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## Original Research Article

# Acute pain abdomen in adolescents: a gynecologist's dilemma

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### ABSTRACT

**Background:** Ovarian torsion is 5<sup>th</sup> most common emergency in gynecology. Benign functional ovarian cysts and benign teratomas are most common among ovarian torsion. Aims and objectives were to study the outcome and HPE of all adolescent girls presenting with acute pain abdomen at BGS GIMS, Bangalore.

**Methods:** A study was conducted at BGS GIMS from 2020 to 2022 of all children and adolescents presenting with acute pain abdomen. Study included data consisting of age, complaints, investigations, intervention and HPE was collected and analysed.

**Results:** There were 21 cases between 12- and 21-years age group who presented with acute pain abdomen in the study period. Majority of them were of 16-19 years age group. Out of 21 cases, 100% of them presented with acute pain abdomen. Operative procedures included 15 (71%) exploratory laparotomy and 6 (29%) operative laparoscopies. Ovarian torsion was seen in 11 cases of which 2 cases had bilateral ovarian torsion and 9 cases had unilateral torsion. Ovarian cystectomy was done in 7 patients, unilateral oophorectomy in 3 patients and unilateral salpingo-oophorectomy in 6 patients. Histopathology reports showed 5 cases of serous cystadenoma, 1 case of teratoma and others were mostly simple cyst or corpus luteal cysts.

**Conclusions:** Acute pain abdomen in adolescents should be diagnosed early to prevent from risk of ovarian torsions. Operative procedures should aim at fertility preservation.

**Keywords:** Ovarian cyst, Ovarian torsion, Ovarian tumor

### INTRODUCTION

Ovarian tumour is the seventh most common cancer diagnosis in the world. Majority of the adolescent ovarian masses are benign, only 10% of lesions are malignant. It has highly variable global incidence, with the age adjusted incidence of 6.3-12.1/100,000 women.<sup>1</sup> In India, ovaries are the third leading site of cancer among women.<sup>2</sup>

Based on the histological classification and age of the patient the incidence of the tumors varies from benign to malignant variant. Majority of the tumors are benign in origin with incidence ranging from 80 to 90%, small portion are malignant.<sup>3,4</sup> Mature teratoma being the most common adolescent ovarian tumor and dysgerminoma being the predominant malignant tumor.<sup>5</sup> Overall survival

(OS) has increased dramatically (75-90%) over a period of 10 years, especially since the introduction of platinum-based chemotherapy. Even the malignant ovarian tumors tend have good survival rate, when treated adequately.

Risk of malignancy is lower in adolescents compared to younger children. Due to the load of the distended ovaries, chances of torsion are higher. Torsion over its own pedicle leads to obstruction of blood supply leading to ovarian necrosis. Radiological imaging helps in diagnosis, though definitive diagnosis is intra-operative.

There exists a conflicting ideology between surgical procedures and conservative management, due to lack of strong guidelines supporting the same. Though the standard protocols support ovarian preservation various

studies show savage rate ranging between 7% and 60%. Multiple factors like time of diagnosis, torsion site, type of malignancy and so on decide the savage rate.<sup>6</sup>

It is a lethal malignancy, because of lack confined screening regimens. Due to lack of cancer registries in our country, the demographics of ovarian cancer are poorly understood.<sup>4</sup> Early definitive diagnosis and procedures to preserve fertility is the key for management of ovarian tumors. This study aims to assess the outcome and HPE of all adolescent girls presenting with acute pain abdomen.

## METHODS

Patients attending OPD/IPD in the department of obstetrics and gynaecology, BGS GIMS, from 2020 to 2022 was included in the study. Total of 31 patients presenting with pain abdomen and vomiting were evaluated, out of which 21 patients diagnosed with ovarian mass were recruited into the study.

Patients satisfying the inclusion criteria were recruited into the study. Institutional ethical committee approval and informed written consent was taken for the study. Only the specimens of ovarian tumours under WHO classification were considered in this study. A detailed history, clinical examination, relevant laboratory investigation, histopathology results and surgical procedure conducted were obtained from the patients.

Descriptive study involving ovarian mass were evaluated for the study and following data were recorded. Side of ovarian mass, type of ovarian mass, presenting symptom, surgical intervention done and histopathological findings were noted.

### Inclusion criteria

Adolescent female patients aged 12-21 years. Patients having ovarian mass presenting with pain abdomen.

### Exclusion criteria

Metastatic ovarian carcinoma. Patients with pre-existing carcinoma.

## RESULTS

21 patients presenting with pain abdomen diagnosed with ovarian mass willing to give informed consent were included in the study.

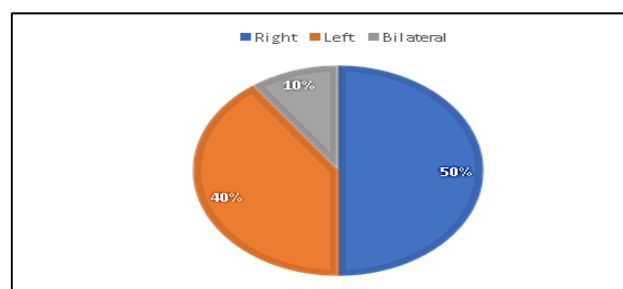
**Table 1: Age at presentation (n=21).**

Age	Number	Percentage
12 to 15	5	23.81
16 to 19	11	52.38
20 to 21	5	23.81

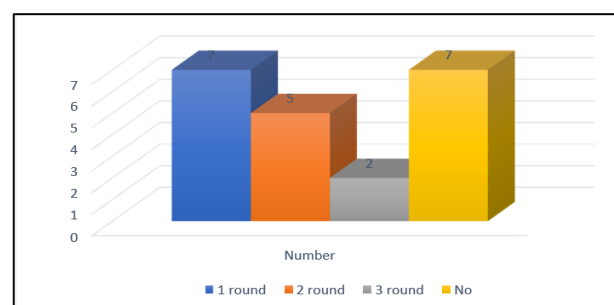
**Table 2: Complaint at presentation.**

Presenting symptoms	Number	Percentage
Pain abdomen	21	51.22
Vomiting	10	24.39
Irregular cycles	6	14.63
Heavy menstrual bleeding	3	7.32
Loss stools	1	2.44

Mean age of the present population was  $17.09 \pm 2.79$  years. Majority of the population were between 16 to 19 years (52.38%). As shown in Table 1, presenting symptoms of patients with ovarian tumor was pain abdomen (51.22%), vomiting (24.39%), irregular cycles (14.63%), heavy menstrual bleeding (7.32%) and loose stools (2.44%).



**Figure 1: Side of ovaries involved.**



**Figure 2: Ovarian torsion.**

50% of the patients had involvement of right ovaries, 40% left ovaries and remaining 10% had bilateral ovaries involved. As shown in Figure 2, 35% of the patients had no torsion, 30% had 1 round torsion, 25% had 2 round and 10% had 3 round torsion of ovaries.

**Table 3: Surgical outcome.**

Surgery	Number	%
Cyst aspiration	5	23.81
Cystectomy	6	28.57
Left oophorectomy	1	4.76
Right oophorectomy	3	14.29
Right salpingo oophorectomy	3	14.29
Left salpingo oophorectomy	3	14.29
Cystectomy with left salpingectomy	1	4.76

All the participants underwent one or more surgeries. Majority of them underwent cystectomy (28.57%) and cyst aspiration (23.81%), followed by right oophorectomy (14.29%), right salpingo oophorectomy (14.29%), left salpingo oophorectomy (14.29%) and cystectomy with left salpingectomy (4.76%).

**Table 4: Histopathologic findings of ovarian tumors at presentation.**

Histopathology findings	Number	Percentage
Serous cystadenoma	3	14.29
Paraovarian cyst	2	9.52
Sex cord stromal tumor	2	9.52
Follicular cyst	2	9.52
Teratoma with immature neuroectoderm	1	4.76
Serous cystadenofibroma	2	9.52
Simple serous cyst	5	23.81
Corpus luteal cyst	2	9.52
Endometriotic cyst	2	9.52
Total	21	

As shown in Table 4, major histo-pathological findings were simple serous cyst (23.81%) and serous cystadenoma (14.29%), followed by paraovarian cyst (9.52%), sex cord stromal tumor (9.52%), follicular cyst (9.52%), serous cystadenofibroma (9.52%), corpus luteal cyst (9.52%), endometriotic cyst (9.52%) and teratoma with immature neuroectoderm (4.76%).

## DISCUSSION

Ovarian mass has heterogenous group of neoplasms showing diverse clinical characteristics, mechanism of pathogenesis and clinical features. ovarian mass could be benign or malignant, its salvage of varies is important during management of ovarian mass.<sup>1</sup> Ovarian torsion is important, as it's a surgical emergency.

Majority of the patients in the present study were between 16 to 19 years. A study by Tanksale et al also had similar patients between 13 to 20 years. In the present study, all patients had pain abdomen at presentation. Pain abdomen reported had acute or chronic origin. A study by AlDakhil et al had 61% of patients with symptomatic presentation, mainly abdominal pain followed by dysmenorrhea and palpable abdominal mass.<sup>5</sup> Other presenting symptoms in our study was irregular cycles, heavy menstrual bleeding and loose stools.

Majority of the mass was unilateral (90%), which was consistent with previous studies by AlDakil et al and Andres et al.<sup>5,7</sup> Ovarian torsion is a surgical emergency, and prompt conservative operative management is indicated.<sup>8</sup>

Majority of the ovarian mass in our study had torsion requiring emergency surgical approach, though the

number of rounds were different. Surgical methods consisted of emergency or programmed surgery with uni/bilateral oophorectomy or salpingo-oophorectomy, cyst management involved cyst aspiration and cystectomy. A study by Andres et al suggests similar surgical protocol.<sup>7</sup>

Ovarian torsion was observed in 21 ovaries. 7 had single round torsion, 5 had 2round and 2 had 3 round. 11 conservative surgeries and 20 programmed oophorectomy was done. Concept of conservative cystectomy for detorsion of ovaries are done in 6 ovaries. A study by Cohen SB et al, also encourages laparoscopic cystectomy. This surgery also helps to preserve the functional capacity of the ovaries.<sup>3</sup>

Ovarian mass ranges from simple cyst to malignancy. 95.23% of the mass was benign in origin. Only 1 patient with malignancy in our study was Teratoma. Similar studies by Naseer et al, Kar et al also showed very low malignant masses.<sup>9,10</sup>

Non neoplastic ovarian cysts were the most common ovarian mass observed in our study. Studies also suggests that non-neoplastic cysts were common in adolescents.<sup>8</sup> Other ovarian mass observed in our study were serous cystadenoma, sex cord stromal tumor and serous cystadenoma.

Major limitation of the present study was small sample size. Study was conducted in a single center, generalizability of the results to general population is not possible, large multi-center studies is recommended. Attempt to understand the function of ovaries post-surgery wasn't documented.

## CONCLUSION

We can conclude that benign ovarian tumors were more common than malignant. Vague abdominal pain was the single most common clinical presentation. Early identification of the ovarian mass in adolescents presenting with pain abdomen and diagnosed with torsion is important to retain the viability despite injury to the ovary.

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

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