Guy's and St Thomas' NHS
NHS Foundation Trust

The Role of Interventional Radiology, CT & MRI in Acute Gynaecological Patients

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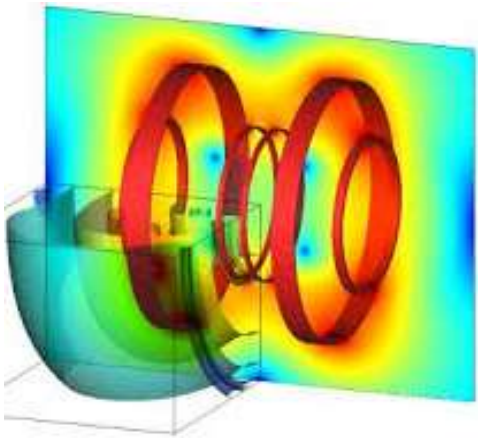
Introduction

- **Ultrasound**
- Usually first line suspected gynae pathology
- Operator and patient dependent
- Further characterisation of initial US findings
- Overview of abdomen/pelvis (initial dx or post op)

- **MRI**
- Problem solving tool
- Soft tissue contrast, characterisation
- Overview of pelvis/abdomen



- **CT**
- Acute pelvic pain of unknown cause, post op complications, guide interventional procedures
- Quick, easy
- Lacks soft tissue contrast
- Radiation

Content

- Infection
- Adnexal mass characterisation
- Torsion
- Fibroids
- Post-surgery

Infection

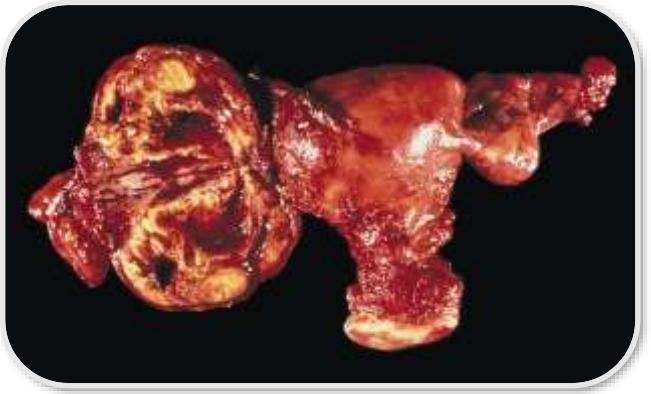
Infection—when is CT/MRI useful?

- Usually clinical diagnosis or US imaging
- CT acute generalised pelvic pain
- Symptoms may be vague (inflammatory markers normal 20%)[1]
- MRI problem solving tool
- TOA may mimic malignancy
- ↑ Diagnostic accuracy MRI (93% vs 80% US)

[1]Thomassin-Naggara et al *Diag Interv Imaging* 2012

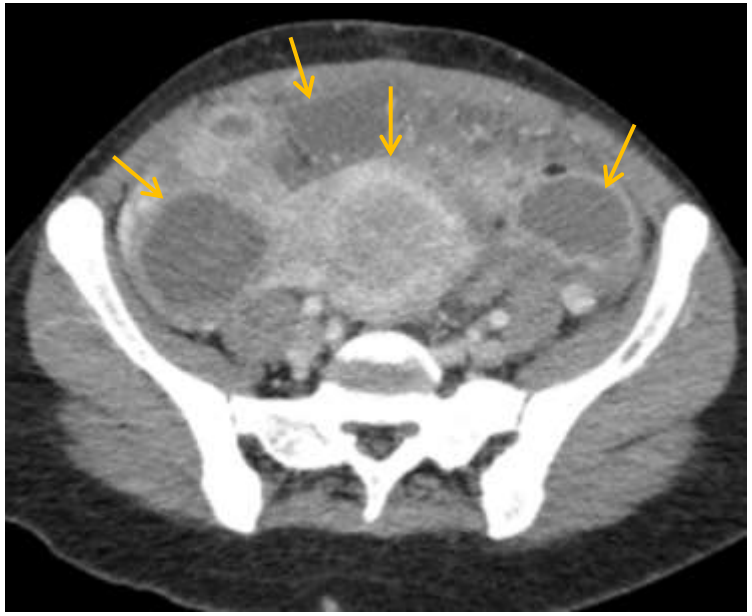
[2]Tukeva et al. *Radiol*. 1999

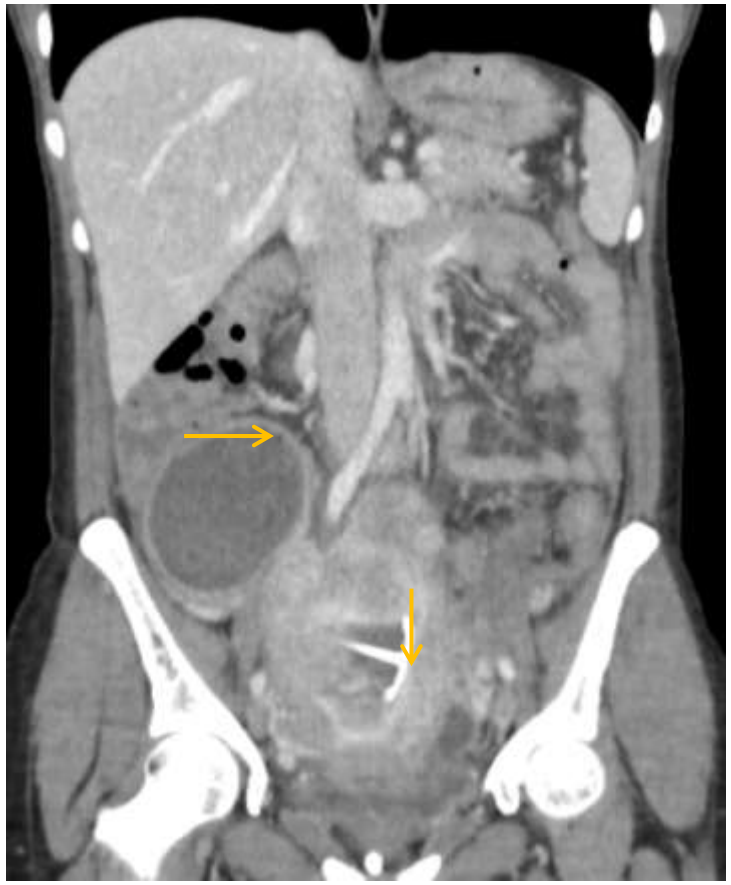
Imaging findings

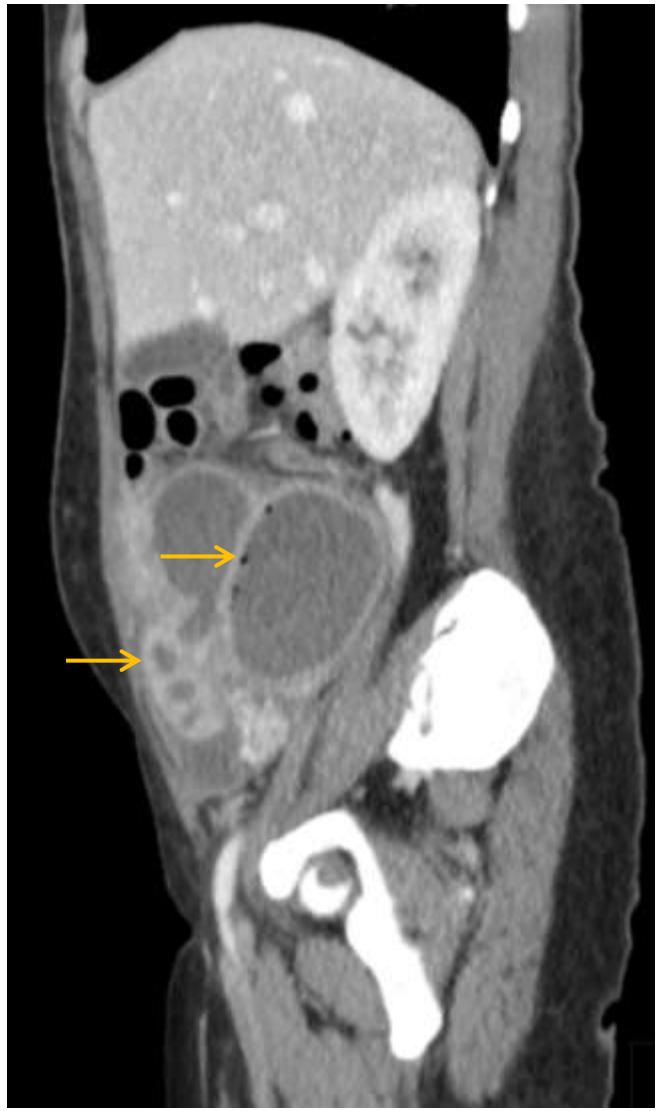


- Fallopian tubes: dilated, fluid-filled, thickened walls
- Oophoritis
- Free fluid
- Fat stranding/adhesions/uterosacral ligaments
- Abscess (TOA): inflammatory breakdown of tube/ovary
- Gas locules (most sensitive) but <40%*
- Cause

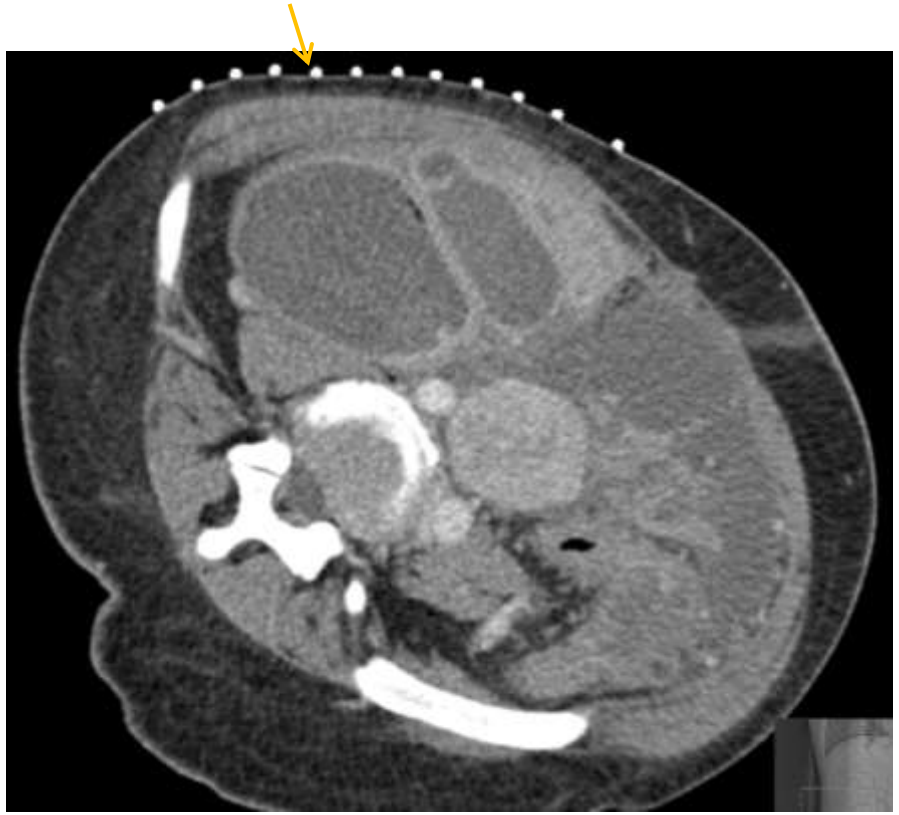
* Dohke. Radiographics 2000

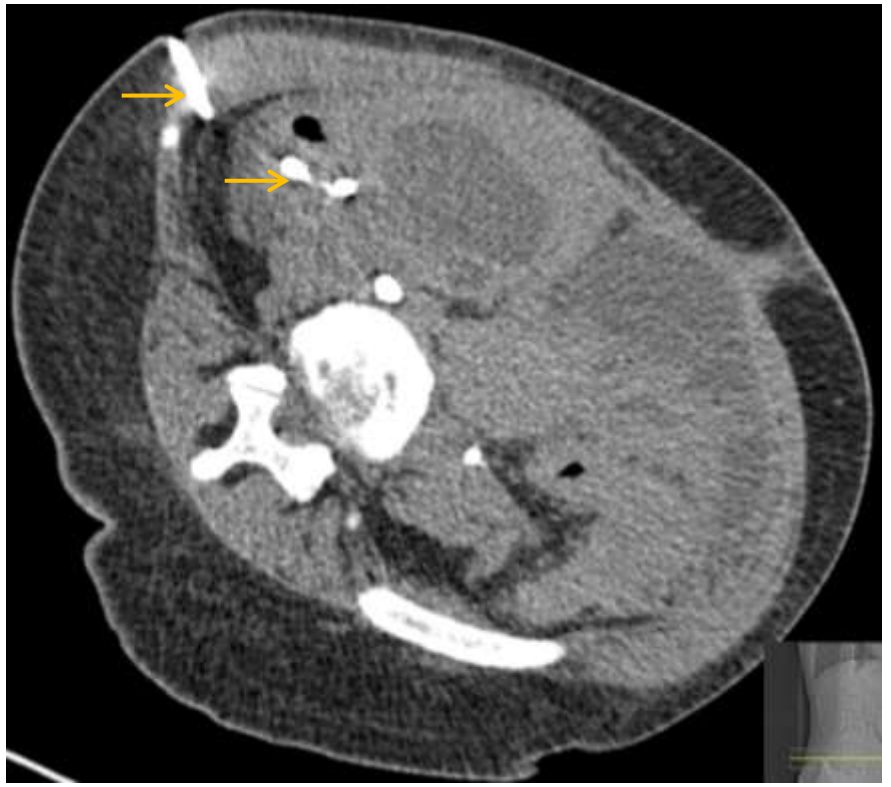




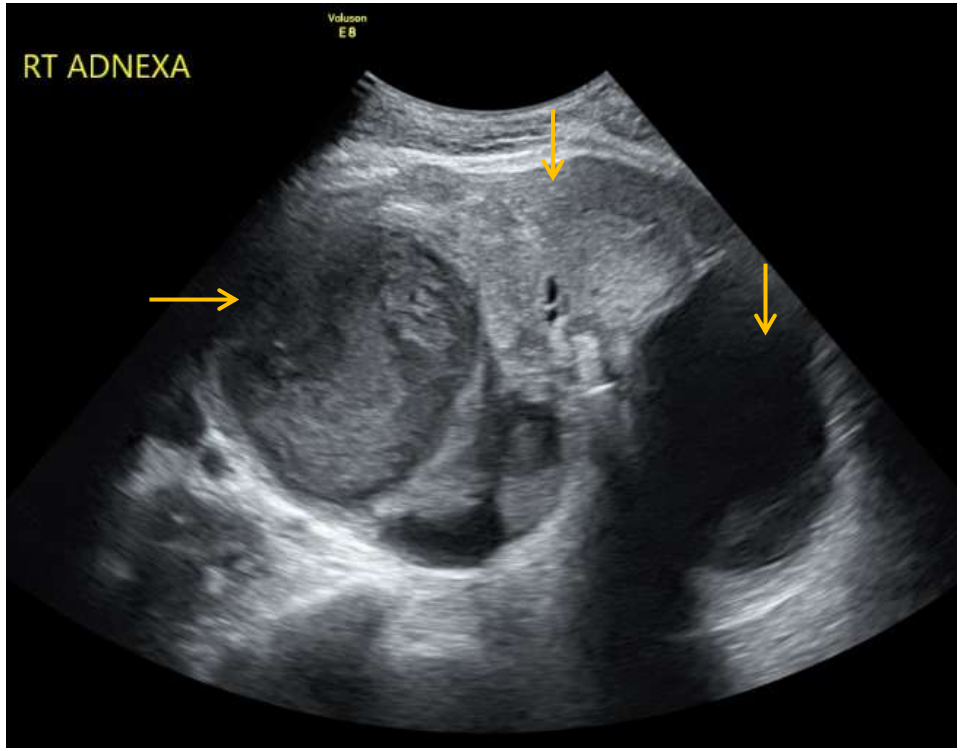


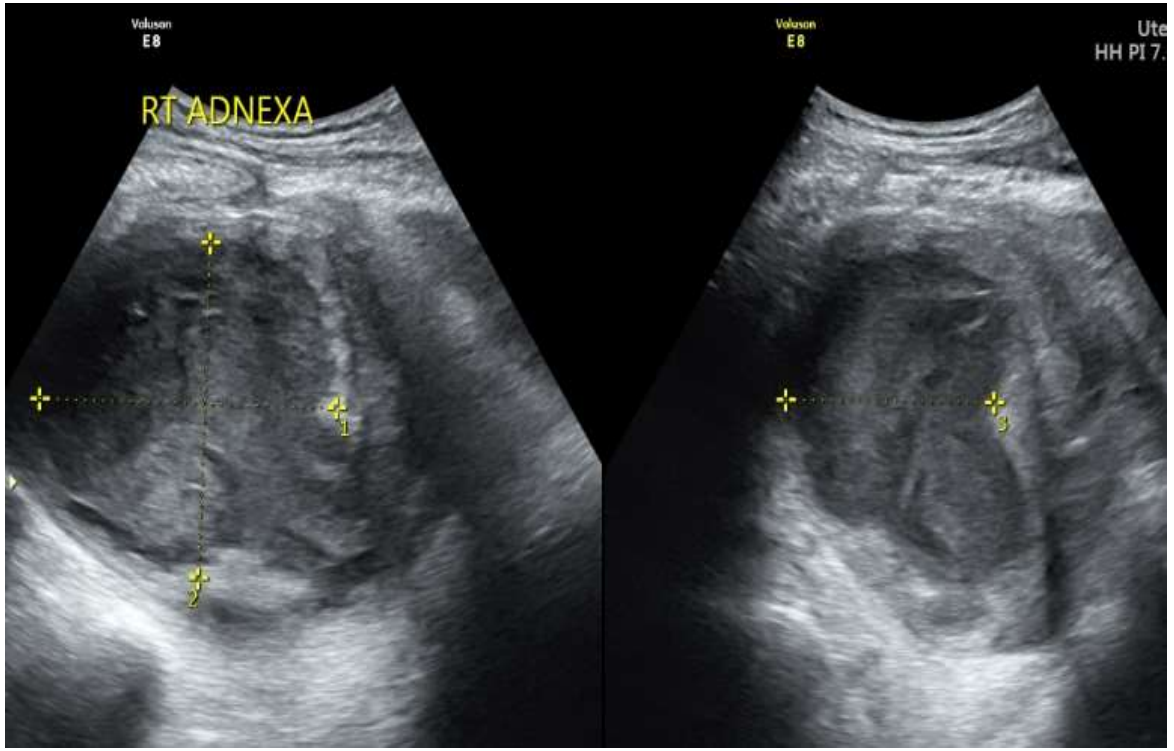
CT guided drainage

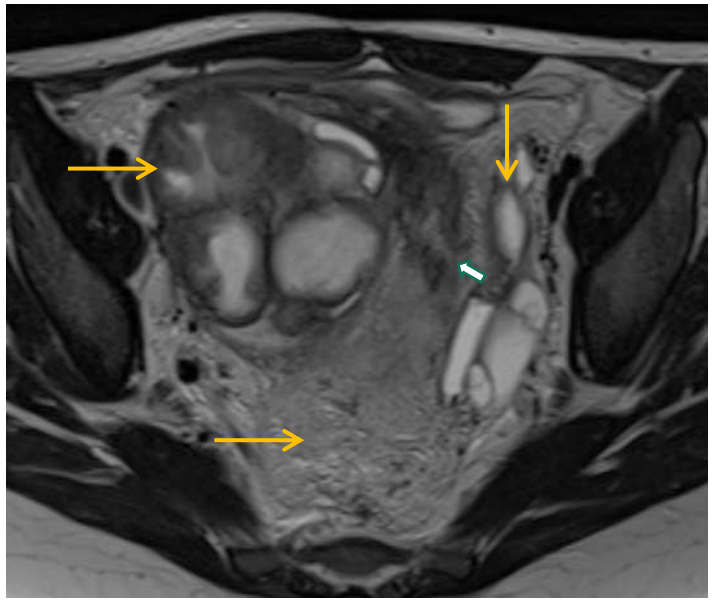
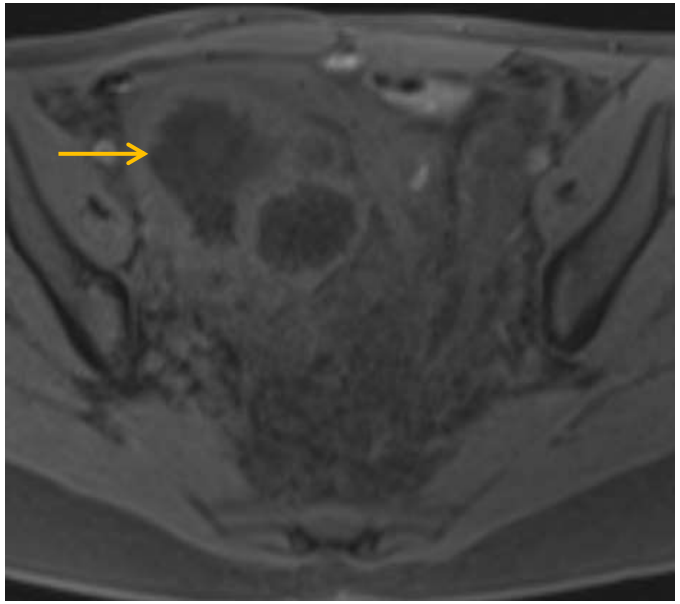
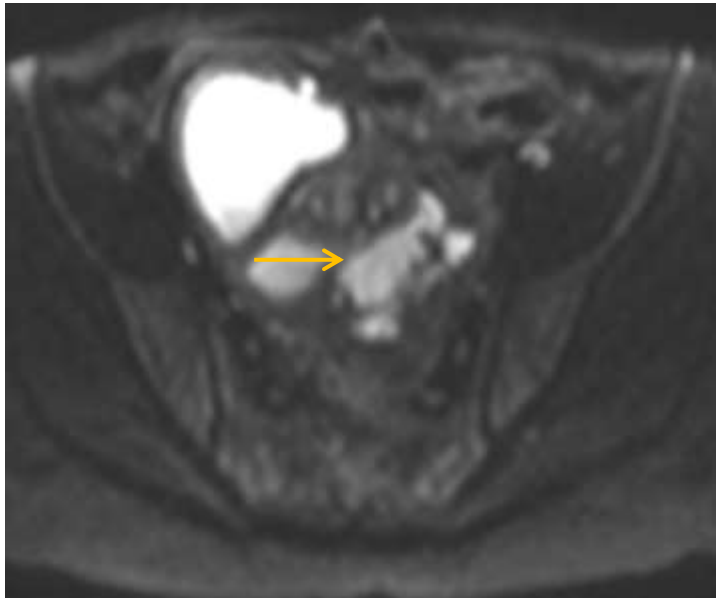
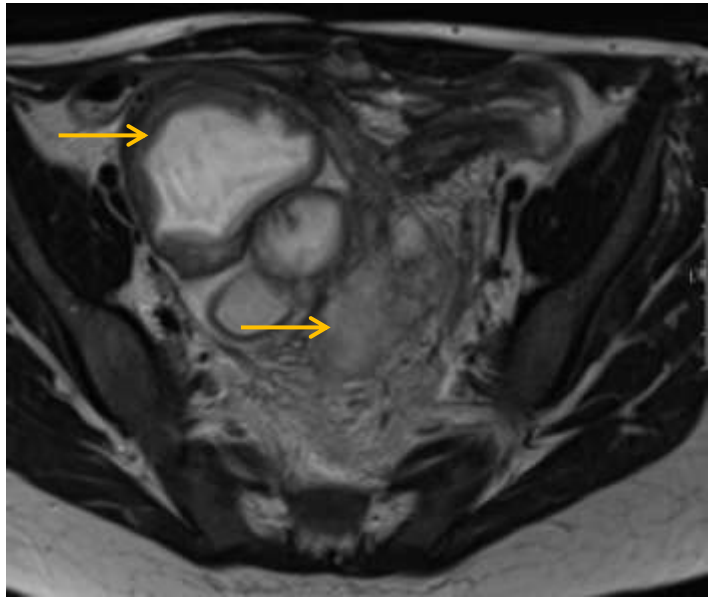
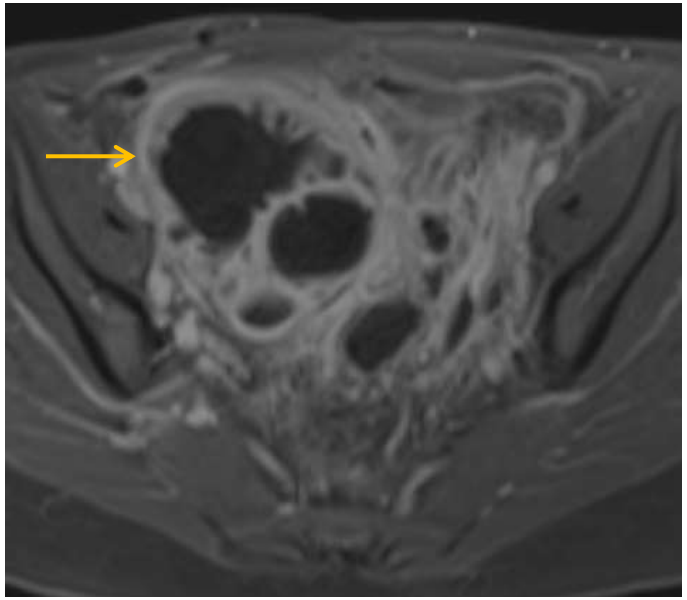
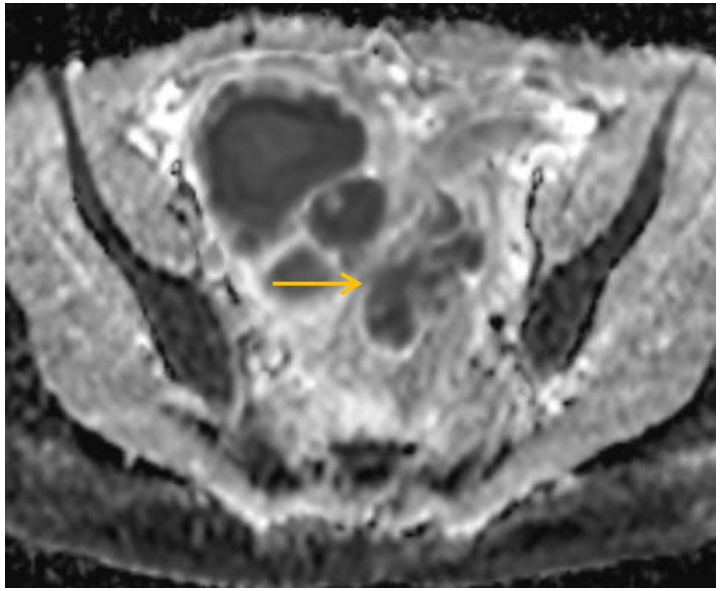




History of Crohn's colitis, abdominal pain and raised WCC/CRP



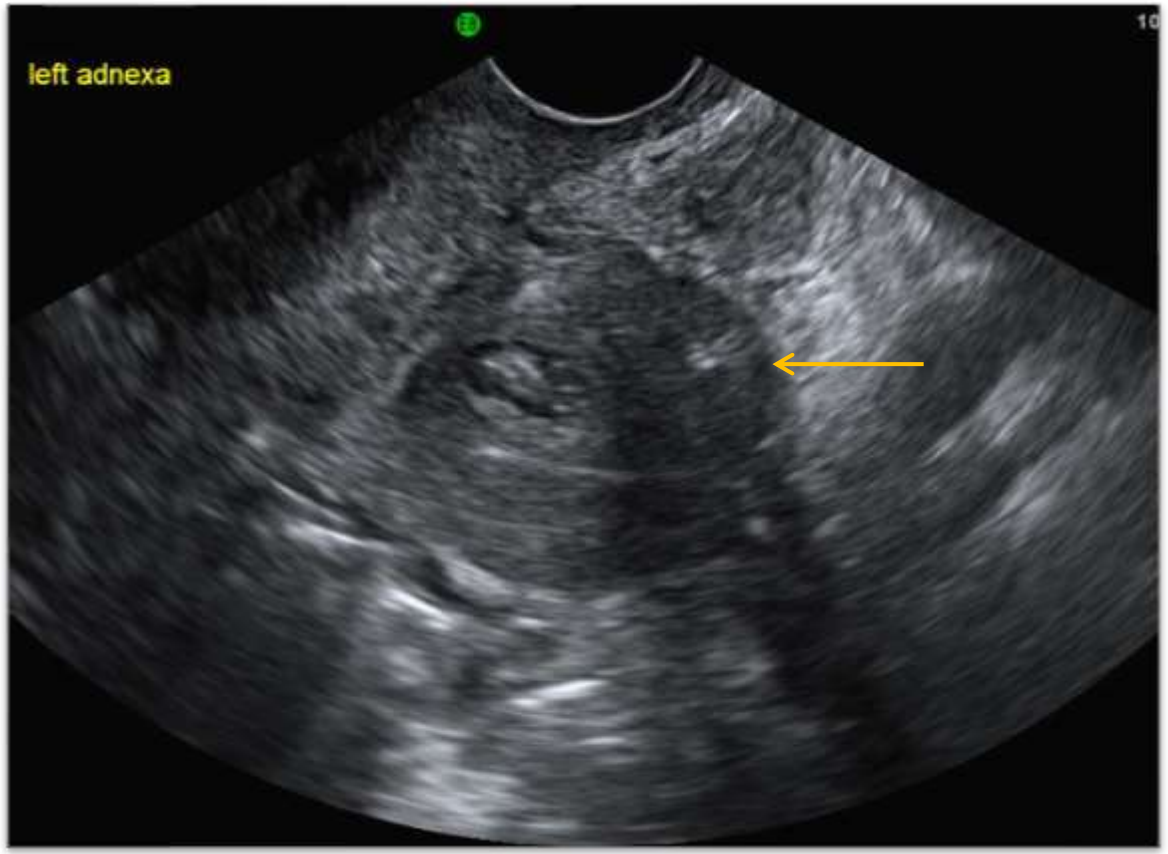


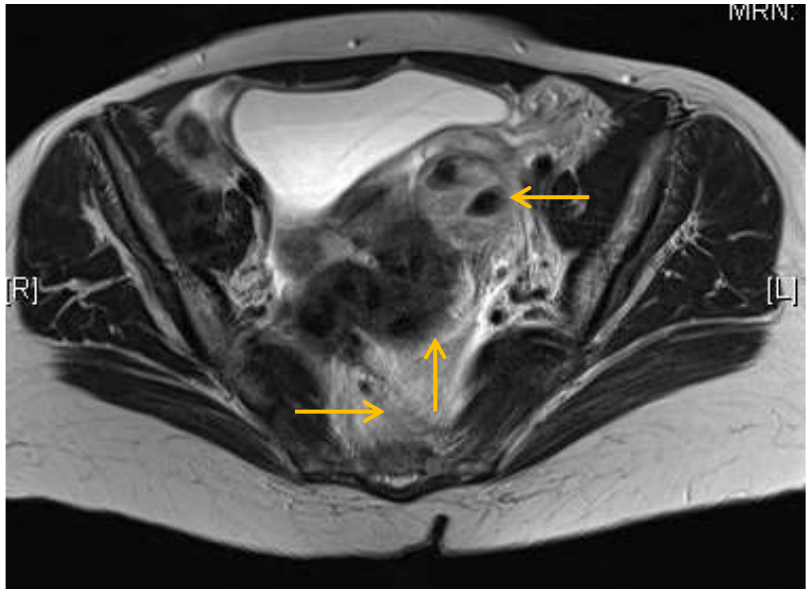







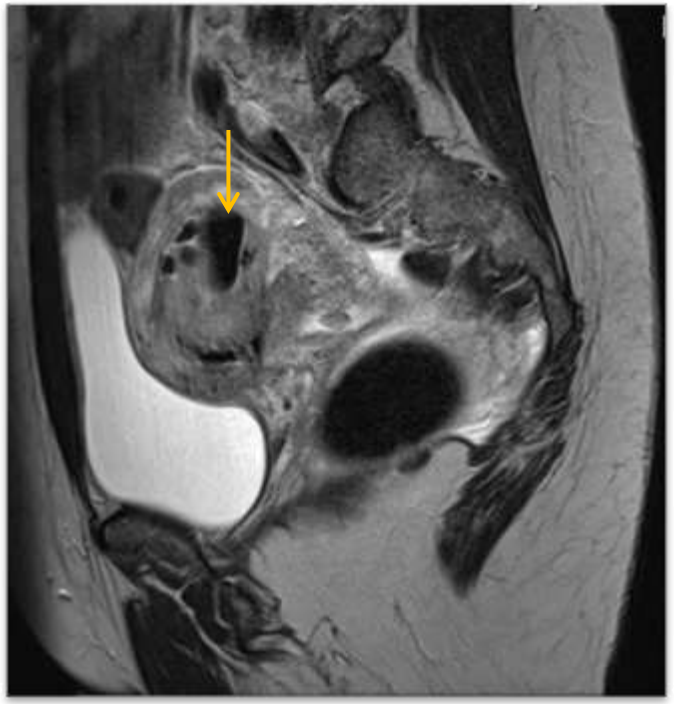
Tuboovarian abscess and pelvic collection secondary to sigmoid colon perforation

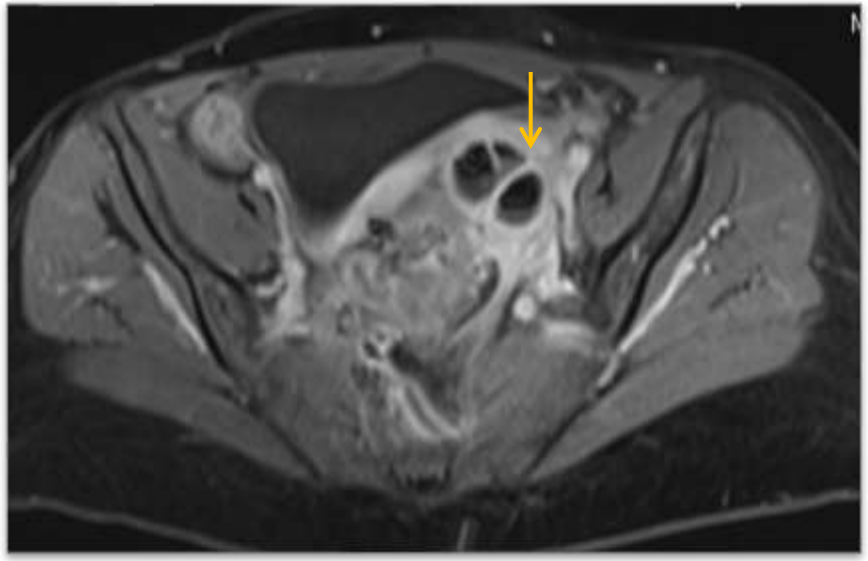
57 yr old lady

2 week history of left iliac fossa pain, transvaginal ultrasound



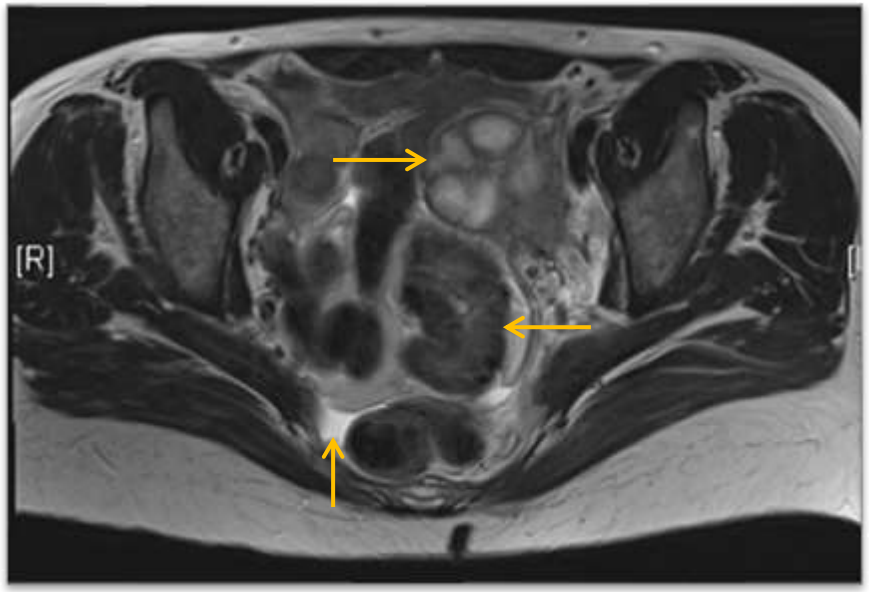




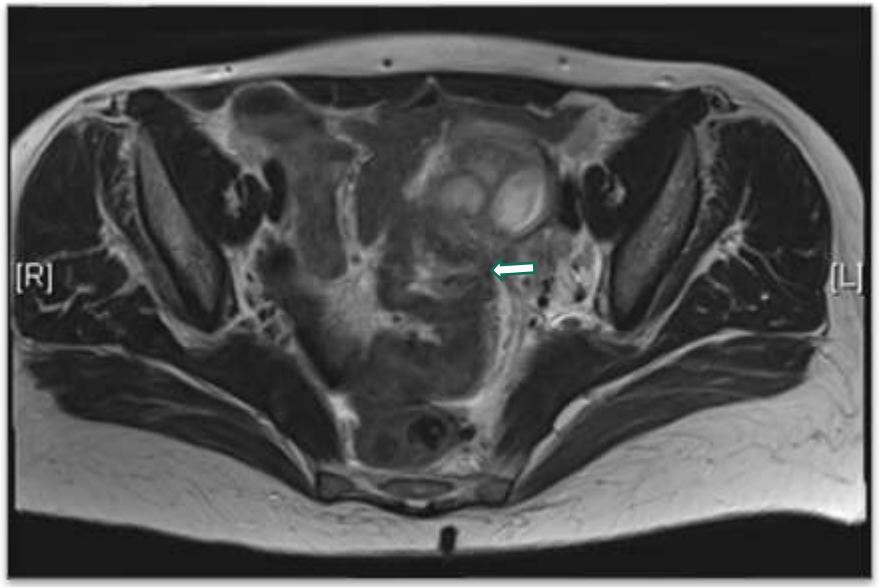


Tuboovarian abscess

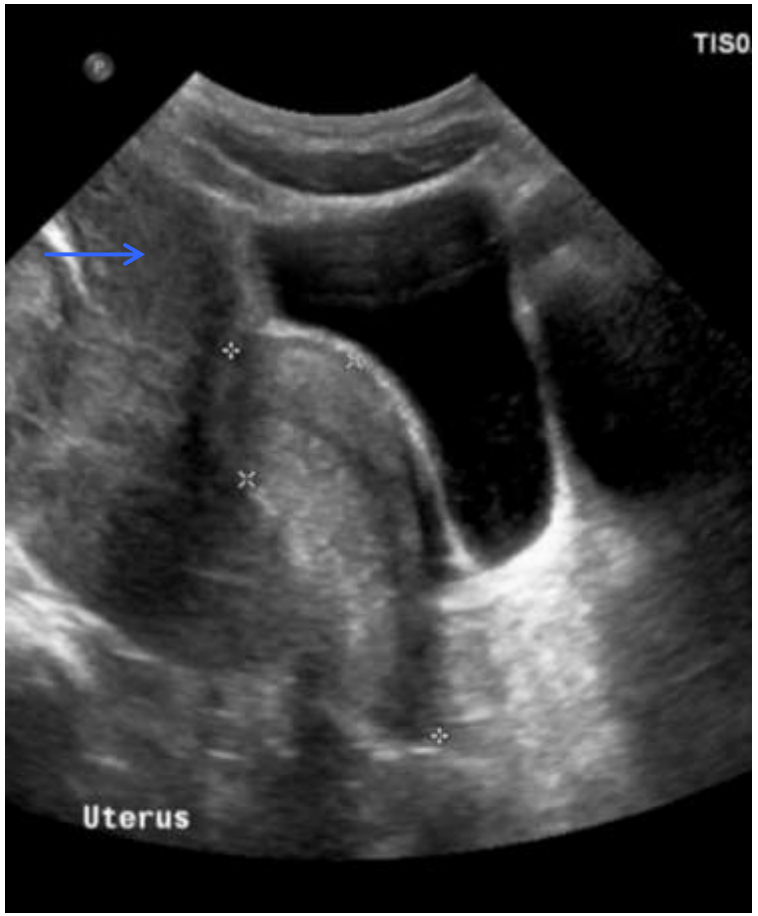
2 months later

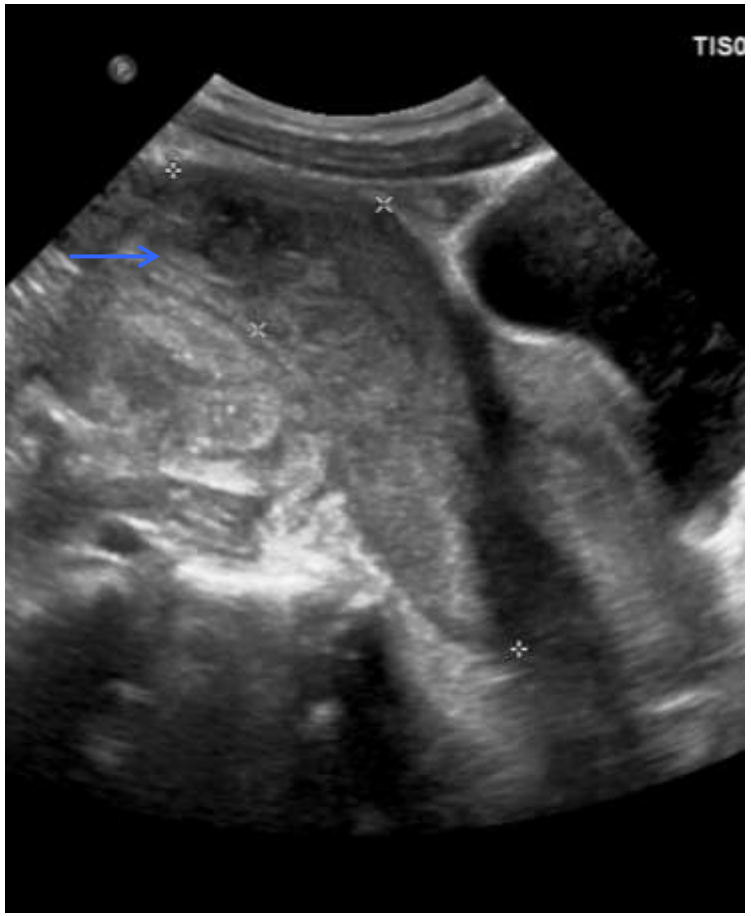


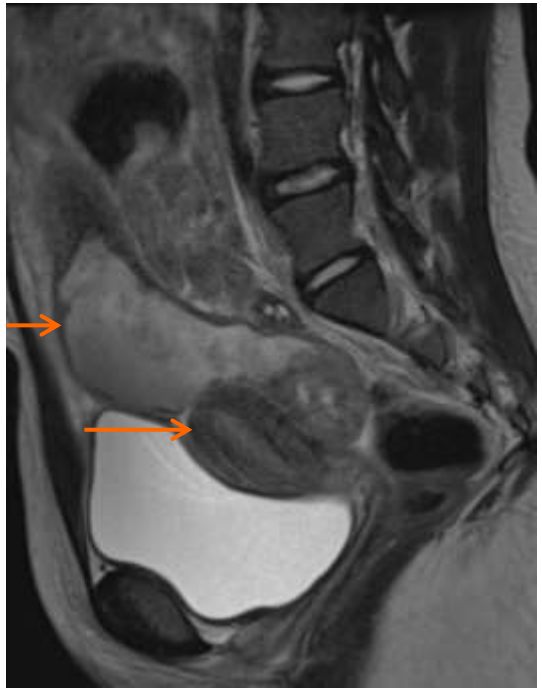
Tuboovarian abscess secondary to diverticular perforation

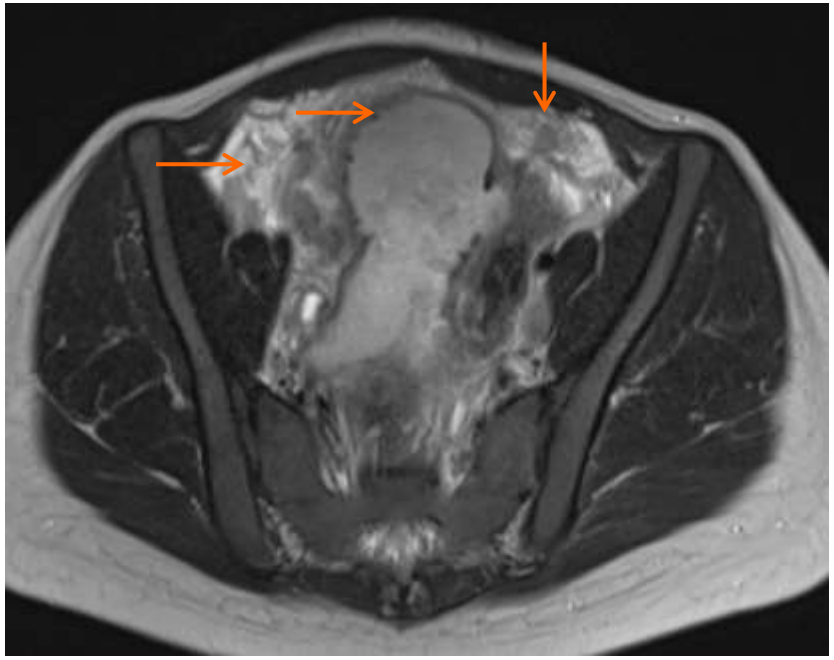


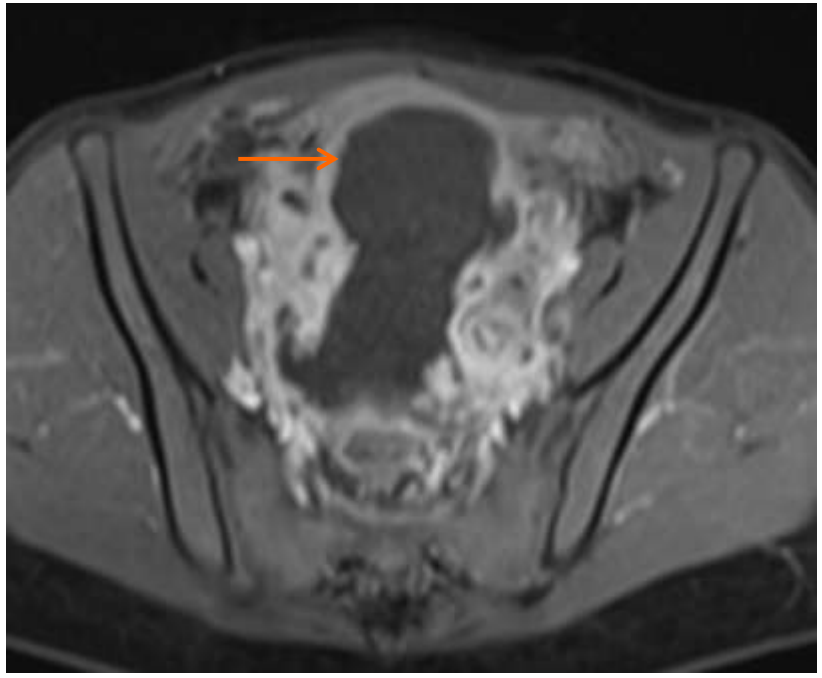
16 yr old girl – *2 week history pelvic pain and low grade pyrexia*





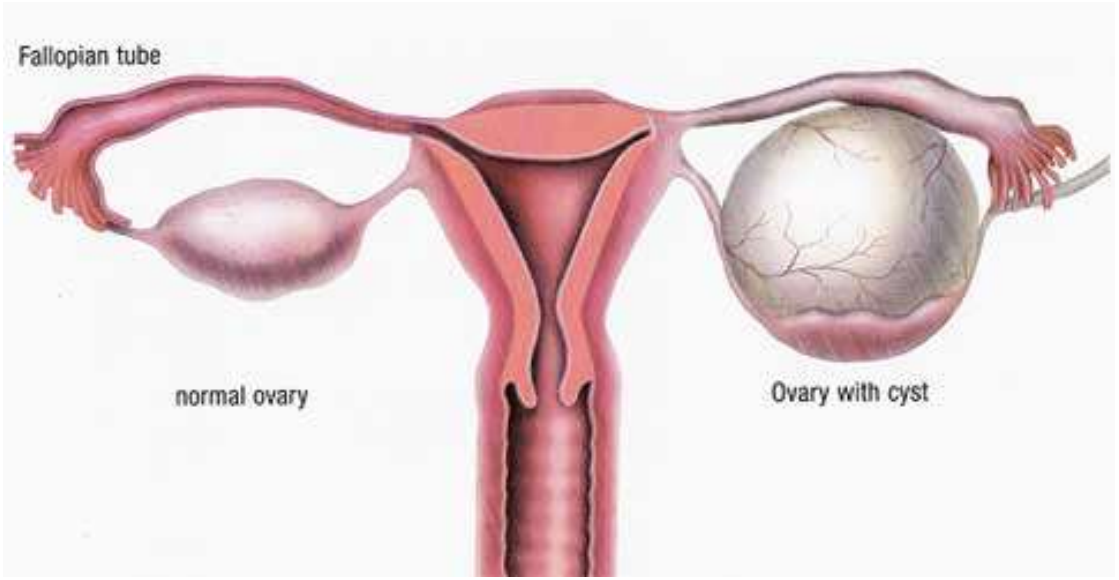






TB Pyosalpinx

Adnexal mass – non infectious



Adnexal Mass—non infectious

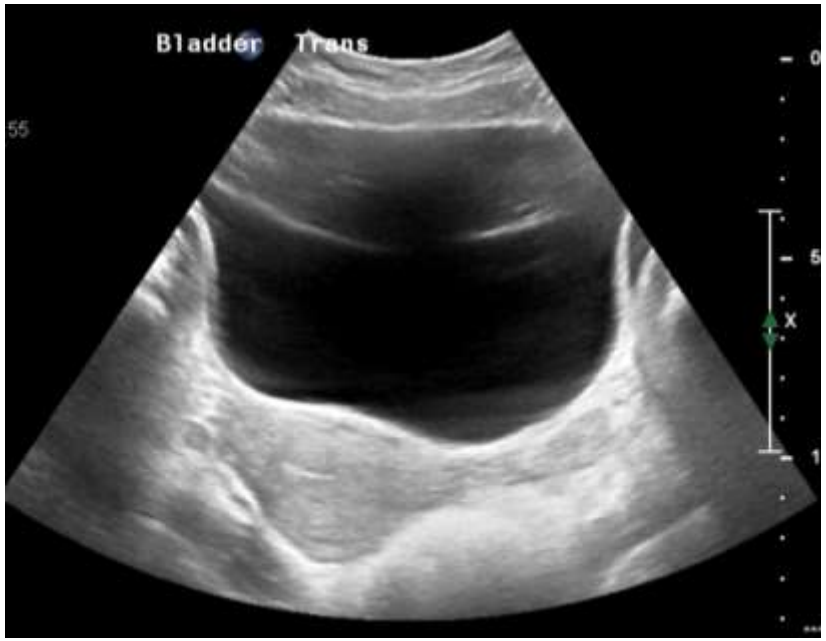
- MRI of benefit in mass characterisation—indeterminate
- Greater specificity than US (ultrasound 39.5% vs MRI 96.6%)
- Soft tissue characterisation, dermoids, endometriomas
- Solid masses
- Site/origin of mass
- Evaluate large masses
- Guide therapy

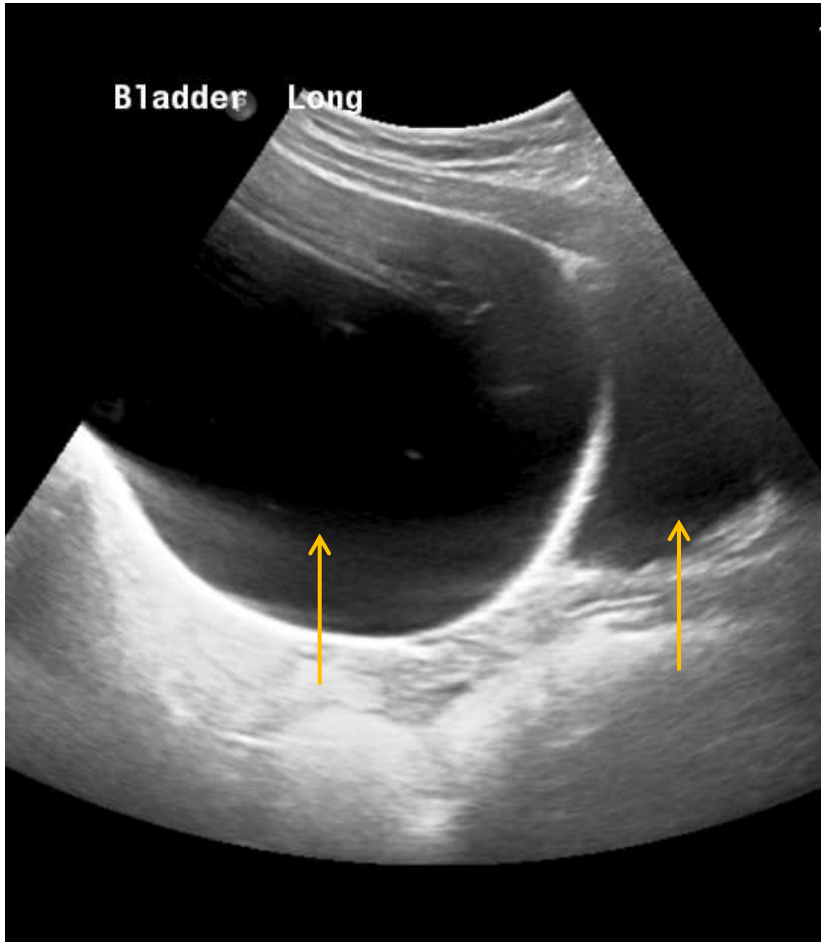
Kinkel et al Radiology 2005
Sohaib et al. Clin Radiol 2005

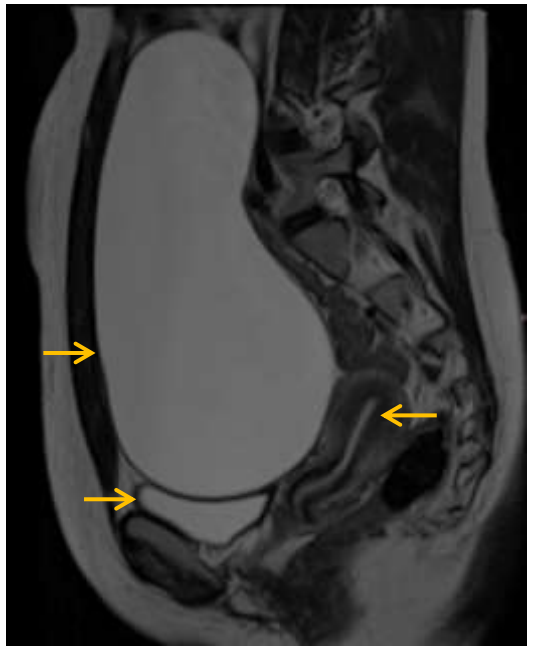
Features of malignancy

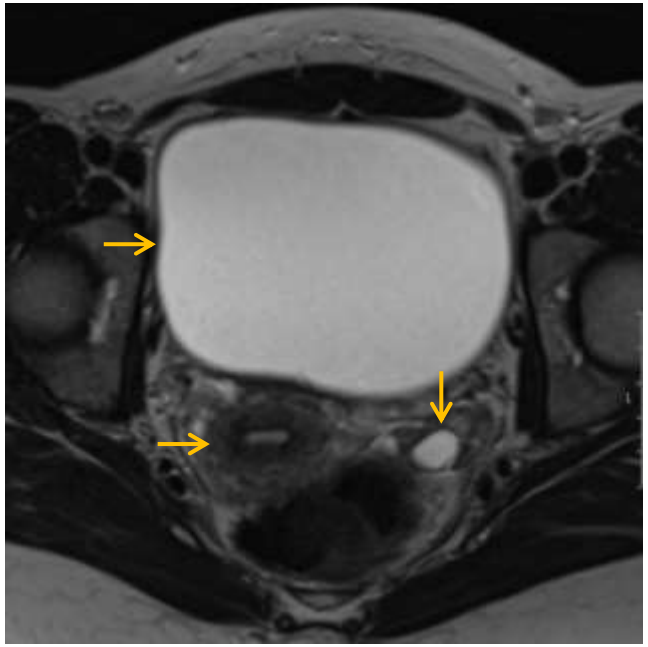
- Solid component/papillary projections
- Thickened irregular walls/septations
- Enhancement/restriction DWI
- Ascites, peritoneal disease, nodes

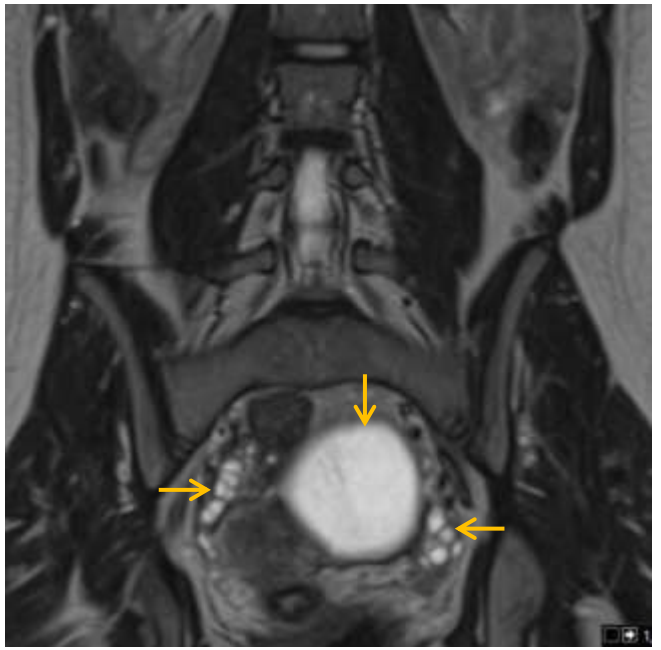
15 yr old, *abdominal pain and nausea*

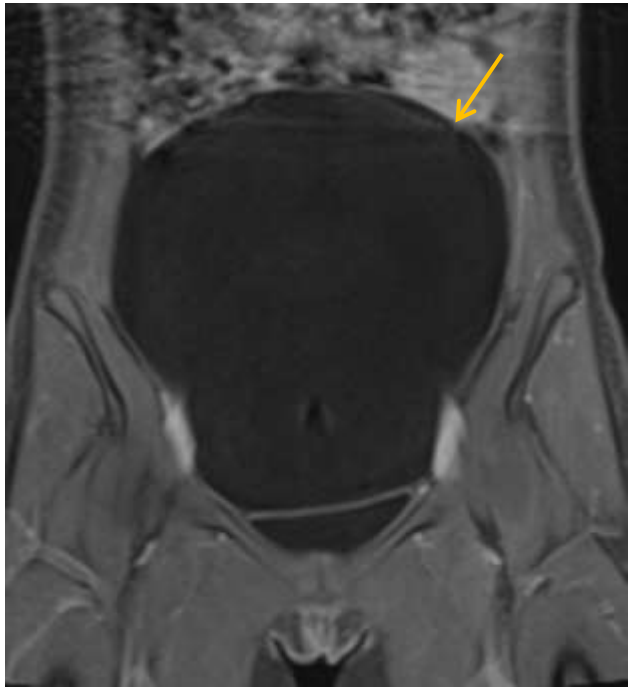






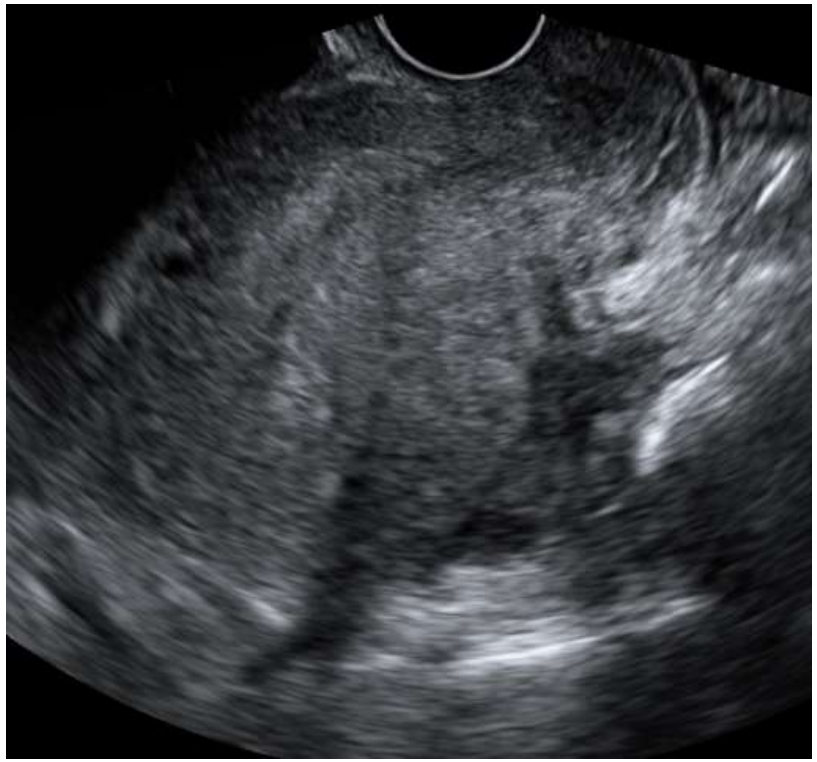


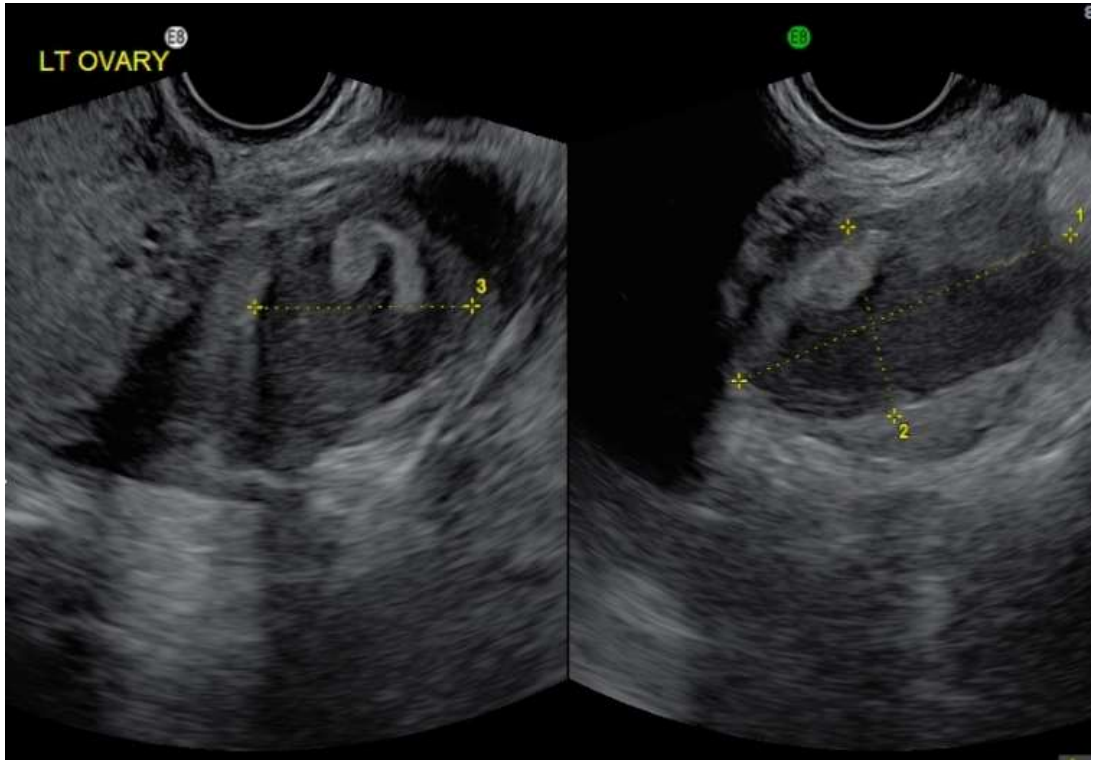


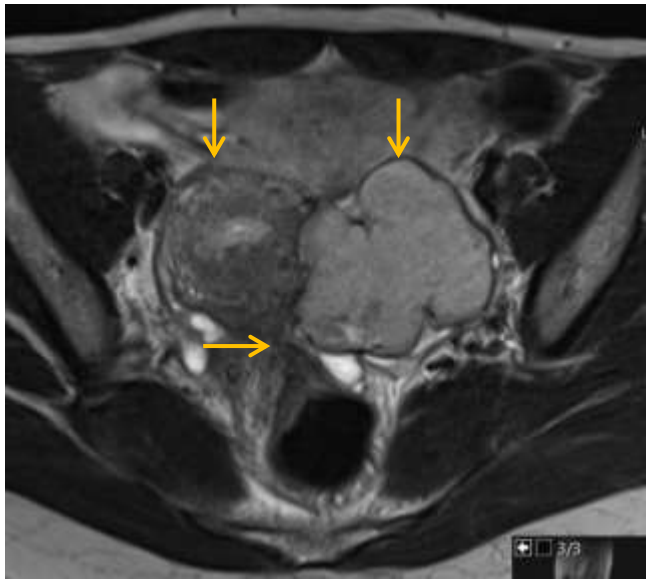


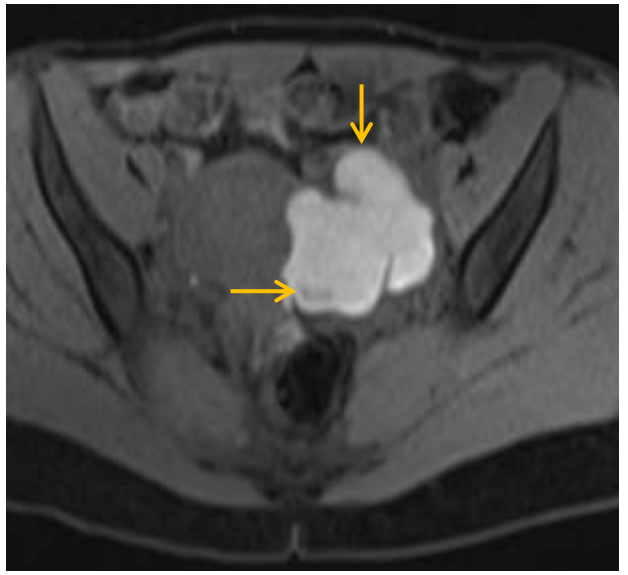
Paraovarian/paratubal cyst

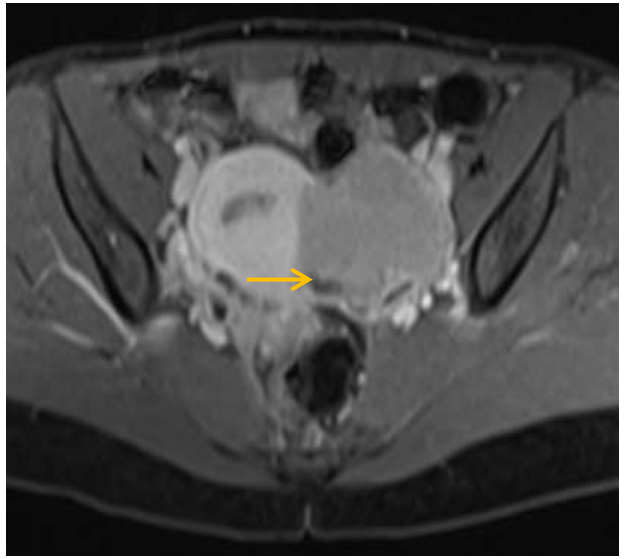
37yr old, *left iliac fossa pain*

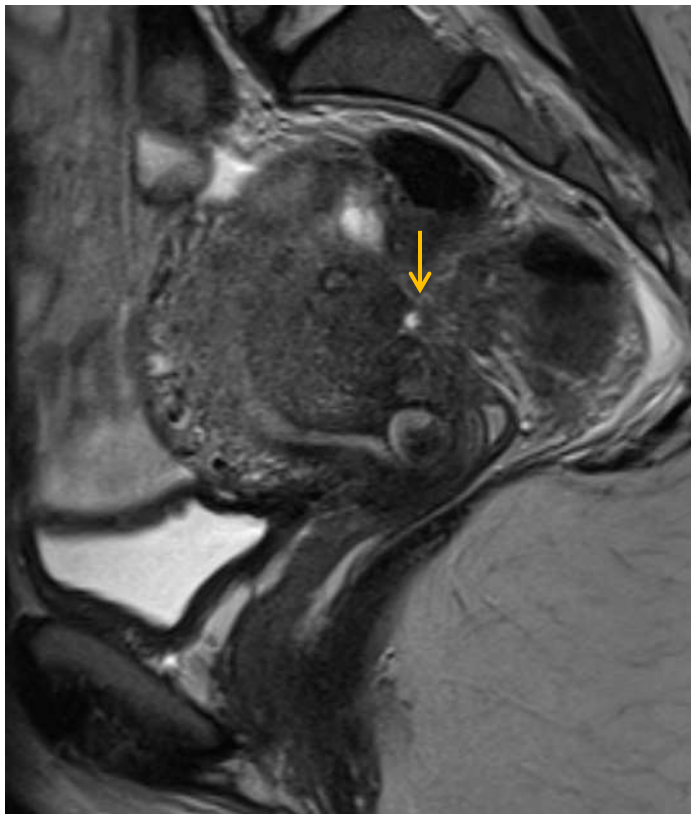






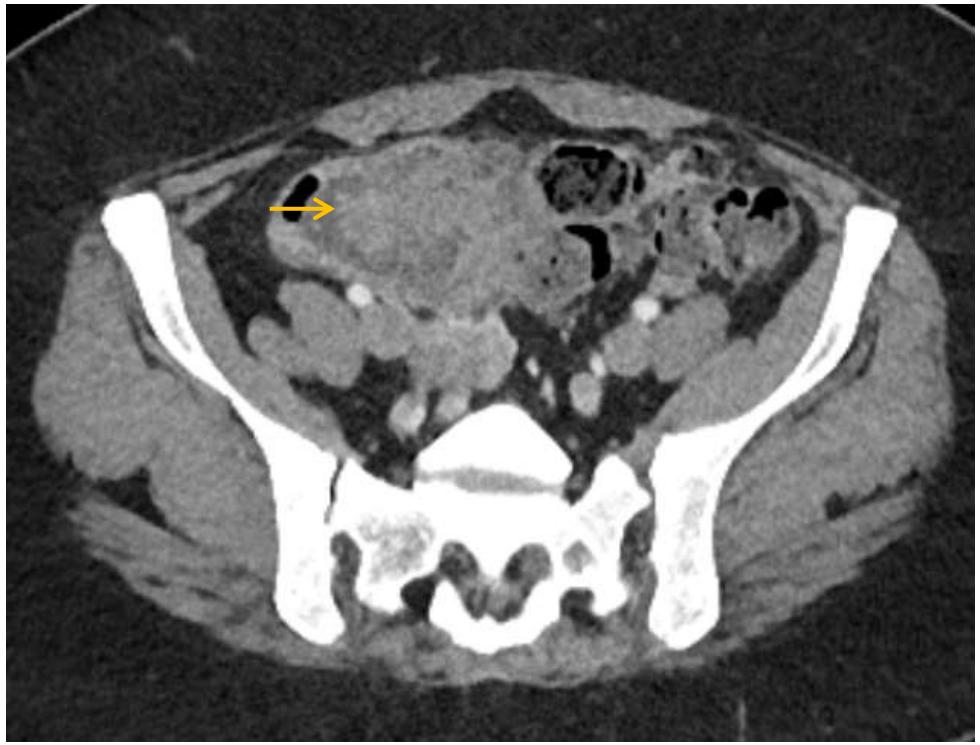


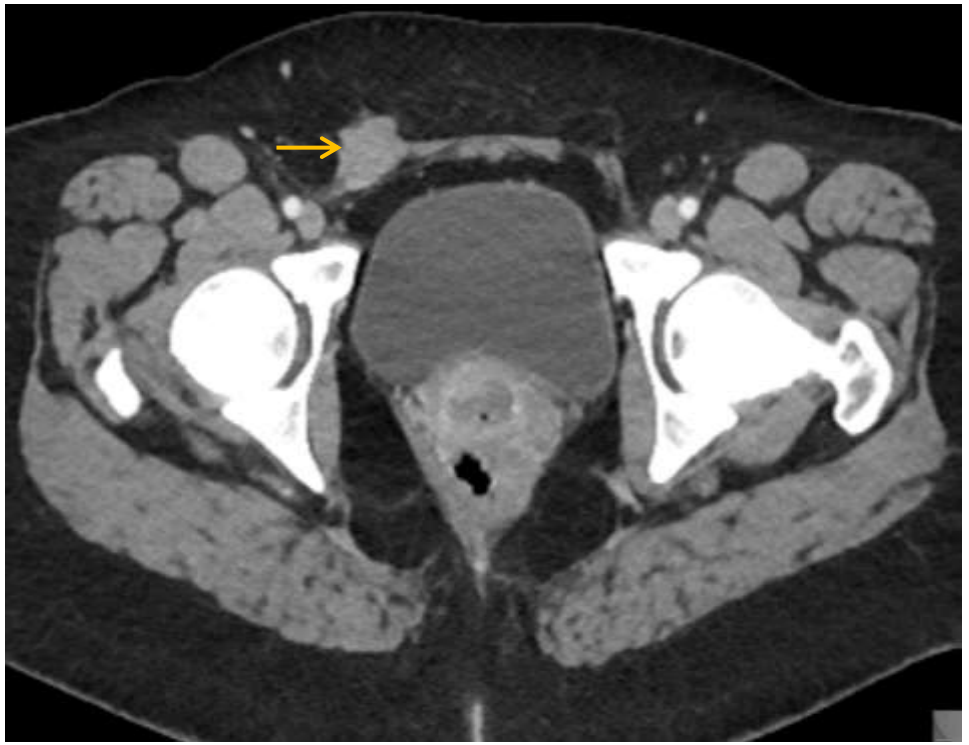




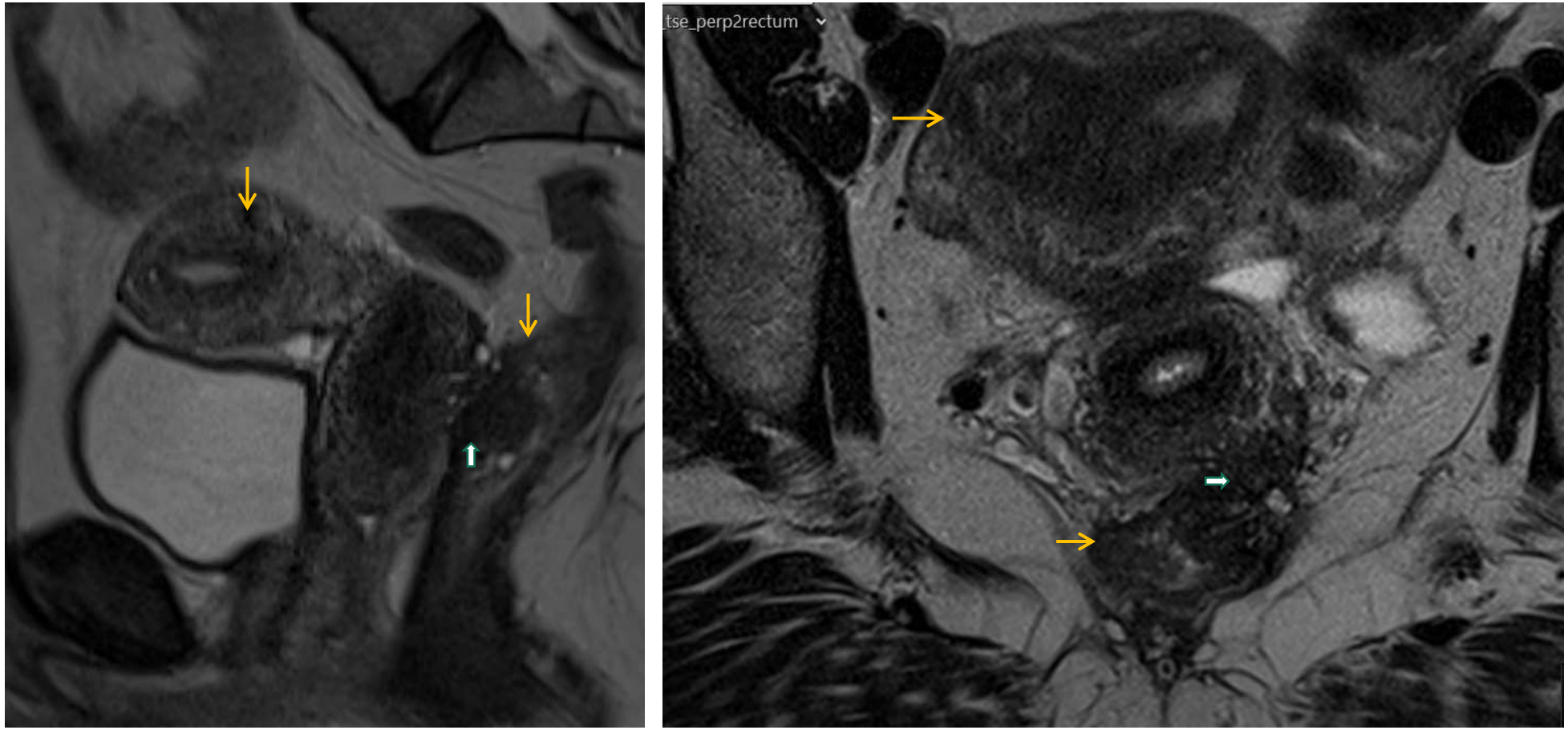
Left endometrioma and deep infiltrating endometriosis

38 yr old, *right iliac fossa pain*



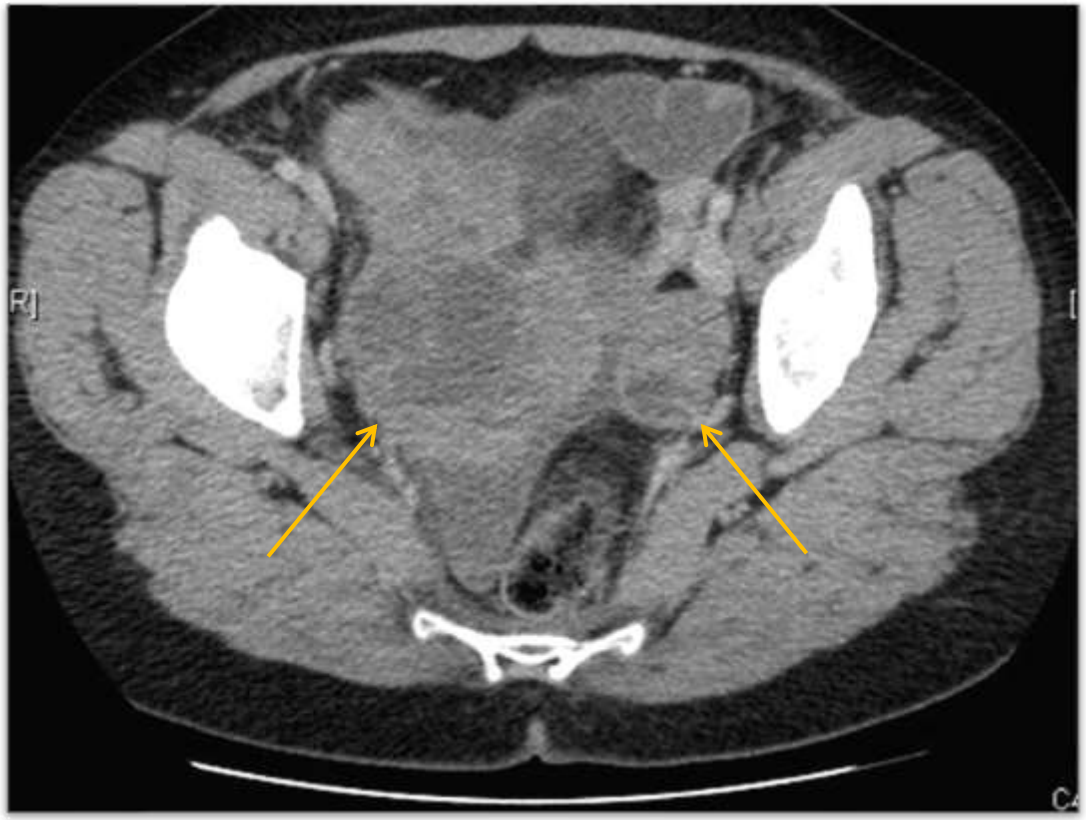


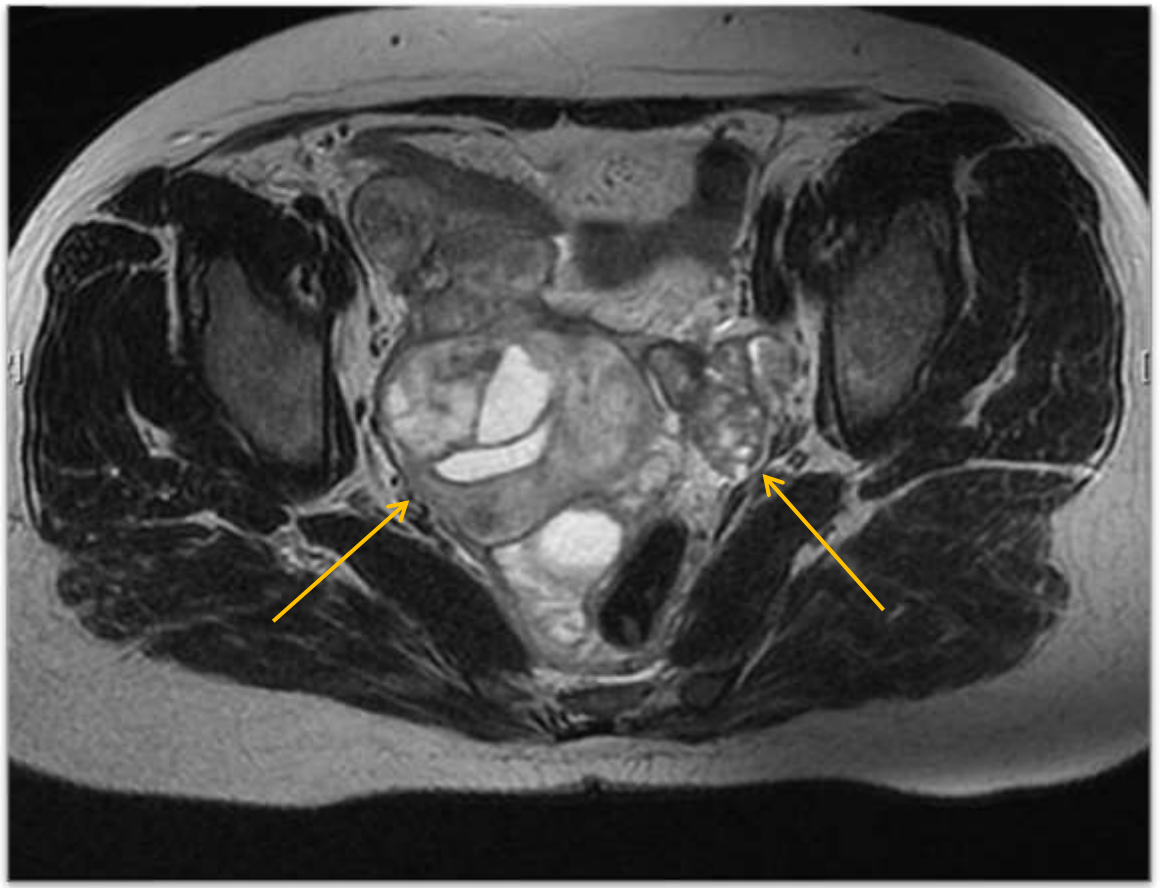
Histology after caecal resection - endometriosis



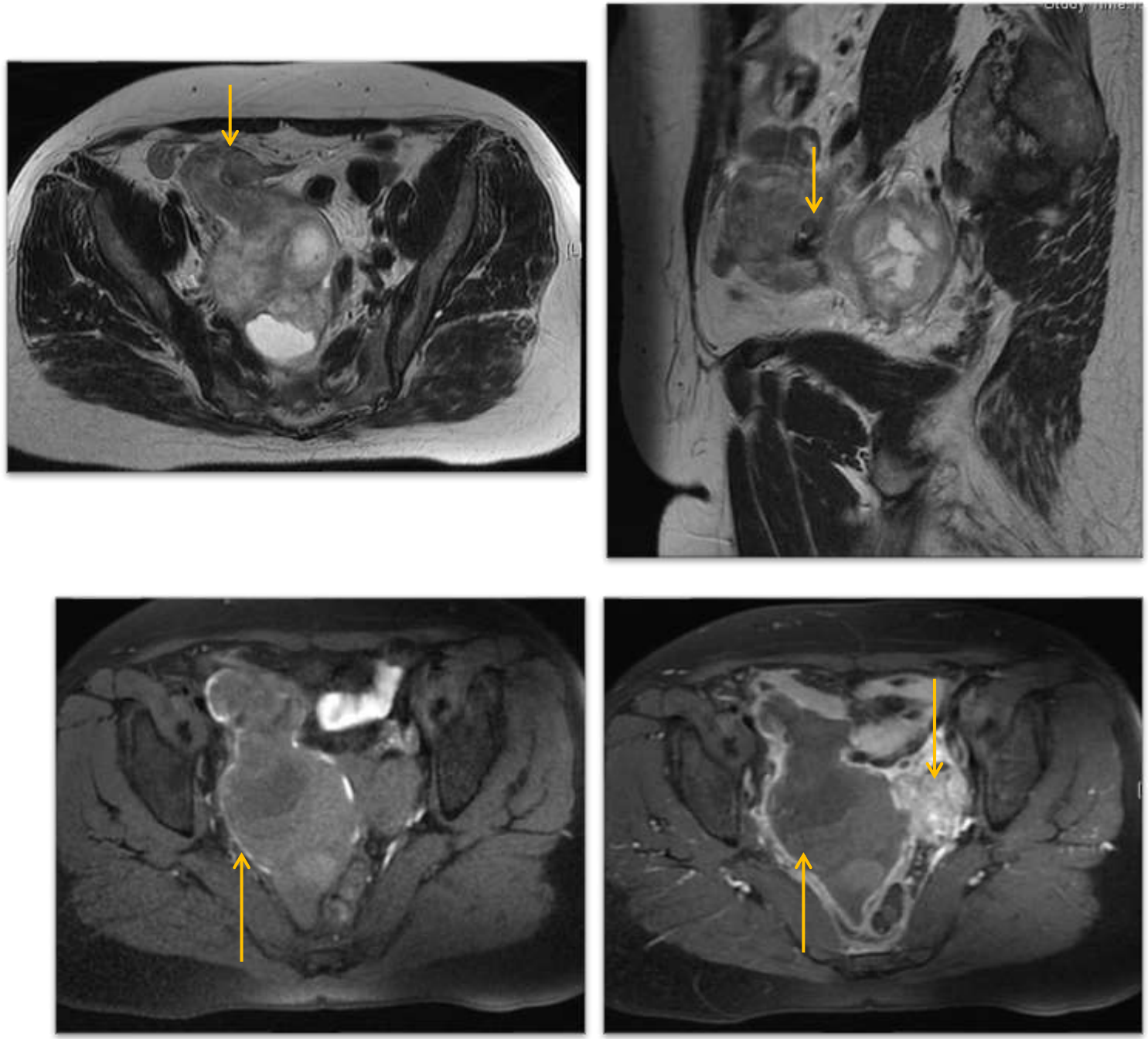
Deep infiltrating endometriosis with mural invasion of the rectum

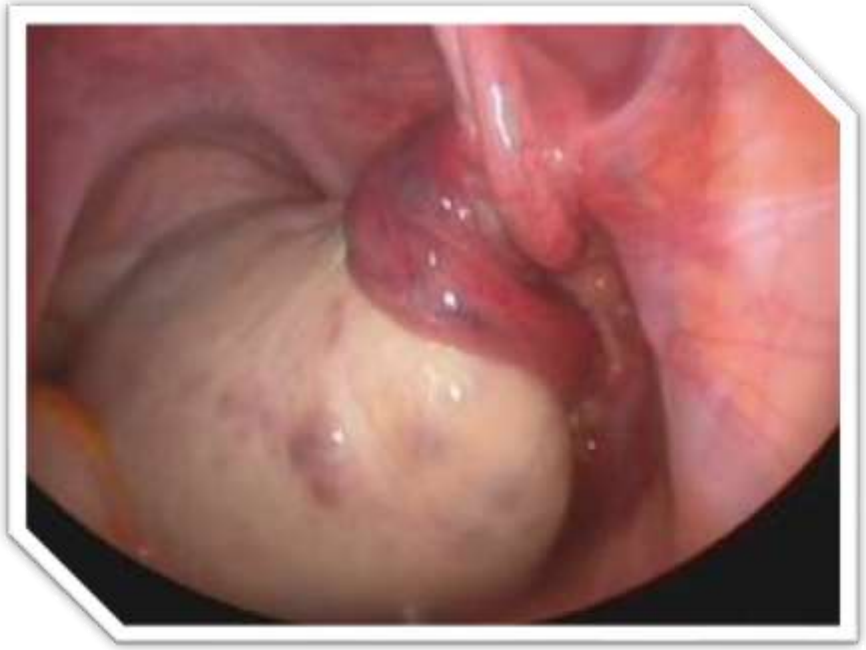
64 year old - *acute RIF pain*





Bilateral serous cystadenocarcinoma, right torsion

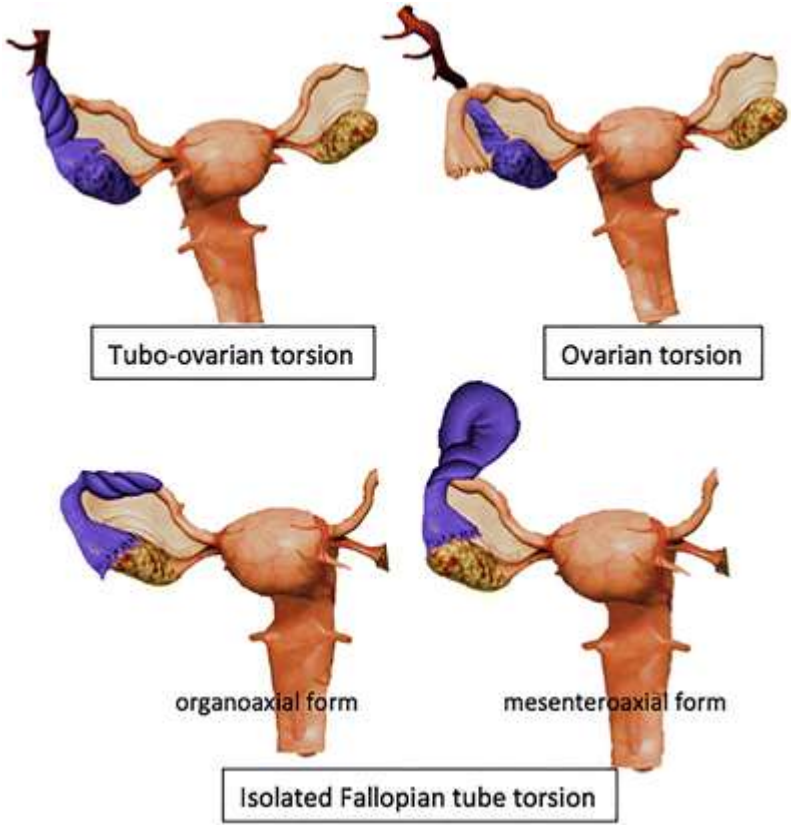




Adnexal Torsion

Adnexal Torsion

- Rotation of ovarian supporting ligaments around their vascular axis
- Ovary/tube
- Venous obstruction, oedema, arterial compromise
- Severity depends on number of twists, tightness of neck
- Risk factors: enlarged ovaries (mass), previous torsion, pregnancy
- Most common childbearing age
- Paediatric
- Post menopausal (>80% adnexal mass and ¼ malignant)
- Right sided predominance
- Early surgery indicated to preserve function in reproductive age



Warner et al. Radiology 1985; 154: 773-775.

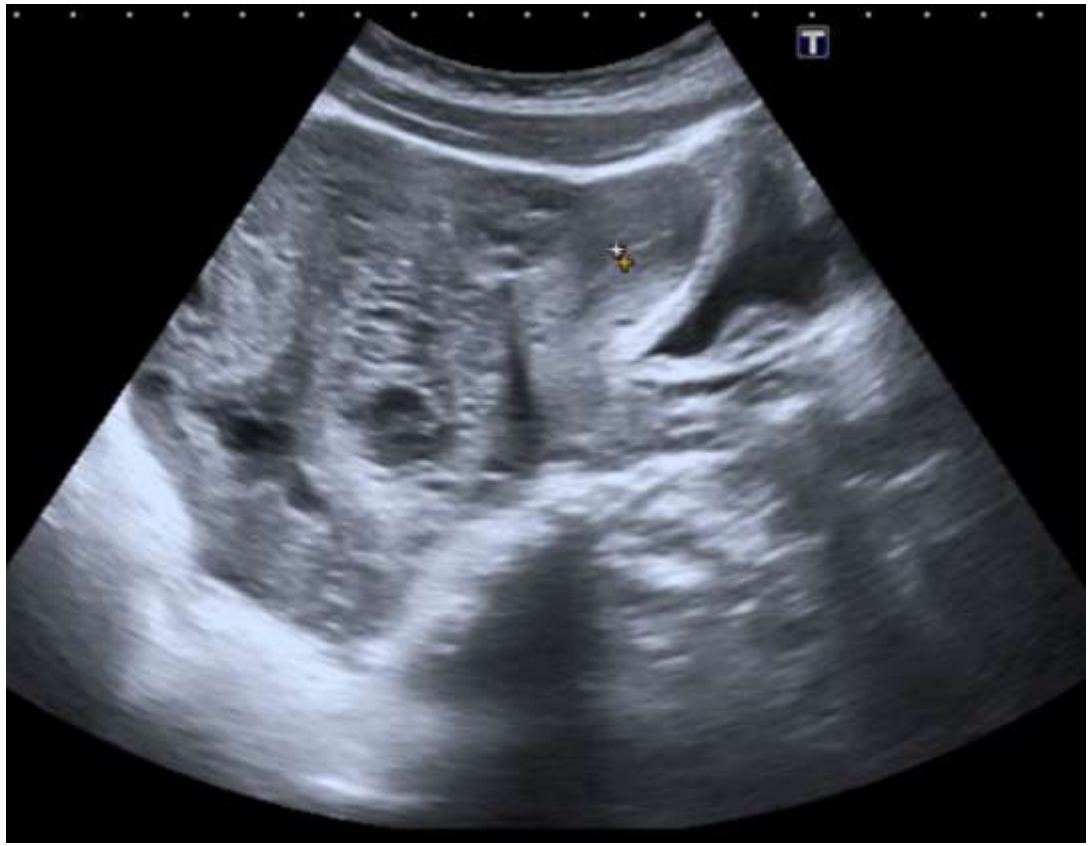
- Non-specific signs and symptoms
- Variable depending on twists
- Intermittent
- Doppler variable
- Avoid delay in diagnosis
- MRI if initial imaging inconclusive

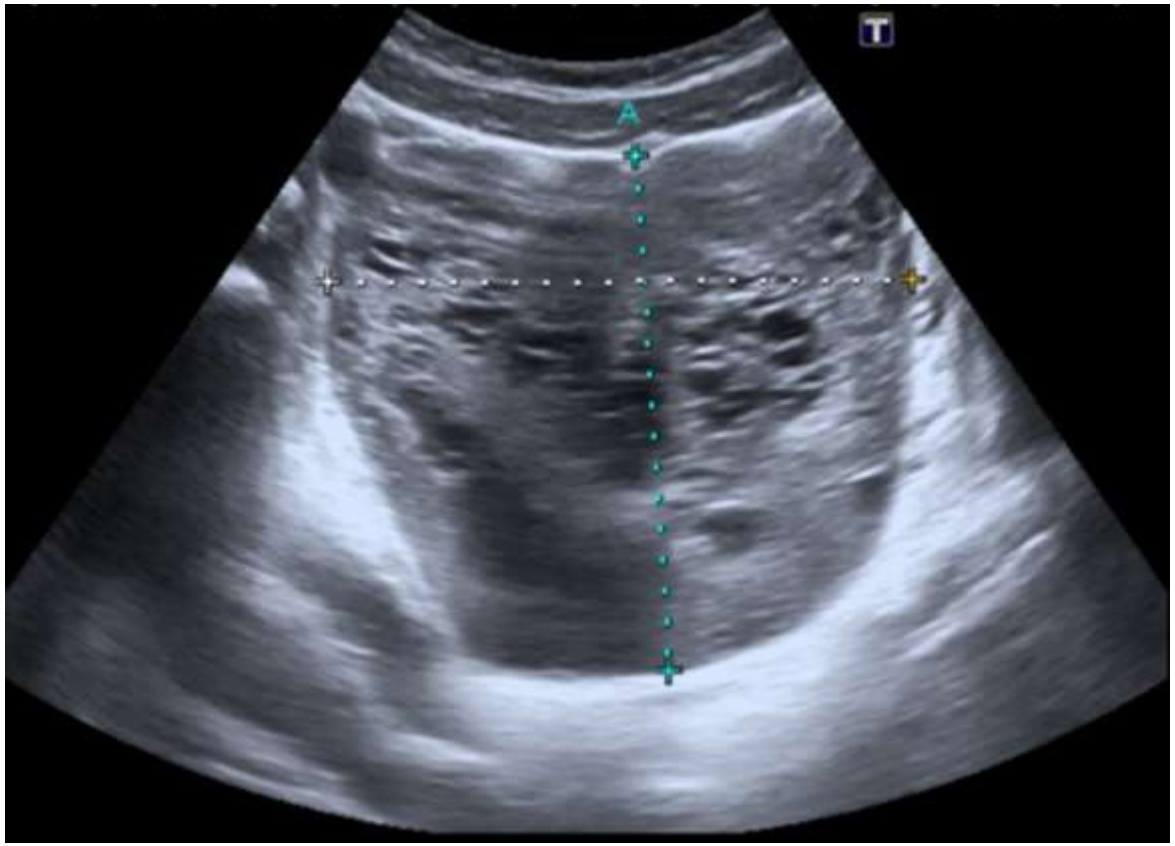
BJOG 2021 Wattar et al US (sens 0.81/ spec 0.88) vs MRI 0.81/0.91)

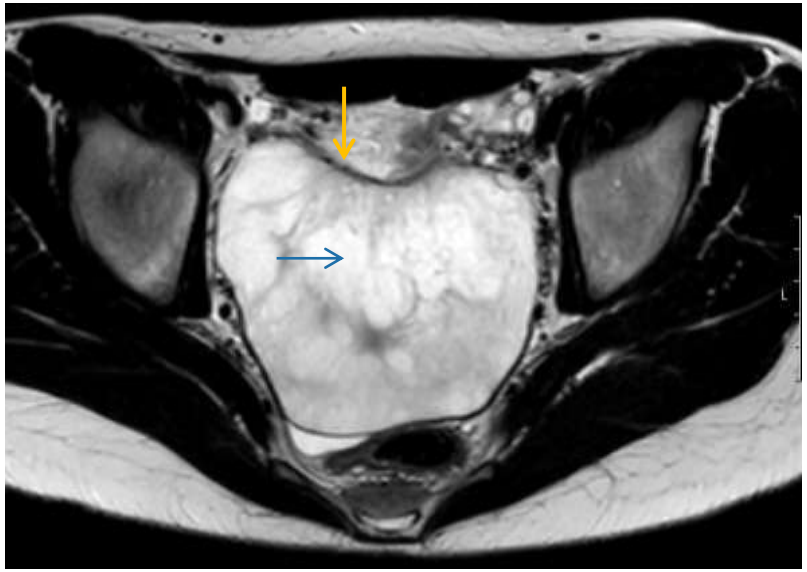
MRI

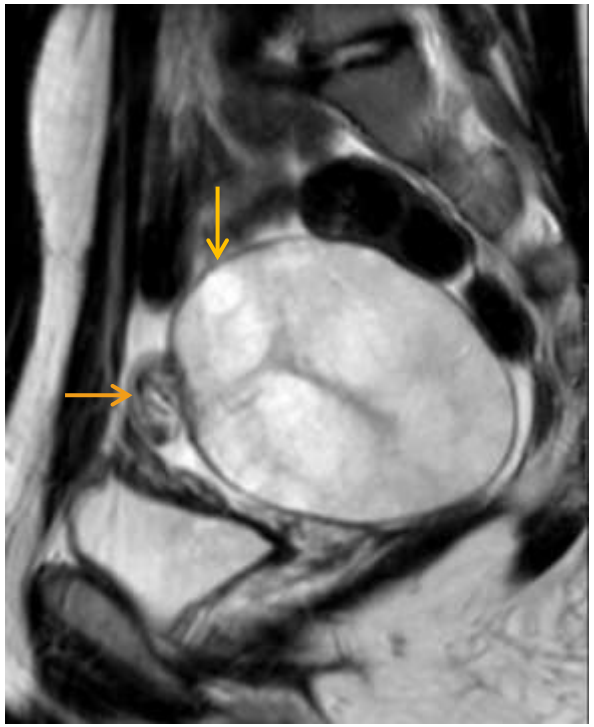
- Enlarged ovary
- Abnormal position/stromal pattern
- Ovarian haemorrhage
- Abnormal enhancement
- Twisted pedicle
- Deviation of the uterus towards torsion

15 yr old, *acute right iliac fossa pain*

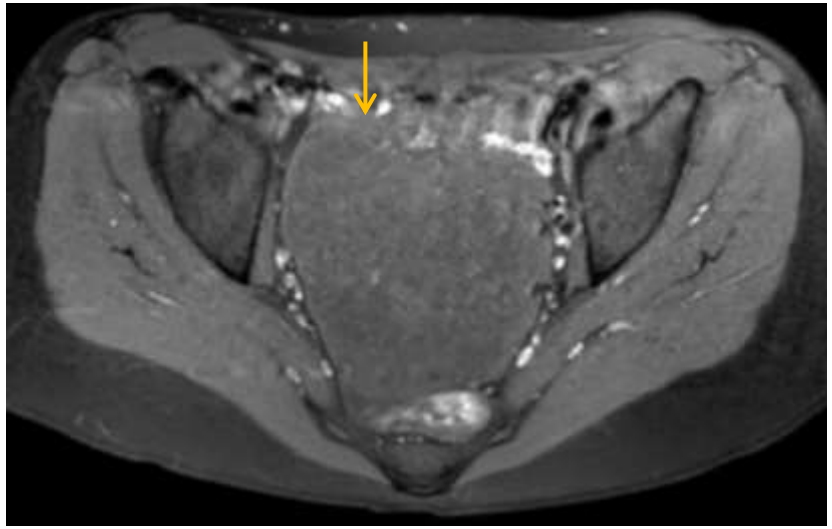


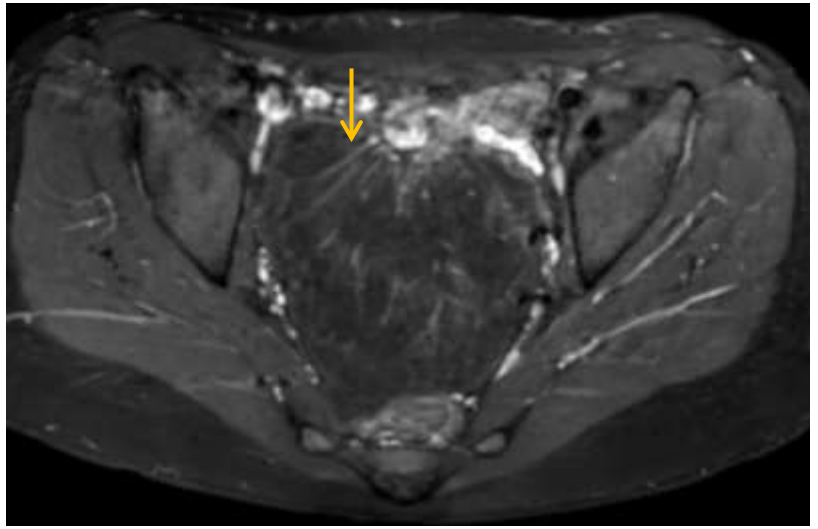




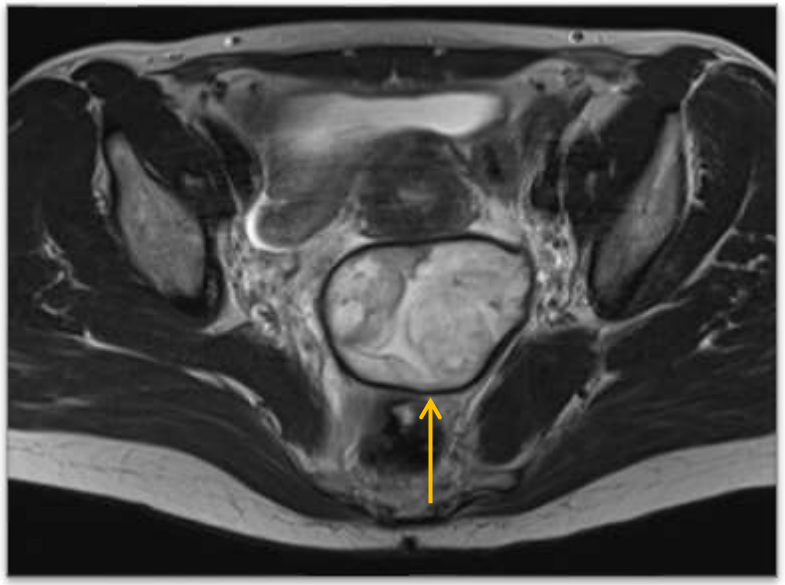


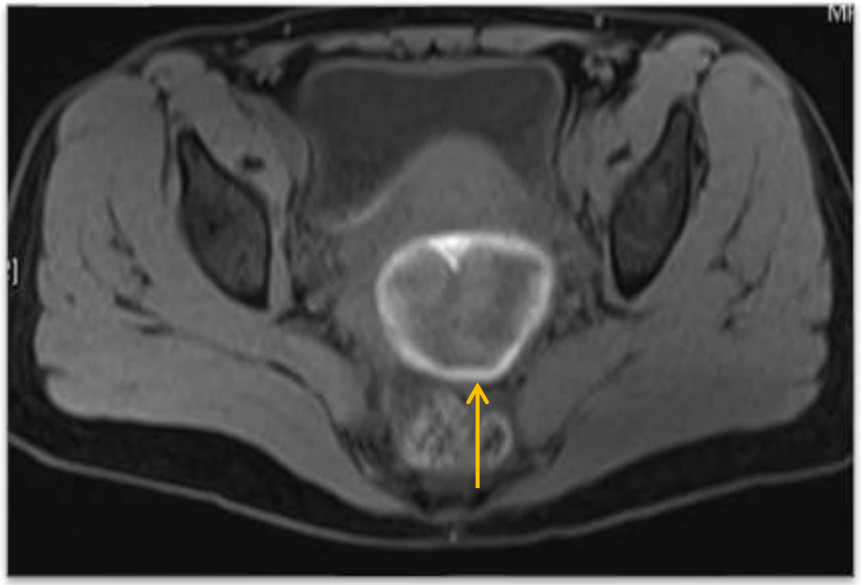
Right ovarian torsion

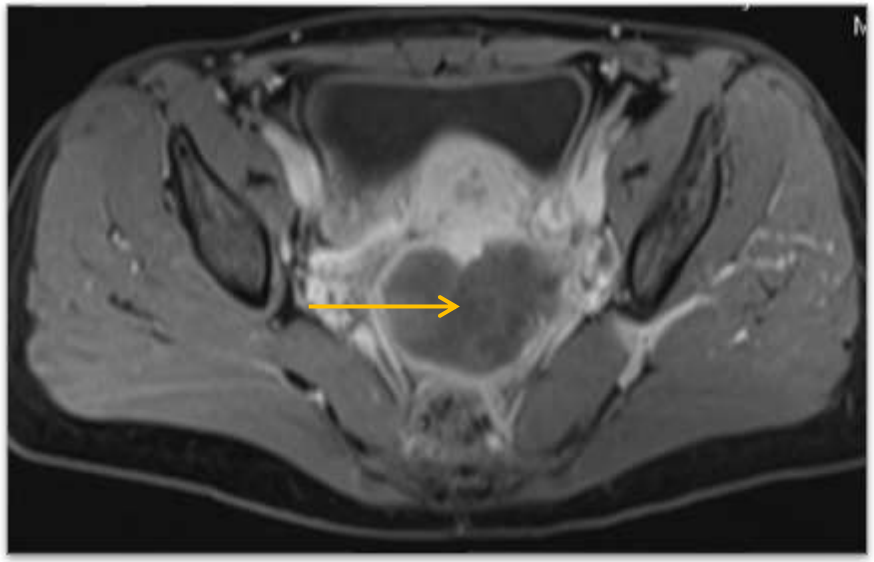




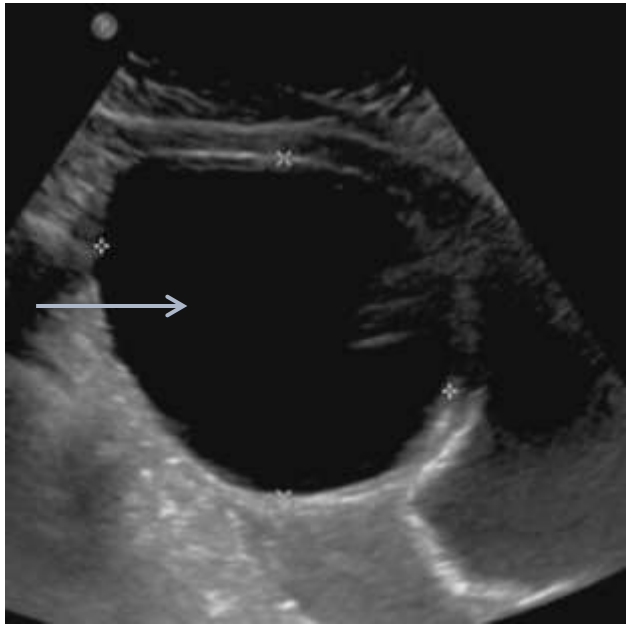
48 yr old, *2/52 hx LIF pain*

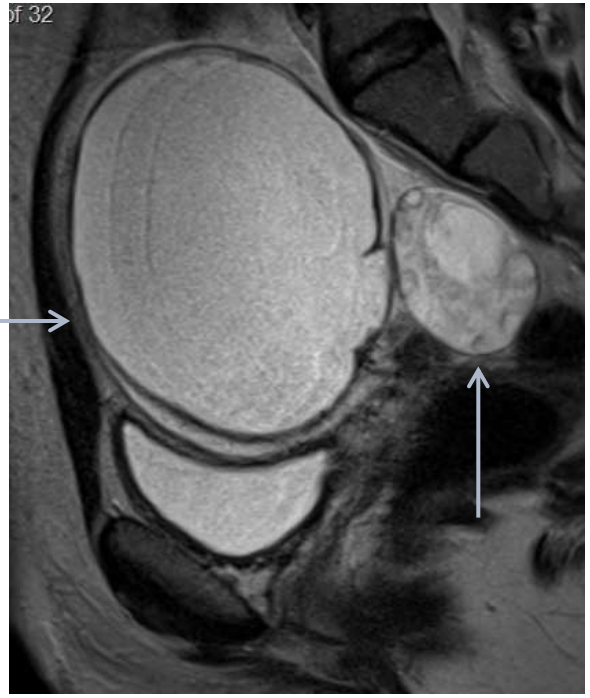




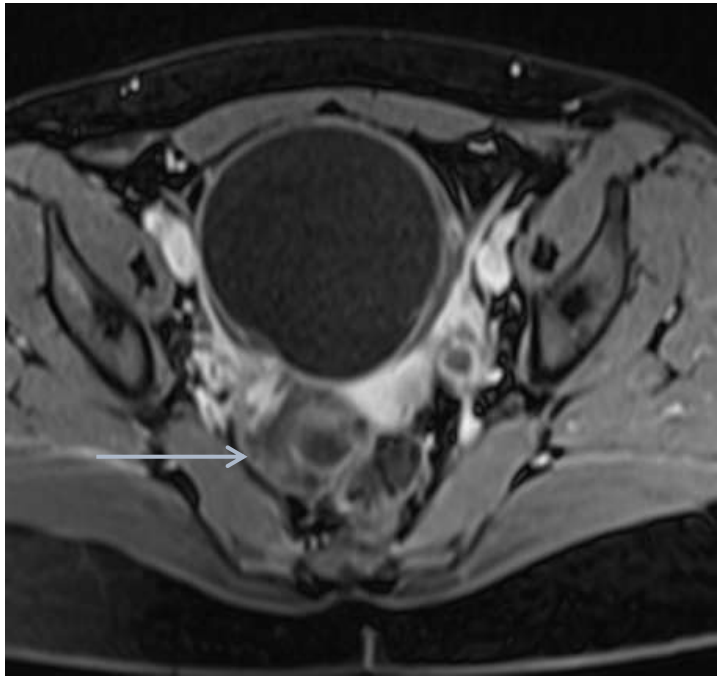


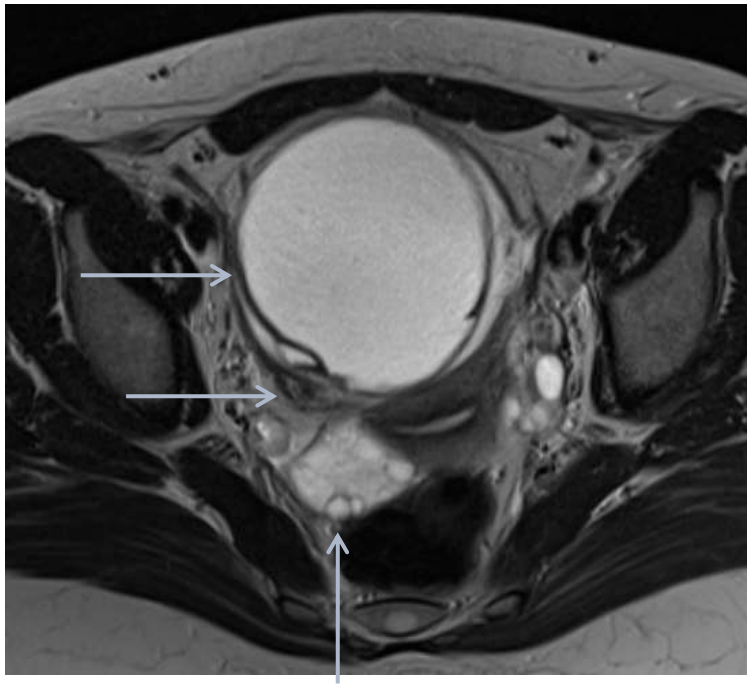
Left ovarian torsion





Right fallopian tube torsion



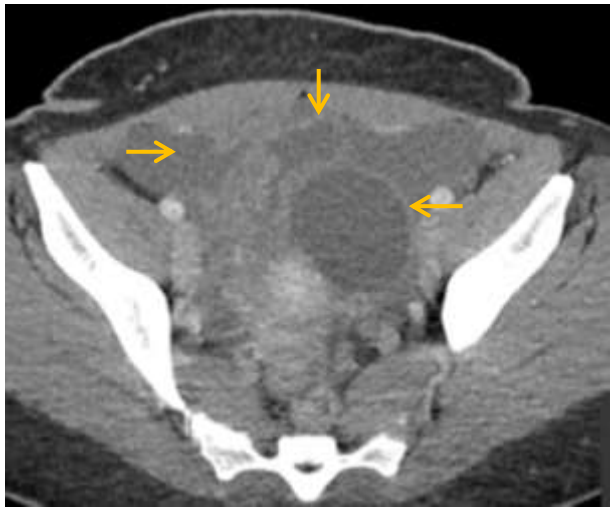


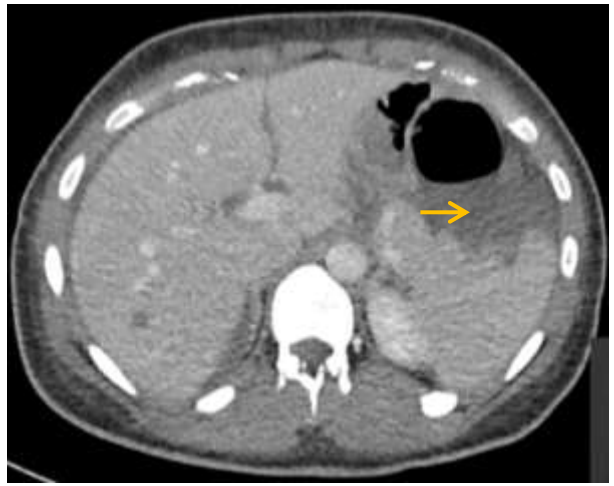
Ovarian cyst rupture

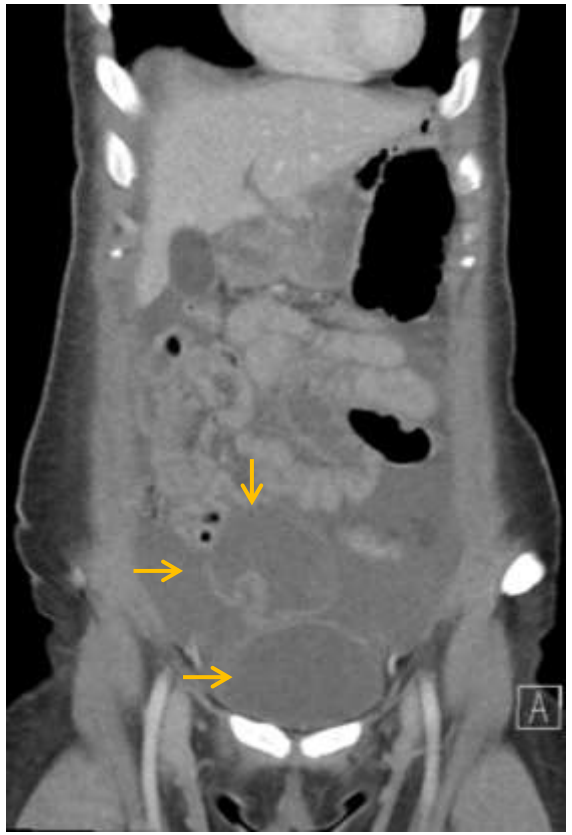
Ovarian cyst rupture

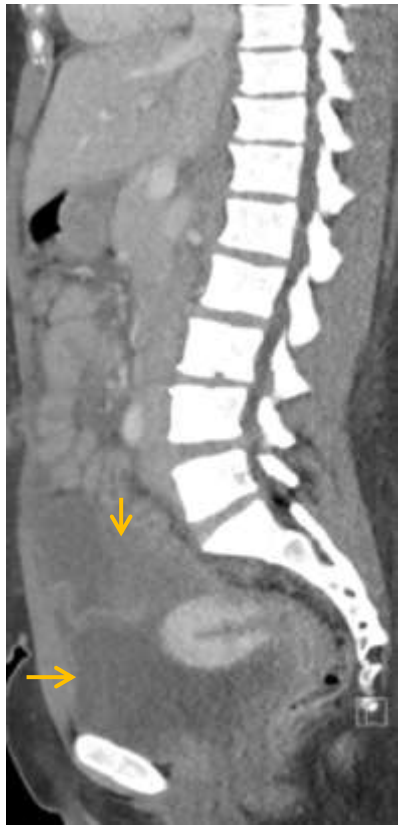
- May present with localised or generalised abdominal/pelvic pain
- CT often first line
- Haemorrhagic functional or corpus luteum cyst most common
- Also endometrioma or dermoid cyst
- Cross section may show cause and free fluid/haemorrhage/fat

37 yr old, *known endometriosis, acute right iliac fossa pain*



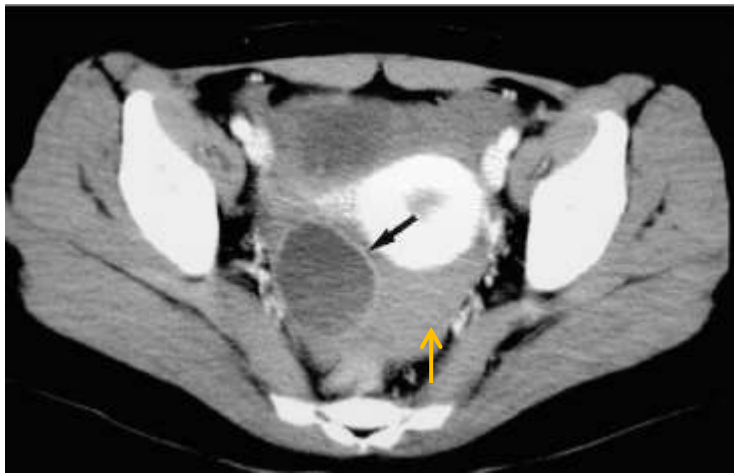


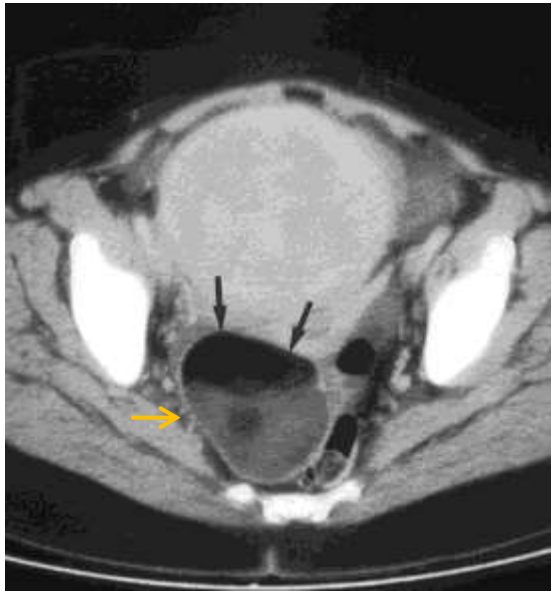


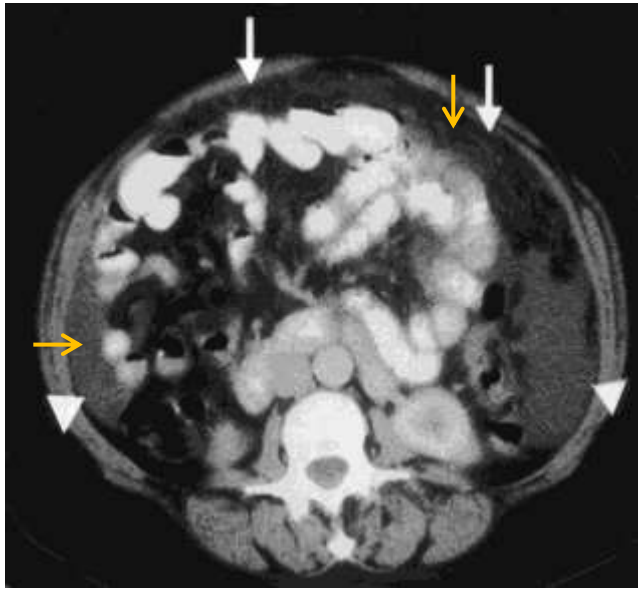


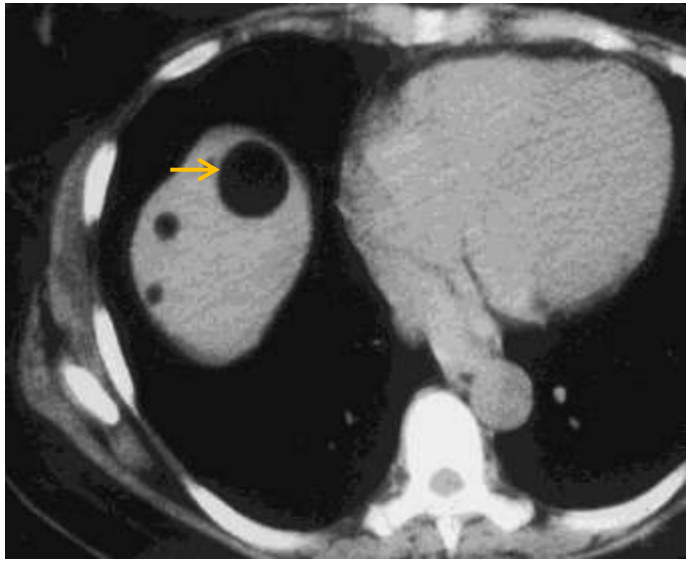
Ruptured right endometrioma

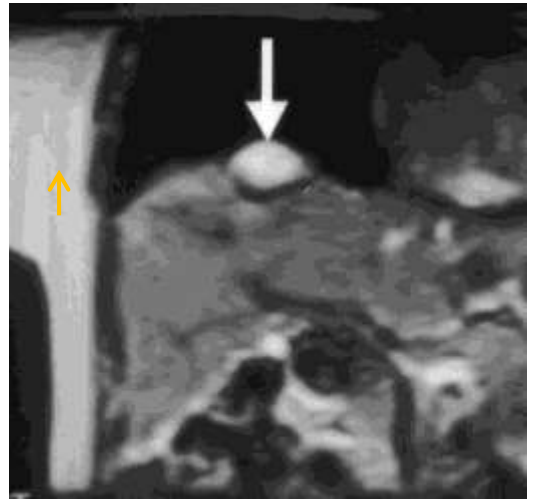
Ruptured right corpus luteum cyst





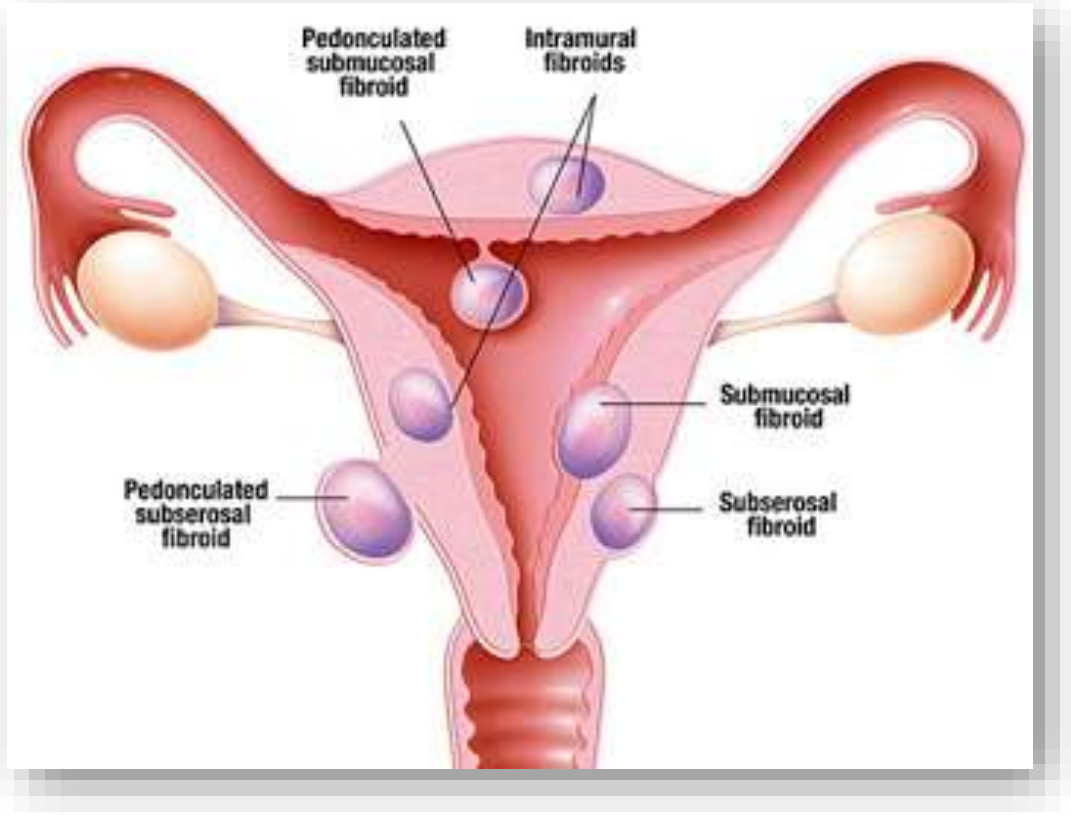






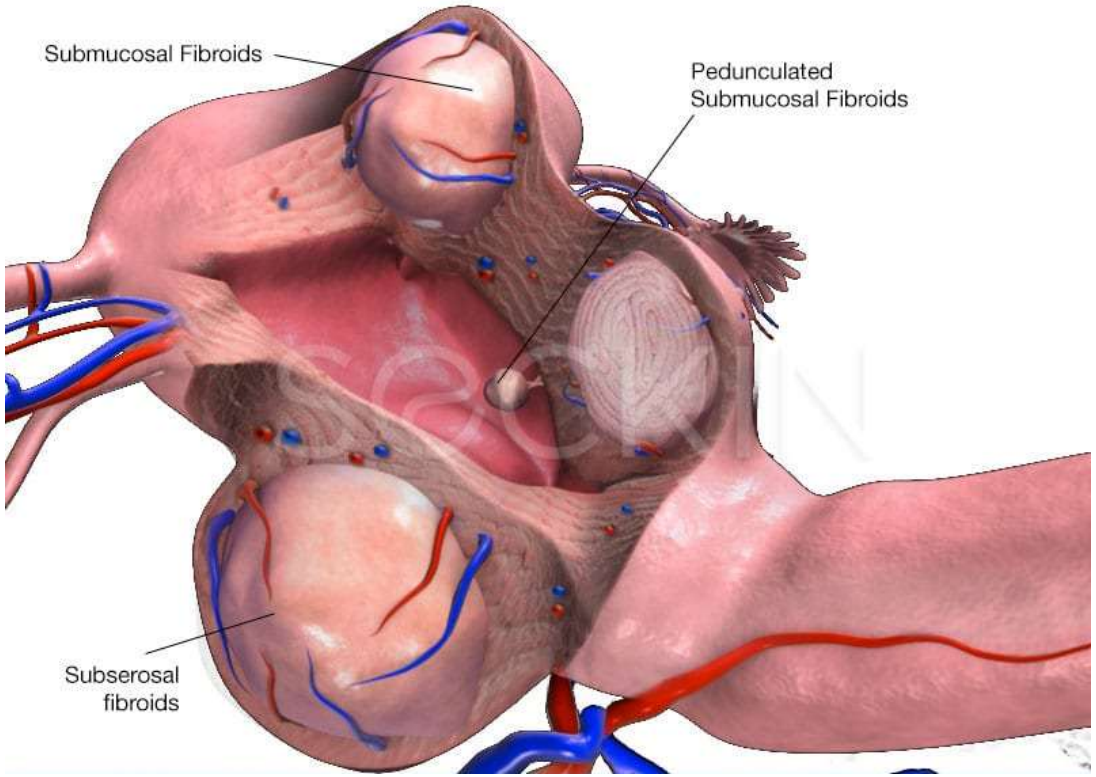
Ruptured right dermoid cyst

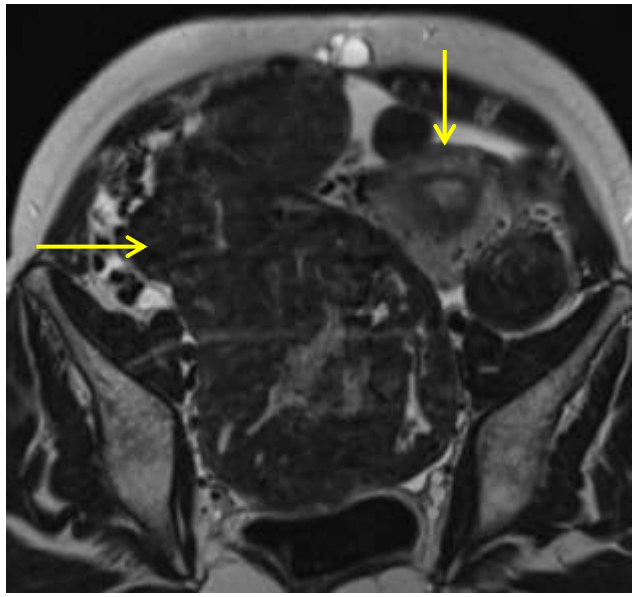
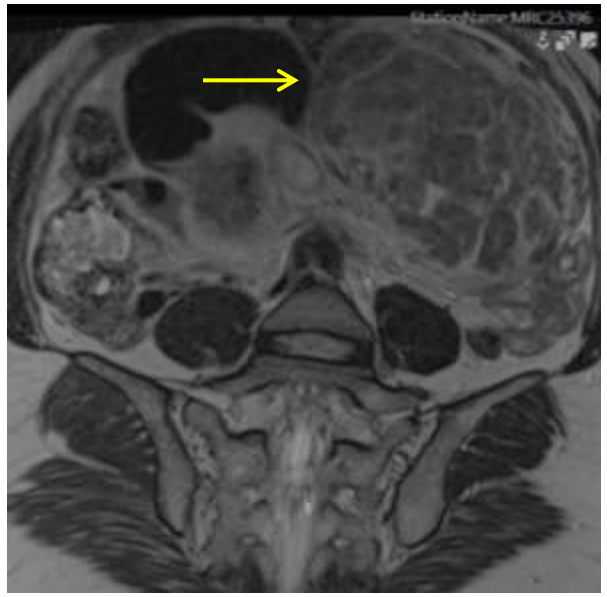
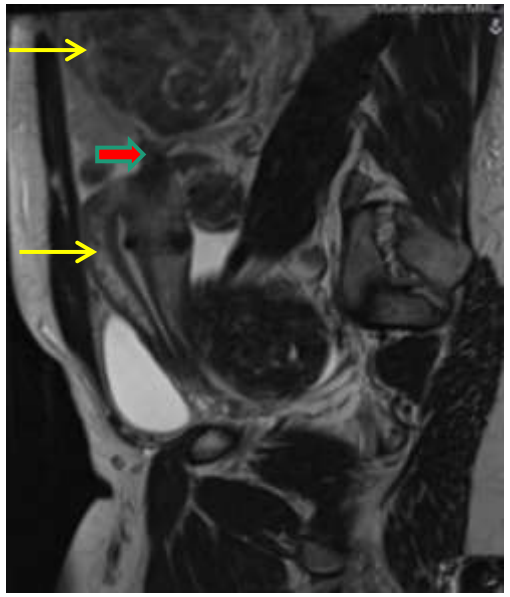
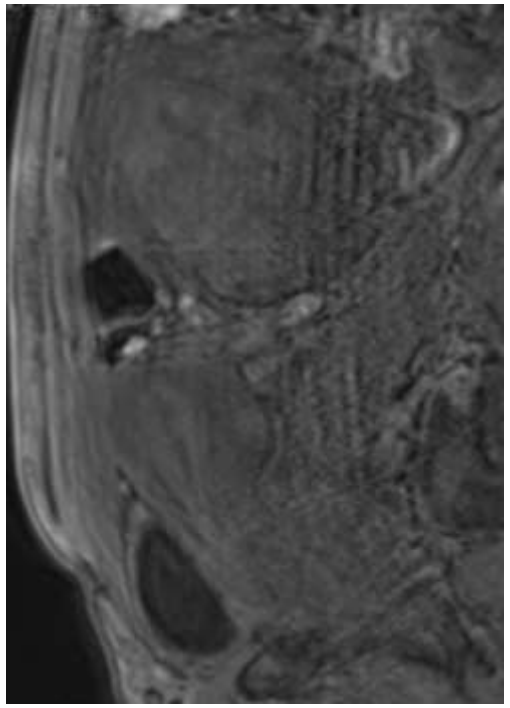
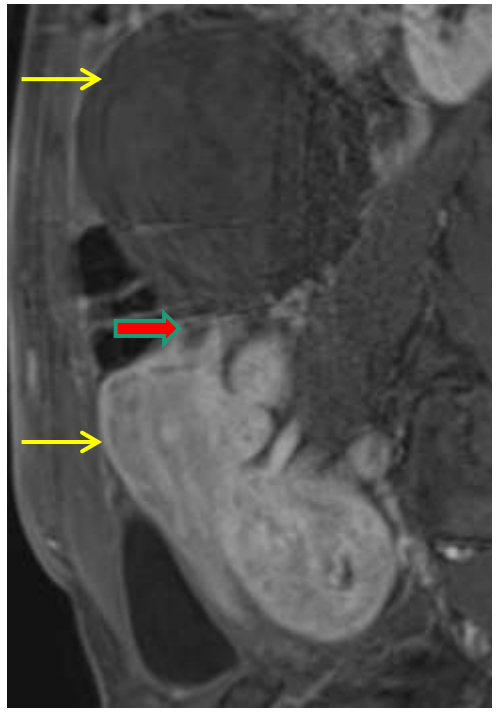
Fibroids


Pedonculated submucosal fibroid
Intramural fibroids
Submucosal fibroid
Pedonculated subserosal fibroid
Subserosal fibroid

Fibroids

- CT generalised pain
- MRI problem solving
- Localise as uterine
- Diagnose cause of complication
  - Degeneration (cystic/red)
  - Torsion
  - Prolapse

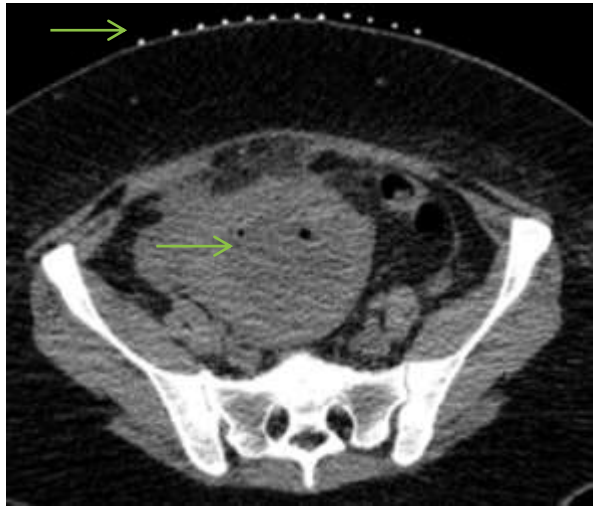


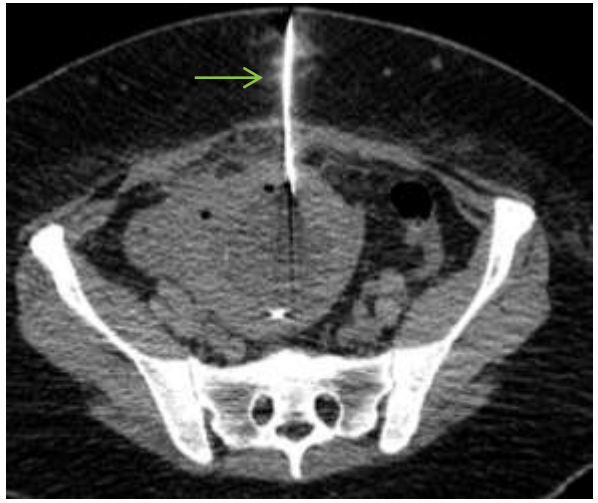






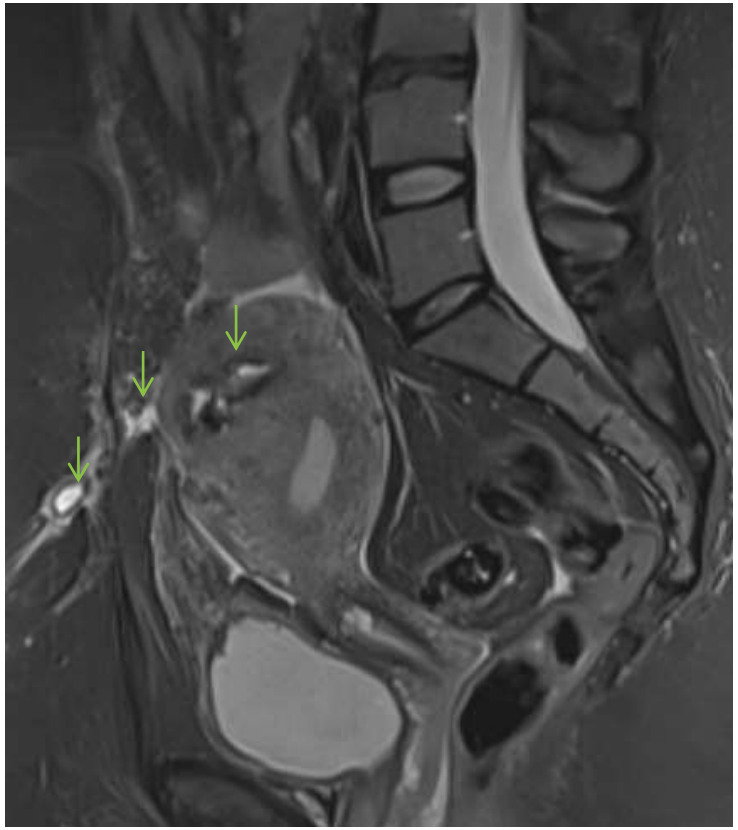
Infarcted/torted
pedunculated fibroid

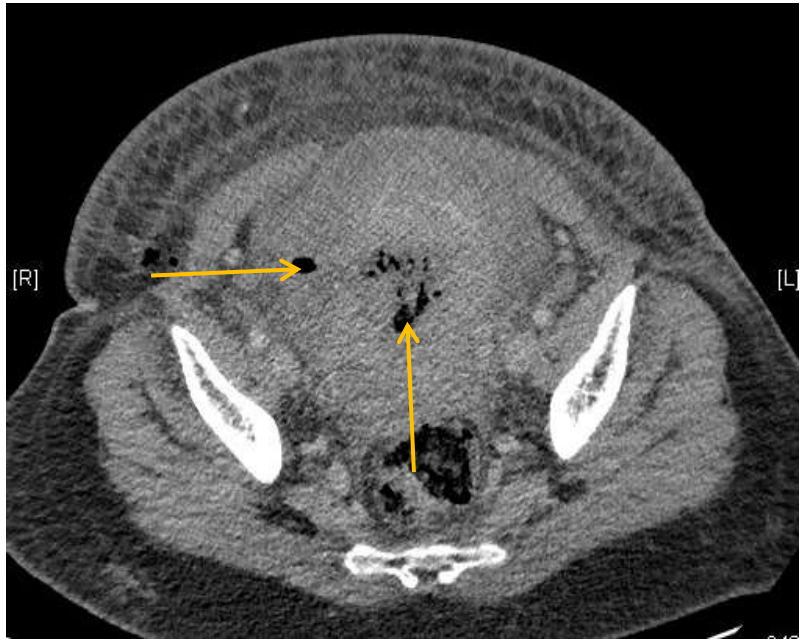
Surgical complications

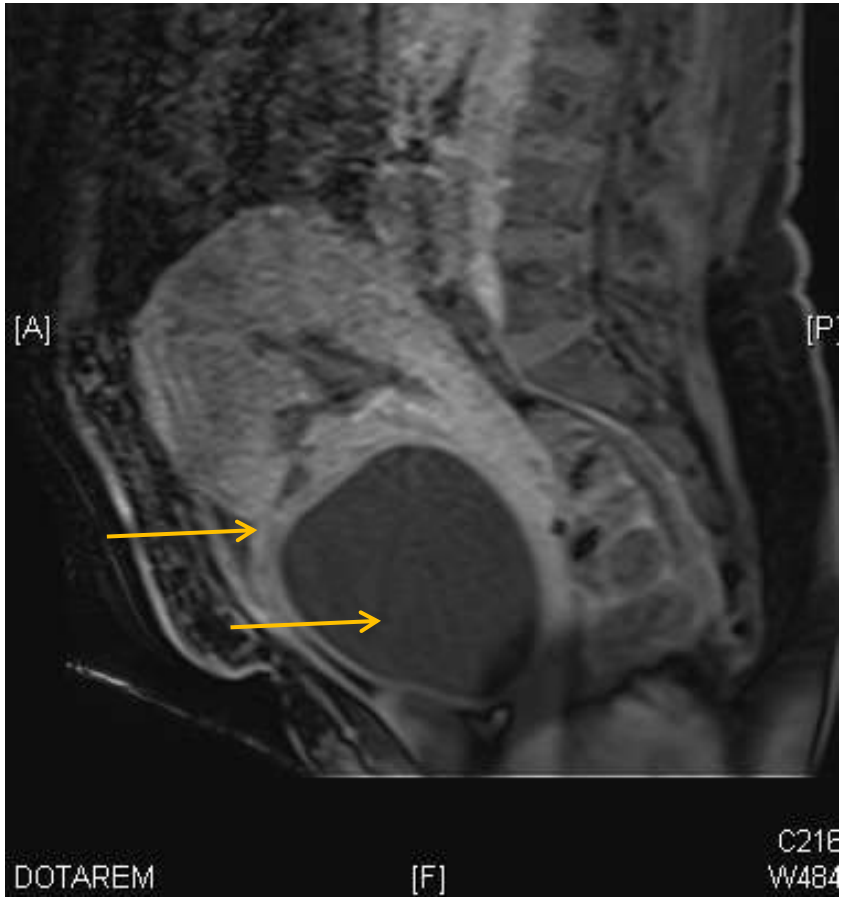
Complications of myomectomy







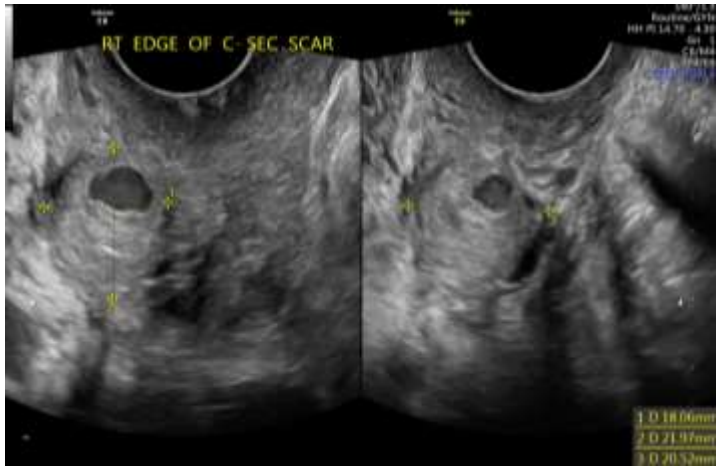


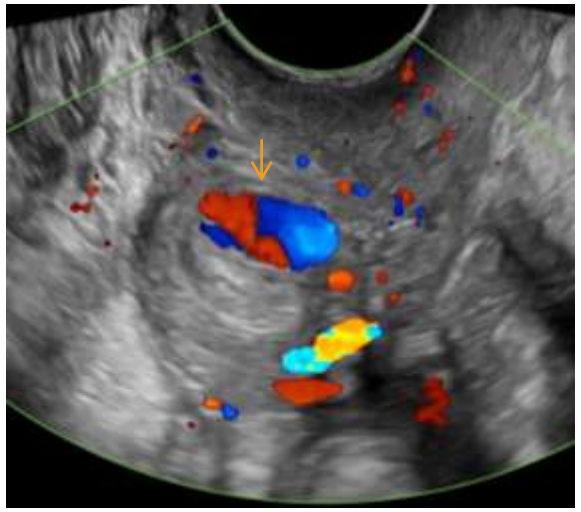


3 days post LSCS

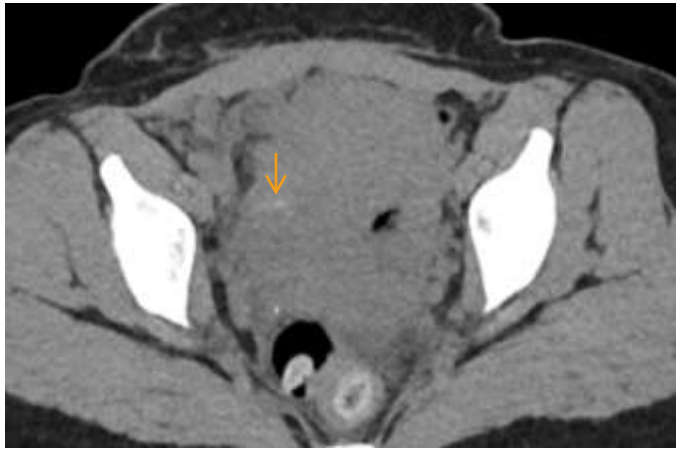
Uterine rupture

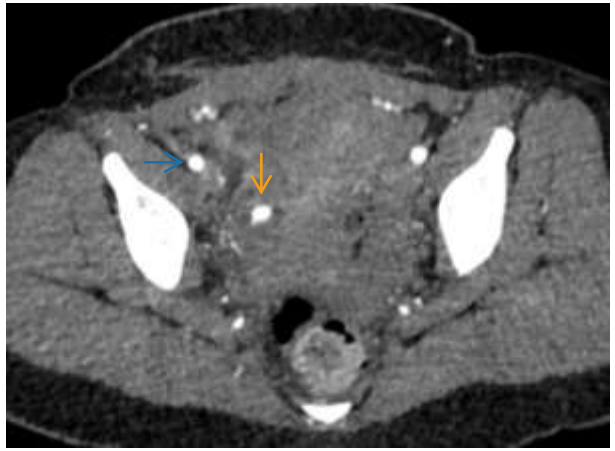
Pulsatile mass along the right edge of CS scar, pain and vaginal discharge

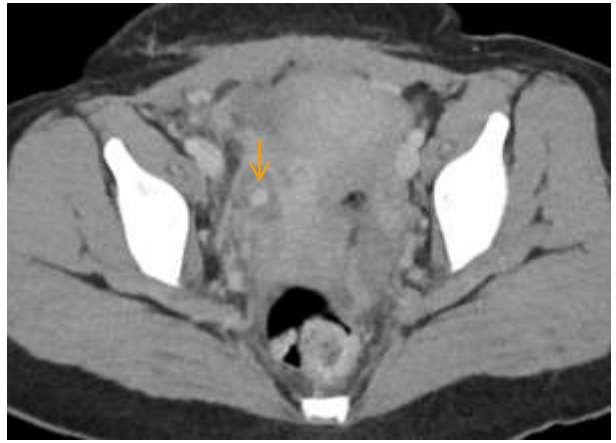




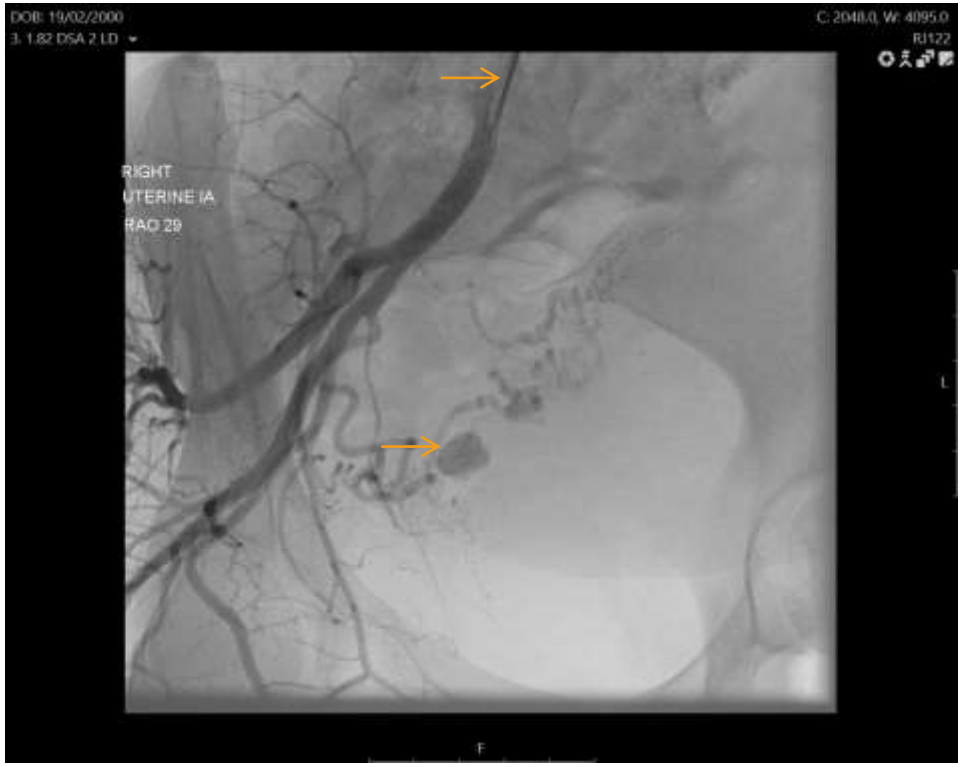
Post operative pseudoaneurysm

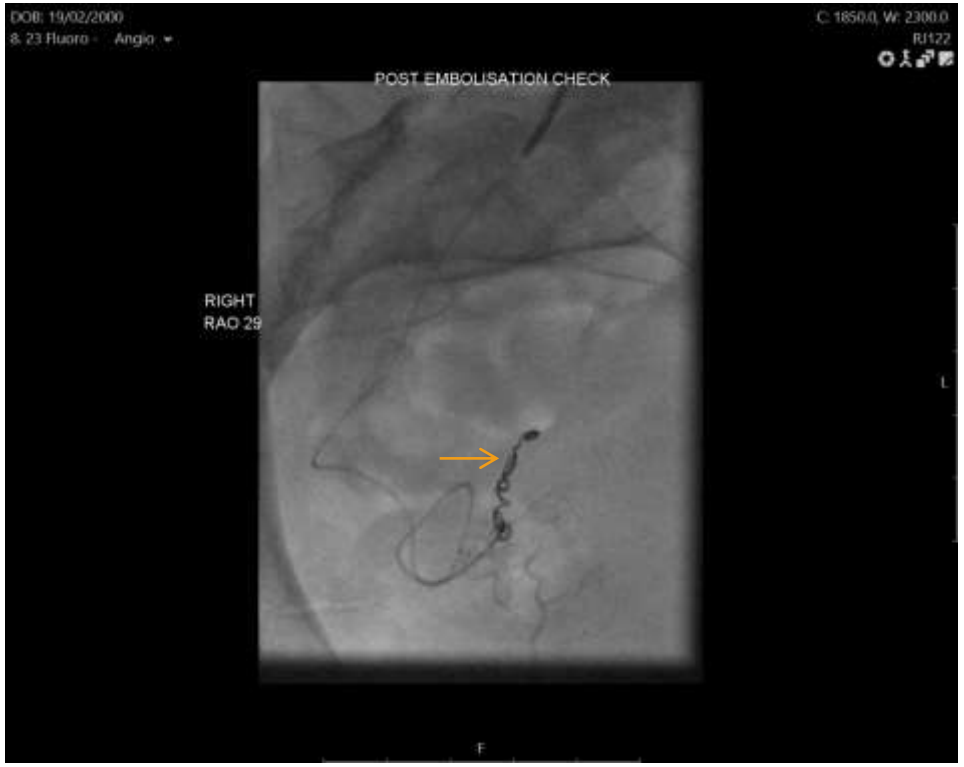






Catheter Embolisation





Conclusion

- CT usually first line for pelvic pain of unknown cause
- Also post op complications/vascular pathologies/CT drainage
- MRI problem solving tool

- Further evaluation of US/CT findings
- Characterisation of adnexal masses
- Large FOV
- Paediatric patients


THANK YOU!