

Approach to the adnexal masses **and** Ovarian masses in infants, children and adolescents



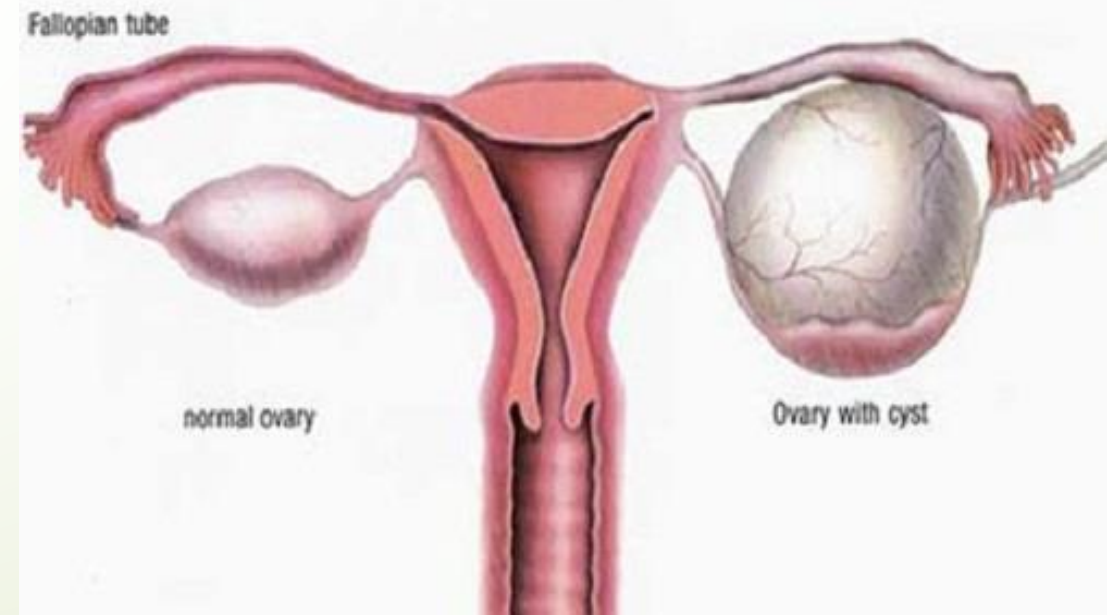
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- An adnexal mass is a common gynecologic problem and may be found in females of all ages (fetuses to the elderly)
- The goal is to address acute conditions (adnexal torsion) and to determine whether a mass is malignant.



Clinical approach

1. Excluding urgent conditions or malignancy

✓ Urgent conditions such as EP or adnexal torsion

✓ Malignancies must be excluded for any masses that is NOT

CLEARLY BENIGN (most complex masses: solid component, thick wall, septations or other hyper echoic findings) with →

surgical exploration or may require follow up with pelvic ultrasound for a prolonged period of time.



- After excluding urgent conditions and malignancies, the remaining patients are→
- ✓ Simple ovarian cyst (anechoic fluid filling- thin walls)
- ✓ Ovarian masses that ultrasound diagnosis is fairly certain→ Teratoma, Endometrioma, Hemorrhagic cyst
- ✓ Other benign adnexal masses such as paratubal or paraovarian cyst.



2. Anatomic location to narrow the DDX.

Gynecologic: Ovarian	Gynecologic: Tubal	Gynecologic: Extraovarian and extratubal	Nongynecologic
Benign			
<ul style="list-style-type: none"> ■ Functional (physiologic) cyst ■ Corpus luteal cyst ■ Luteoma of pregnancy ■ Theca lutein cyst ■ Polycystic ovaries ■ Endometrioma ■ Cystadenoma ■ Benign ovarian germ cell tumor (eg, mature teratoma) ■ Benign sex cord-stromal tumor 	<ul style="list-style-type: none"> ■ Ectopic pregnancy ■ Hydrosalpinx 	<ul style="list-style-type: none"> ■ Paraovarian cyst ■ Paratubal cyst ■ Uterine leiomyoma (pedunculated or cervical) ■ Tubo-ovarian abscess 	<ul style="list-style-type: none"> ■ Constipation ■ Appendiceal abscess ■ Diverticular abscess ■ Pelvic abscess ■ Bladder diverticulum ■ Ureteral diverticulum ■ Pelvic kidney ■ Peritoneal cyst ■ Nerve sheath tumor



3. Age and reproductive status

- ✓ Children and adolescents (most are urgent or malignant conditions)
- ✓ Premenopausal women (most of them are benign)
- ✓ Pregnant women
- ✓ Postmenopausal women (excluding malignancies is the main priority)

General evaluation

➤ Medical history:

- Pelvic pain & pressure + characteristics
- Genital tract bleeding
- Dysmenorrhea, dyspareunia
- Hx of infertility
- Fever / vaginal discharge/ Hx of PID

➤ Physical examination & pelvic imaging:

- size, consistency and mobility of the mass
- Irregularity of nodularity of the cul-de-sac (malignancy or endometrioma)
- Rectovaginal exam



➤ Imaging studies:

- Pelvic ultrasound(first choice)→ TAS + TVS

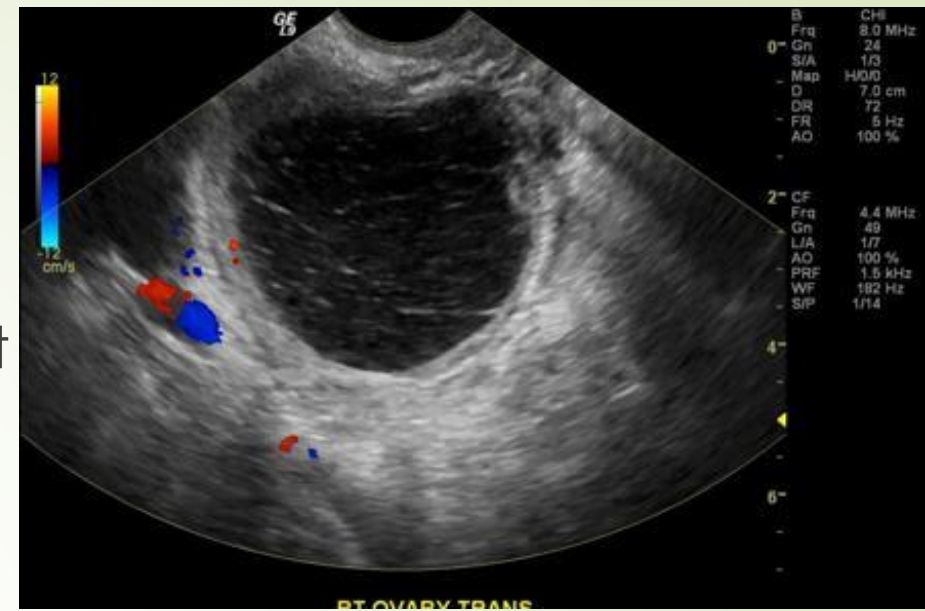
It is highly predictive for:

- 1- simple ovarian cyst
- 2- hemorrhagic cysts
- 3- endometrioma
- 4- teratoma

- MRI (secondary choice if surgical evaluation is needed):

- ✓ Hemorrhagic masses with mural solid appearance
- ✓ Mature teratoma with atypical appearance
- ✓ Solid ovarian neoplasm

- CT→ is NOT a primary modality for adnexal mass





➤ Laboratory evaluation

- **BHCG:** for any reproductive age woman with an adnexal mass
- **CBC:** evaluation of anemia or leukocytosis
- **Lab test to evaluate malignancies**



Referral to a specialist

Premenopausal women (refer if any are present)

Very elevated CA 125 level

Ascites

Evidence of abdominal or distant metastases

Postmenopausal women (refer if any are present)

Elevated CA 125 level

Ascites

Nodular or fixed pelvic mass

Evidence of abdominal or distant metastases

Ovarian masses in children and adolescents






Ovarian masses can occur in children and young girls .

They can be discovered due to symptoms on PH/Ex and/or through imaging studies.

Pelvic masses are usually of gynecology origin but it can also arise from the urinary tract ,bowel or other pelvic structures.

Ovarian masses {
physiologic cyst
benign neoplasm
malignant neoplasm

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- Historically, all ovarian masses in infants, children and adolescents were removed surgically **BUT** nowadays tumor markers and radiologic imaging provide a risk assessment, allow conservative approach and ovarian preservation in cases of cancers.



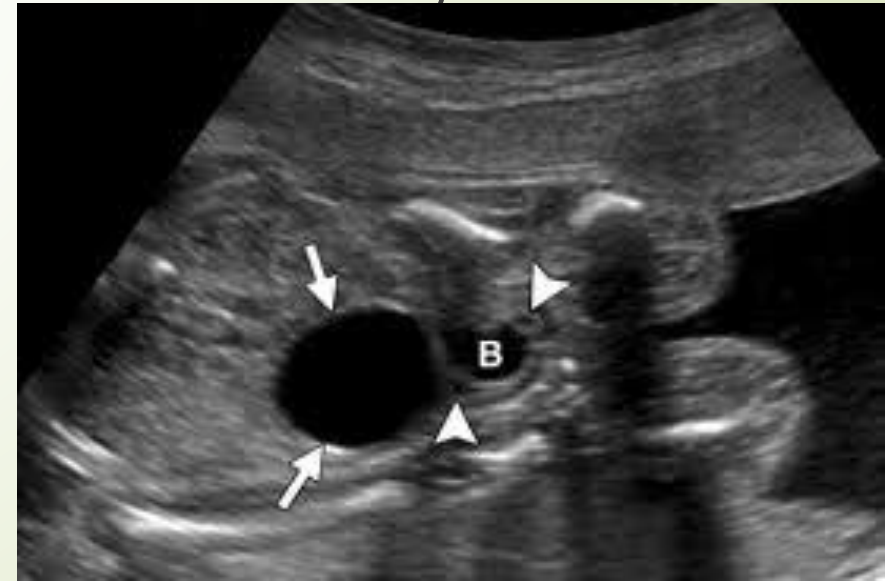
Ovarian cyst in fetus & neonates

- Follicular cyst in neonate and fetus are common (often unilateral)
- it is related to some maternal conditions=> DM-
preeclampsia- Rh isoimmunization
- Dx=> sonographically : - female
 - nonmidline regular cystic structure
 - NL urinary tract
 - NL GI tract

- Simple cyst less than 2cm=> NL & physiologic
- Complex cyst & larger than 2cm=> non physiologic

❑ Management in fetuses:

- Expectant: Spontaneous regression antenatally or postpartum by 6 months
 - ⇒ Follow up with sonography every 3-4 weeks antenatally
 - ⇒ Antenatal aspiration of large cyst (greater than 4-6cm) to reduce complications





➤ **Management in neonates:**

- *Spontaneous regression of simple or complex cyst → in 4-6 months (50%)*
- **Serial ultrasound at birth and every 4-6 weeks** till cyst resolves or enlarged or persisted for 4-6 months or becomes symptomatic.
- **Torsion may occur, particularly with long utero-ovarian ligament => untwisting the vascular pedicle**
- **Surgical intervention :**
 - complex cyst
 - concern of torsion
 - cyst enlargement
 - symptomatic cyst
 - >4-6 months persistent cyst

Ovarian cyst in infants and prepubertal children

- Physiologic cyst are uncommon
- Some ovarian cyst result in precocious puberty=> McCune-Albright synd.





► **Clinical manifestations:**

- Asymptomatic abdominal mass
- Increasing abdominal growth
- Acute or chronic or intermittent abdominal pain (R/O torsion)
- Abdominal fullness/ bloating/ urinary frequency or retention



► **Evaluations:**

- Ultrasonography
- +/- Doppler Ultrasonography (not very diagnostic)
- CT
- MRI

- 
- **ATTENTION to the signs of precocious puberty**
- 

► Management:

Depends on the appearance of the cyst on ultrasonography + clinical manifestation+ significant symptoms

- **Expectant management** => follow up sonography in 4-8 weeks
IF **NOT** resolved **BUT** ultrasonic characteristics are **reassuring** CONTINUE OBSERVATION as long as the girl remains asymptomatic.
- **Urgent conditions** (surgical management)
- **Ovarian masses greater than 9 cm are at increased risk of malignancy**

Ovarian cyst in adolescents

- Both simple and complex cyst are common
- Most simple cysts result from failure of maturing follicle to ovulate

- **Clinical features:**

Asymptomatic & found incidentally

Menstrual irregularities

Pelvic pain

Urinary or GI symptoms

Pelvic heaviness

Clinical features of Torsion or Ruptured cysts

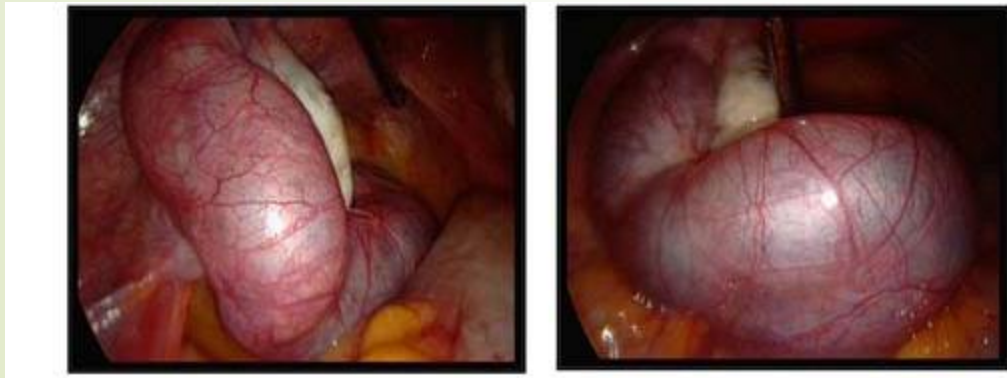
► Evaluations:

- Menstrual and sexual history
- Contraceptive use?
- PH/E
- Ultra sonography is the first line method
- Color Doppler and abdominal radiograph (?)
- CBC & BHCG



► **DDx of adnexal masses in this age group=>**

- 1- obstructive genital lesions
- 2- ovarian Tumors
- 3- Tubal conditions
- 4- Uterine mass
- 5- GI conditions



► Follicular cyst:

- Resolve spontaneously in 2-8 weeks
- Asymptomatic simple cyst <6cm → observed +/- OCP
- Monthly Ultrasound or BME.



OCP suppresses Ovarian-Hypothalamic axis SO NEW cysts will not form..

❖ Laparoscopic cystectomy if:

Simple cyst persists + increases in size (greater than 6cm) + symptomatic

➤ Corpus luteum cysts:

- Hemorrhagic or ruptured cyst may occur
- Size of the cyst can reach to 5-12 cm
- Ultrasound appearance is characterized
 - ❖ Observation in asymptomatic cyst=> 2weeks to 3 months +/- OCP
 - ❖ Size is not important in the management
 - ❖ IF persistent=> manage surgically..



Ovarian Neoplasms

- 1% of all tumors in children & adolescents
- Most ovarian neoplasms are physiologic and benign
- 35-45% of ovarian cancers in children are **germ cell** tumors

- Most common gynecologic malignancies in women <25 y:

Ovarian cancer

- Most common histology=> **Germ cell**
- **Every Persistent ovarian masses** need to be evaluated for malignancies



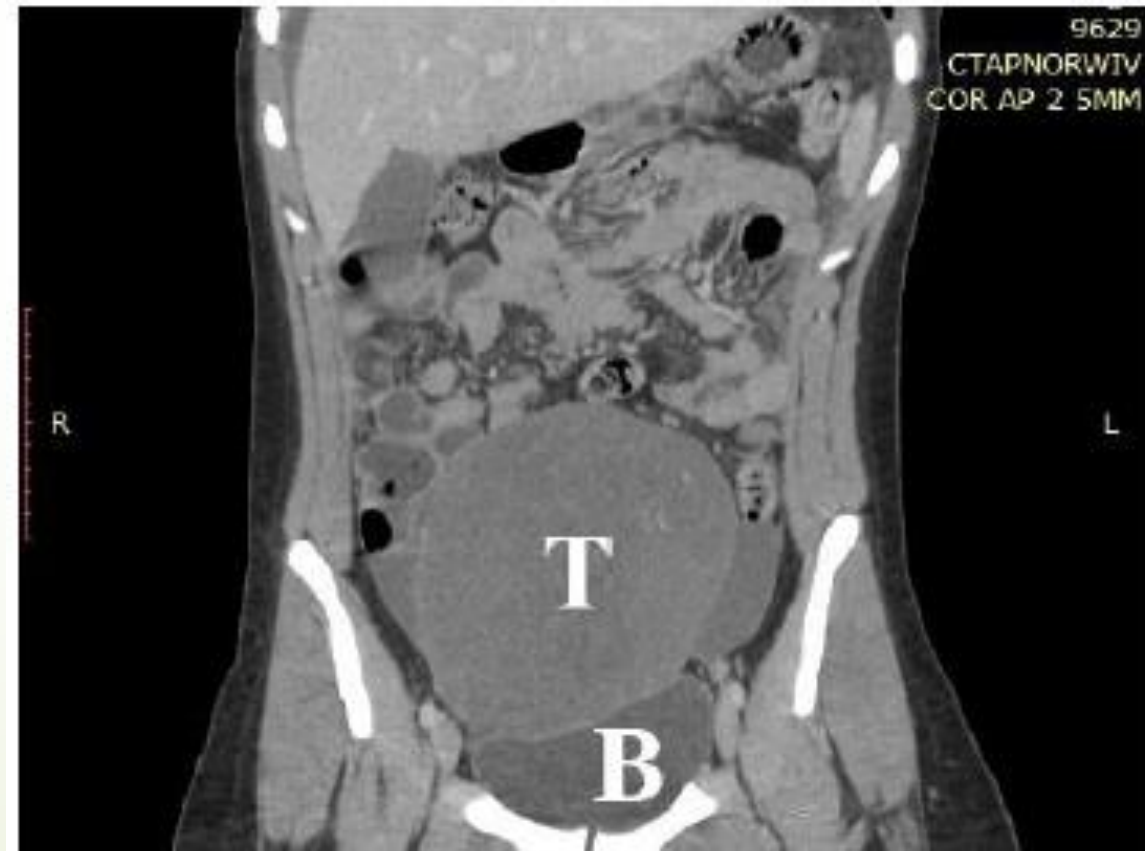
➤ Evaluations:

- Ultrasonography +/- Doppler => a solid ovarian mass in childhood is ALWAYS considered malignant until proven otherwise
- CT/MRI
- Tumor markers:
 - AFP: endodermal sinus tumors, mixed germ cell, immature teratoma
 - LDH: dysgerminoma
 - CA 125
 - CEA: epithelial or germ cell tumors
 - Inhibin: granulosa cell tumor
 - **Thrombocytosis**

► **Treatment:**

Surgical intervention + preservation of reproductive & sexual function

ABNL Tumor markers + suspected malignancy=> USO + staging



Thank you for your attention

