

# Giant congenital paraovarian cyst presenting with dyspeptic symptoms

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## SUMMARY

Paraovarian cysts are benign lesions arising from paramesonephric or mesonephric canal remnants. They are thin-walled, non-vascularized, contain homogeneous serous fluid without septation, and most commonly occur in the fourth or fifth decades of life. Paraovarian cysts are usually asymptomatic and range in size from 2 to 20 cm. These cysts, which are typically modest in diameter, can become symptomatic when they reach a large diameter. We present the management of a 30 × 24 cm paraovarian cyst in an 18-year-old nulligravid patient who presented to the outpatient clinic with complaints of dyspepsia, nausea, vomiting, loss of appetite, and abdominal pain discomfort in this case report.

**Keywords:** Paraovarian cysts; Dyspepsia; Adolescent

## INTRODUCTION

Intraabdominal cysts may have various causes, including congenital or acquired conditions. They can be benign or malignant and range from small to large. Some common types of intraabdominal cysts include ovarian cysts, pancreatic cysts, hydatid cysts, and splenic cysts.

The development mechanism of paraovarian cysts has yet to be fully understood. However, some theories suggest that they may form from remnants of embryonic cells left behind after the development of the reproductive system. These cells can grow into cysts that are surrounded by a fluid-filled sac. Other theories suggest that paraovarian cysts may develop due to an obstruction in the fallopian tubes or an abnormal fluid accumulation in the area surrounding the ovaries [1].

Changes in hormone levels during the menstrual cycle may contribute to the forming paraovarian cysts. Endometriosis, a disorder in which tissue comparable to the uterine lining grows outside the uterus, may be linked to certain cysts. This tissue can also produce cysts in the vicinity of the ovaries [2].

It is important to note that not all paraovarian cysts are the same, and their development mechanism may vary based on the type of cyst. Further studies are needed to understand better the exact mechanisms behind the development of paraovarian cysts. Paraovarian cysts are benign cysts that develop in the tissue surrounding the ovaries. They are also known as "paraovarian" or "infundibulopelvic" cysts. These cysts are found in the broad ligament and can originate from either neoplastic or non-neoplastic origins and can occur in women of all ages, but they are most common in women of childbearing age [3-5]. These cysts constitute 3% to 20% of all adnexal masses [6] and are primarily benign and usually arise from paramesonephric and mesonephric remnants [4]. The true epidemiology of these cysts is challenging to evaluate because they are frequently diagnosed in asymptomatic patients [7]. Clinical signs and symptoms arise due to the pressure effect on neighboring organs or complications. The literature reported that paraovarian cysts' diameter varies between 2 and 20 cm.

In this case report, an 18-year-old woman with dyspepsia was found to have a massive (30 × 24 cm) right-sided paraovarian cyst that had been extending from her pelvis to her epigastric region. The cyst was successfully removed by surgery.

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## CASE PRESENTATION

An 18-year-old post-pubertal female with no history of chronic illness was admitted to the internal medicine outpatient clinic with gradually increased complaints of dyspepsia, nausea, appetite and weight loss, abdominal tenderness, and swelling for the last two months. A well-circumscribed tender with deep palpation mass from the right lower quadrant to the epigastric region was observed on the physical examination. Laboratory results reveal that she is not pregnant, and sexual hormone (FSH, LH, Progesterone, and Estradiol) levels were within normal limits. Complete blood counts, liver (AST, ALT, ALP, GGT, Bilirubin), kidney (BUN, Creatinine) tests, electrolytes ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Cl}^-$ ), and inflammation parameters (ESR, CRP) were average. Echinococcal indirect hemagglutination test was negative. Urinalysis was non-significant, and tumor markers (CEA, CA-19.9, CA-15.3, CA-125, AFP) were negative.

Magnetic resonance imaging revealed a cystic mass with dimensions of  $30 \times 22 \times 7.5$  cm that extends from the anterior abdomen's epigastric area to the pelvis's upper section of the bladder. The bladder's filling and shape are both consistent. In the lumen, there was no discernible pattern or appearance of mass. The uterus was anteverted and deviated to the right. A 20 mm diameter follicle was observed in the right ovary. The left ovary was normal (**Fig. 1-Fig. 3**).

The pediatric surgery department consulted the patient since it was anticipated that a mesenteric cyst, a congenital urachus cyst, or an omental cyst might cause

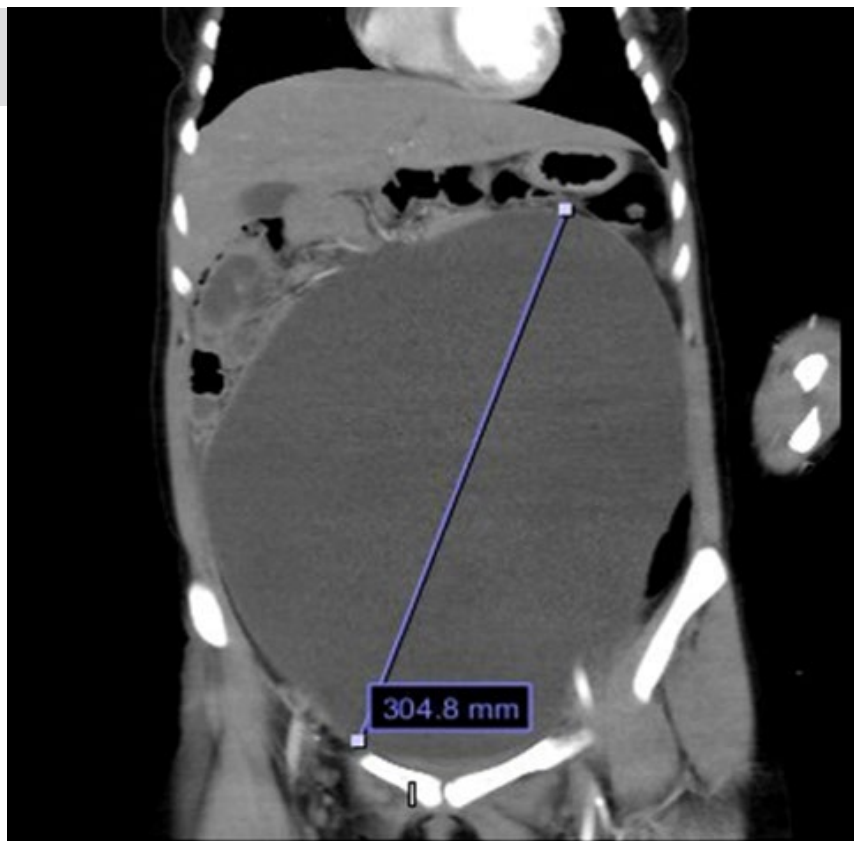
the cyst suppressing the intestinal logs. Under general anesthesia with intubation, a 10F cystostomy catheter was inserted into the cyst under ultrasound guidance. Almost seven liters of serous cyst fluid was aspirated. Then, a 13 mmHg pneumoperitoneum was created by inserting a Veress needle from the umbilicus, and a 10 mm camera port was placed. Under direct vision, 5 mm working ports were placed in the left iliac region and just to the left of the umbilicus. Laparoscopy revealed a typical appearance of ovaries, uterus, and collapsed paraovarian cyst in the left tubal mesentery. The cyst was excised by blunt dissection without opening the capsule. It was too large to fit into the endobag and was removed through the umbilical incision. Hemorrhage control, pelvis irrigation, and aspiration were performed, and no drain was placed (**Fig. 4-Fig. 9**).

## DISCUSSION

Potential causes for premenstrual ovarian masses include cysts, torsion, benign and malignant tumors, ovarian leukemia, lymphoma, and spreading malignancies [8]. Juvenile ovarian cysts are infrequent, and most are not cancerous [9]. The prevalence of epithelial malignancies in children rises with age, with the majority occurring after menarche. Since most instances (65%) are around 17-year-olds, it is thought that hormones may induce ovarian epithelial cysts [10]. These patients are typically post-pubertal teens, and paraovarian cysts with high diameters are more common in this group.

Symptoms are caused mainly by subileus, which can result from compression effects. Patients were advised to contact emergency services when experiencing abdominal

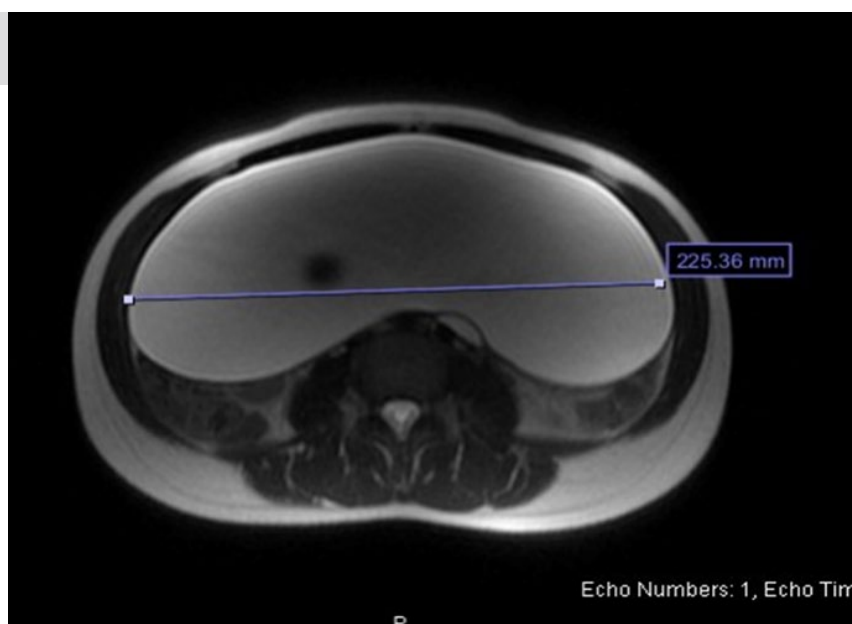
**Fig. 1.** The coronal section of the cyst shows its expansion from the epigastrium to the pelvis.



**Fig. 2.** Sagittal section from the same MRI of this particular cyst shows a deviated uterus.



**Fig. 3.** Transverse section of the same cyst.

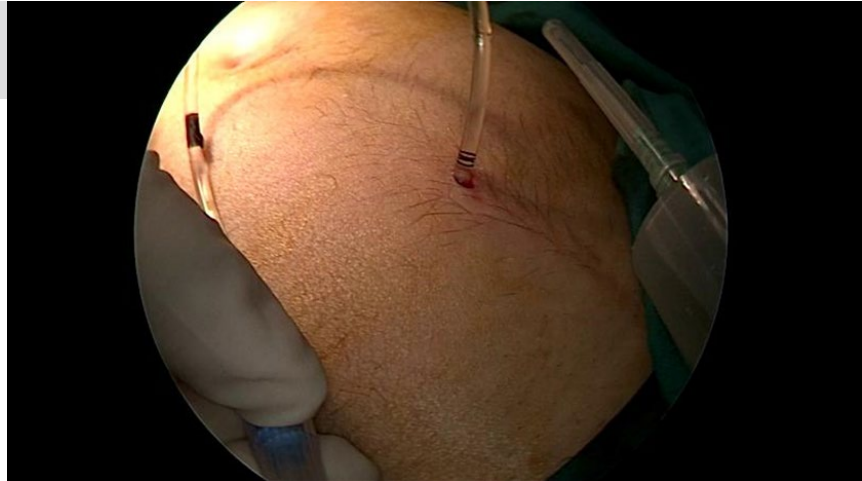


pain, bloating, nausea, or vomiting [11]. Paraovarian cysts can cause adnexal torsion in some people. However, this is extremely rare [12]. Our patient was already asymptomatic for about two months since gradually increased abdominal diameter was noticed. The first admission symptom was dyspepsia due to the pressure of a giant cyst in the stomach. The absence of high fever, sweating, and severe abdominal pain suggested a chronic process more than an acute disease. A well-defined formation on the abdominal wall, from the pubis to the epigastric region, was detected on physical examination.

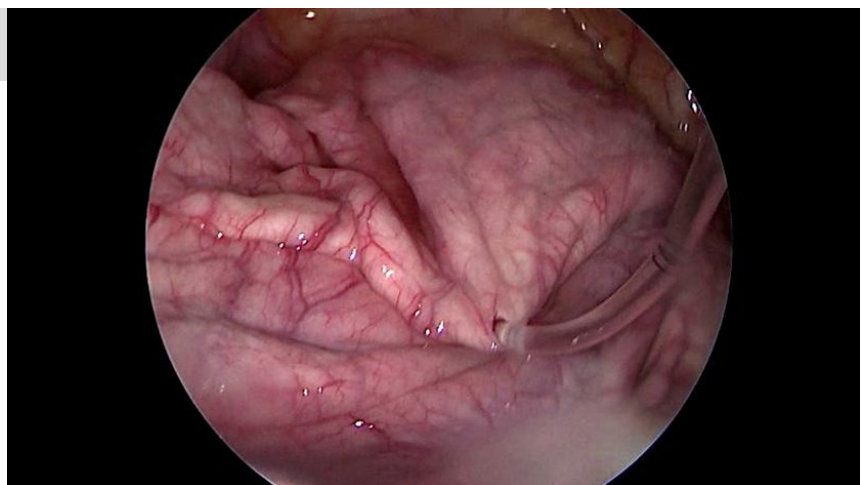
Higher expertise and precision are expected for

ultrasonographic diagnosis of paraovarian cysts [13]. Ultrasound findings include a well-defined oval or round cyst that is close but separated from the ipsilateral ovary, the absence of a surrounding follicle, and the appearance of the split sign, which is the slight oscillatory movement of the cyst and ovary while being pressed by the endovaginal probe. Ovarian cysts, hydrosalpinxes, and peritoneal inclusion cysts can all be distinguished with ultrasound. Ultrasound characterization of the cyst aids in determining a simple from a malignant paraovarian cyst. Our patient's ultrasonography reported no definitive findings except a 30 × 22 × 7.5 cm dimension homogeneous cyst. On

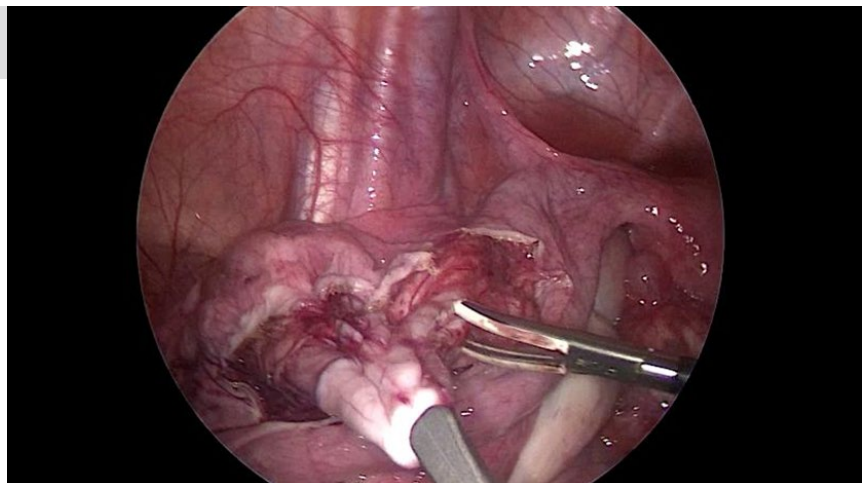
**Fig. 4.** Percutaneous cyst aspiration to open sufficient space in the serious abdomen content.



**Fig. 5.** The collapsed state of the paraovarian cyst.



**Fig. 6.** The cyst wall begins to separate from the serosa.



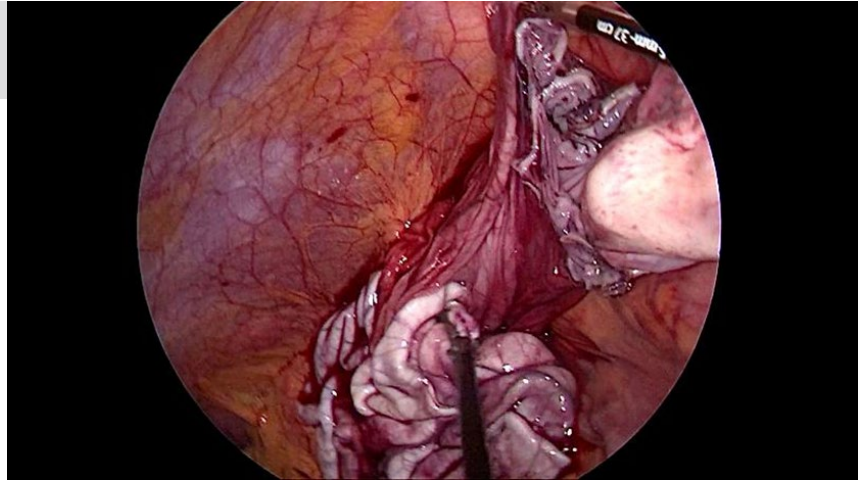
MRI, a paraovarian cyst presents as a homogeneous mass between the uterus and the epigastrium, but no comments were available for the origin of the mass. The major challenge in the current case was determining which organ or tissue gave rise to the current cystic formation. When considering the formations that may have occurred between the starting point and the endpoint on imaging, we can list them as follows: massive mass originating from congenital mesonephric canal residue, renal cystic formation, tubovarian cysts, or abscess, epidermoid cysts, intra-abdominal adnexal mass-related malignancy, hydatid

cysts caused by *Echinococcus granulosus* infection or a malignancy arising from the bladder wall.

The imaging showed that the cyst was homogenous and did not contain hemorrhagic components and septation, and no accompanying signs of malignancy were accompanying. Laboratory evaluation shows no signs of inflammation, and tumor markers were within normal limits. Due to their location, adnexal masses and mesonephric canal residues were the most emphasized diagnoses. Clinically, post-pubertal mesonephric cystic



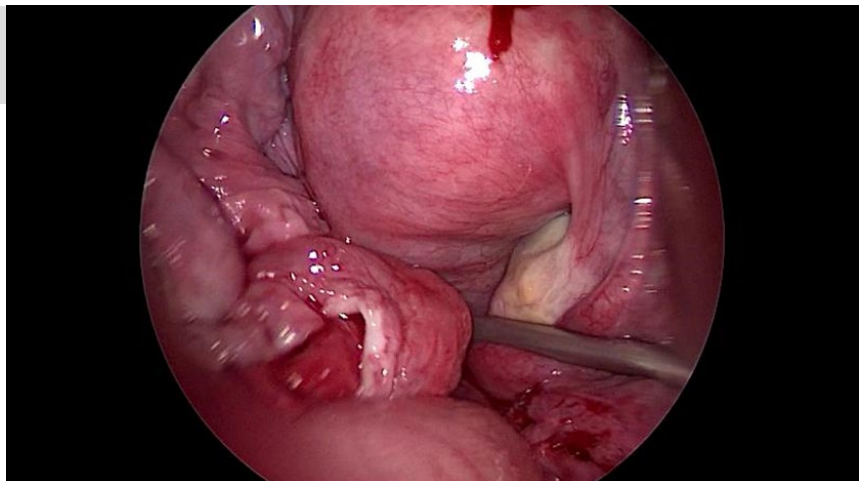
**Fig. 7.** The cyst was dissected almost wholly, and the left normal ovary is also seen in this frame.



**Fig. 8.** Removal of the cyst wall from the umbilicus.



**Fig. 9.** After the operation, the pelvis was irrigated, and the right ovary is squared.



adenocarcinoma cases in mesonephric canal residues have been observed in the literature. It has been determined that it does not fit our instance owing to the presentation of this issue before it reaches such a massive size and the frequent torsion in adnexal structures. The cyst was considered non-inflammatory and benign when the clinical and laboratory findings and imaging were evaluated.

In such circumstances, diagnostic surgery should be conducted regardless of the preliminary diagnosis for

a conclusive diagnosis. Inspection during surgery will be critical in determining the exact location of the mass and its connection to the surrounding organs and tissues. The patient benefits from surgery in both diagnostic and therapeutic aspects. A definitive patient diagnosis was made by pathological examination of the excised material as a paraovarian cyst.

Paraovarian cysts are benign lesions that arise from paramesonephric or mesonephric canal remnants and

are most common in women in their forties and fifties [14,15]. Adolescent paraovarian cysts, such as the Gartner cyst, are most frequently congenital [16]. Gartner cysts are paraovarian cysts that can sometimes grow to the renal regions, even though they are most commonly detected in the top wall of the vagina [16-18]. Due to the paramesonephric and mesonephric tract residues, concomitant metanephric urinary system abnormalities can occur.

## CONCLUSION

In particular, ectopic ureter, ureter duplication, or ectopic kidney anomalies may be noticed; therefore, a thorough evaluation and magnetic resonance imaging should be scheduled before the operation regarding

the cyst's interaction with surrounding tissues and any associated organ anomalies. Surgical dissection should be performed during cyst excision, and ureter damage may occur during surgery regarding this unusual ureter trace. Surgery should be planned electively by examining for renal anomalies in such cases. Our patient had no renal or ureteral abnormalities. Since these instances can be confused with adnexal diseases, the ovaries' ultrasonographic vision and the cyst wall expansion along a line above the ovary should be closely studied.

## CONFLICT OF INTEREST

The authors declared that there are no potential conflicts of interest concerning this article's research, authorship, and/or publication.

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