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Original Research Article

# OVARIAN MASSES IN ADOLESCENT AGE GROUP– A RETROSPECTIVE OBSERVATIONAL STUDY

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## Abstract

**Background:** Gynaecologists have a particularly difficult situation when it comes to the diagnosis and treatment of ovarian tumours in adolescents. Acute abdomen discomfort, mass effect, nausea, vomiting, and—less frequently—precocious puberty and vaginal bleeding are some of the presenting signs of an adnexal mass among adolescents. Thus we decided to study the pattern and clinical presentation and outcomes of ovarian amasses among adolescents (13 to 19 years). **Materials and Methods:** We included a total of 33 cases with ovarian mass were recruited for the study. The patients were enrolled consecutively during the study period using specific inclusion and exclusion criteria. The main outcome was to study the sociodemographic characteristic, clinical presentation and outcomes of ovarian masses among adolescents. **Result:** All participants consented for the study. We took around 33 cases, where we noted that 90% of the ovarian masses among adolescents are benign tumors. And of the total cases, 70% of them were explored by laparotomy and commonest presenting complaint was observed to be mass per abdomen followed by irregular cycles (61%)We noted that the most commonest type of lesion was simple Mullerian cyst (21%), followed by haemorrhagic necrosis (15%). Almost 70% of cases were operated as cystectomy (70%). **Conclusion:** Thus through our study findings we suggest that we must focus on early diagnosis and the preservation of fertility among adolescents. Larger studies with more samples are required to evaluate the same.

## INTRODUCTION

Gynaecologists have a particularly difficult situation when it comes to the diagnosis and treatment of ovarian tumours in adolescents. Adolescent ovarian masses are uncommon, and it might be challenging to estimate their real incidence. Malignant ovarian tumours make up roughly 1% of all children malignancies, with an estimated incidence of 0.0026 percent.[1,2]

Ovarian tumours in adolescents appear in a variety of ways, from asymptomatic lumps to sharp abdominal pain. The most frequent ovarian lesions throughout childhood and adolescence are benign and functioning cysts. Even though benign lesions predominate, it's crucial to spot deadly malignant tumours early on for a good outcome. The gynaecologist faces a difficult decision when treating teenage ovarian masses: surgical removal or conservative therapy.

Adolescents have a decreased probability of developing malignant neoplasms than do young adolescent. There are more epithelial tumours on average as people age. The most frequent tumours in the first ten years of life are germ cell tumours, which are less common during puberty. More than half of ovarian neoplasms in women under the age of 20 are mature cystic teratomas, the most common neoplastic tumour in children and adolescents.[3] Therefore, functional cysts and other benign neoplasms, as well as the majority of adolescent adnexal lesions, are associated with benign disease.

Acute abdomen discomfort, mass effect, nausea, vomiting, and—less frequently—precocious puberty and vaginal bleeding are some of the presenting signs of an adnexal mass in juvenile patients.[4] The differential diagnosis includes conditions with infectious etiologies (pelvic inflammatory disease, PID), müllerian abnormalities, benign and malignant ovarian lesions, tubal and paratubal cysts, and pregnancy-related masses (ectopic pregnancy). A simple cystectomy may be required in some cases, but in others, such as with functional ovarian cysts, conservative therapy with observation alone is recommended. Modified cyst aspiration procedures with a low level of invasiveness have also been discussed.[5]

The current management strategies include tumour markers and radiological imaging. A more cautious approach to managing these masses with ovarian preservation is thought of as a typical practise, with


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the exception of cases of malignancy. Young individuals undergoing ovarian-related operations run the risk of having their future fertility compromised, either by ovary removal or adhesion formation. Benign ovarian tumours are effectively assessed and removed using laparoscopic techniques.[6,7] However, there is still debate regarding whether children with ovarian cancers should undergo laparoscopy or other minimally invasive procedures.[8]

**Aims and Objectives**

To study the pattern and clinical presentation and outcomes of ovarian amasses among adolescents (13 to 19 years) who attended our tertiary care set up in south India.

## MATERIALS AND METHODS

**Study design and study setting:** We conducted a retrospective observational study among patients who presented with mass per abdomen suggestive of ovarian pathology to the department of Obstetrics and Gynecology in Government Dharmapuri Medical College Hospital- Dharmapuri

**Study Duration:** The data collection was done over a retrospective period of 6 Months from May 2023 to November 2023.

**Sample size:** We selected all adolescents who attended the hospital during the study period. Thus, we finally recruited all 33 adolescents who presented with suspected ovarian mass.We employed convenient sampling to recruit the participants.

**Study Participants:** The study participants were recruited with inclusion criteria of all adolescent women between the ages 13-19 years, with suspected cases ovarian mass or clinical or preoperative diagnosis of ovarian masses and operated upon for the samewere included in this study.All patients were selected consecutively.

**Outcomes:** The main primary outcome of our study was to determine the sociodemographic characteristics of the patients who presented with ovarian masses and to determine the clinical presentation and outcomes among these cases.

**Data collection procedure:** The study started after data collection through obtained relevant data from the hospital records. The postgraduate trainee collected all necessary information during her postings in the Gynecology ward and OPD. The information was collected using a semi-structured pretested questionnaire.According to a pre-structured questionnaire, all relevant information pertaining to socio demographic characteristics, and other information including time of surgery, presenting complaints, USG findings, tumor markers, operative procedure, and histopathology report of tumor and outcome of the patients were gathered.

**Data Analysis:** Data was entered into excel and analyzed using SPSS 20. Numerical variables were expressed as mean± standard deviation, while categorical variables were summarised as frequency and proportions. The outcomes were presented in descriptive format using frequency and proportions.

## RESULTS

We finally recruited around 33 adolescents who eligible within the inclusion and exclusion criteria. Table 1 depicts the demographic characteristics of the study participants. We found that the mean age distribution of the study participants was17.2± 2.2 years. Around 66% of the study participants had the mass for <6 months, 57% had anaemia, while almost 60% had menstrual irregularities.

[Table 2] explains theclinical characteristics of the study participants who presented with ovarian mass. We observed that around 70% of the study cases had mass of 6-10 cms size, and around 90% of the masses were observed to be benign in nature. Of the total cases, 70% of them were explored by laparotomy. The commonest presenting complaint was observed to be mass per abdomen followed by irregular cycles (61%).

**Table 1: demographic and anatomical characteristics of the study participants (n=33)**

| Characteristics | Frequency (%) |
|---|---|
| Age group | |
| 13-15 years | 8(24.3) |
| 16-19 years | 25 (75.7) |
| Duration of disease | |
| <6months | 22 (66.7) |
| >6 months | 11 (33.3) |
| Anaemia | |
| Yes | 19 (57.5) |
| No | 14 (42.5) |
| Menstrual irregularities | |
| Yes | 20 (60.1) |
| No | 13 (39.9) |

**Table 2: clinical characteristics of the study participants, n=33**

| Size of the mass | |
|---|---|
| <5 cms | 5 (15.1) |
| 6-10 cms | 23 (69.8) |
| >10 cms | 5 (15.1) |
| Nature of the mass | |


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| | |
|---|---|
| Malignant | 3 (9.1) |
| Benign | 30 (89.9) |
| Exploration | |
| Laparoscopy | 10 (30.2) |
| Laparotomy | 23 (69.8) |
| Presenting complaints | |
| Irregular cycles | 20 (60.7) |
| Mass abdomen | 33 (100.0) |
| Vague abdominal pain | 8(24.2) |
| Severe acute pain | 4 (12.1) |

**Table 3: type of lesion and outcomes of ovarian mass, n=33**

| | **Frequency (%)** |
|---|---|
| Benign cystic teratoma | 3 (9.1) |
| Benign mucinous cystadenoma | 4 (12.1) |
| Benign papillary serous cystadeno-fibroma | 4 (12.1) |
| Benign papillary serous cystadenoma | 4 (12.1) |
| Germ cell tumour | 3 (9.1) |
| Corpus luteal cyst | 2 (6.0) |
| Sclerosing stromal cell tumour | 1 (3.0) |
| Simple Mullerian cyst | 7 (21.1) |
| Haemorrhagic necrosis | 5 (15.1) |
| Outcome | Frequency (%) |
| Cystectomy | 23 (69.9) |
| Unilateral oopherectomy | 3 (9.1) |
| Bilateral oopherectomy with omentectomy | 1 (3.0) |
| Unilateral salpingooopherectomy | 1 (3.0) |
| Aspiration with cystectomy | 2 (6.0) |
| Aspiration only | 2 (6.0) |

[Table 3] explains the type of lesion and outcomes of ovarian mass among the study participants. We noted that the most commonest type of lesion was simple Mullerian cyst (21%), followed by haemorrhagic necrosis (15%). Almost 70% of cases were operated as cystectomy (70%), 9% with unilateral oophorectomy, followed by and aspiration with cystectomy and aspiration only (6%) respectively

## DISCUSSION

We performed a retrospective observational study to determine thecharacteristics, pattern and clinical presentation and outcomes of adolescents who presented with ovarian masses to our medical college and teaching hospital. We observed that that the commonest presentation other than mass abdomen was menstrual irregularities, and around 85% of the masses were observed to be benign in nature. We also noted that the most commonest type of lesion was simple Mullerian cyst (21%), and almost 3/4th of these cases were operated as cystectomy.

Numerous tumours can develop in the ovary. The pathophysiology of the mass can span a wide spectrum, from benign to seriously aggressive malignant tumours. In the early stages, patients are frequently asymptomatic. Abdominal pain and a mass are the main symptoms. It's crucial to conduct a comprehensive examination of the patient and arrive at the right diagnosis. An effective, non-invasive, affordable, and helpful diagnostic tool is ultrasound. With a sensitivity of 89 percent and a specificity of 73 percent, ultrasonography is a well-known imaging method for ovarian tumours. The most significant tumour markers are LDH, AFP, CA-125, and -HCG. Although useful, tumour markers are unreliable as a screening test.

In our study we observed that the most commonest presentation of the masses was simple Mullerian cyst, followed by haemorrhagic necrosis. This observation was found to be similar to another study established by Tanksale et al from India, who also documented that the commonest type of lesion was simple/serous cyst.[9] In our study we observed that 90% of the cases were benign in nature, which further establishes the fact that benign tumours are more commonly seen among adolescents.[10] This proportion also observed to be higher than findings established by Tanksale et al and Choudary et al. This could be probably be due to differences in the tumour pattern, risk factor profile, and study characteristics and such as inclusion of young adults in the later study.

Or study showed that the most commonly seen type of adnexal mass was the Mullerian simple cyst, studies have shown that up to 7% of females are affected by Müllerian abnormalities. The most frequent clinical manifestations of these patients are amenorrhea and cyclic pelvic discomfort. Adnexal masses may form in people who have full or partial blockage of menstrual flow.

Female children and teenagers with adnexal masses have a wide range of potential diagnoses. A thorough and accurate history and physical examination are therefore crucial. The clinician should specifically ask about the patient's presenting symptoms as well as the intensity and type of pain. While cyclic discomfort in a woman who is menstruating may be an indication of endometriosis or müllerian abnormalities, acutely beginning intense pain may be the result of adnexal torsion. Adolescents should also be questioned about sexual activity, including


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specifics regarding contraception use, STI history, and potential abuse. A adolescent patient who has never been examined before may have limited diagnostic options, although abdominal palpation and a rectal exam can help. Additionally, imaging using abdominal/pelvic CT/USG and MRI could be useful. In order to help distinguish between benign and malignant ovarian lesions in adolescent patients, a number of ultrasound-based algorithms have been developed, with sensitivity ranging from 82 to 91 percent and specificity ranging from 68 to 83 percent. However, these methods have not been examined in this population because the majority of ovarian cancers in patients under 20 are not epithelial in origin. It has been demonstrated that in pediatrics and adolescent patients, malignant tumours are noticeably larger than their benign counterparts. Malignant ovarian tumours measured 17.3±7.1 cm in a recent study, compared to 8.8 ± 7.1 cm for benign masses (P 0.001). However, the knowledge gained from researching adult patients with adnexal masses has had a significant impact on how ultrasonography is used in children.

The main benefit of ultrasonography is its capacity to differentiate between solid or complex masses, for which surgical intervention may be necessary, and simple cystic forms, which are almost always benign. Additionally, adnexal masses can be distinguished from gastrointestinal and uterine pathologies using ultrasound imaging.

CT scanning and/or MRI can be utilised if more imaging is needed or if a possible malignancy is a concern. The advantages of MRI include the lack of exposure to ionising radiation and its capacity to distinguish soft tissue borders more clearly, which may be crucial in patients with suspected müllerian defects. Patients who cannot tolerate a transvaginal ultrasound or examination may also use these imaging modalities.

Laboratory tests, however they are nonspecific, can also help with diagnosis in addition to imaging. Inhibin, carcinoembryonic antigen (CEA), cancer antigen 125 (CA 125), lactate dehydrogenase (LDH), beta-human chorionic gonadotropin (-hCG), alpha fetoprotein (AFP), beta-human chorionic gonadotropin (-hCG), and cancer antigen 19-9 (CA 19-9) are a few examples of tumour indicators [Table 2]. Both individuals with a torsed adnexa and those with a noncommunicating uterine horn have been shown to have significantly higher CA 125 levels.

Management options are also plenty. For the purpose of preserving fertility, gentle tissue manipulation, rigorous hemostasis, and adhesion prevention techniques were used. The goal of surgical intervention is to maintain reproductive function. Teenagers are more likely than adults to develop malignant tumours. Therefore, patients, their families, and gynaecologists are concerned when these lesions are found. Due to factors like full recovery, complete healing, poverty, illiteracy, social background, and symptom relief, which may be a cause to avoid going to hospitals, the majority of the patients in this study did not have regular follow-ups. Our study had the strength of evaluating the pattern and clinical presentation and outcomes of ovarian amasses among adolescents (13 to 19 years) who attended our tertiary care set up in south India,as there is a paucity of literature available among this specific ethnicity of India. Our study had a few limitations. First, we did not calculate the sample size, secondly, we did a observation of pattern of presentation and we did not undertake any comparative analysis. Thirdly, our findings were from a single tertiary care hospital from southern India, so it is generalisable only to similar settings.

## CONCLUSION

Thus through our study results, we conclude that 90% of the ovarian masses among adolescents are benign tumors and the most common presenting symptom among them was mass abdomen followed by menstrual irregularities. The commonly observed type of ovarian mass was simple ovarian cyst and the commonly performed surgical procedure was cystectomy. It is imperative that this problem be addressed in our society since patients not only fall into a vulnerable age group, but there are also significant concerns about their quality of life and potential future fertility.

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