

A Case Report of Pre Menarcheal Ovarian Cyst – A Rarity

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Abstract: **Background:** Age-related changes in ovarian morphology and size have been studied in the past. Various studies show that ovarian volume is relatively stable up to 5-6 years of age, followed by an increase in cystic functional changes in the ovary, when the regular age-related growth started. USG studies now have established that ovary has a heterogenous echotexture with cysts being a common finding. **Case presentation:** We consider case of a 12yr old prepubertal girl who came with complaint of lower abdominal pain, who was diagnosed and treated for ovarian torsion with a para-ovarian cyst after two prior clinic visits. A brief discussion of the same follows. **Conclusion:** Ovarian cysts though more common in reproductive age group; but can be seen rarely in premenarcheal population as well. Ovarian torsion is a rare problem in the paediatric population, yet it represents a true gynaecological and surgical emergency. Ovarian torsion accounts for approximately 2-3% of all cases of acute abdominal pain in children. It mandates early surgical management to prevent further adnexal damage.

Keywords: Ovarian torsion, gynecologic emergency, prepubertal ovarian cyst, dermoid cyst, germ cell tumour

1. Introduction

Previous studies of sonograms in premenarcheal girls have reported the typical ovary to be homogenous in echogenicity, with cysts an uncommon finding. But, this information contradicts published pathology studies and sonographic experience. The **typical sonographic appearance** of the ovary in premenarchal girls is **heterogenous**. Cysts can occur in premenarchal girls though more commonly seen in reproductive age group. Ovarian torsion in children is an uncommon cause of acute abdominal pain but mandates early surgical management to prevent further damage.

Ovarian torsion represents a **true surgical emergency**. The clinical presentation might mimic other pathologies, such as appendicitis. Prompt diagnosis is essential for ovarian salvage. A high clinical suspicion is important in this regard. Patho-physiological ramifications include ovarian loss, intra-abdominal infections, sepsis and even death. However, because the signs and symptoms can mimic other acute abdominal conditions, the preoperative diagnosis often remains a challenge.

Herein, we describe the case of a 12 yr old girl with a seemingly benign presentation of abdominal pain who was diagnosed and treated for ovarian torsion with a para-ovarian cyst after two prior clinic visits. A brief discussion of the same follows.

2. Case Scenario

A 12 yrs old girl, not attained menarche was admitted with complaints of right sided lower abdominal pain and nausea and vomiting since two days. No H/O fever. She was treated outside in a private clinic with analgesics and antiemetics. Patient came to our hospital as the symptoms did not subside. Vitals stable.

P/A- soft, minimal tenderness+ over left iliac fossa. L/E-

hymen intact, not bulging.

On USG- Rt. Para-ovarian clear cyst 5x4cms

Figure A: No evidence of torsion.



Figure A: Rt.-sided para ovarian cyst (1st visit)

Patient was treated with analgesics and a course of antibiotics. Patient (parents) were given the option of either a D-Lap or observation (risks were explained). Patient (parents) opted for observation and was discharged after two days as symptomatically relieved.

2 weeks later patient presented with same complaints since 1 day. Patient was admitted and a repeat USG was done- Rt. Para-ovarian cyst-5x4cms[**Figure B.1 and B.2**]. Vascularity +. Left ovary-hyperdense stroma.

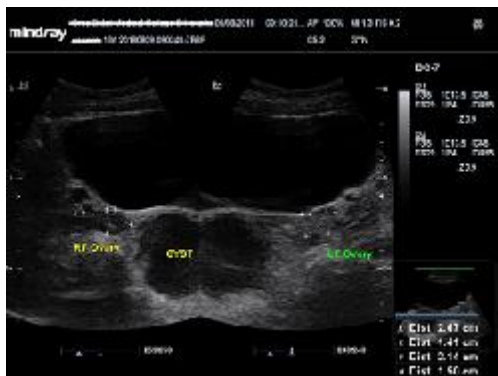


Figure B (1): Rt-sided para ovarian cyst- 5x4 cms

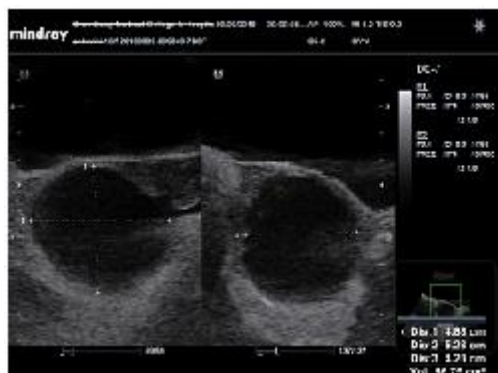


Figure B (2)



Figure D

HPE Report- Cyst wall areas of necrosis, congestion and haemorrhage. No lining epithelium seen. Ovary-areas of haemorrhage and necrosis. Tube- necrotic wall.

Impression- Features consistent with torsion of ovarian cyst with areas of gangrenous necrosis.

3. Discussion

Ovary is demonstrable on ultrasonography at all ages. It is only the volume that differs and changes. Ovarian volume increases after 6 yrs of age.

Age (yrs)	Ovarian Volume (cc)
1-5	1
6-10	1.2-2.3
11-12	2-4
At puberty	12
Reproductive age group	10-14
Postmenopausal	2-3

CECT Abdomen- Cyst of 5.4x4cms in rt. Paramedian aspect of POD. Correlative USG showed anechoic lesion in corresponding region. Left ovary- enlarged with thickened stroma with mottled enhancement.

Correlative **MRI** showed twisted pedicle adjacent to left ovary. Impression- Left Ovarian Torsion with Para-ovarian cyst.

Emergency laparotomy was performed. **Intra-op-** Left ovary with left tube and left para ovarian cyst(5x5cm)—twisted 3 times at uterine cornua[Figure C]. tube— stretched over the cyst twisted 2 times.

Left ovary and tube- **GANGRENOUS**[Figure D]. Right ovary and tube- normal. **Surgery performed-** left salpingo-oophorectomy. Left cystectomy. Post op period uneventful.

Visualization of follicles (microcytic) is physiological during childhood with a diameter of approximately <10mm. This in turn gives ovary a heterogenous echotexture on ultrasound imaging.

Age Specific **Incidence** of Ovarian cyst varies. The peak being at 15yrs of age. 31.1% (MIDDLE ADOLESCENCE).

Age(yrs)		Incidence (%)
Childhood	0-8	1-2
	8-9	1.5-2.7
Early adolescence	10-12	3.8-9.6
	12-13	9.6-17.5
	13-14	18-30
Middle adolescence	15	31.1 (peak)
	16	26.7
	17	27.3
Late adolescence	18-21	13.6
Reproductive age group		24.3



Figure C

Majority of them are simple cysts (68.9%). Mostly right sided (57.9%). The incidence of torsion is 10.5%. Incidence of ovarian cancer at age <20yr is 1.3 %.

The **most common** ovarian cysts seen are the Functional ovarian cysts which comprise of Follicular cysts , Corpus

luteum cysts, Theca lutein cysts. Functional Ovarian cysts in childhood are usually benign, simple clear cysts which do not persist beyond 6 months. Majority of them are incidentally discovered while USG being done for some other reason such as abdominal pain or a mass. Treatment is reassurance or follow up. An ovarian mass may be a Dermoid cyst (**BENIGN**) or a Germ cell tumour (**MALIGNANT**). Dermoid cysts are mostly asymptomatic with a 10% risk of torsion. Germ cell tumours are malignant. 25% cases of germ cell tumours are asymptomatic. Treatment is conservative surgery with chemotherapy with good prognosis.

An ovarian cyst may undergo a **natural course** of regression (resolve spontaneously) seen in case of functional cysts; or may persist which indicates towards an organic cause/tumour (Dermoid cyst/Germ Cell Tumour) which warrants further evaluation. Various **clinical presentations** which may be seen are pain, bloating, nausea and vomiting, urinary symptoms, endocrinological derangement etc. Certain cysts and tumours may be hormonally active producing excessive estrogen which might lead to precocious puberty.

Complications seen are torsion (10%), haemorrhage, rupture, infection, endocrine disturbances, malignancy etc.

Investigations such as Ultrasonography helps to demonstrate the size, location, vascularity and torsion. It also helps to differentiate between benign and malignant features. CECT/MRI may be needed to determine nature of cyst accurately or if malignancy is suspected to look for metastasis. Hormonal Assays such as S.Estradiol ($N < 10\text{pg/ml}$) are required in case of hormonally active cysts. Other assays may include Basal and Stimulated Gonadotropin levels or GnRH-Stimulation Test (**GOLD STANDARD**). Tumor Assays like CA 125 (epithelial tumours), AFP (germ cell tumours), Beta hCG (theca lutein cysts) etc. may be done if need be.

Management depends upon clinical presentation and the radiological appearance. Young children may present with more advanced or more rapidly progressive disease and require a high index of suspicion.

Peculiarities of the Case

- 1) Low incidence in this age group.
- 2) Patient complained of right sided pain but tenderness was present in left iliac fossa.
- 3) On USG cyst appeared to arise from right side but MRI showed it being left sided.
- 4) Mostly right sided but in our case it is left sided.
- 5) Intra-Op para-ovarian cyst+but on HPE no lining epithelium seen giving impression torsion of ovarian cyst with areas of gangrenous necrosis.

4. Conclusion

Ovarian cysts though more common in reproductive age group; but can be seen rarely in premenarcheal population as well. Majority are functional cysts but possibility of tumours should be kept in mind. Appropriate investigations should be done and features for precocious puberty should be looked for. Ovarian torsion can occur at any age and is a cause of abdominal pain. It can result in infarction of the ovary and

should be considered in any girl or woman with acute onset lower abdominal pain accompanied by vomiting. Ovarian torsion is a surgical emergency. Prompt diagnosis and emergency surgical intervention are keys to salvage the ovary.

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