

جَائِزَةُ الْحُسَيْنِ  
بْنِ عَبْدِ اللَّهِ الثَّانِي  
لِلْعَمَلِ التَّطَوُّعِيِّ

AL HUSSEIN BIN ABDULLAH II  
AWARD FOR VOLUNTARY WORK



النادي الطبي  
Medical Club



# Radiology

Subject: GYN (women imaging pt2)

Group no: D11

Done by: Hala Yaseen

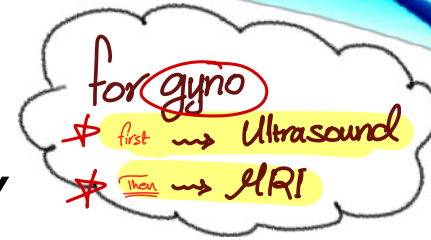


هَذَا خُلِقَ اللَّهُ فَأَرْوَحِي مَاذَا خُلِقَ الذِّينَ مِنْ دُونِهِ بَلِ الظَّالِمُونَ فِي ضَلَالٍ مُبِينٍ

# HYSTEROSALPINGOGRAPHY

uterus

fallopian tube



- Is a fluoroscopic examination of the uterus and fallopian tubes commonly used in infertility or recurrent spontaneous abortion.
- It evaluates shape of the uterus, opening of the tubes and if there is any scarring in the uterus.

From CS

- (HSG): Hysterosalpingography

Indications: Infertility, tubal patency evaluation, uterine abnormalities.

↳ polyps  
fibroids

Technique:

Injection of contrast material (NICM) **DAY 8-12 OF the cycle** into the uterine cavity and fallopian tubes.

non-ionic contrast material

↳ after menses and before ovulation  
(Follicular phase)

Advantages: Non-invasive, can assess tubal patency and uterine anatomy.

✱

✱

Limitations: May cause discomfort, can lead to allergic reactions.

# CONTRAINDICATION

- Pregnancy → wash out to zygote
- Infection
- Recent uterine or tubal surgery.
- Contrast allergy.

↳ Non- ionized » contrast used



# COMPLICATION

- Pain → most common complication
- Infection → most serious complication → lead to PID
- Bleeding
- Contrast media allergy .

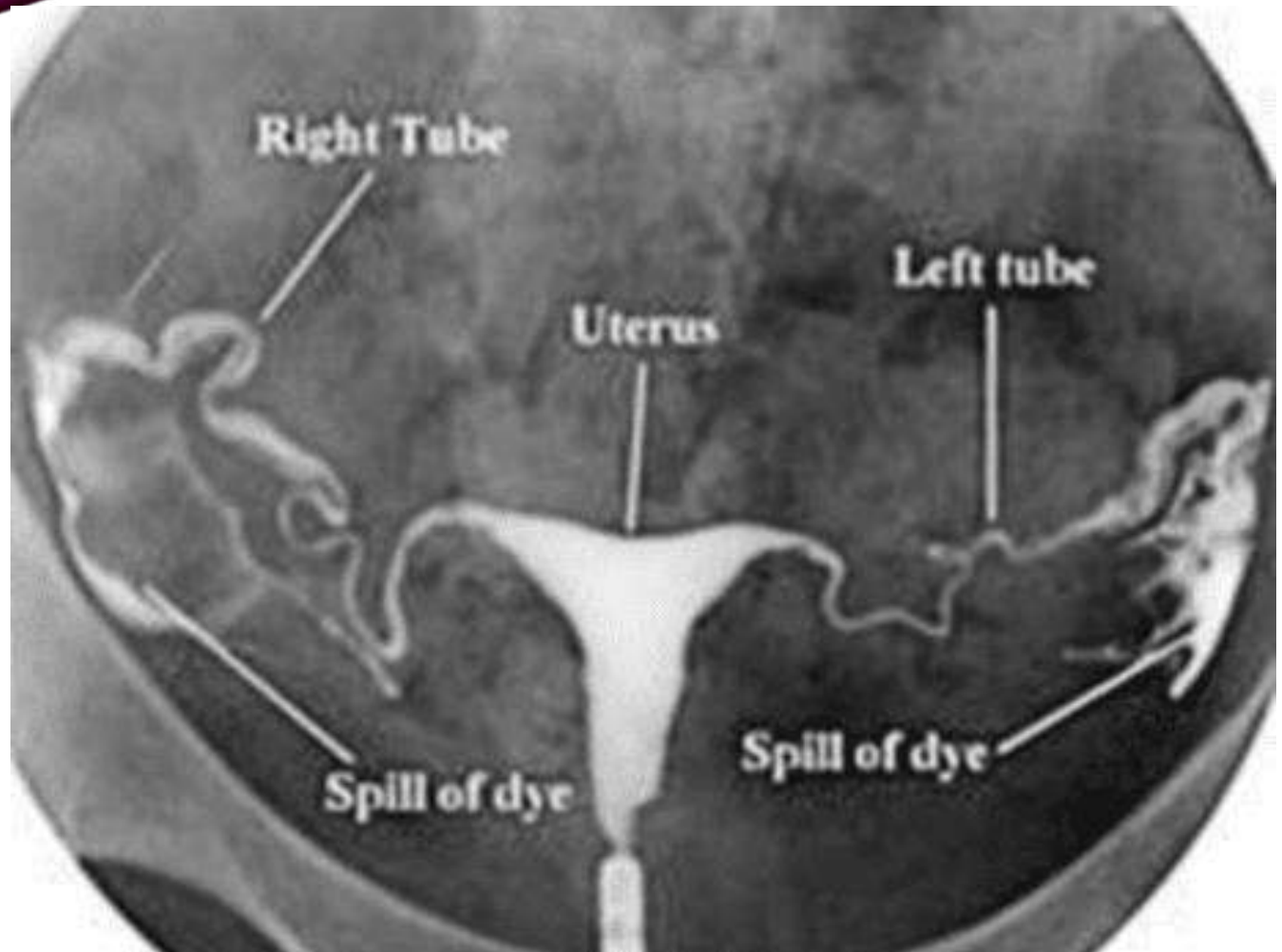
*Normally :-*

- Bilateral free peritoneal spillage

+ Free spillage to peritoneum »  
patent fallopian tubes

لما تقوت ال contrast على ال  
peritoneum المريضة راح تحس  
بمغض بس عادي هاد يعني ال  
fallopian tubes are intact

+ Normal uterus shape



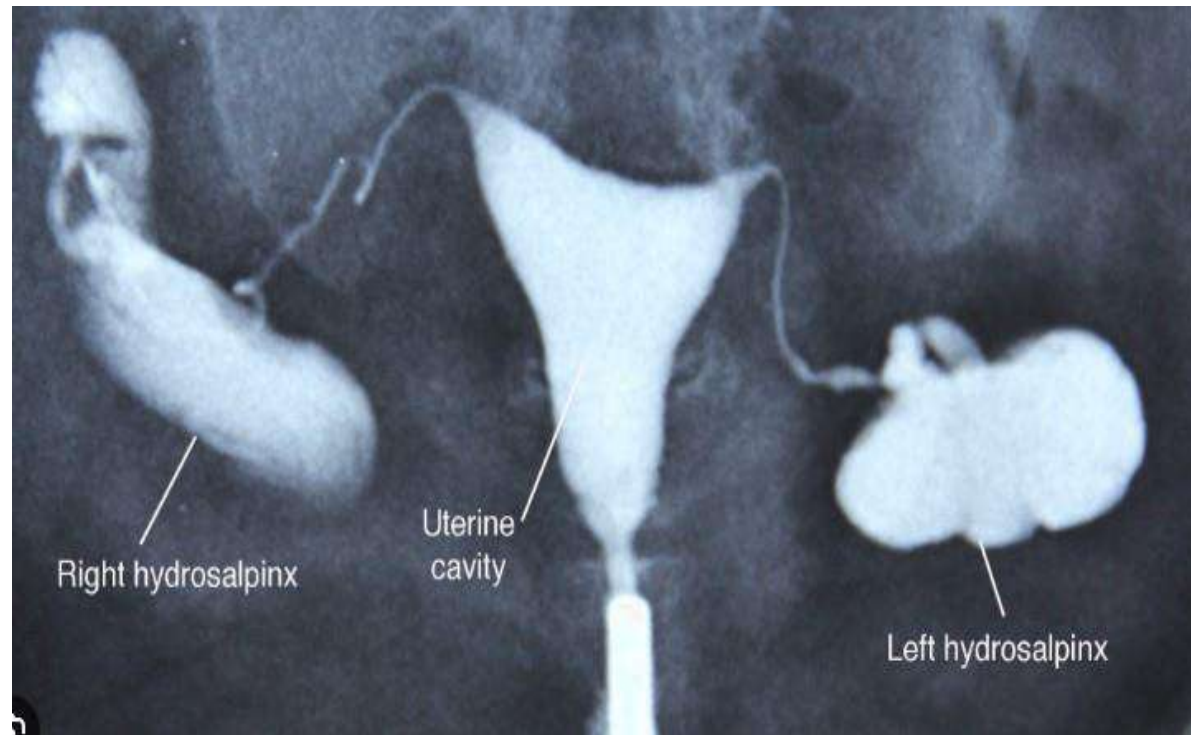


✦ Normal uterus shape &  
→ patent fallopian tubes

✦ اول اشي بنعمل للمريضة PV exam الي هو per vaginal exam عشان ال assessment of cervix بعدين بنحط ال speculum و بنحقن ال contrast

# BILATERAL HYDROSALPINX

Enlarged fallopian tubes



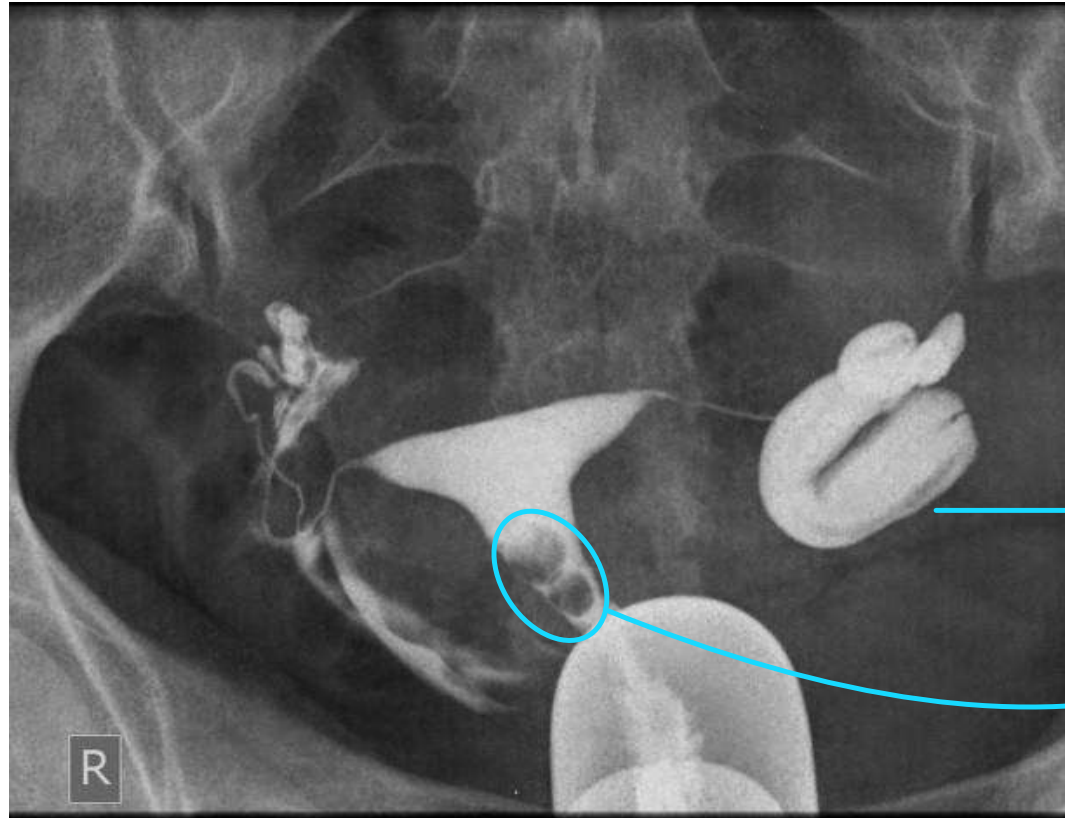
## 1 Filling defect inside the uterine cavity

- A filling defect means an area where contrast does not fill.
- In HSG, the most common benign cause is an air bubble.
- Air bubbles:
  - Are round / smooth
  - Change position between images
  - Disappear on delayed films
  - Not pathology
- True pathology (polyp, submucosal fibroid, adhesions):
  - Produces a constant filling defect ✓
  - Same shape and position on all images ✓
  - Irregular or angular margins ✓

## 2 Left hydrosalpinx

- The left fallopian tube is:
  - Dilated ✓
  - Tortuous ✓
  - Filled with contrast ✓
  - No free peritoneal spill ✓
- Classic appearance of hydrosalpinx (distal tubal obstruction)
- ✖ Mechanism:
  - Distal obstruction 'n' tube fills and balloons
  - Contrast remains trapped ⇐

\* unilateral hydrosalpinx + filling defect.



✚ Filling defect = air not pathology

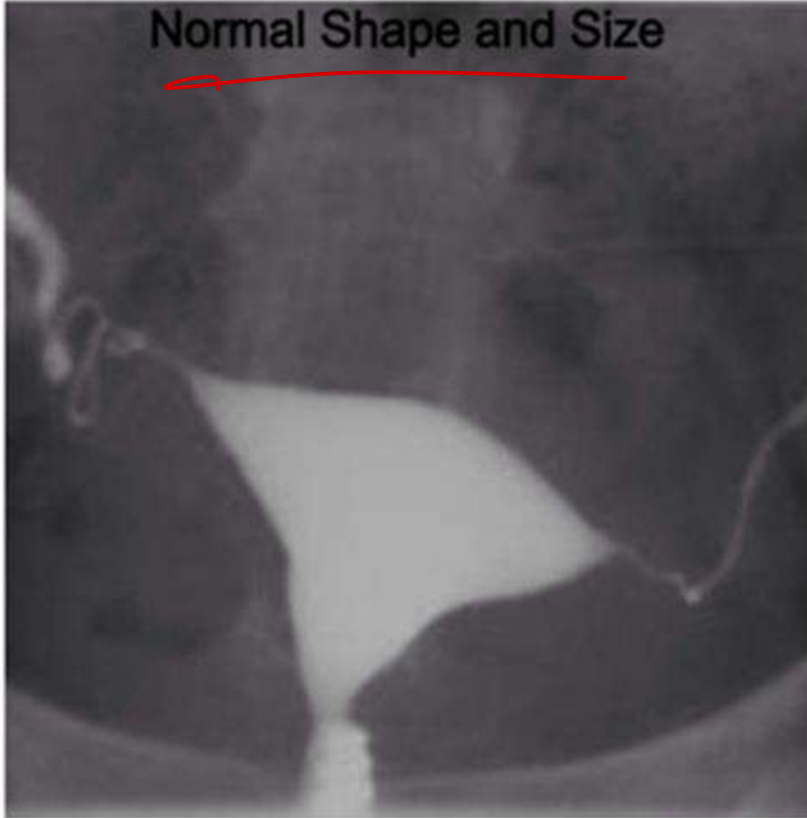
لو كان في pathology او  
مشكلة بكون ال filling defect  
constant يعني مستمر

✚ Left hydrosalpinx

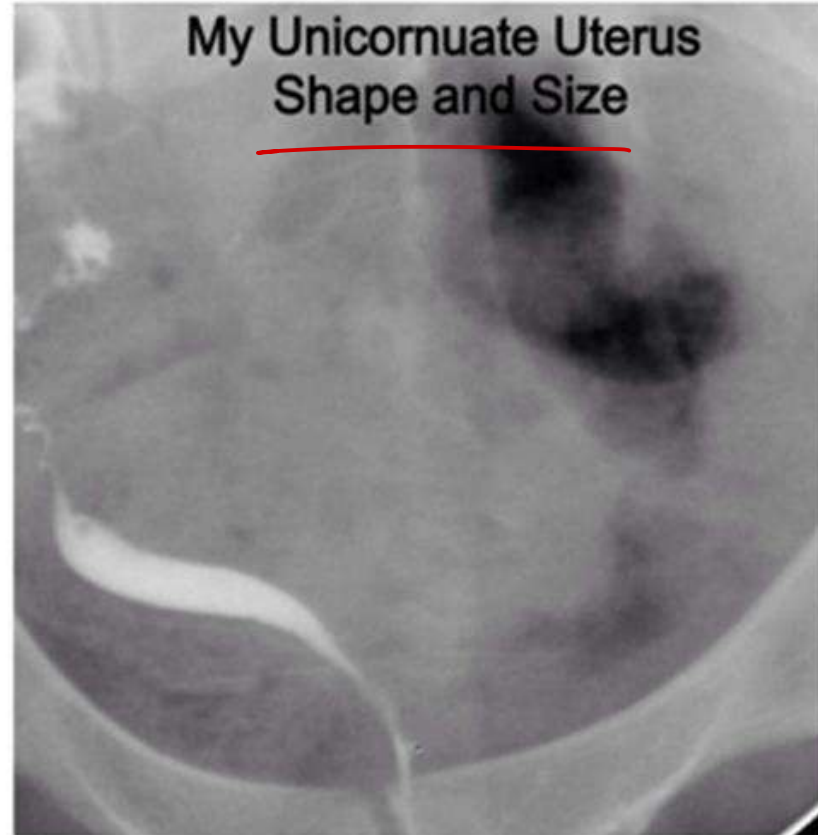


- one cervix
- half uterus ✓ / other one is rudimentary
- transverse ✓
- "Banana shaped"

Normal Shape and Size



My Unicornuate Uterus Shape and Size



بال embryology ال uterus يكون جزئين و بصيرلهم diffusion و ممكن تصوير بعض ال congenital anomalies زي ال unicornuate uterus يكون بال embryoology ال uterus يكون جزئين و بصيرلهم diffusion و ممكن تصوير بعض ال congenital anomalies زي ال unicornuate uterus يكون recurrent miscarriages small, asymmetrical, connected to one fallopian tube بال embryoology ال uterus يكون جزئين و بصيرلهم diffusion و ممكن تصوير بعض ال congenital anomalies زي ال unicornuate uterus يكون recurrent miscarriages small, asymmetrical, connected to one fallopian tube

# BICORNUATE UTERUS ↘

✚ Leads to recurrent miscarriages



✚ 2 uterine bodies

→ no fundus



Bicornuate

# CONTRAST FILLING DEFECT

☆ FIBROID



+ Constant filling defect, most  
common cause » fibroids

# PELVIC ULTRASOUND IN FEMALE

- Indication:

Menstrual irregularity ,pelvic pain , ovarian mass ,fibroid and endometriosis

Advantages:

Non invasive ,cost effective and excellent for evaluating pelvic anatomy .

Disadvantage :operator dependent , limitation in obese may not detect subtle endometriosis

✦ احسن طريقة تصوير لل female pelvic organs هي ال ultrasound بعدين ال MRI

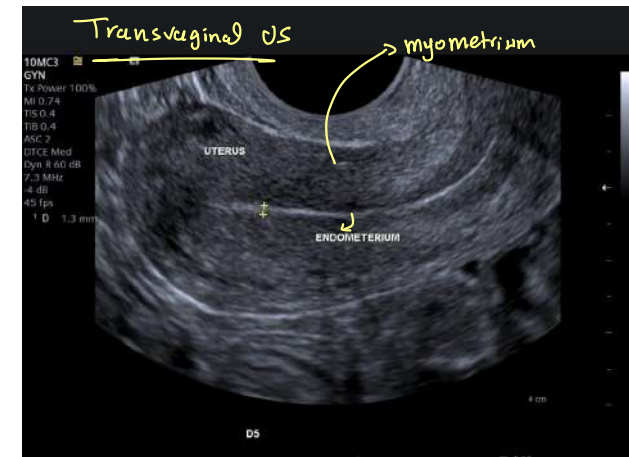
➤ اولاً عشان نقلل ال radiation exposure لل ovaries ثانياً ال tissue differentiation احسن على ال MRI

# ULTRASOUND

- Trans abdominal and trans vaginal ultrasound :
  - TAU : Using 3.5 -5MHz curved transducer ,  
wide field of view with full urinary bladder ??
  - ① To displace the bowel , ② acoustic window .
- لحی السمان بحدود الترددات الصوتية بشكل احسن.

✦ Linear probe » superficial, high frequency » breast, thyroid, vascular

✦ Curved probe » deep structures, low frequency » Abdomen, pelvis, pregnancy



# OVARIES



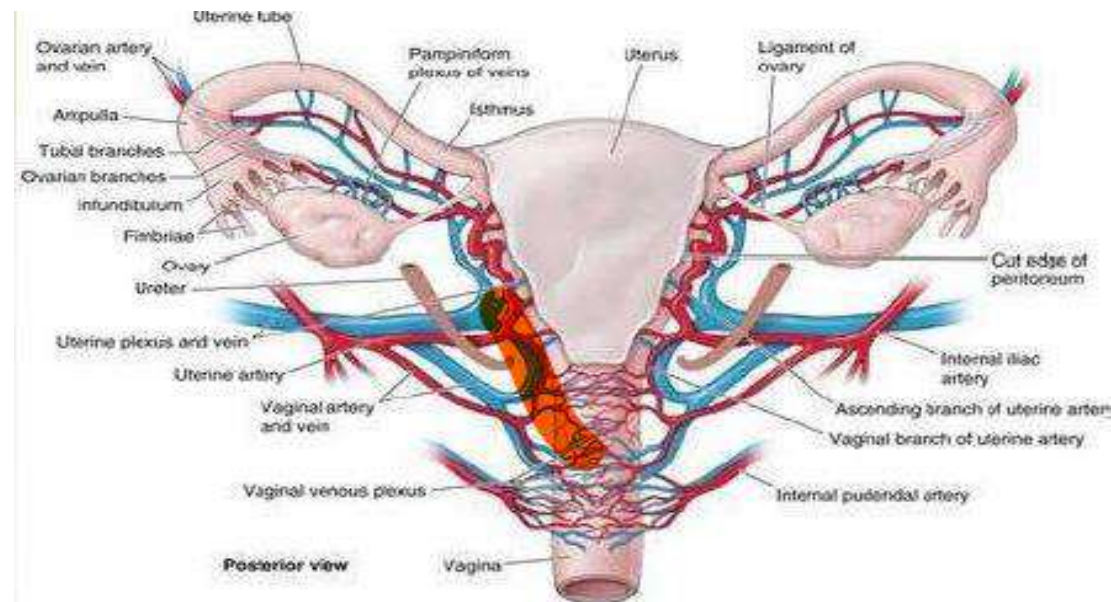
✦ **Doppler US** » to assess vascularity to  
exclude ovarian torsion

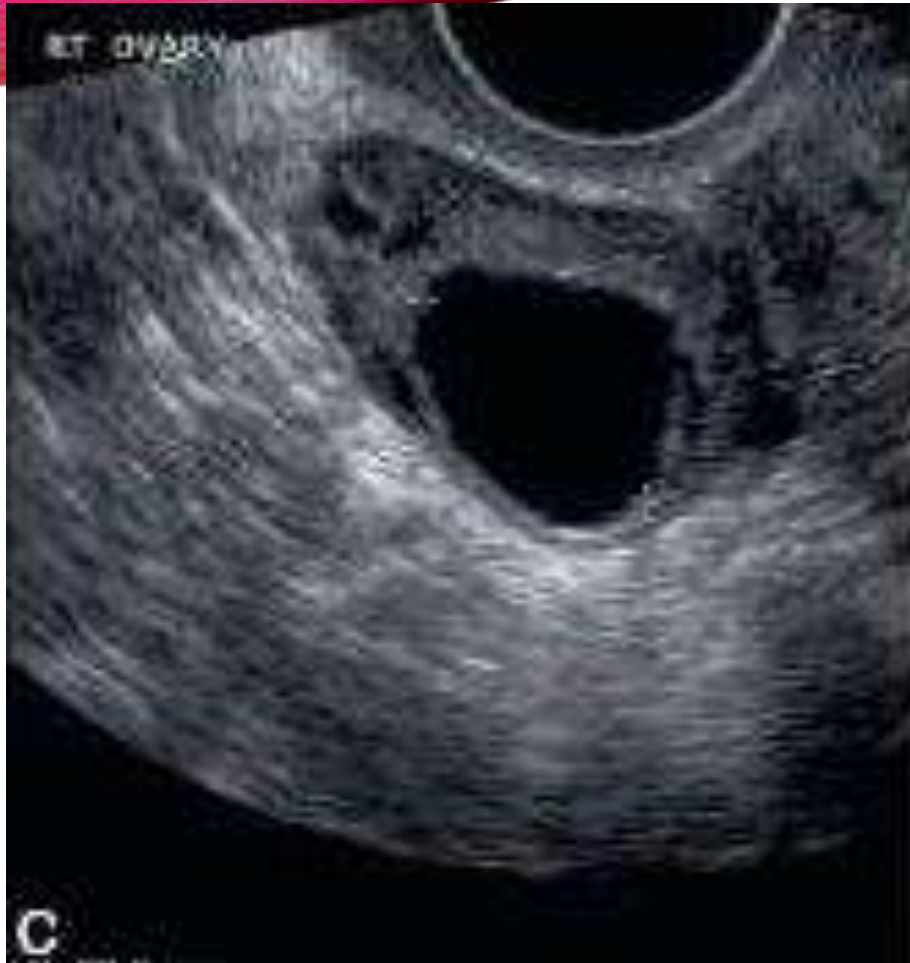
✦ اللون الاحمر و الازرق الي هم ال  
arterial and venous blood

✦ هاد مهم عشان ال  
ovarian  
torsion

# OVARIES

- Medial to external iliac artery in the ovarian fossa.
- Anterior to internal iliac artery.
- Central echogenic stroma with peripheral anechoic follicle (3-4 mm).
- size 3x2x1 cm .
- Fallopian tube normally not seen on US , but seen in hydro salpinx or surrounding ascites.



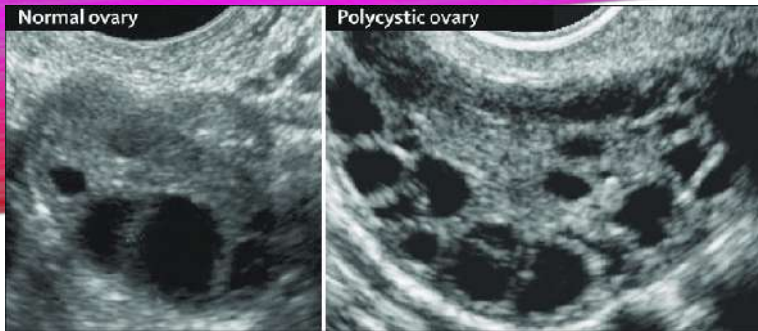


# SIMPLE OVARIAN CYST

- Cyst

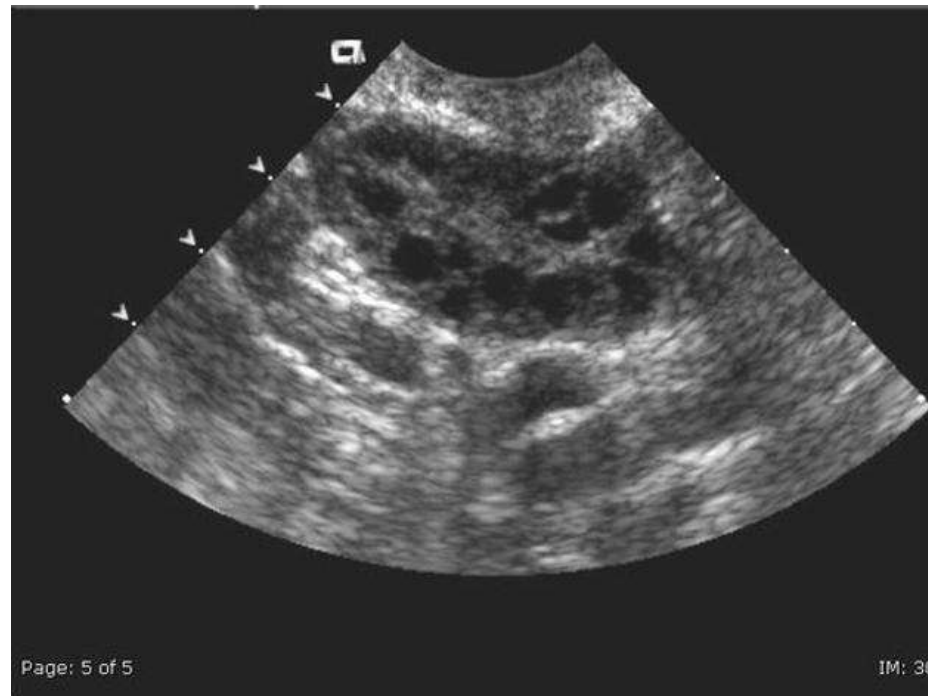
- Anechoic

➡ Larger than 2 cm ➡



# PCO

✚ String of pearls cysts < 1 cm,  
located peripherally on ovary



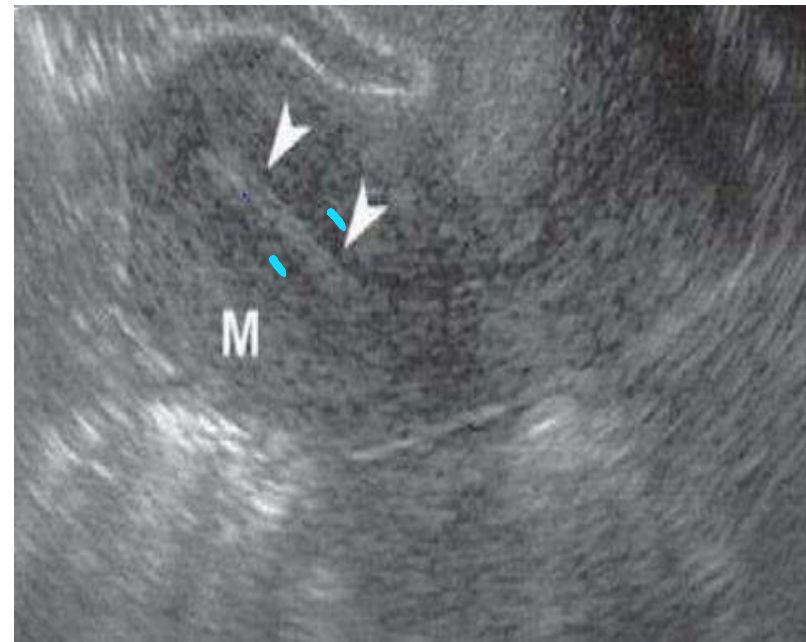
✚ 3 criteria's of PCO ✚ —

1. Hormonal profile 2nd day of period » FSH:LH ratio
2. Radiological profile
3. Clinical picture » young female with irregular period, hirsutism, obese, acne

عشان نعرف ال thickness of endometrium بقيس من السواد الي

جنب الخط الابيض من جهة للسواد الي على الجهة الثانية

## UTERUS



- Normally 3x5x7 cm .
- Consists of endometrium , junctional zone and myometrium .
- Endometrium appearance according to phase of menstrual cycle , so at mid cycle ( follicular phase )it has three layer appearance .its more homogenous later (at menstrual phase) with thin hyperechoic line .
- junctional zone difficult to see on US .
- if tilted toward anterior abd wall , anteverted .

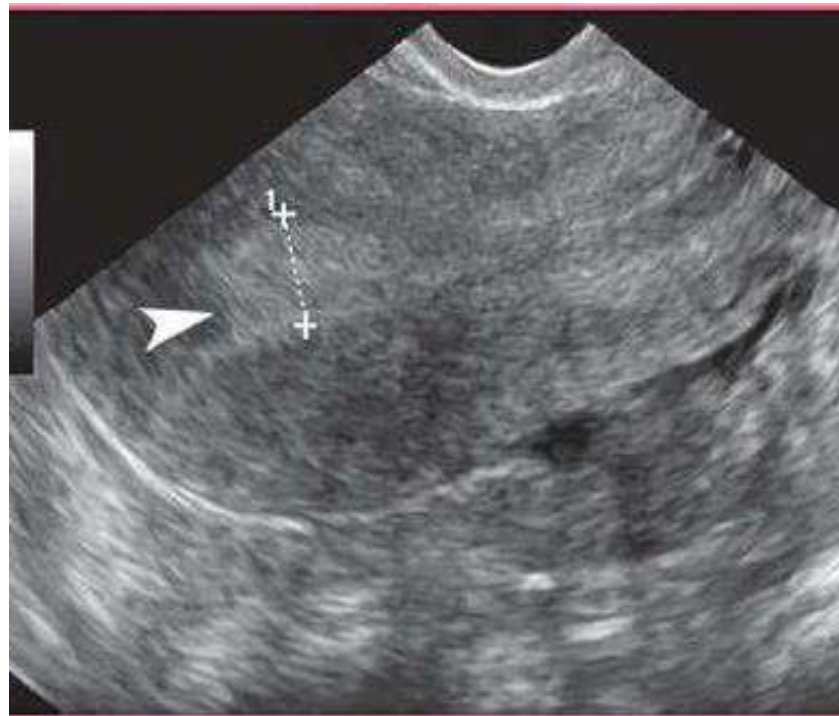
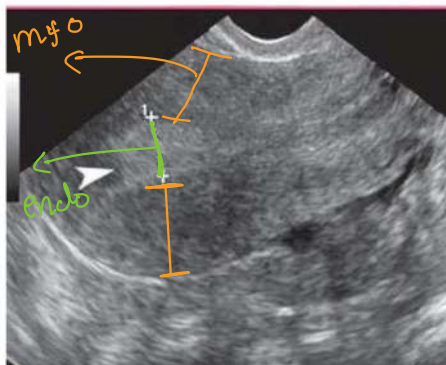
+ Thickness of endometrium depends on » age, time of menstrual cycle (phase)

المقصود بال age هل هي premenopause or post

← ال post ممنوع تكون اكثر من 5-4 mm

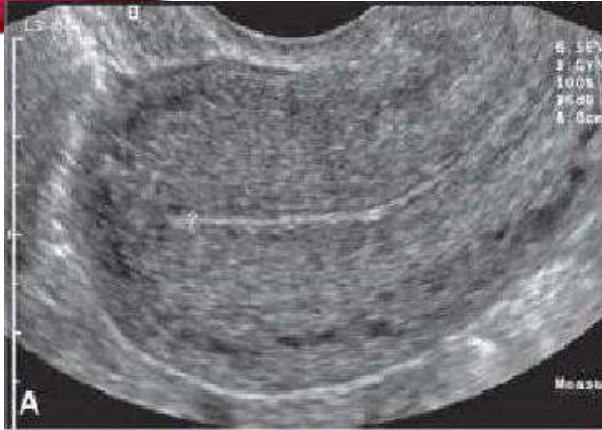
(if more than 4-5 mm → endometrial cancer)

13mm » accepted  
Luteal phase with  
increased  
echogenicity



✦ Different thickness in different phases of cycle for the same patient

first phase  
4-5 mm



as 3 layer

homogenous

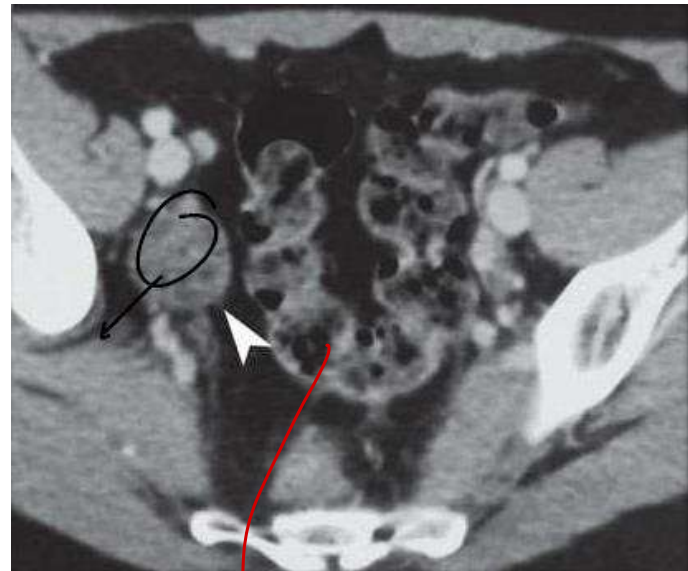


reach 13 mm

luteal phase

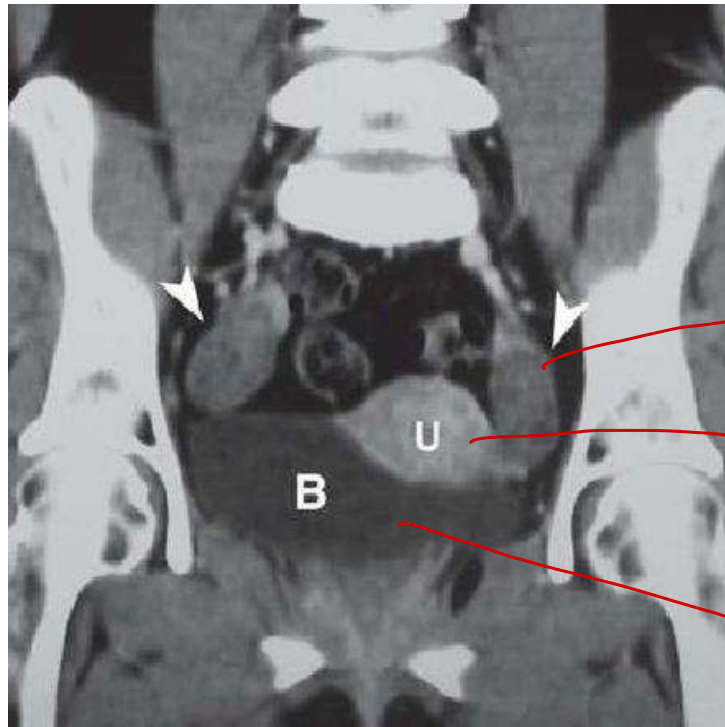
# CT SCAN

- Decreased soft tissue resolution so less often used.
- Used to assess calcified leiomyoma and calcified lymph node.
- partially distended bladder.
- NECT and CECT ( 100-120 ml NICM)



it's not  
uterus?

Coronal



Axial

Urinary bladder

Right ovary

Internal iliac vasculature,  
anterior division

Uterine fundus

External iliac va

Left ovary



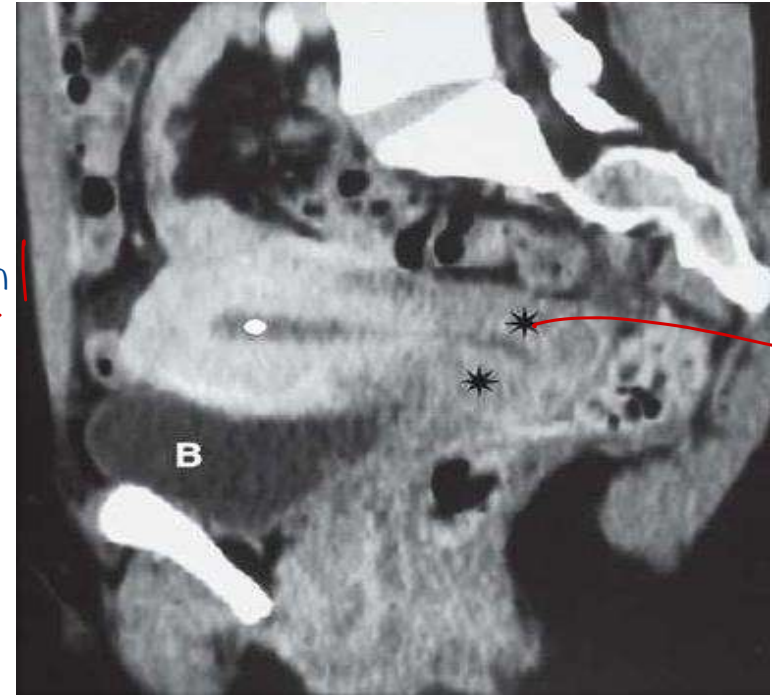
✚ Retroverted

with back pain.



Sagitta ct scan

✚ Ante-verted



Cervix

✚ كيف بحكم انه retro بشوفه اذا راجع لورا ناحية ال vertebral column

Calcified mass » fibroid  
✱



X-ray

# CALCIFIED FIBROID

*The most common  
mass in uterus.*



# MRI IN FEMALE IMAGING

- Indication:

Endometriosis , pelvic pain , ovarian mass , fibroid and adenomyosis .

- Advantage:

Excellent soft tissue contrast , detailed pelvic anatomy and non invasive.

- Disadvantage:

Metallic implant , expensive and time consuming .

- Contraindication:

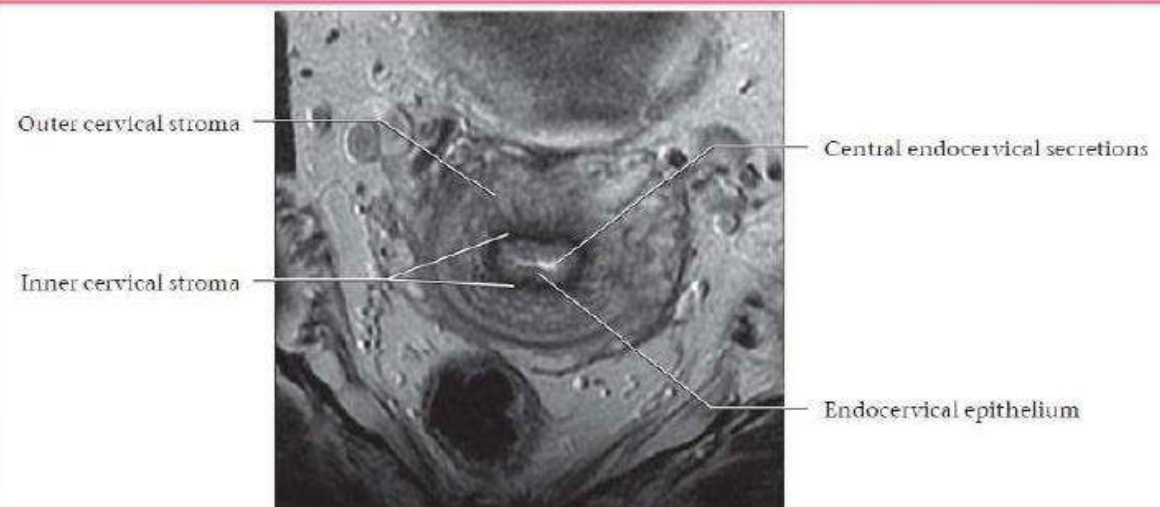
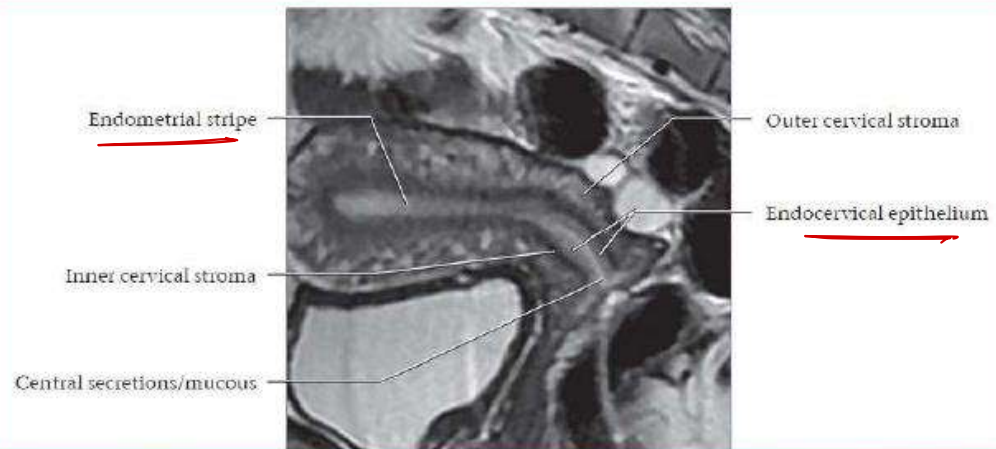
Claustrophobia, metallic implant and first trimester of pregnancy??

← زي الي مركبة سياخ ومركب  
اجهزة ثانية

(organogenesis)

\* if Pt. has IUD , from metallic source → is contraindicated.

T2 » fluid is white (bladder)



✈ Sagittal MRI, T2 » fibroid



Retroverted

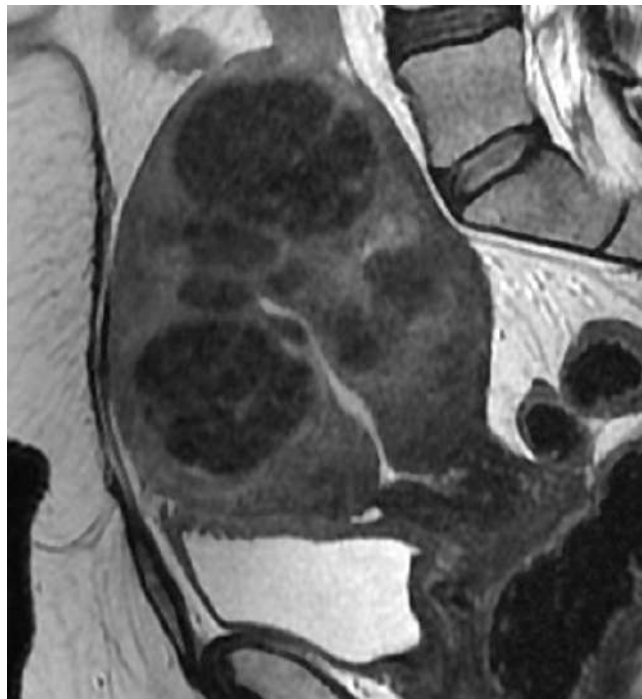
↓  
Bladder  
is full



# MRI

- Better soft tissue resolution .
- Staging in cancer.
- Characteristic feature of pelvic mass.
- Pelvic lymphadenopathy
- Evaluation for congenital anomaly.
- Pelvic pain in pregnancy.

# UTERINE FIBROID



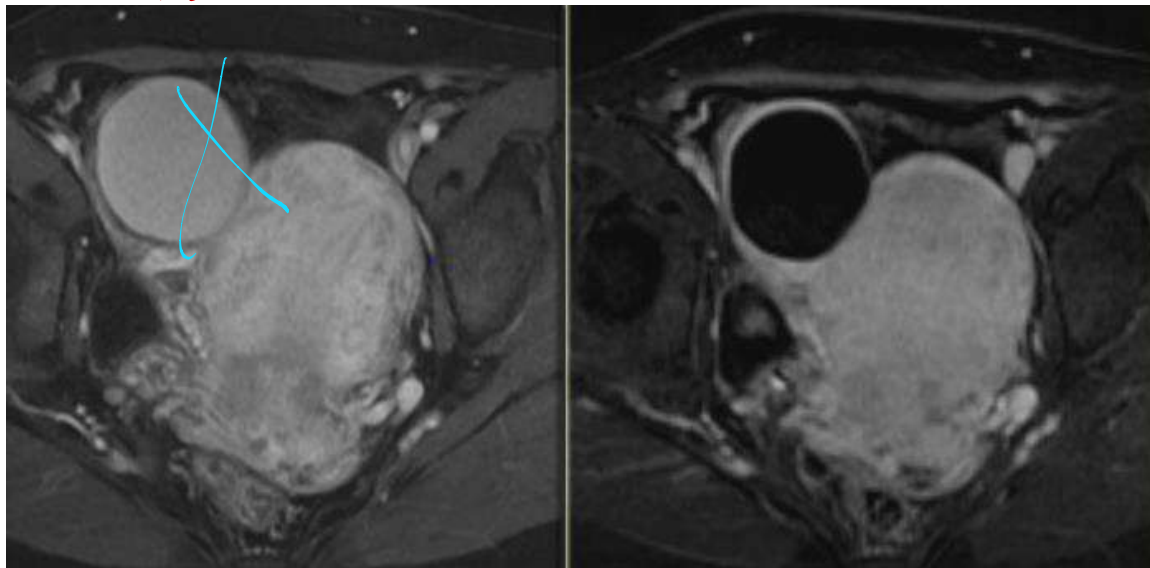
Sagittal, MRI, T 2

Multiple masses » fibroid

# SIMPLE RIGHT OVARIAN CYST

T<sub>2</sub>?

T<sub>1</sub>?



Cyst