of diagnosis.[9]

30 cases of ovarian tumours were included in this study. Functional tumours accounted for 50 % of the tumours, benign ovarian tumours were 46.6 % and there was one case of mucinous cystadenoma with borderline malignant potential. These results were comparable to Makhwana HH et al. Comparison of other parameters between various studies is tabulated in Table 5.[10,11]

In present study, maximum (43.3 %) of tumours were found to be in the age group 21-30 years age group, out of which 60 % of functional tumours were present in the above age group. This was similar to studies performed by Makhwana HH et al. Mature cystic teratomas were observed to have a wider age distribution in the third and fourth decades of life, similar to studies conducted by Pilli et al.[12] Most of the tumours were seen in parous women (53.3 %), 13.3% seen in infertile patients and 26.6 % in unmarried patients. 2 patients out of 30 had ovarian masses in pregnancy.

This was comparable to a study where there 6 out of 60 cases in pregnant women.[13] In present study, the most common presenting symptom was abdominal pain seen in 73.5 % in functional and 80 % in neoplastic ovarian tumours. Lump in abdomen was present in 58% of benign tumours, menstrual irregularities seen in 20% of patients and 33% were asymptomatic, which was similar to other studies. CA-125 was not much useful in the present study due to its less specificity.

This was contrary to other studies which had a larger sample size and hence, this marker could be used to differentiate benign and malignant tumours. CA-125 is also elevated in benign conditions like fibroids, endometriosis, adenomyosis and pelvic infection and is raised in only 50 % of early stage of surface epithelial tumours.[3]

Surgical excision remains the treatment of choice for ovarian cystic tumours due to the risks of ovarian torsion, spontaneous rupture, and malignancy. Laparoscopic approach is preferred due to reduced need for analgesia, shorter hospital stay, speedy recovery and resumption of routine activities, and better cosmetic results. But the rate of cyst rupture during laparoscopic surgery has been reported to range between 6 and 100 %.[14,15]

Table 5: Comparison between present study and other studies.

Parameter	Present study	Makwana HH et al[10]	Kanthikar SN et al[11]
Period of study	1 year	11 years	3 years
No. of cases	30	337	145
No. of functional cases	15 (50%)	197 (58.4%)	75 (51.72%)
No. of neoplastic cases	15 (50%)	140 (41.6%)	70 (48.27%)
M/C functional	Serous cyst	Serous cyst	Serous cyst
M/C benign	Mucinous cystadenoma	Serous cystadenoma	Serous cystadenoma
M/C malignant	No malignant tumor in present study	Serous cystadenocarcinoma	Serous cystadenocarcinoma

Also, the risk of chemical peritonitis, pseudomyxoma peritonei, recurrence of tumour, and dissemination of malignant cells due to inadvertent rupture of the cyst is increased in laparoscopy. Spillage of the contents of the cyst should be avoided as malignancy cannot be completely ruled out by pre-operative and intra-operative assessment.[16]

Hence, we used a different technique for excision of large mucinous cystadenoma by taking purse string suture to secure the cyst and puncturing and suctioning out the contents which helped in delivery of the cyst wall through a small incision. Subsequently, the ovarian cyst wall was excised with the fallopian tube as the fallopian tube was stretched over the tumour in all cases.

This reduces the intra-operative time and post-operative recovery time for the patient. The high incidence of borderline tumours and the technical difficulties associated with cystectomy leave oophorectomy as the procedure of choice in these patients.

CONCLUSION

To conclude, both clinical and histopathological parameters in ovarian tumours are inter-related. These along with advanced newer diagnostic modalities can help in early diagnosis and prompt referral to oncologist when indicated. Most of patients seeking advice in government hospitals come from a rural set up and hence, seek medical help at a later stage of the disease due to lack of sufficient knowledge and facilities. So, awareness among the public by education, passive surveillance programmes will be helpful in early detection of ovarian tumours.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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