



# Acute Pelvic Pain

- Emma Kirk MBBS BSc MD MRCOG
- Royal Free Hospital

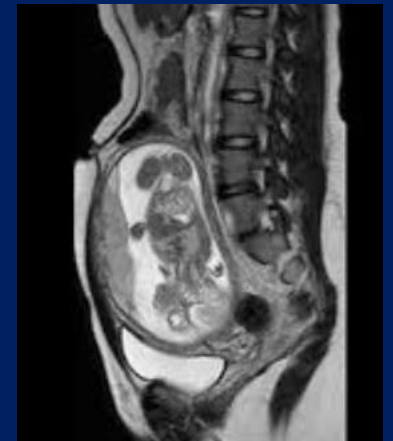
# Acute Pelvic Pain

- 'Lower abdominal or pelvic pain that has lasted less than three months'
- Exact prevalence unknown as pelvic pain is usually included in abdominal pain statistics.
- Most women experience mild pelvic pain at some time due to periods, ovulation or sexual intercourse.

**+/- PREGNANCY**

# Imaging

- Ultrasound is often the primary investigation:
  - Transvaginal
  - Transabdominal
- CT used widely in non-pregnant patients with acute pain, but exposure to ionising radiation and the potential need for IV contrast limits use in pregnant patients
- MRI is safe and comprehensive multiplanar imaging protocols can be used to evaluate most causes of pelvic pain. Aim to avoid use of contrast in pregnant patients.



Diagnostic Imaging Dataset  
Statistical Release

Table 1: Count of imaging activity in England, on NHS Patients, November 2022 to November 2023

	X-ray	Ultrasound	CT Scan	MRI	Fluoroscopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography	% organisations included	Total
Nov	1,855,640	908,415	599,100	349,015	78,335	21,185	22,435	3,400	4,705	97.6%	3,842,235
Dec	1,737,045	783,975	576,195	322,195	67,710	24,725	19,565	4,150	4,645	98.8%	3,541,205
Jan	1,876,975	899,000	619,850	357,755	77,555	24,755	22,435	4,390	5,270	98.2%	3,887,555
Feb	1,758,050	837,875	574,600	356,665	77,565	24,755	22,435	4,150	5,130	97.5%	3,636,750
Mar	1,968,635	937,490	642,870	364,100	77,400	24,755	22,435	4,910	5,730	98.1%	4,068,275
Apr	1,726,935	809,830	566,055	351,110	77,110	24,755	22,435	3,150	4,620	98.7%	3,568,080
May	1,936,205	904,670	626,980	360,160	77,160	24,755	22,435	3,995	5,395	96.8%	3,967,040
Jun	1,973,215	934,310	633,580	365,395	81,570	28,355	24,395	4,425	5,900	97.4%	4,051,140
Jul	1,870,895	899,195	637,505	373,630	72,685	27,100	22,010	3,960	5,510	98.7%	3,912,490
Aug	1,823,640	891,000	630,640	360,915	75,790	26,585	22,820	3,760	5,425	98.1%	3,840,570
Sep	1,820,025	879,875	615,600	351,695	73,530	25,460	22,455	3,750	5,655	97.4%	3,798,045
Oct	1,836,680	899,335	624,375	354,245	73,260	25,755	22,280	3,775	5,940	94.2%	3,845,645
Nov	1,791,835	905,100	609,910	350,320	76,915	26,185	22,955	3,845	6,475	91.0%	3,793,545
<b>Total</b>	<b>22,120,130</b>	<b>10,581,660</b>	<b>7,358,160</b>	<b>4,261,115</b>	<b>889,635</b>	<b>319,220</b>	<b>266,470</b>	<b>48,260</b>	<b>65,695</b>	-	<b>45,910,340</b>

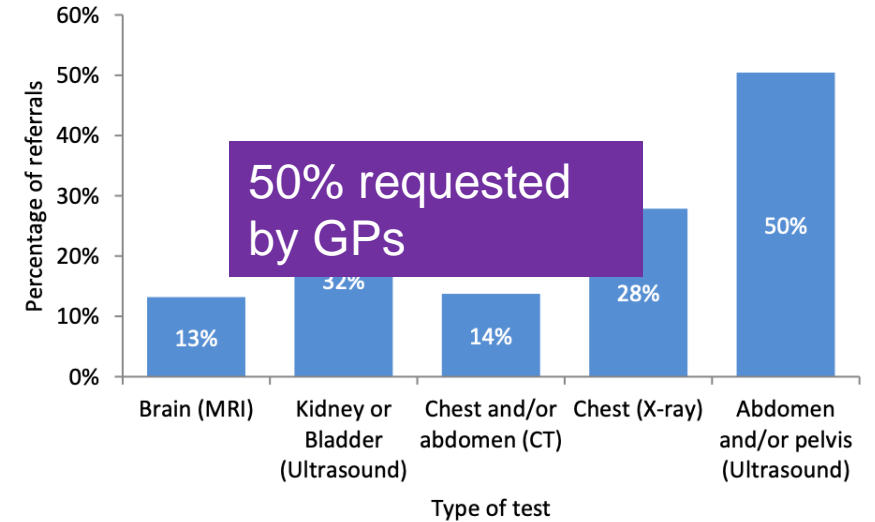
> 10 million USS scans each year

Table 3.1: Median number of days between 'date of test' and 'date of test report issued' for imaging activity, by modality, November 2022 to November 2023

	X-ray	Ultra-sound	CT Scans	MRI	Fluoro-scopy	Nuclear Medicine	PET-CT Scans	SPECT Scans	Medical Photography
Nov	1	0	0	3	0	1	2	2	0
Dec	1	0	0	4	0	1	2	1	0
Jan	1	0	0	3	0	1	2	1	0
Feb	1	0	0	3	0	1	2	2	0
Mar	1	0	0	3	0	1	2	2	0
Apr	1	0	0	3	0	1	2	2	0
May	1	0	0	3	0	1	2	2	0
Jun	1	0	0	3	0	1	3	2	0
Jul	1	0	0	4	0	1	3	2	0
Aug	1	0	0	4	0	1	3	2	1
Sep	1	0	0	4	0	1	3	2	2
Oct	1	0	0	3	0	1	2	1	1
Nov	1	0	0	3	0	1	2	1	1

USS: instant reports  
MRI: 3-4 days

Graph 3: Percentage of referrals made by GPs by type of test, November 2023



50% requested by GPs

# Acute Pelvic Pain

[Ann R Coll Surg Engl](#). 1995 May; 77(3): 193–197.

PMCID: PMC2502094

PMID: [7598417](#)

Management of women presenting to the accident and emergency department with lower abdominal pain.

[C. Gilling-Smith](#), [N. Panay](#), [J. Wadsworth](#), [R. W. Beard](#), and [R. Touquet](#)

- 322 women presenting to a UK A&E department with acute pelvic pain during a 6 month period.
- 95% were < 50 years old
- 55% - pain in early pregnancy
- 69% - pain gynaecological in origin

The screenshot shows the top portion of a web page from American Family Physician. The title is "Evaluation of Acute Pelvic Pain in Women" by Paul S. Kruszka, MD, and Stephen J. Kruszka, DO. The page includes navigation links for "PREV ARTICLE" and "NEXT ARTICLE", the date "JUL 15, 2010", and options for "PDF", "Print", and "Comments".

**Table 2. Frequency of Common Acute Pelvic Pain Diagnoses**

Study (n)	Diagnosis						No diagnosis
	Appendicitis	Ectopic pregnancy	Endometriosis	Ovarian cyst	Ovarian torsion	Pelvic inflammatory disease	
Morino (104) <sup>1</sup>	18%	1%*	2%	12%	—	19%	37%
Anteby (223) <sup>4</sup>	3%	17%	3%	27%	10%	21%	12%
Gaitán (110) <sup>5</sup>	2%	9%	7%	14%	—	55%	8%
Kontoravdis (736) <sup>6</sup>	†	19%	16%	2%	—	23%	8%
Annual incidence in the United States (multiple sources)	130,000 per year <sup>7‡</sup>	60,000 per year <sup>8</sup>	NA	65,000 per year <sup>9§</sup>	NA	1,000,000 per year <sup>10</sup>	—

NA = not available.

\*—Pregnant women excluded.

†—Only gynecologic etiologies recorded.

‡—Women only.

§—Inpatient data.

Information from references 1, and 4 through 10.

# Acute Pelvic Pain

## Pregnancy related

Ectopic pregnancy  
Miscarriage

## Urological causes

Infection  
Renal tract stones

## Other causes

Musculoskeletal  
Pelvic vein thrombosis

## Gynaecological causes

Ovarian cysts  
Adnexal torsion  
OHSS  
Pelvic inflammatory disease  
Fibroids

## Gastrointestinal causes

Gastroenteritis  
Appendicitis  
Inflammatory bowel disease  
Irritable bowel disease

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Irritable bowel disease



Pregnancy causes

# Ectopic pregnancy

- Leading cause of maternal mortality in the 1<sup>st</sup> trimester of pregnancy
- Classic triad of symptoms:
  - amenorrhoea
  - pain
  - vaginal bleeding
- Up to 1/3<sup>rd</sup> have no clinical signs or symptoms
- Pain most common presentation

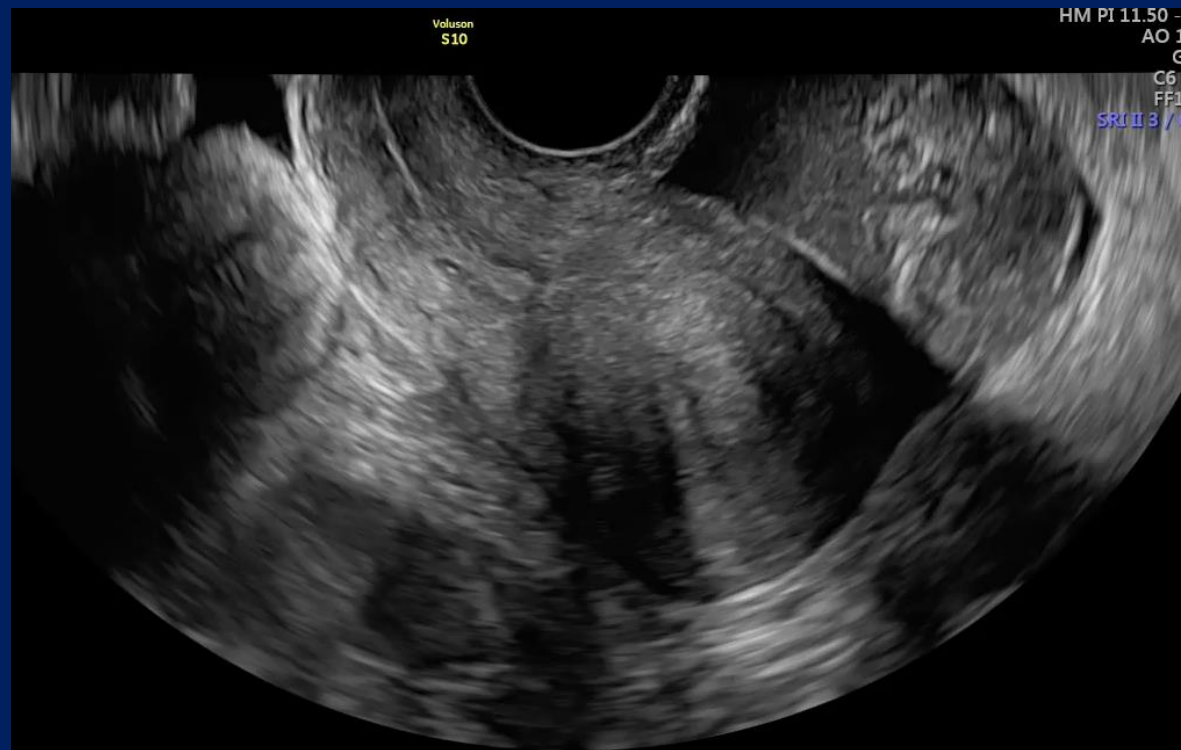


## RFH Emergency Gynaecology Unit 2023

- 101 ectopic pregnancies
  - 70% presented with pain
  - 17 % pain alone
  - 53% pain and bleeding
  - 13% bleeding alone



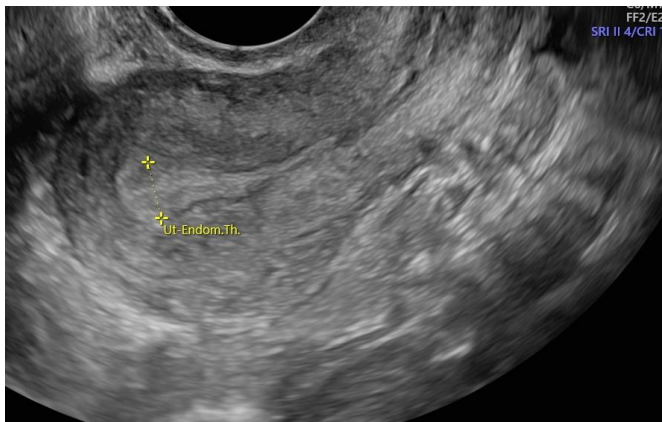
Pregnancy causes  
**Ectopic pregnancy**



Pregnancy causes

# Ectopic pregnancy

- 36 years
- P2
- Not known to be pregnant
- Sent for an urgent gynae USS by GP
- Left sided pelvic pain.
- Irregular periods



- hCG 143 IU/L
- 48 hours later
- hCG 60 IU/L

# Acute Pelvic Pain

## Pregnancy related

Ectopic pregnancy  
Miscarriage

## Urological causes

Infection  
Renal tract stones

## Other causes

Musculoskeletal  
Pelvic vein thrombosis

## Gynaecological causes

Ovarian cysts  
Adnexal torsion  
Fibroids  
OHSS

## Gastrointestinal causes

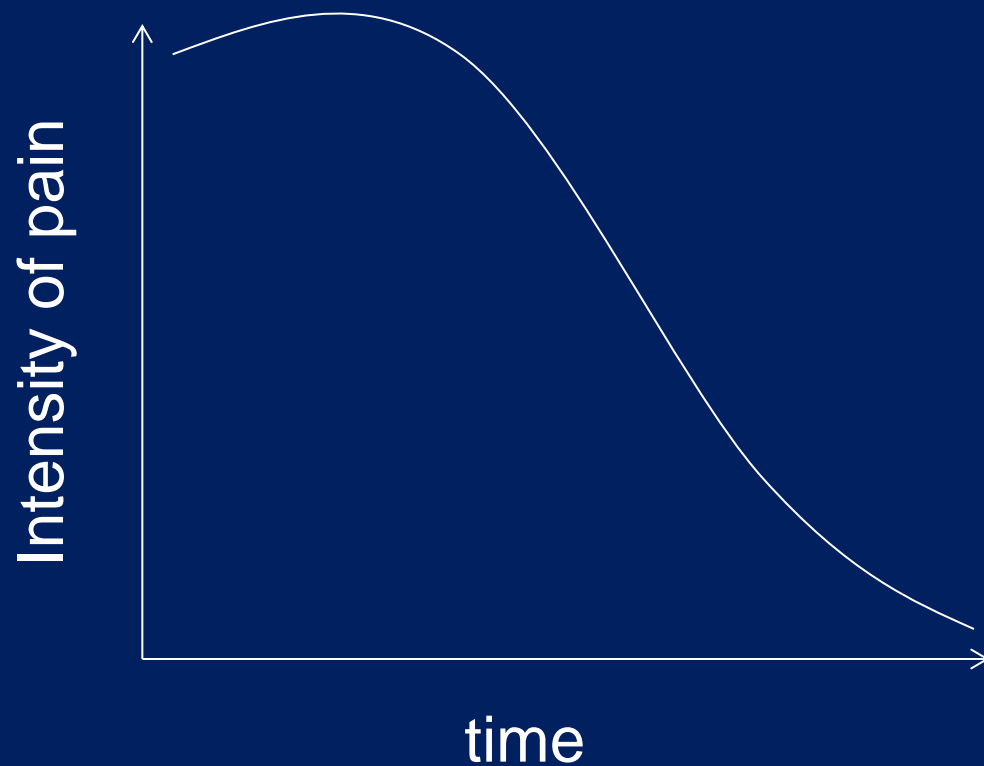
Gastroenteritis  
Appendicitis  
Inflammatory bowel disease  
Irritable bowel disease

Gynaecological causes

# Functional ovarian cysts

Sharp, sudden, severe continuous:

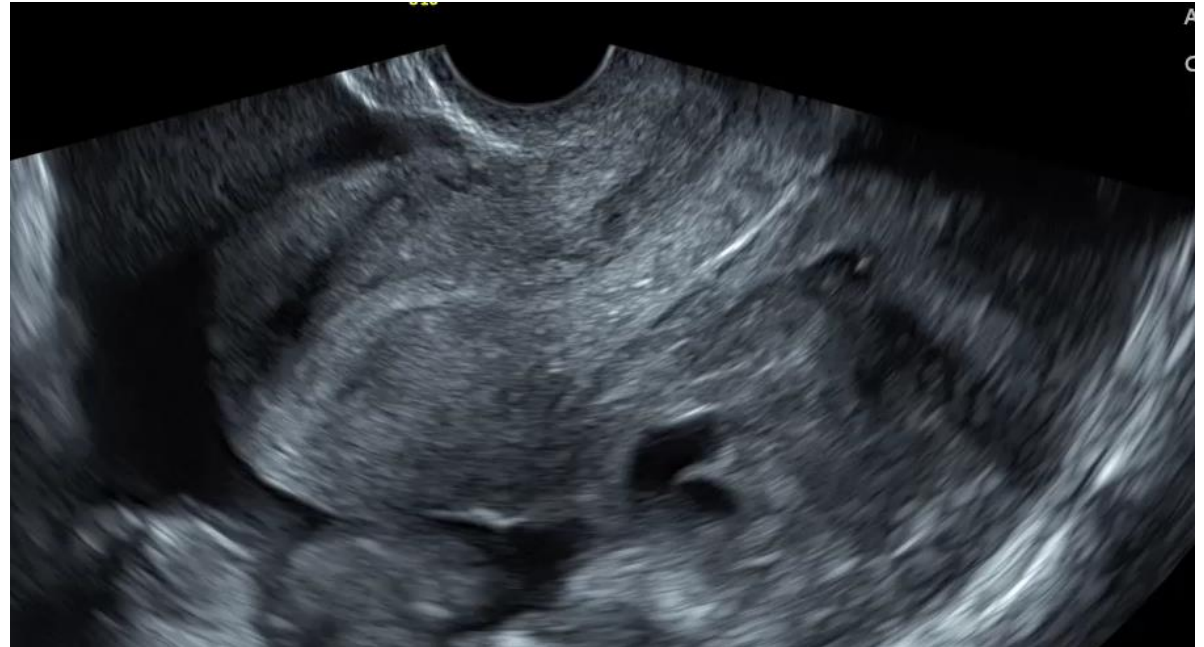
- typical of ruptured follicle or bleed from corpus luteum
- usually localised to one side
- more generalised if associated with intraperitoneal bleed



Gynaecological causes

# Functional ovarian cysts

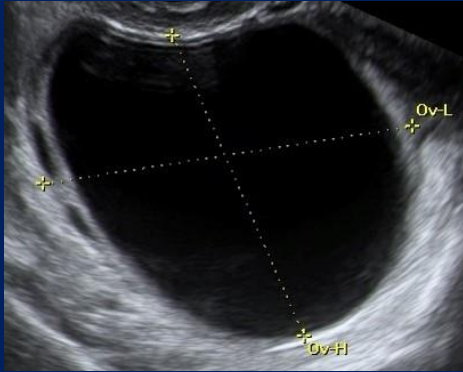
- 32 years old
- P1
- LMP ~ 2 weeks ago
  
- Right sided pain
- Intermenstrual bleeding



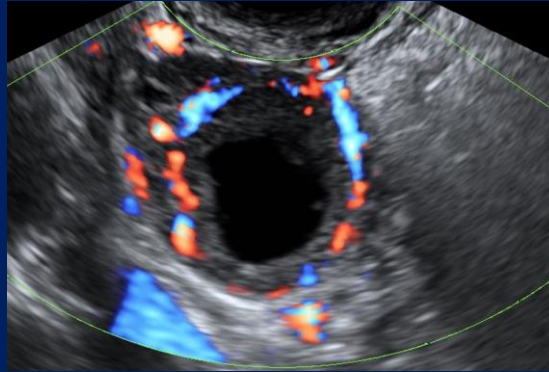
# Gynaecological causes

## Ovarian cysts

- Simple Cyst



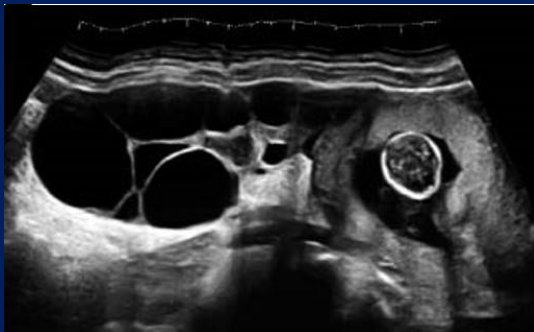
- Corpus Luteum



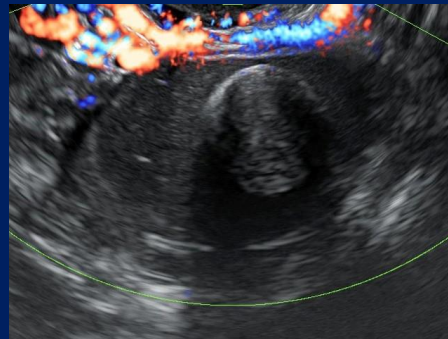
- Endometrioma



- Theca Lutein Cyst



- Dermoid



- Borderline Tumour

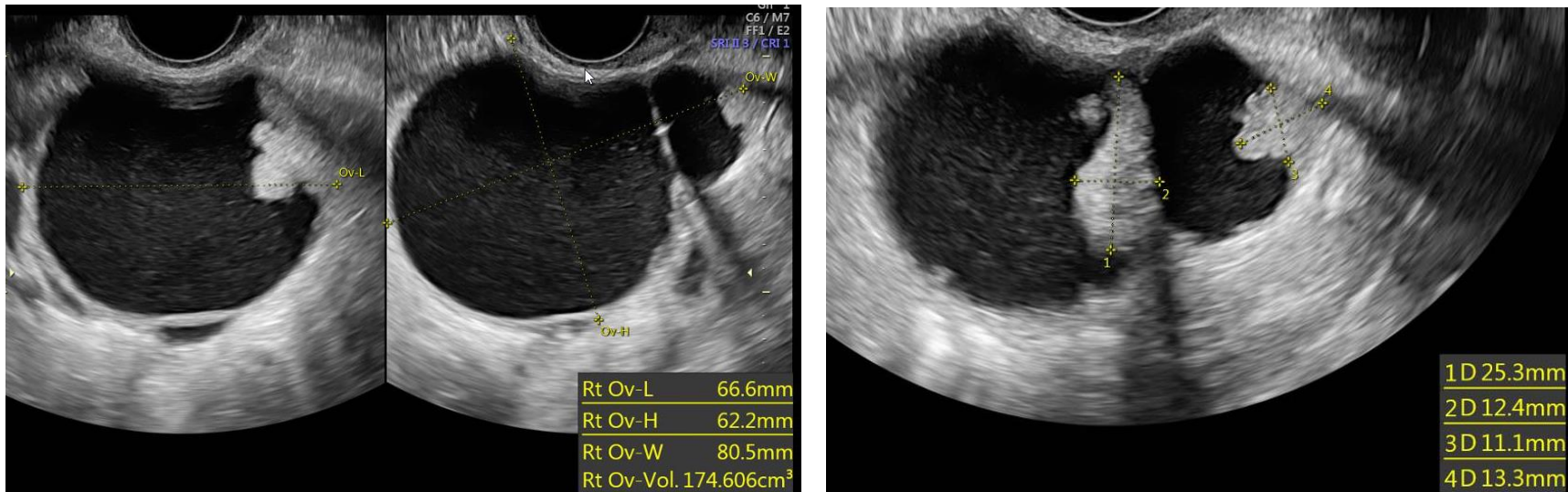




Gynaecological causes

# Ovarian cysts

- 19 years old
- P0
- Recent admission with right sided pain, now resolved



- Borderline serous tumour

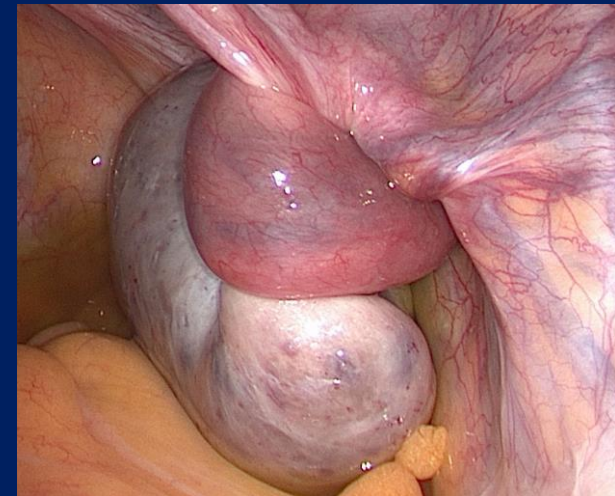
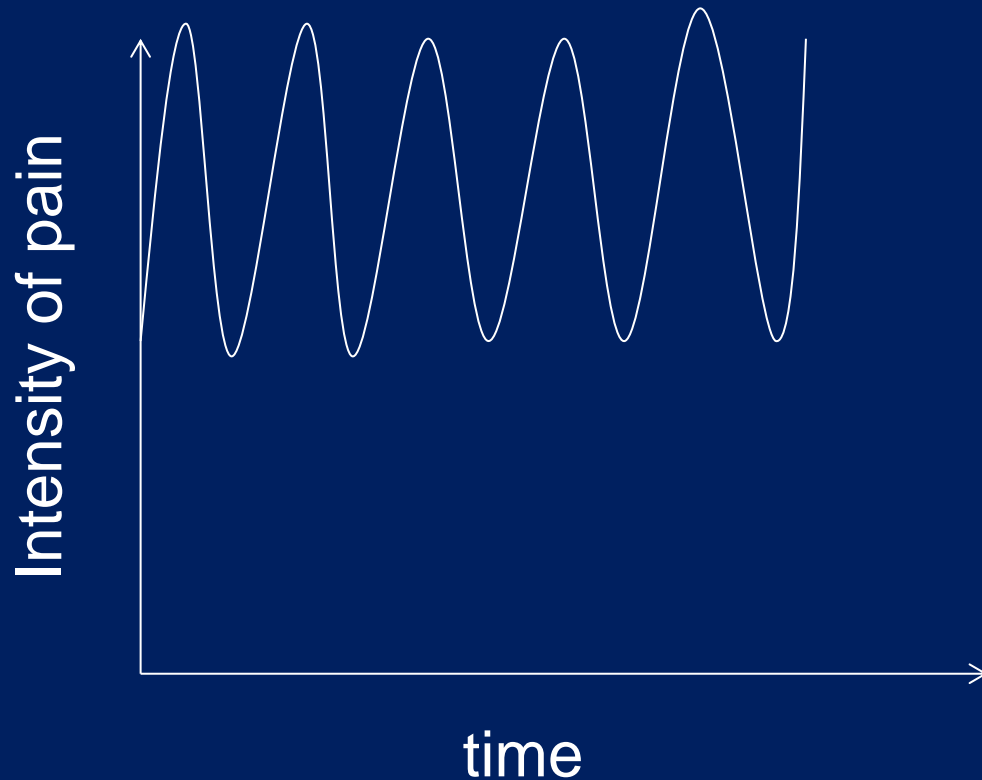


Gynaecological causes

# Adnexal torsion

Severe, fluctuating pain:

- may be sharp or dull
- localised to one side
- may radiate to loin or thigh
- difficult to distinguish from renal colic



Gynaecological causes

# Adnexal torsion

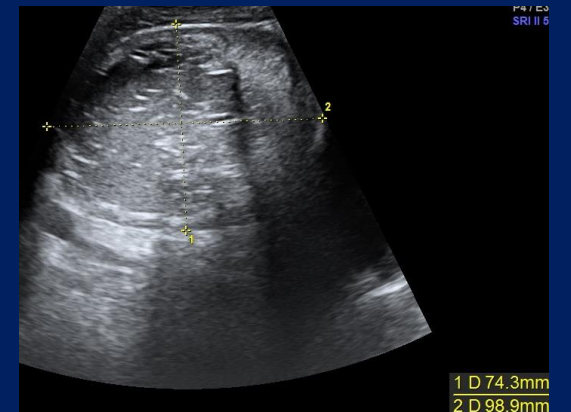
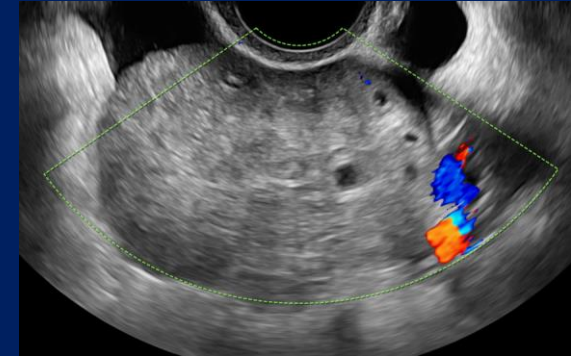
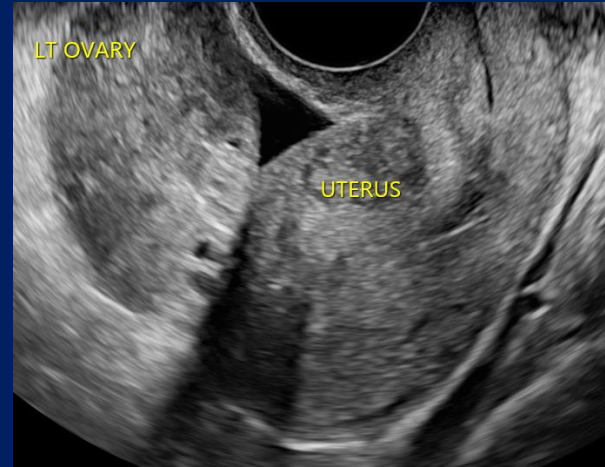
- 3-7% of all gynaecological emergencies
  - Risk of ovarian torsion is increased in pregnancy
  - 12-18% of patients with ovarian torsion are pregnant
- Unilateral pain
  - Pain < 8 hours
  - Vomiting
  - Ovarian cyst > 5cm
  - Tachycardia
  - Pyrexia

Gynaecological causes

# Ovarian torsion

- Unilateral ovarian enlargement\*
- Oedema\*
- Peripherally placed follicles
- Solid mass with hypo- and hyperechoic areas in keeping with haemorrhage and necrosis
- Twisted pedicle – which may be seen as a whirlpool

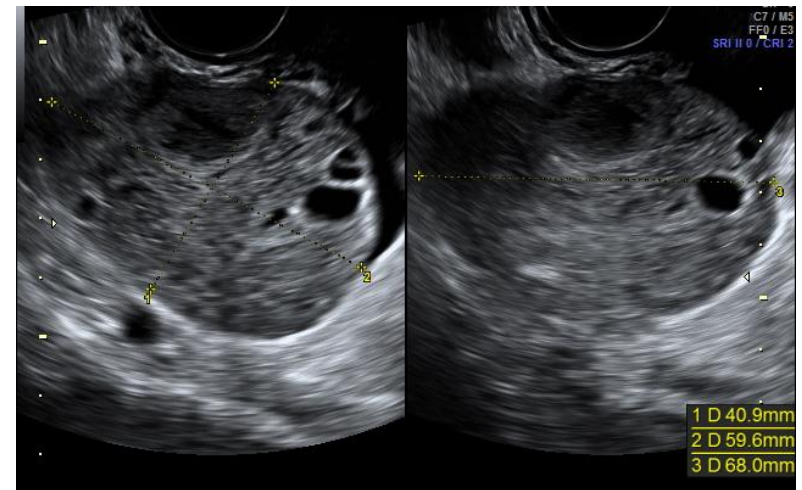
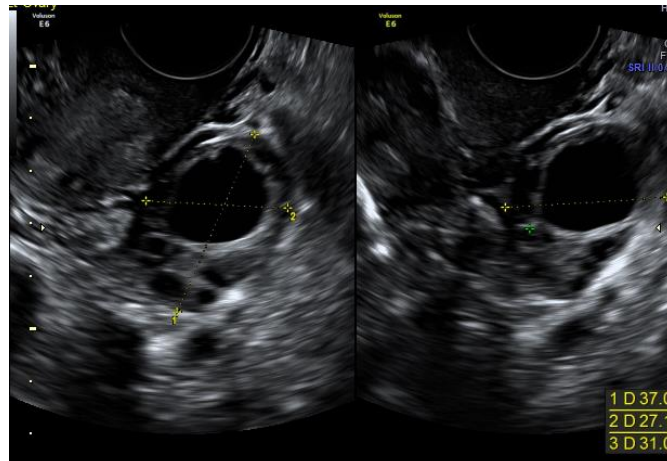
\* Most consistent signs



Gynaecological causes

# Ovarian torsion

- 23 years old
- Intermittent episodes of left sided pain over the last 1yr
- Acute pain and vomiting



Gynaecological causes

# Ovarian Hyperstimulation Syndrome

- OHSS is a complication of fertility treatment
- There is an exaggerated response to the fertility drugs.
  
- Mild OHSS – up to 1/3<sup>rd</sup> of all IVF cycles
- Moderate or severe - ~ 3-8% of IVF cycles
  
- Early – within 7 days of the hCG trigger
- Late - > 10 days after hCG trigger and is usually the result of endogenous hCG from an early pregnancy

## Gynaecological causes

# Ovarian Hyperstimulation Syndrome

Category	Features
Mild OHSS	Abdominal bloating Mild abdominal pain Ovarian size usually < 8 cm <sup>a</sup>
Moderate OHSS	Moderate abdominal pain Nausea ± vomiting Ultrasound evidence of ascites Ovarian size usually 8–12 cm <sup>a</sup>
Severe OHSS	Clinical ascites (± hydrothorax) Oliguria (< 300 ml/day or < 30 ml/hour) Haematocrit > 0.45 Hyponatraemia (sodium < 135 mmol/l) Hypo-osmolality (osmolality < 282 mOsm/kg) Hyperkalaemia (potassium > 5 mmol/l) Hypoproteinaemia (serum albumin < 35 g/l) Ovarian size usually > 12 cm <sup>a</sup>
Critical OHSS	Tense ascites/large hydrothorax Haematocrit > 0.55 White cell count > 25 000/ml Oliguria/anuria Thromboembolism Acute respiratory distress syndrome

## Ovarian size

### Mild

- < 8cm

### Moderate

- 8-12cm
- Ascites

### Severe

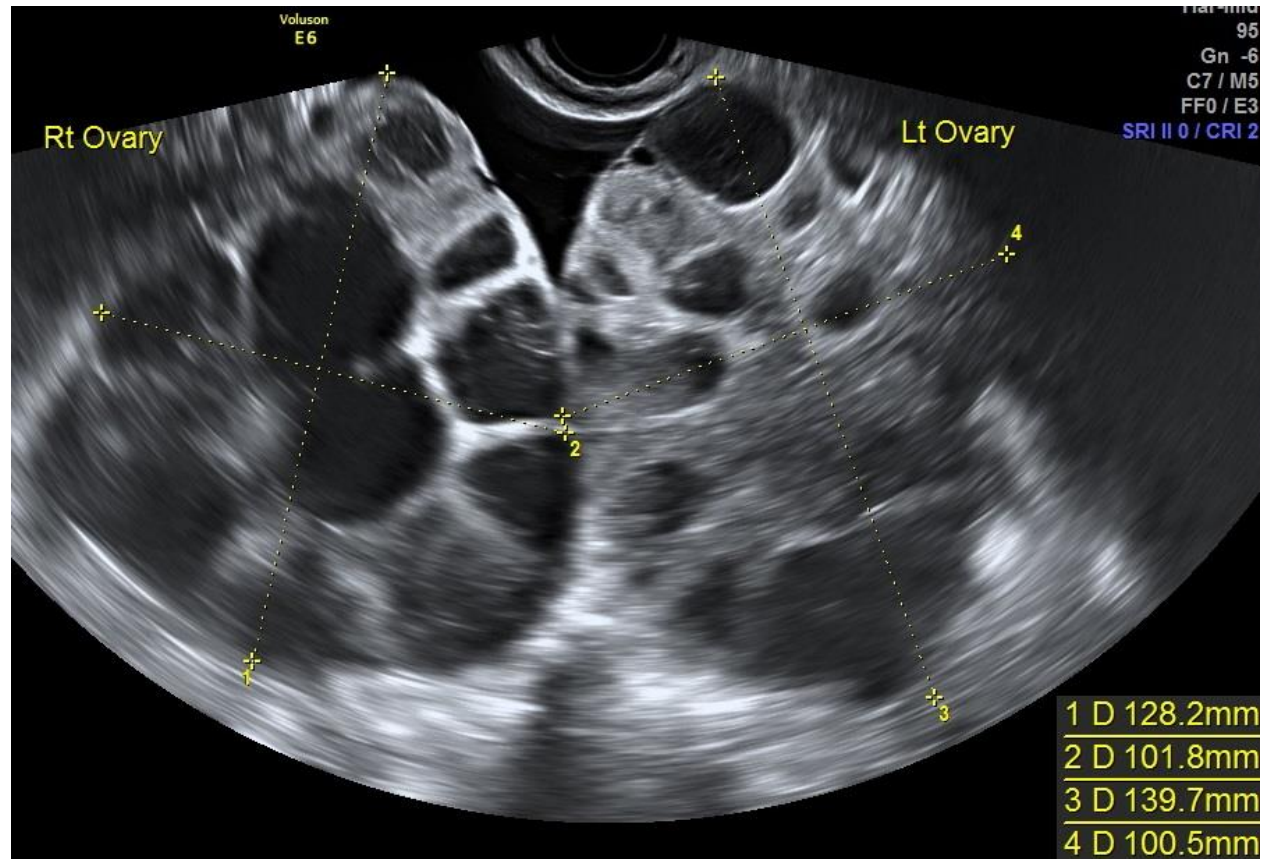
- > 12 cm
- Ascites



Gynaecological causes

# Ovarian Hyperstimulation Syndrome

- 37 years old
- PCOS
- Pain and bloating
- 27 eggs retrieved

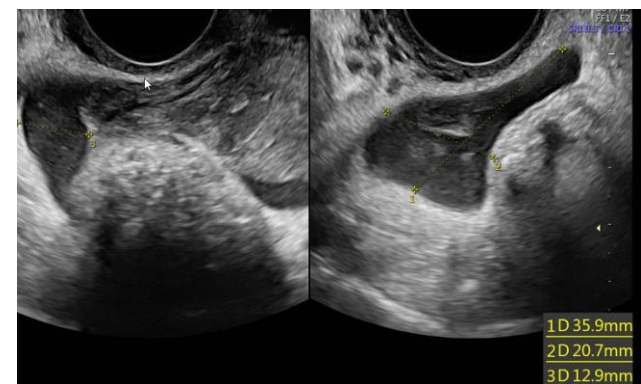
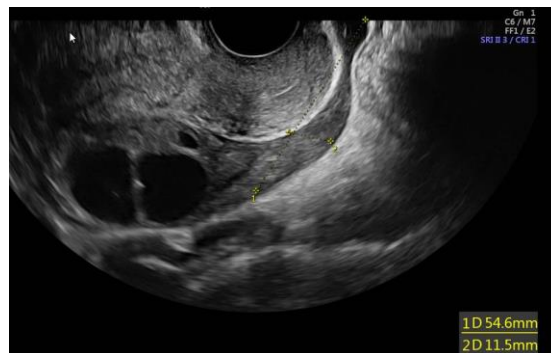
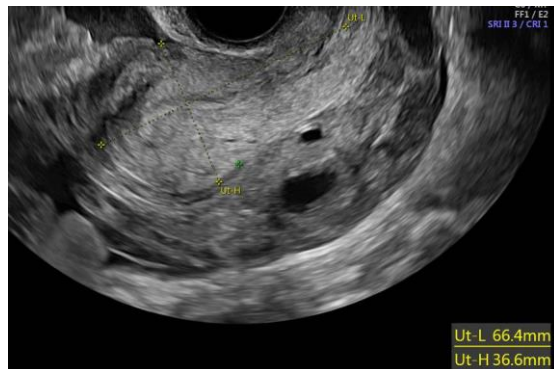
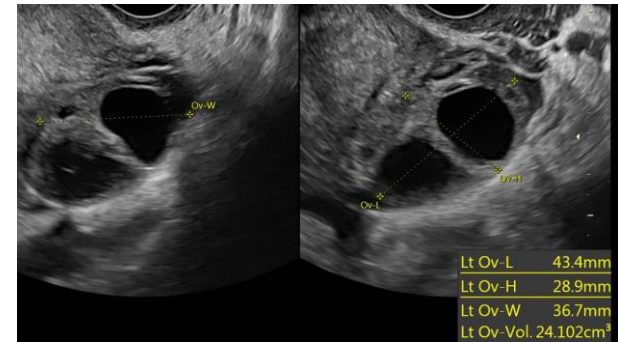
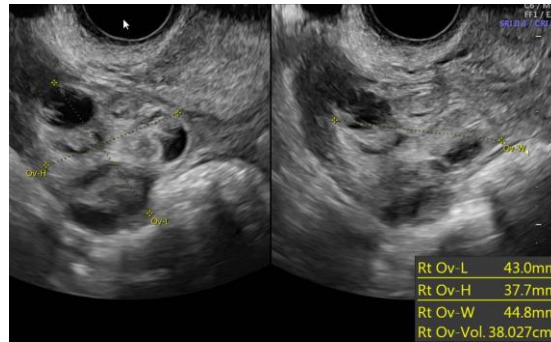




Gynaecological causes

# Post IVF Egg Retrieval

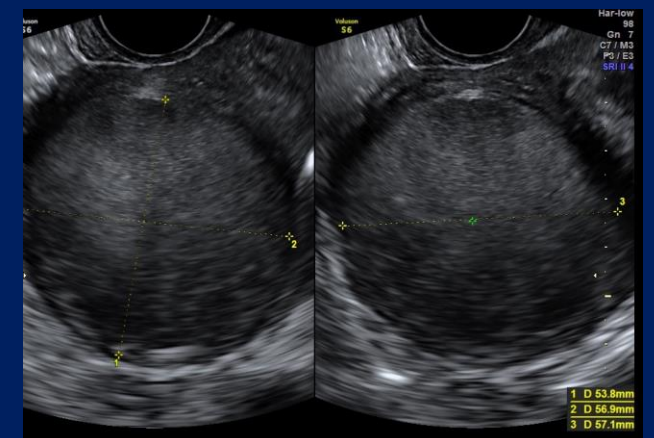
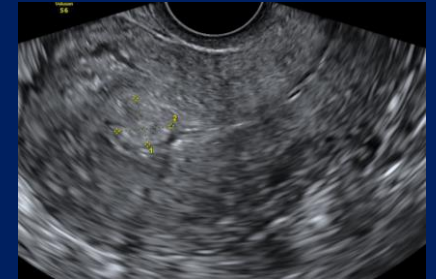
- 41 years old
- 1 day post 5th egg collection
- 7 eggs
- Hb 87



Gynaecological causes

# Fibroids

- Most common uterine tumour
- Incidence increases with age during the reproductive years
- Affect >50% of pre-menopausal women age 35-49
- Common cause of pain and /or abnormal bleeding



Gynaecological causes

# Fibroids

## Abnormal bleeding

Often submucous fibroids

## Torsion

Of a pedunculated subserosal or submucosal fibroid

## Miscarriage

Submucosal or deep intramural fibroids may distort the cavity

## Urinary retention

If exerting pressure on the bladder

## Vascular infarction (red degeneration)

Acute pain due to degenerative changes when rapid growth occurs precipitated by high levels of sex hormones, causing it to outgrow its blood supply

## Haemoperitoneum

May result from spontaneous rupture or avulsion of a fibroid, or rupture of an overlying blood vessel

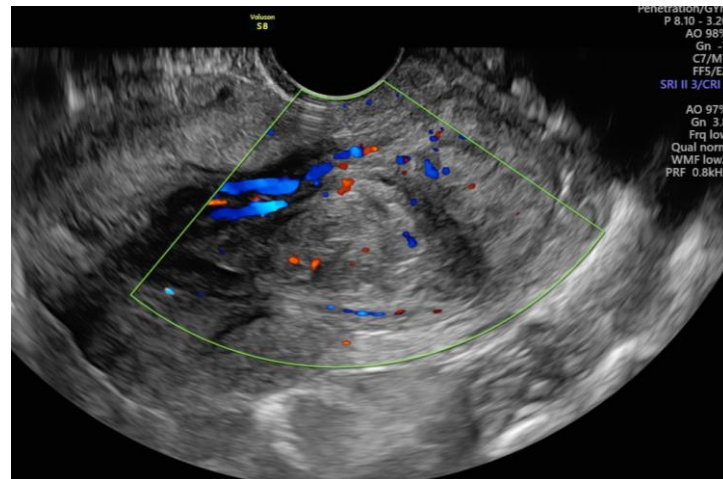
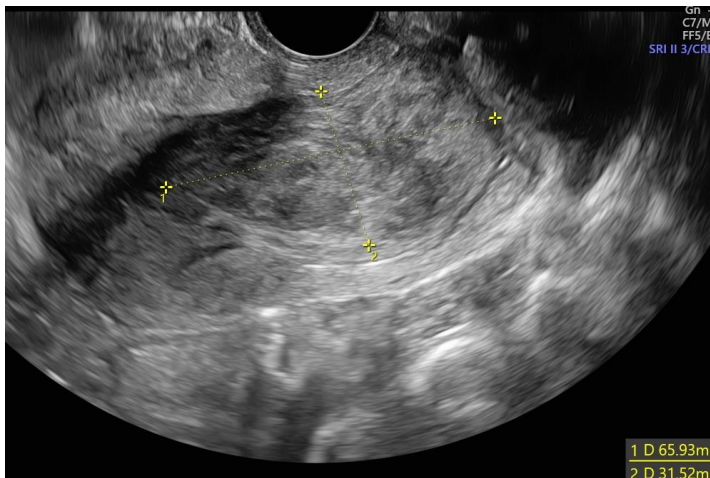
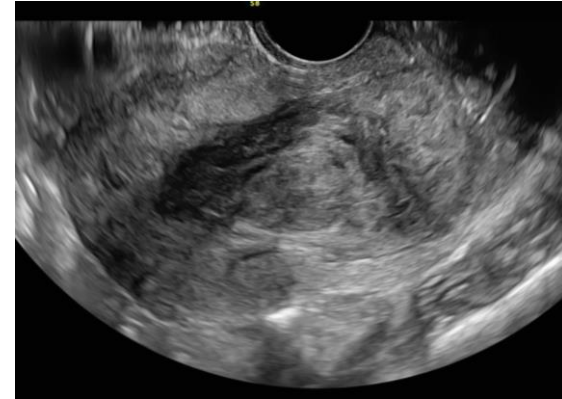
## Hydronephrosis

If there is a large fibroid causing ureteric compression.

# Gynaecological causes

## Fibroids

- 49 years old
- Pain
- Prolonged episode of bleeding



Gynaecological causes

# Pelvic Inflammatory Disease

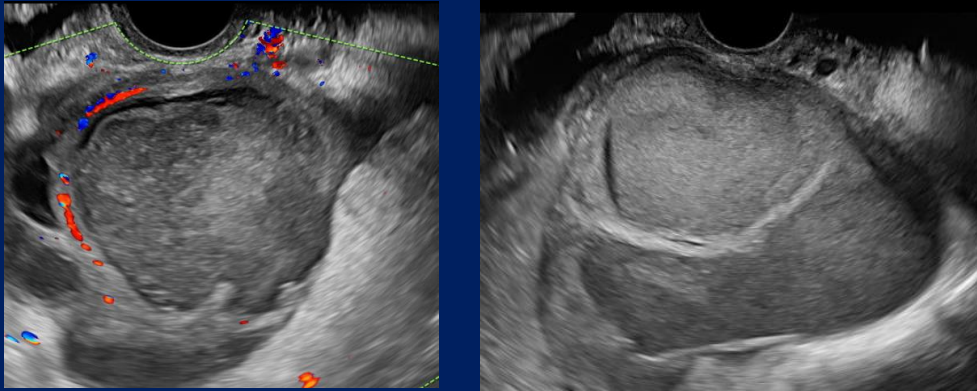
- General term indicating infection of the female upper genital tract
- Includes: endometritis, salpingitis, salpingo-oophoritis, tubo-ovarian abscess (TOA) and pelvic peritonitis.
- A TOA is an inflammatory mass involving the tube and / or ovary, characterised by the presence of pus.
- Symptoms include pelvic pain and abnormal discharge or bleeding.



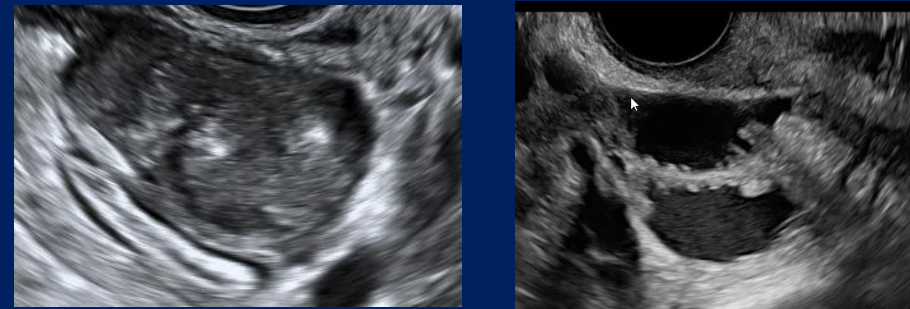
Gynaecological causes

# Pelvic Inflammatory Disease

- Complex solid / cystic mass



- Cogwheel appearance – thickened endosalpingeal folds



- Free fluid



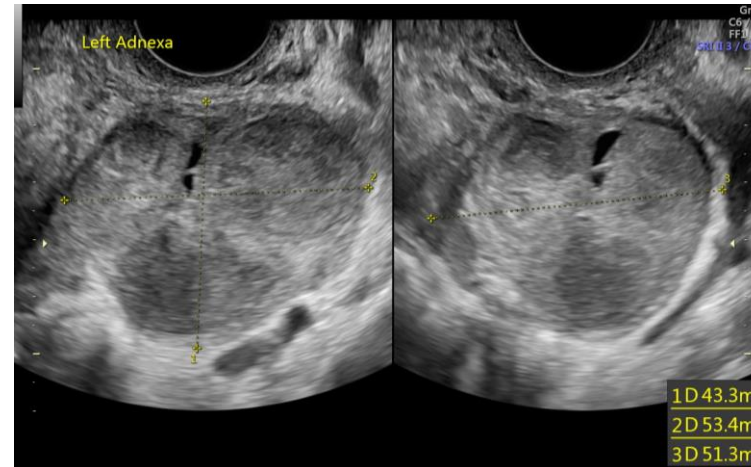
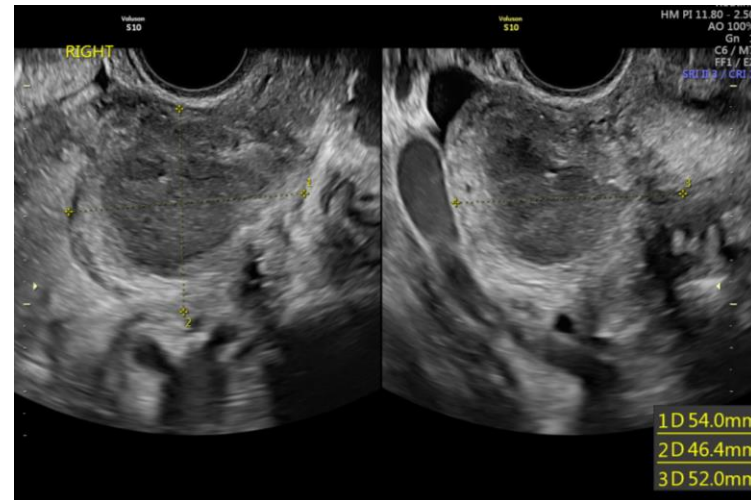
- Pyosalpinx



Gynaecological causes

# Pelvic Inflammatory Disease

- 26 years old
- PO
- IUCD in situ
- Feeling unwell, pyrexial.
- Lower abdominal pain
- Spotting

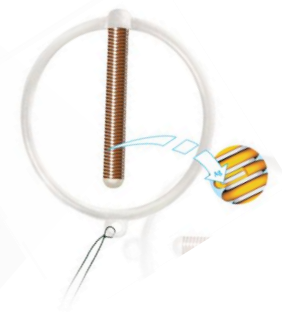
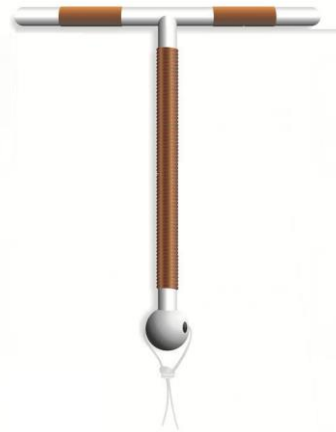
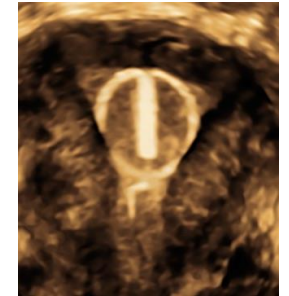
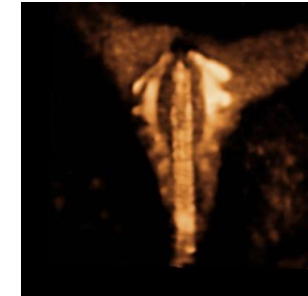
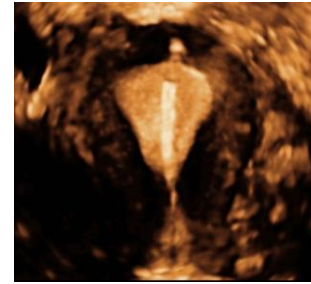
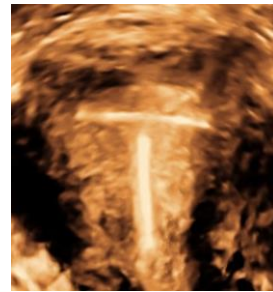




Gynaecological causes

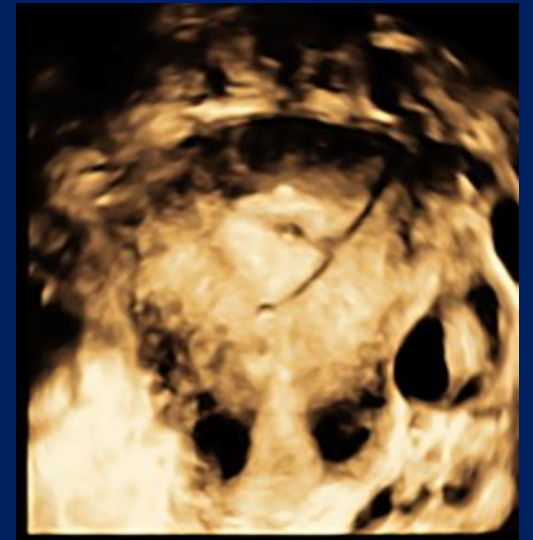
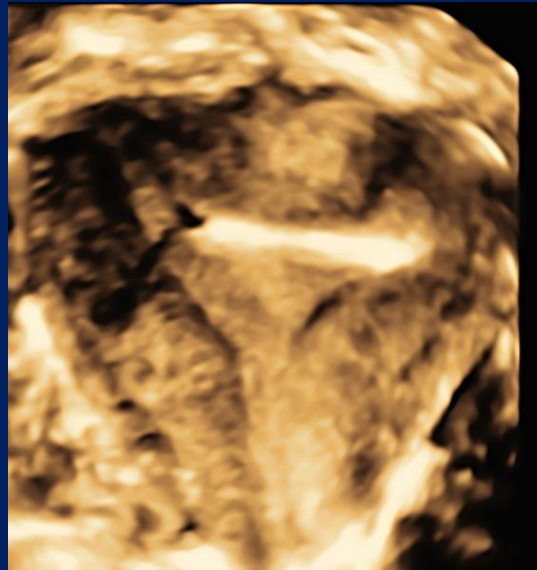
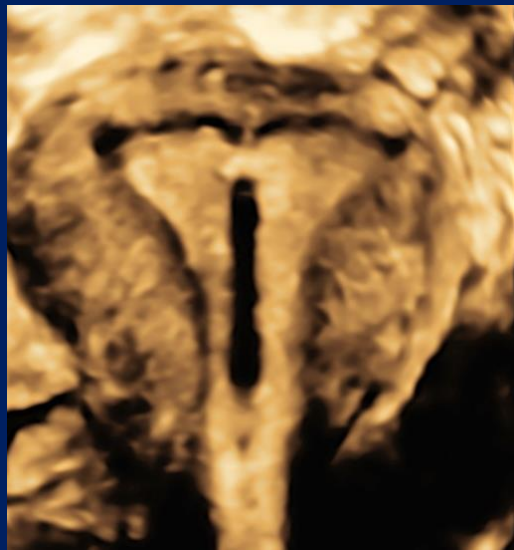
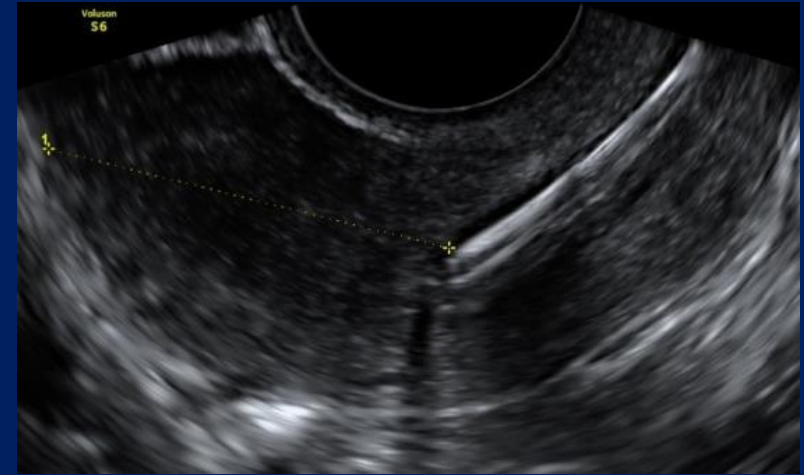
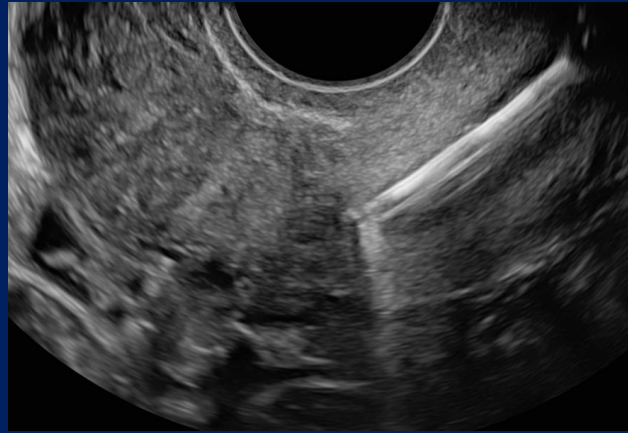
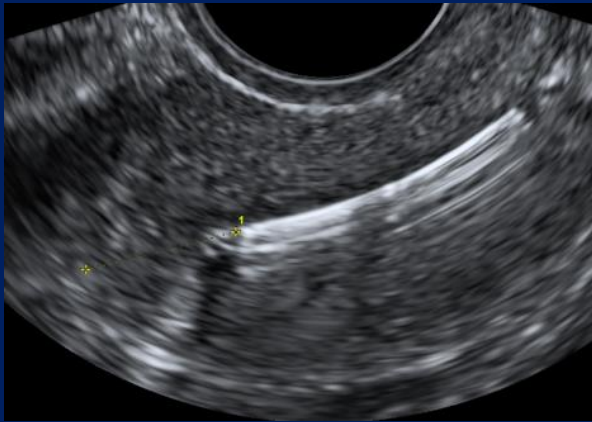
# Coil related problems

- Perforation < 1 per 1000
- Expulsion 1 in 20 per 5 years
- Risk of PID 6 fold higher in 1<sup>st</sup> 20 days post insertion



Gynaecological causes

# Coil related problems



Gynaecological causes

# Coil related problems

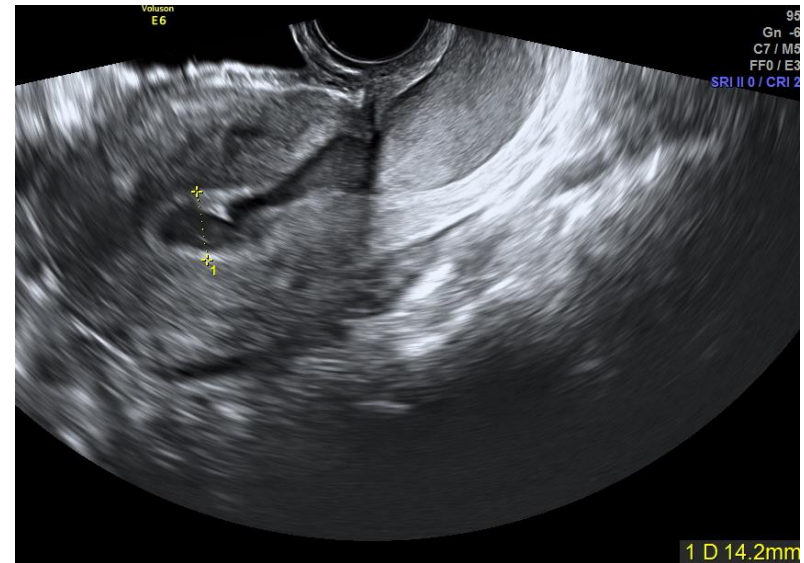
- 32 years old
- P2
- 8 weeks post LSCS
- IUCD inserted 2 days ago
- Right sided pain
- IUCD strings not visible



Gynaecological causes

# Coil related problems

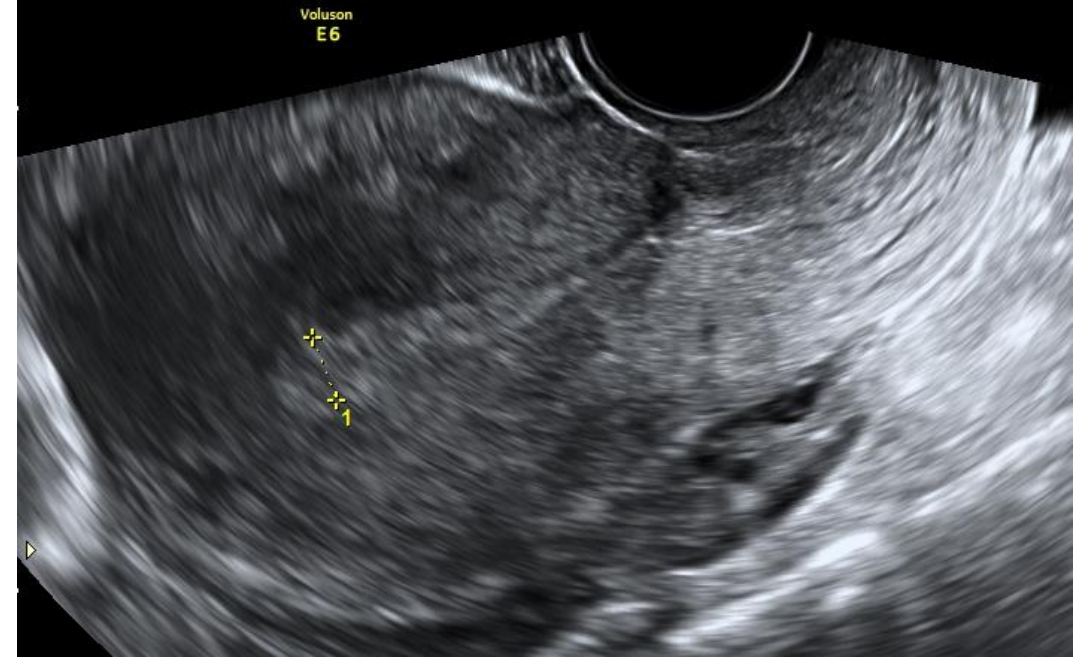
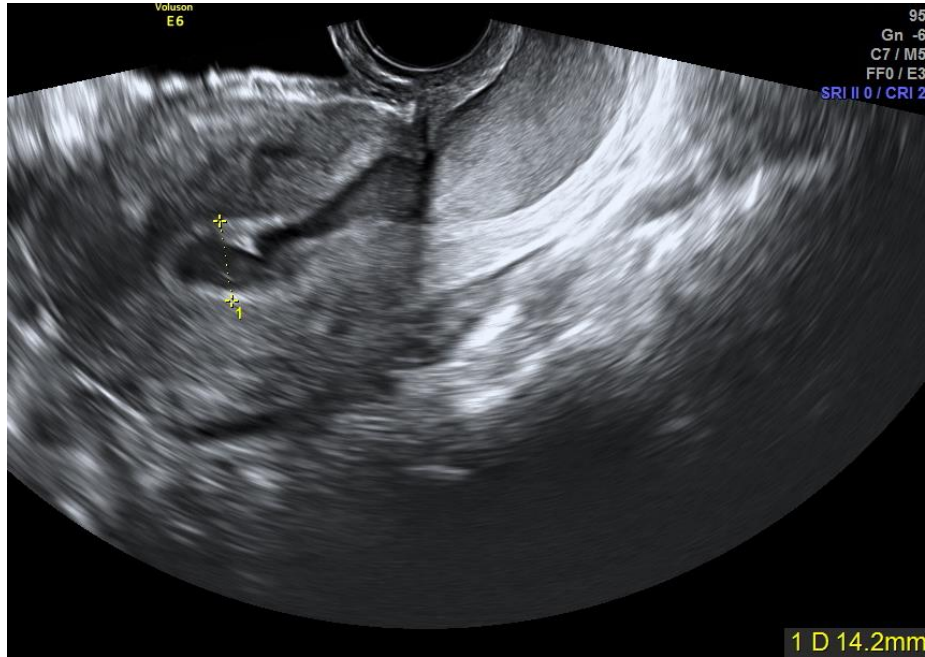
- 33 year old
- P2
- Sudden onset lower abdominal pain
- Feeling faint
- hCG –ve
- Mirena IUS removed 6/52 ago.
- No recent period





Gynaecological causes

# Coil related problems



# Acute Pelvic Pain

## Pregnancy related

Ectopic pregnancy  
Miscarriage

## Urological causes

Infection  
Renal tract stones

## Other causes

Musculoskeletal  
Pelvic vein thrombosis

## Gynaecological causes

Ovarian cysts  
Adnexal torsion  
OHSS  
Pelvic inflammatory disease  
Fibroids

## Gastrointestinal causes

Gastroenteritis  
Appendicitis  
Inflammatory bowel disease  
Irritable bowel disease

Urological causes

# Renal tract stones

- Renal colic is one of the most frequent non-obstetric causes for pelvic pain.
- Ultrasound is the imaging modality of choice
  - Can identify stones within the renal pelvis
  - Stones at the uterovesical junction may be detected using TVS





# Acute Pelvic Pain

## Pregnancy related

Ectopic pregnancy  
Miscarriage

## Urological causes

Infection  
Renal tract stones

## Other causes

Musculoskeletal  
Pelvic vein thrombosis

## Gynaecological causes

Ovarian cysts  
Adnexal torsion  
OHSS  
Pelvic inflammatory disease  
Fibroids

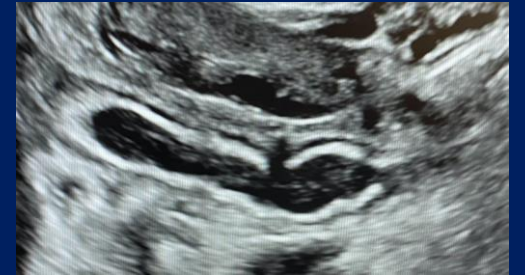
## Gastrointestinal causes

Gastroenteritis  
Appendicitis  
Inflammatory bowel disease  
Irritable bowel disease

Gastrointestinal causes

# Appendicitis

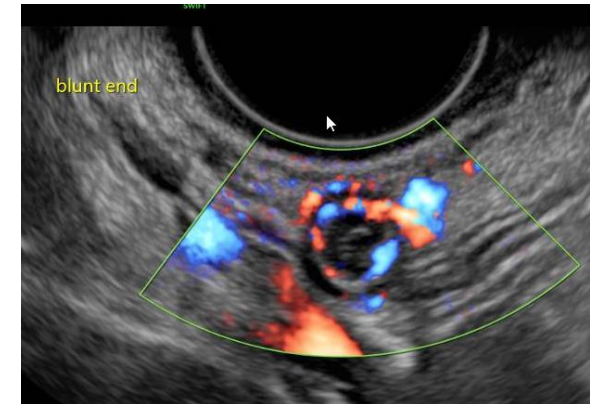
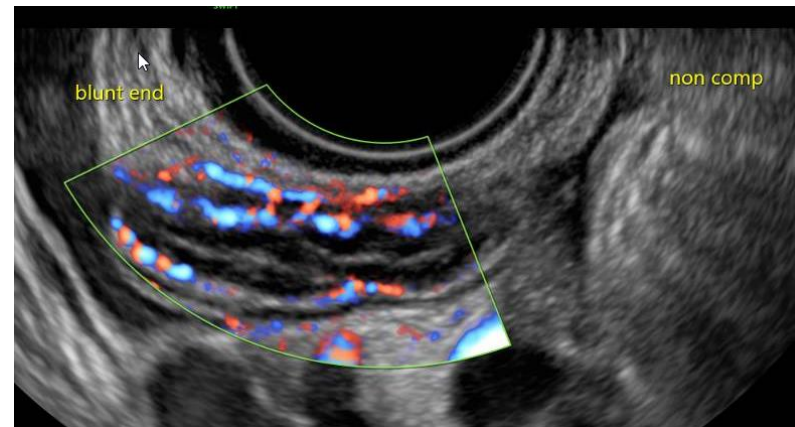
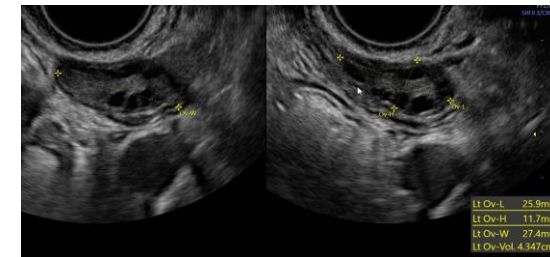
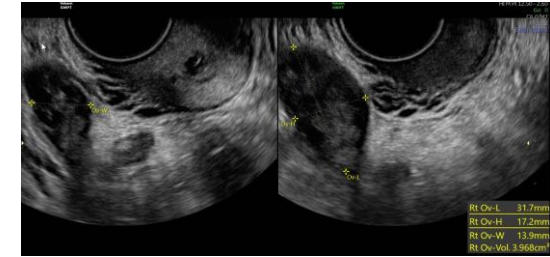
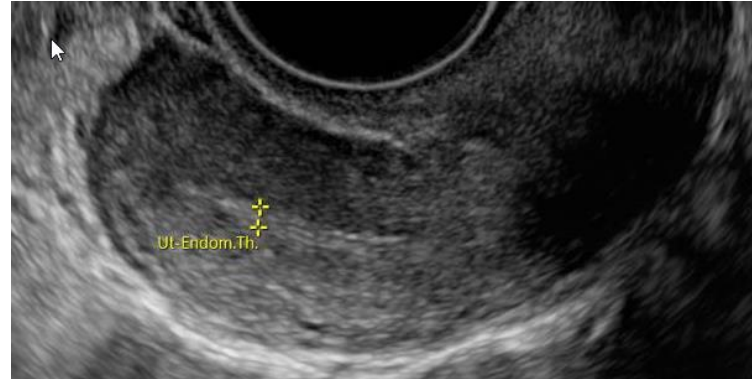
- Rate of appendicitis highest in 20s and 30s
- Ultrasound is the imaging modality of choice
  - Blind ended, dilated (>6mm) non-compressible tubular structure arising from the caecum
- Can be diagnosed on a TVS



# Gastrointestinal causes

## Appendicitis

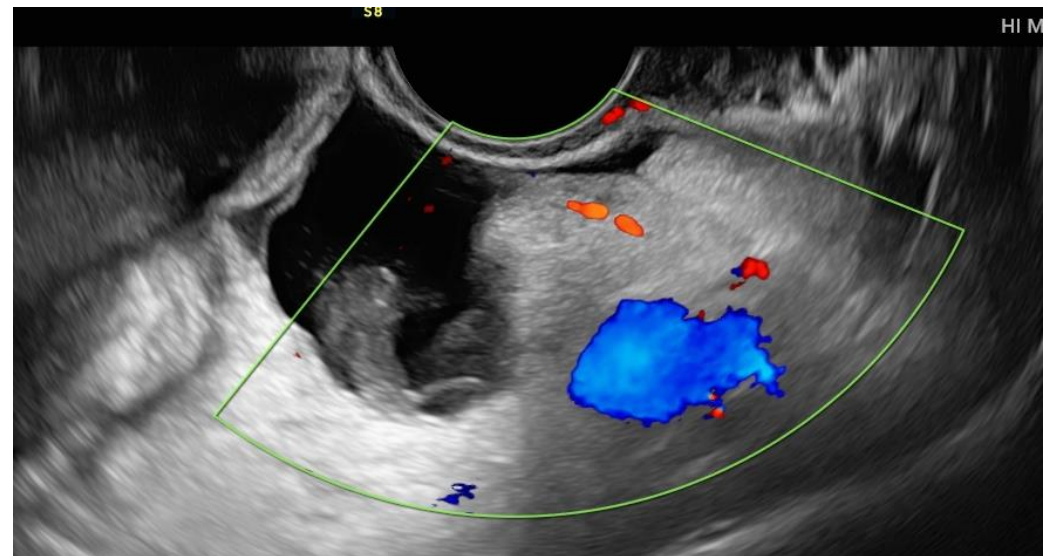
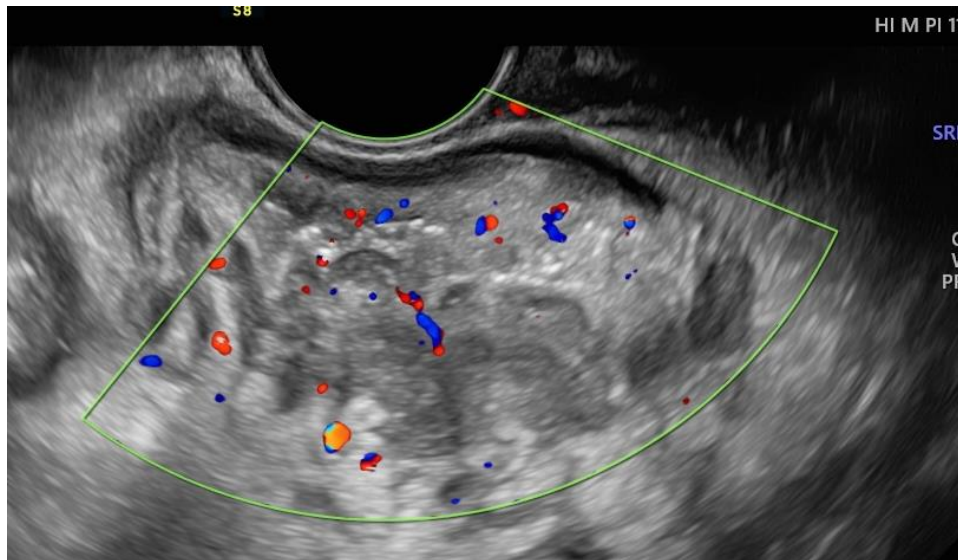
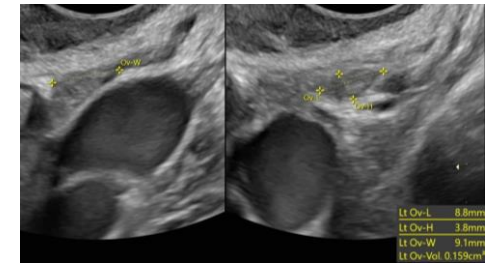
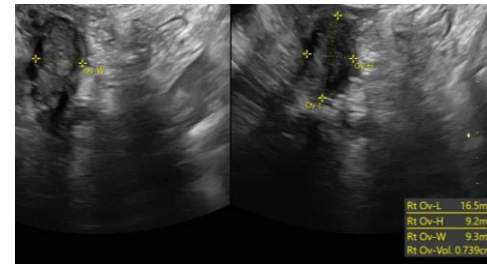
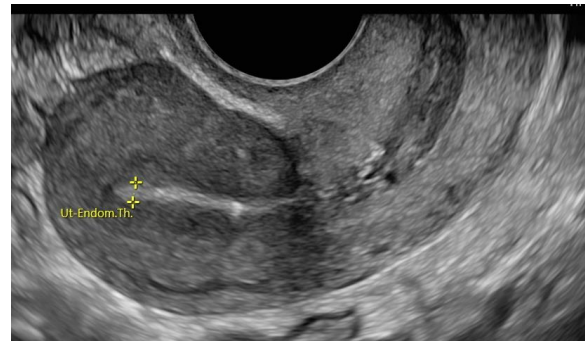
- 27 years old G0
- Sudden onset of pain
- Constant
- No vaginal discharge.
- Some nausea. No vomiting.
- Bowels open normally.
- Regular sexual partner.
- Hb 145, WCC 16.6 CRP 6.



# Gastrointestinal causes

# Acute Diverticulitis

- 56 years old G2P2
- Left sided pain.
- Bowel disturbance.



# Acute Pelvic Pain

## Pregnancy related

Ectopic pregnancy  
Miscarriage

## Urological causes

Infection  
Renal tract stones

## Other causes

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Pelvic vein thrombosis

## Gynaecological causes

Ovarian cysts  
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## Gastrointestinal causes

Gastroenteritis  
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Irritable bowel disease



Other causes

# Pelvic vein thrombosis

- Pelvic vein thrombosis is a recognized cause of acute pelvic pain
- Higher incidence in patients in a hypercoagulable state

6/40  
LIF pain



Case Reports > [J Ultrasound Med.](#) 2003 Mar;22(3):287-93. doi: 10.7863/jum.2003.22.3.287.

## Diagnosis of pregnancy-associated uterine venous plexus thrombosis on the basis of transvaginal sonography

Zvi Leibovitz<sup>1</sup>, Simon Degani, Israel Shapiro, Joseph Tal, Baram Paz, Zohar Levitan, Ariel Aharoni, Aurora Toubi, Lilliana Schliamser, Elisha Bar-Meir, Gonen Ohel

> [J Thromb Haemost.](#) 2020 Oct;18(10):2557-2565. doi: 10.1111/jth.14989. Epub 2020 Aug 11.

## The prevalence of incidental uterine venous plexus thrombosis in women attending a gynecology clinic

Tejal Amin<sup>1</sup>, Hannah Cohen<sup>2 3</sup>, Michael Wong<sup>1</sup>, Venetia Goodhart<sup>1</sup>, Sara-Louise Pointer<sup>1</sup>, Davor Jurkovic<sup>1</sup>



Acute pelvic pain

# Summary

- Ultrasound is invaluable in the assessment of women with acute gynaecological problems
- Most pathologies can present in the acute setting