



# **ISUOG Basic Training**

**Examining the Uterus: Cervix & Endometrium**

# Learning objectives

At the end of the lecture you will be able to:

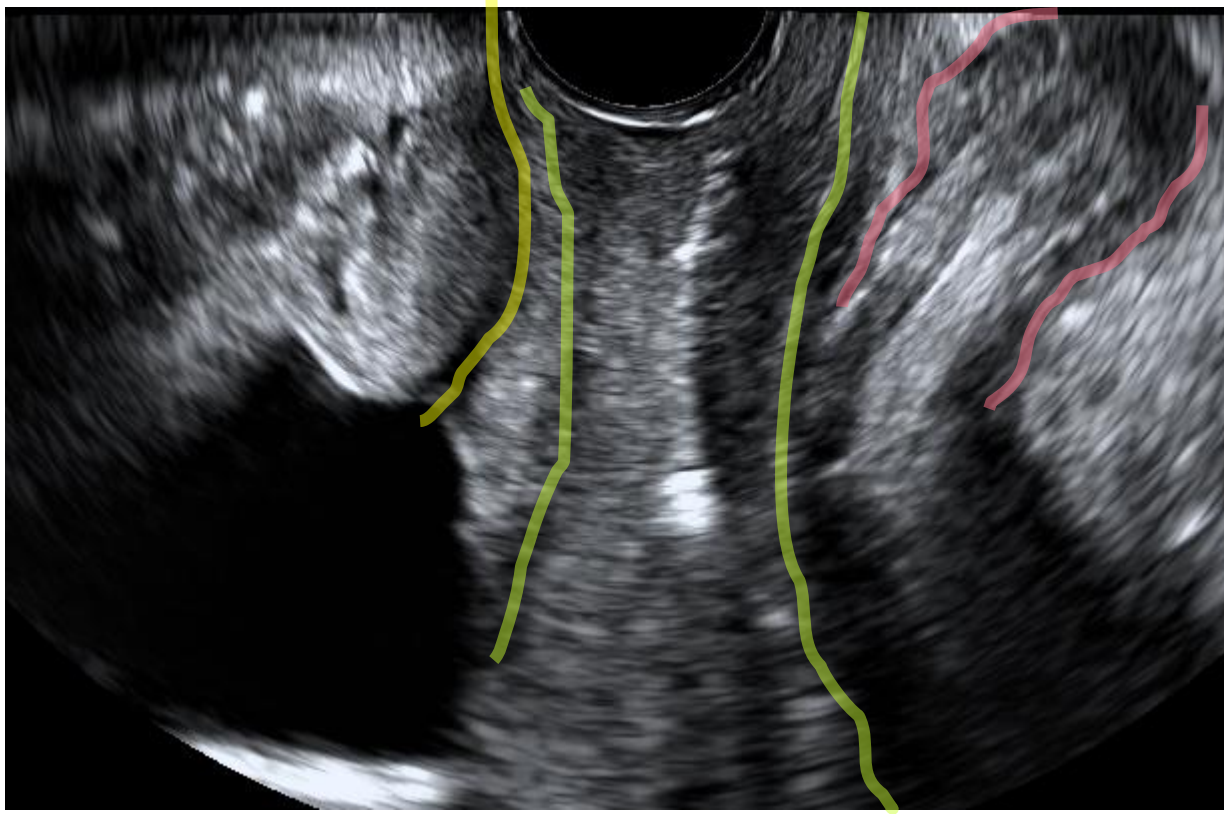
- Recognize the typical ultrasound appearances of a normal cervix and endometrium
- Recognize the typical ultrasound appearances of abnormalities in the cervix and endometrium

# Key questions

- What are the typical ultrasound findings of a normal cervix and endometrium?
- What are the typical ultrasound findings of common abnormalities in the cervix and endometrium?

# Key points

- Understand the typical ultrasound features of a normal cervix and endometrium
- Understand the typical ultrasound features of common abnormalities in the cervix and endometrium
- Know when to refer for a specialist opinion



SAMSUNG

Queen Charlotte's & Chelsea Hospital MI 0.93 25-05-2016  
V5-9 / Adnexa / FR 29Hz TIs 0.2 11:14:39

2D G50 DR123 FA10 P90 Frq Gen./7.0cm

Preset Change

Ez Exam+

Gynecology

Adnexa

General

General1

OB

1st Trimester

Urology

Prostate

User Preset

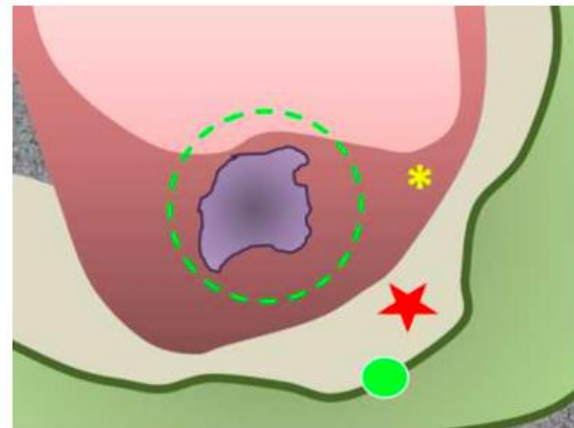
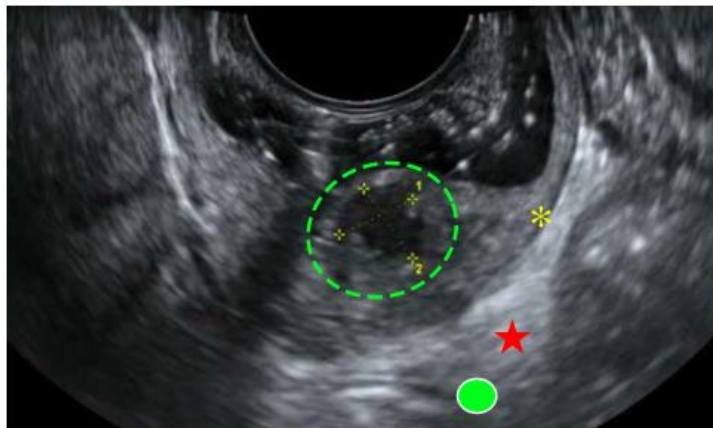
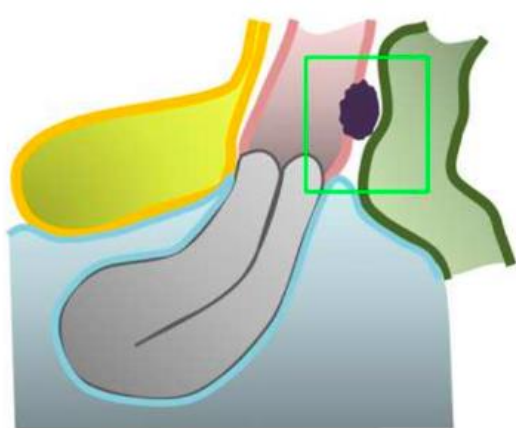
1stTrim Anom

WS80A



P1 Cine/Send  
P2 Rec/Send  
P3 Application Change  
P4 Exit  
P5 None  
P6 Volume Save

# Rectovaginal nodule of endometriosis



- You don't need to know how to recognize this
- It is just a reminder to not forget to look at the vagina when you start your TV US
- The more you see 'normal' the easier it will be to recognize abnormalities

Guerriero et al. Ultrasound Obstet Gynecol 2016; 48: 318–332

# Cervix

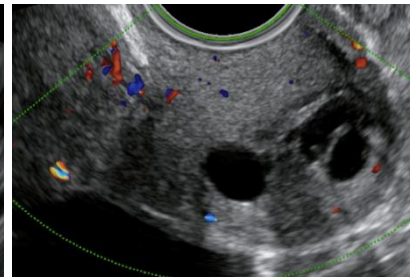
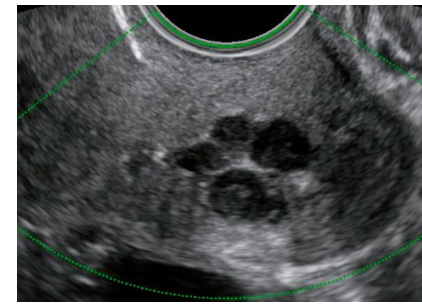


# Cervical findings

- Nabothian follicle
- Cervical polyp
- Cancer

# Nabothian follicle

- Mucus-filled cyst on surface of cervix
- Caused by squamous epithelium of the ectocervix growing over the columnar epithelium of the endocervix
- This tissue growth can block the cervical crypts
- On US:
  - Anechoic
  - Avascular



2D G50/DR123/FA10/P90/Frq Gen./6.0cm



Preset Change

Ez Exam+

Gynecology

Adnexa

General

General1

OB

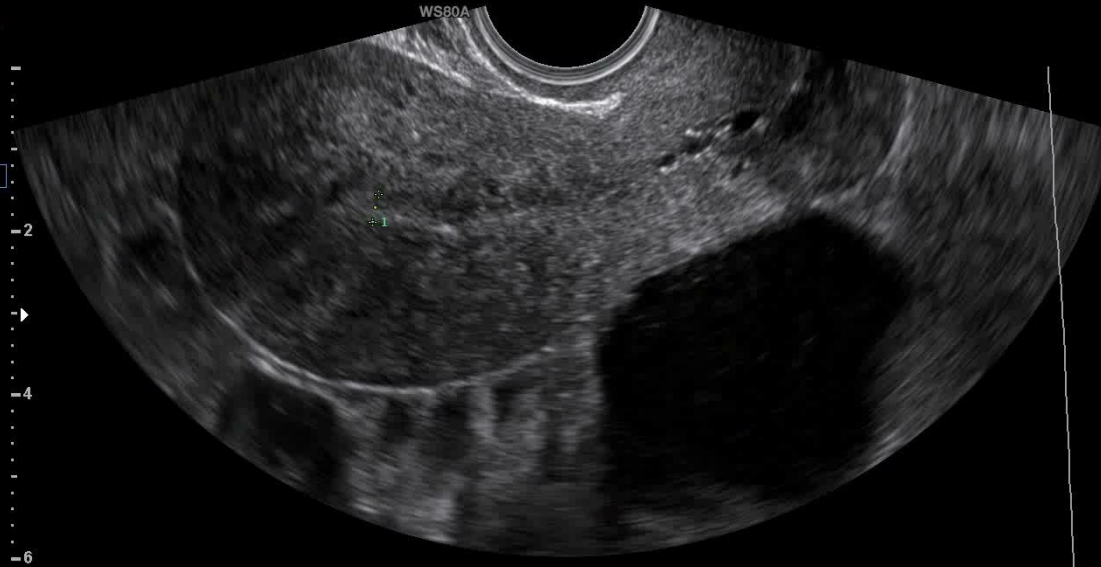
1st Trimester

Urology

Prostate

User Preset

1stTrim Anom



ET

D1 3.49 mm

A

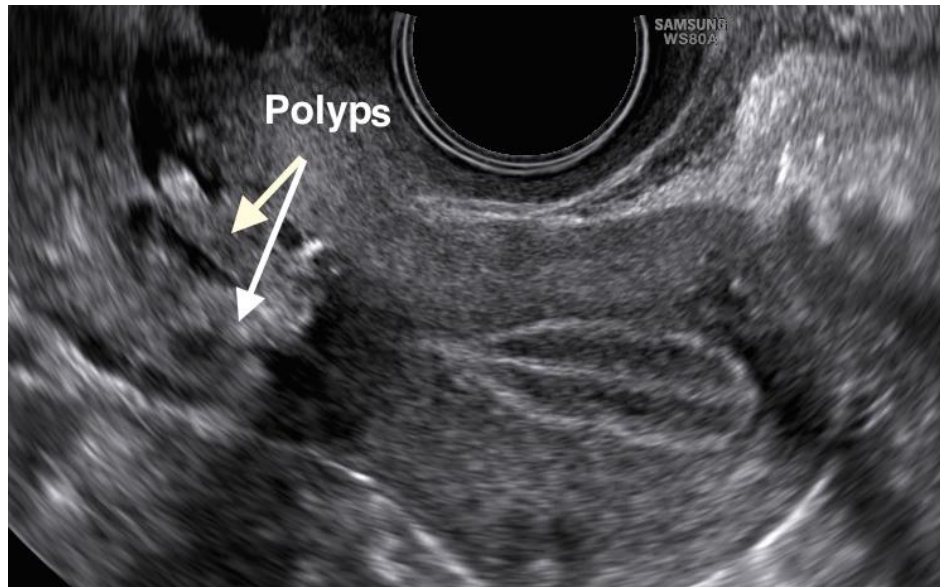


U1 Cine/Send  
U2 Rec/Send  
U3 Application Change  
U4 Exit  
U5 None  
U6 Volume Save

#223/223

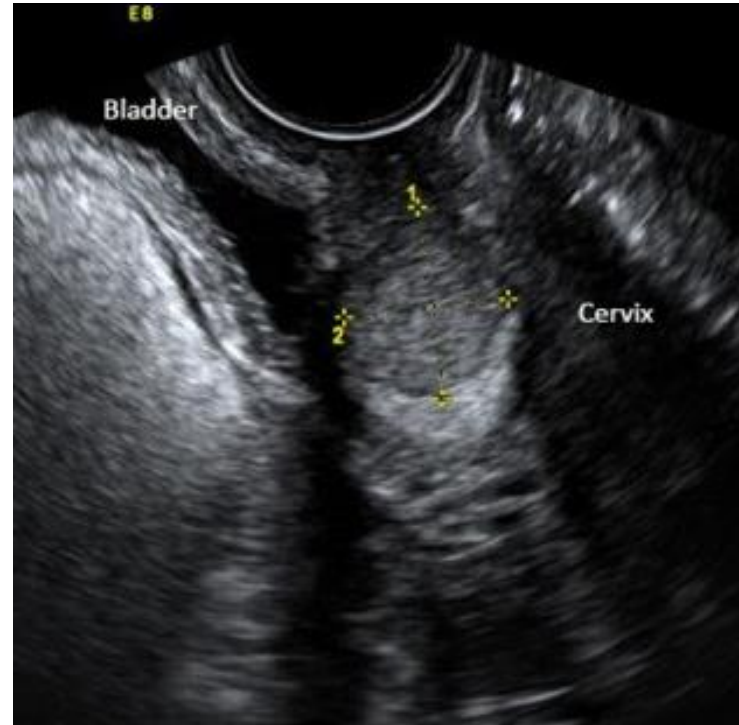
# Cervical polyps

- Sessile or pedunculated well-circumscribed masses within endocervical canal
- Hypo or hyper-echogenic
- Identifying the stalk attaching to the cervical wall helps differentiate it from an endometrial polyp
- May have feeding vessel

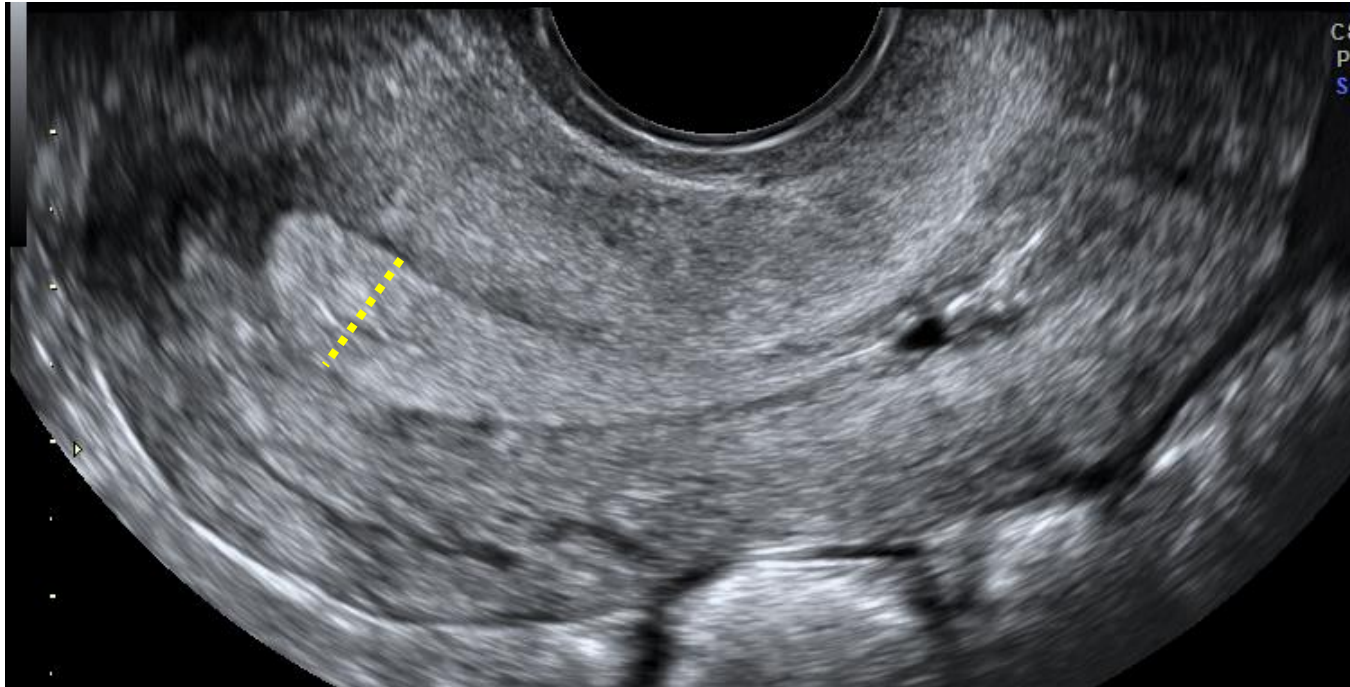


# Cervical cancer

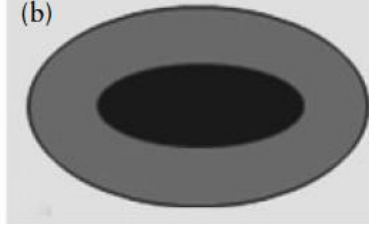
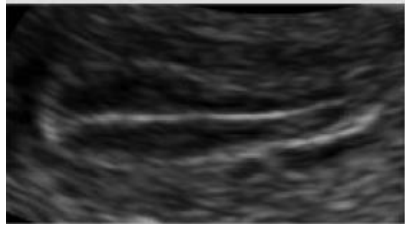
- Heterogeneous mass involving the cervix
- May show increased vascularity on color Doppler
- Ultrasound can be useful to evaluate:
  - size ( $<4$  cm or  $\geq 4$  cm)
  - parametrial invasion
  - tumor invasion into the vagina
  - tumor invasion into adjacent organs
  - hydronephrosis (implies stage IIIB tumour)



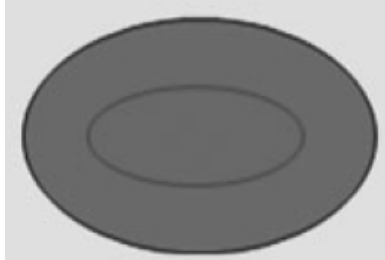
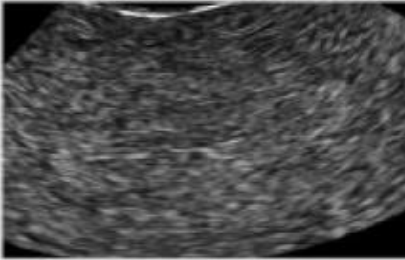
# Endometrium



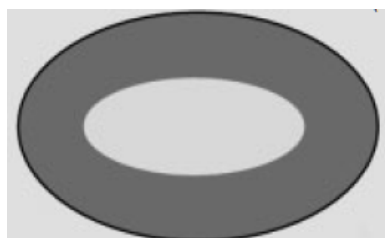
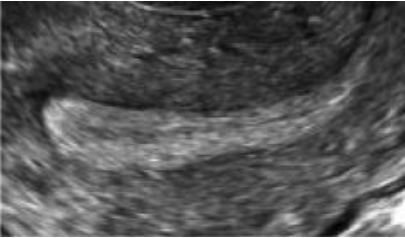
# Describing the endometrium



**Hypoechogenic**



**Isoechogenic**



**Hyperechogenic**

Leone et al. Ultrasound Obstet Gynecol 2010; 35: 103–112

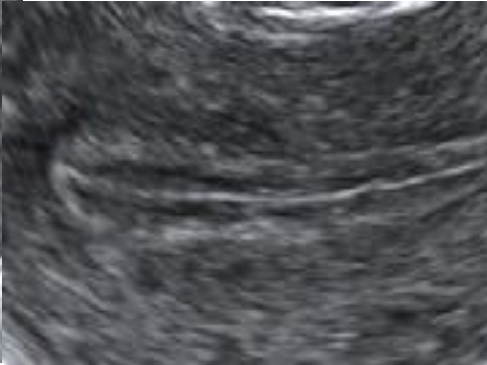
# Normal ultrasound findings

- Differ between women before and after menopause
- Change throughout the menstrual cycle

# The endometrium changes throughout the menstrual cycle



Shortly after  
menstruation



Proliferative phase



Proliferative phase



Secretory phase

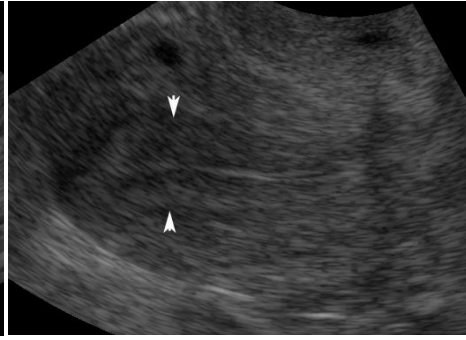
# Changes during menstrual cycle



Shortly after  
menstruation



Proliferative phase  
3 days before ovulation



Proliferative phase  
1 day before ovulation



Secretory phase  
6 days after ovulation

# The endometrium in postmenopausal women



- Median ET = 3mm
- 10th & 90th percentile: 2 – 5mm
- ET >5mm is NOT necessarily pathological

# The IETA consensus statement

## How to describe

- Endometrial echogenicity
- Endometrial midline
- Endometrial-myometrial junction

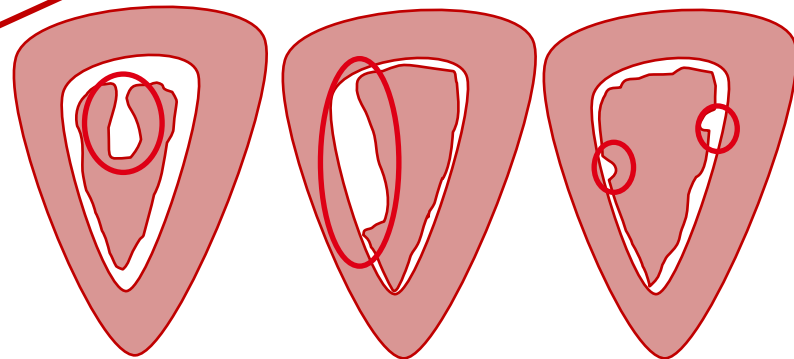
## If fluid in the cavity

- Fluid echogenicity
- Endometrial outline
- Intracavitary lesion

## On colour/power Doppler

- Colour content
- Morphology of endometrial vessels

Anything that protrudes into a fluid-filled uterine cavity

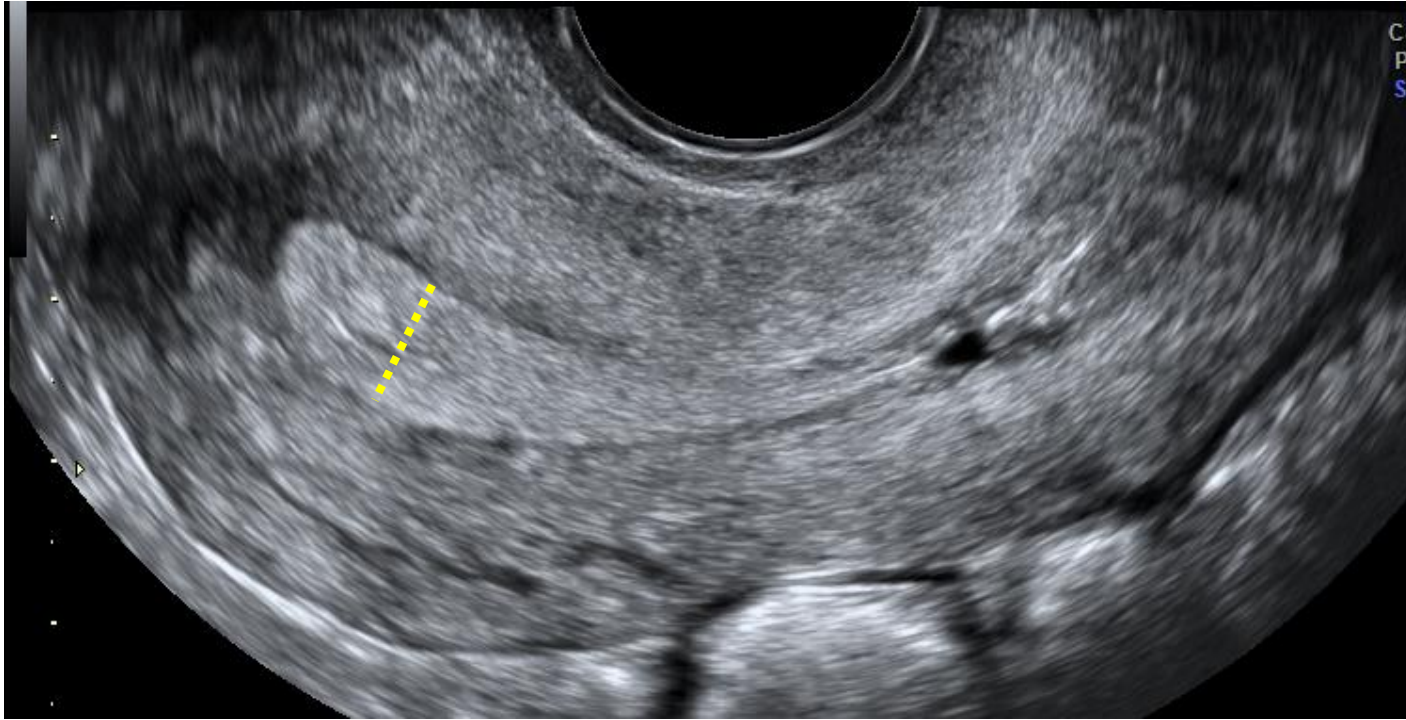


Pedunculated

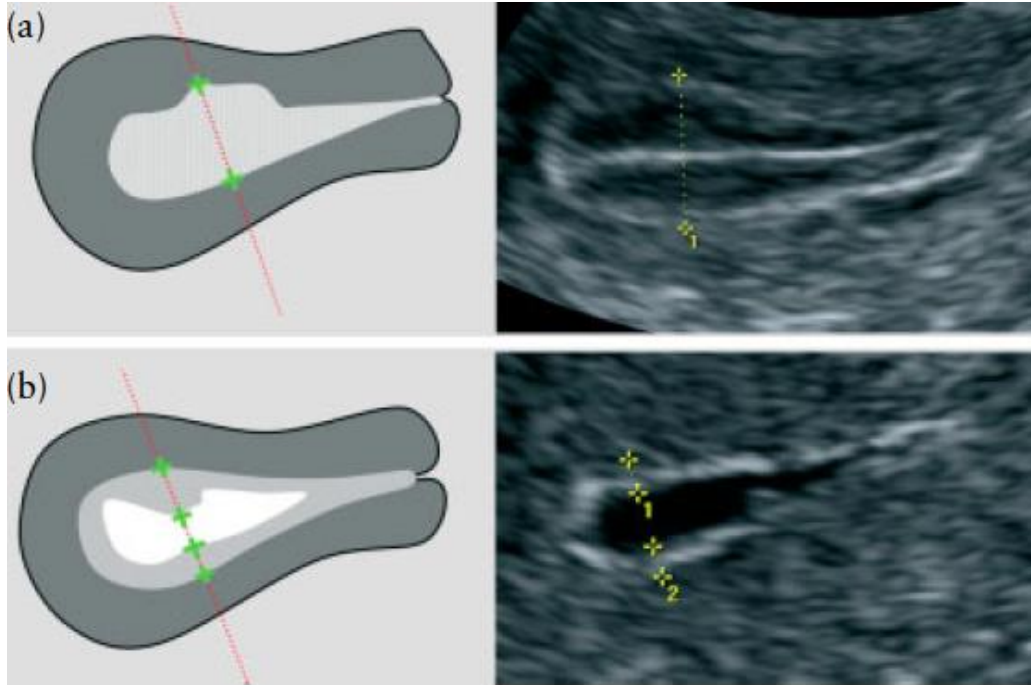
Sessile

Leone et al. Ultrasound Obstet Gynecol 2010; 35: 103–112

# How to measure endometrial thickness (ET)



# How to measure endometrial thickness (ET)



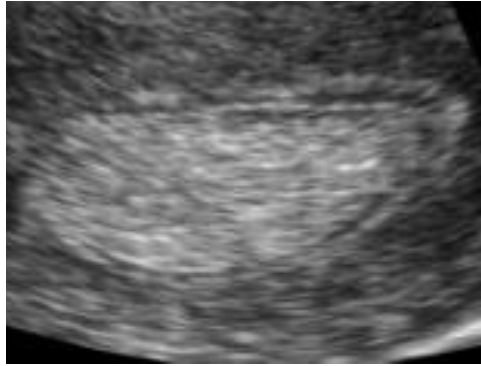
1. When intracavitary fluid is present, measure thickness of both single layers and *add* together to give ET
2. When intracavitary pathology is present measure total ET *including* the lesion (unless it's a well defined myoma that can be measured separately)

Leone et al. Ultrasound Obstet Gynecol 2010; 35: 103–112

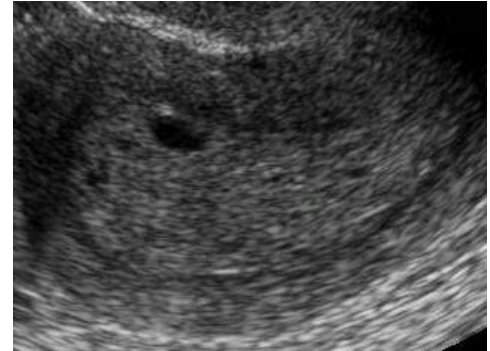
# Most common endometrial pathology

- Polyp
- Submucous myoma
- Endometrial thickening
- Cancer

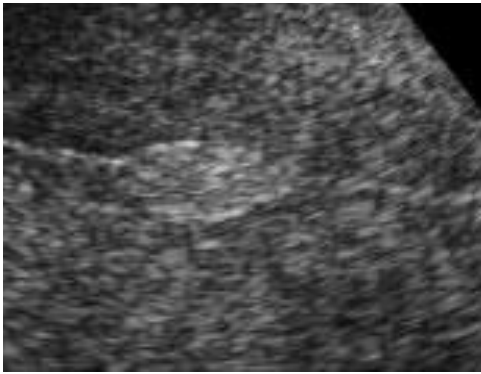
# Typical ultrasound features of endometrial polyp



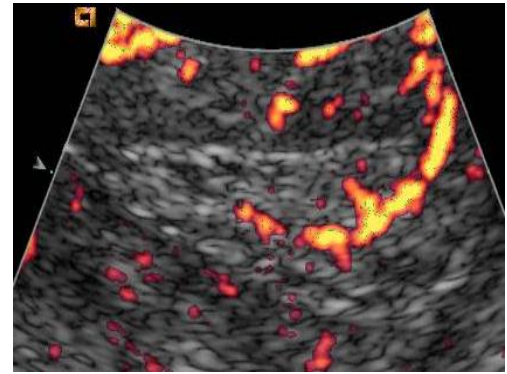
Bright edge



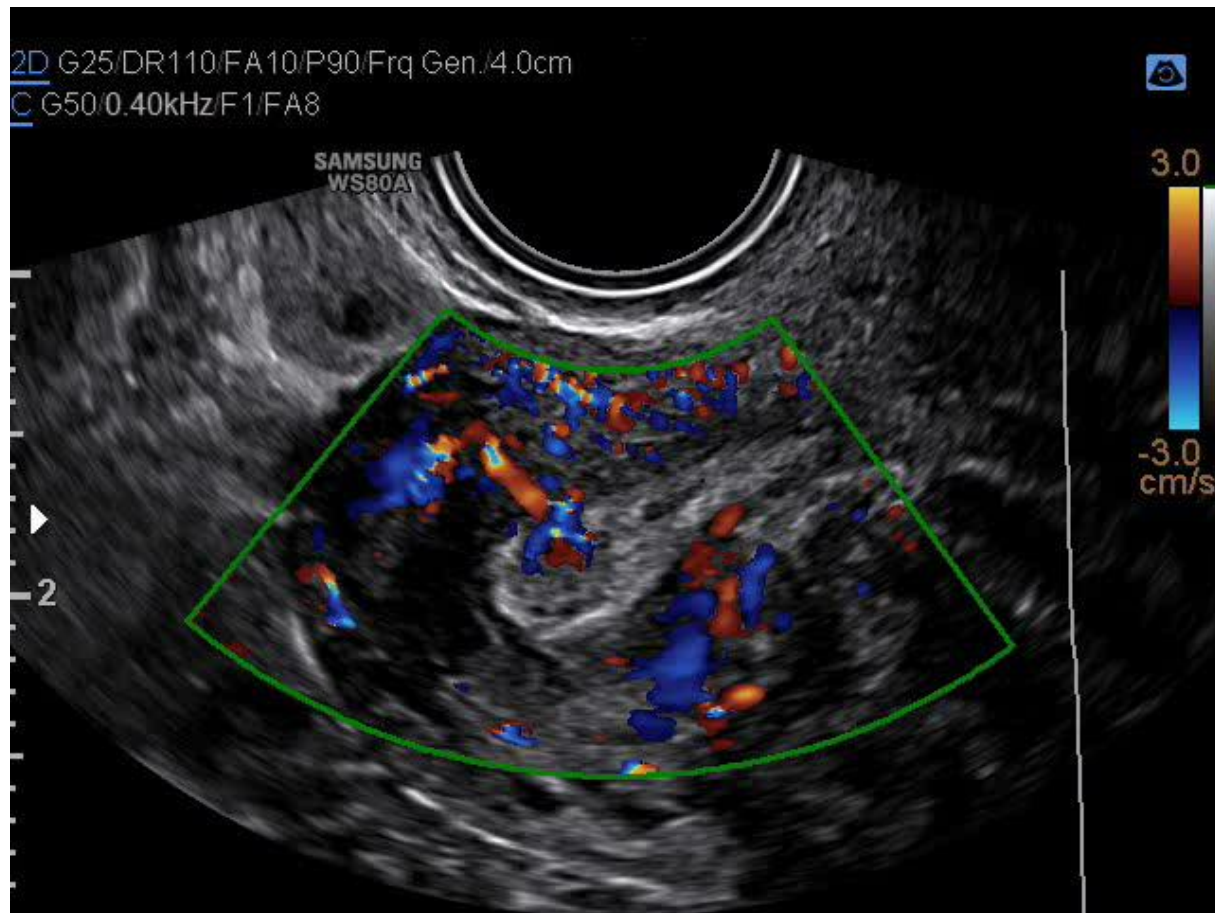
Regular cysts



Hyperechogenic



Feeding vessel



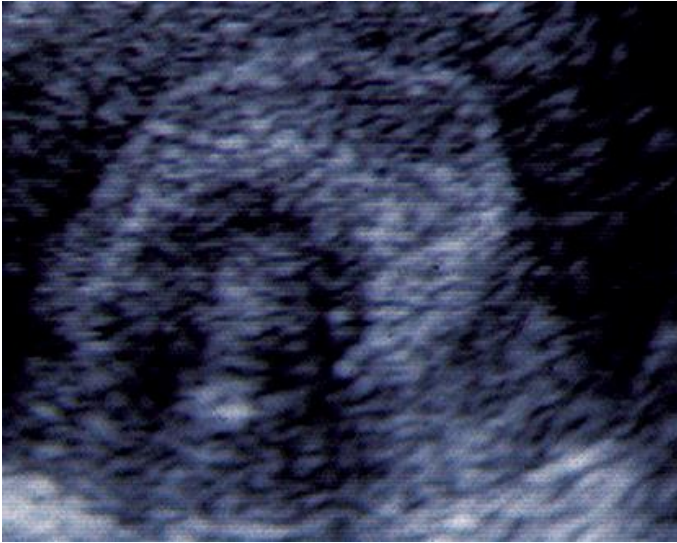
2D G25/DR110/FA10/P90/Frq Gen./4.0cm



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WS80A



# Typical ultrasound features of submucuous myoma



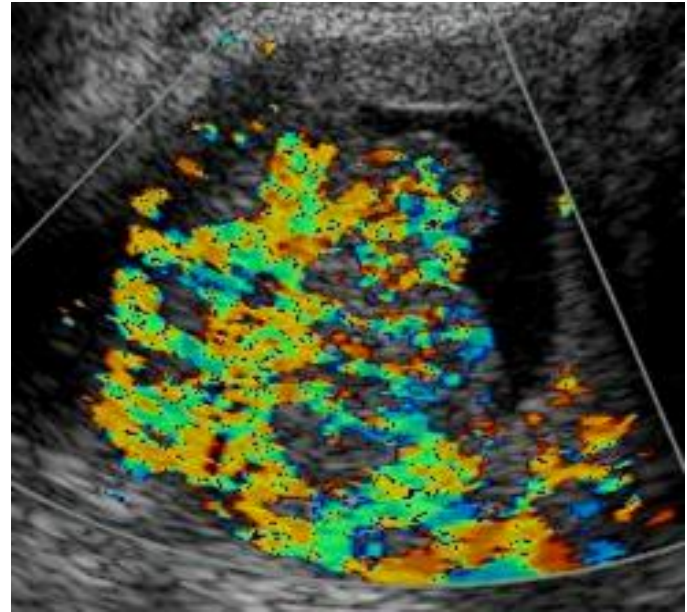
- Solid tumor protruding into uterine cavity
- Same echogenicity as myometrium

- Color Doppler: ring of color

# Typical ultrasound features of endometrial cancer

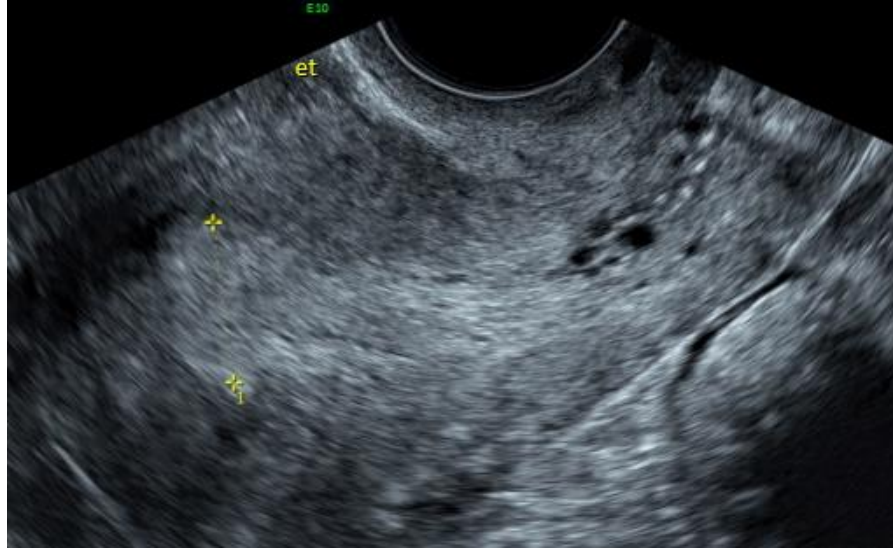


- Thick endometrium
- Inhomogeneous echogenicity



- Richly vascularized on color Doppler

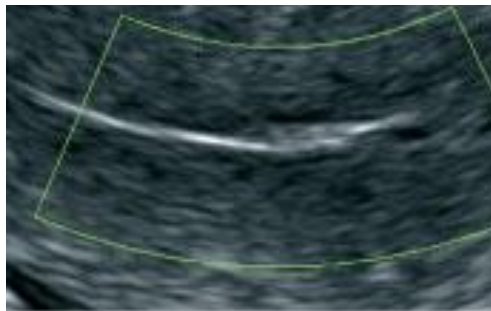
# Diffuse vs focal endometrial thickening



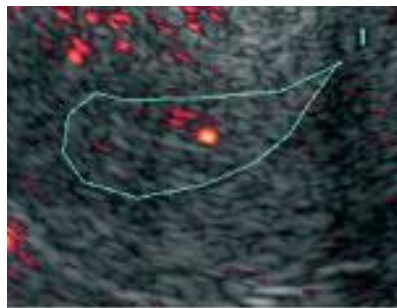
# IETA consensus statement

## Doppler ultrasound examination of the endometrium

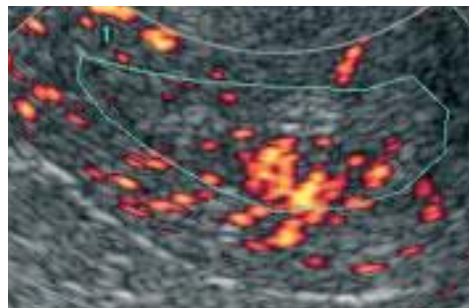
Quantification of the color content of the endometrial scan



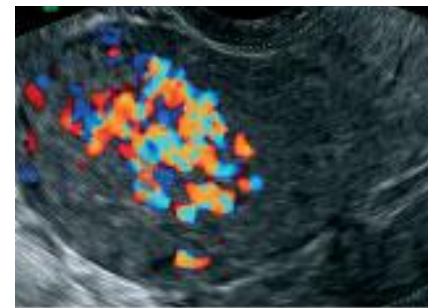
color score **1**  
= no color



color score **2**  
= minimal color



color score **3**  
= moderate color



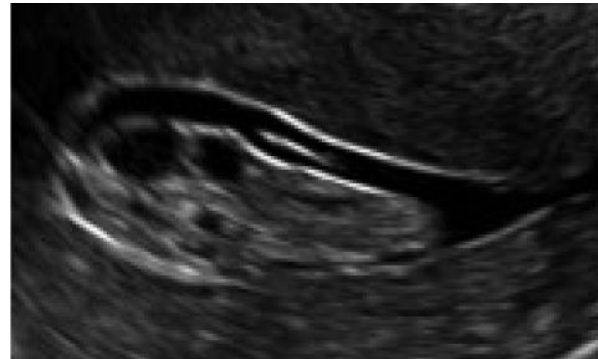
color score **4**  
= abundant color

**Adjust settings: maximize detection of flow without artefacts**

**(pulse repetition frequency (PRF): 0.3-0.6 KHz, 3-6 cm/s velocity scale)**

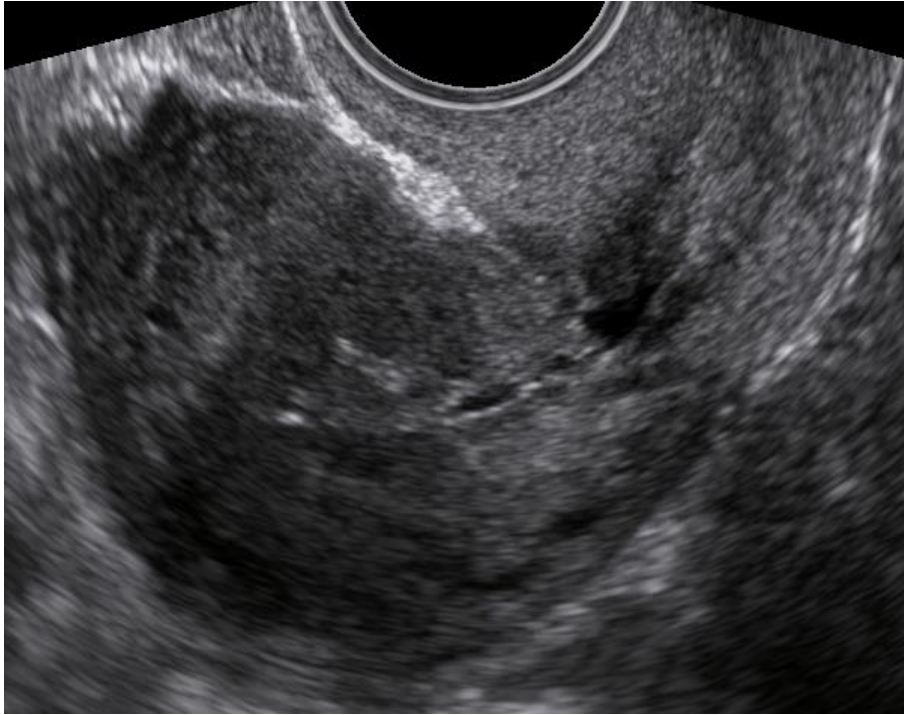
Leone et al. Ultrasound Obstet Gynecol 2010; 35: 103–112

# Benefits of fluid instillation



Leone et al. Ultrasound Obstet Gynecol 2010; 35: 103–112

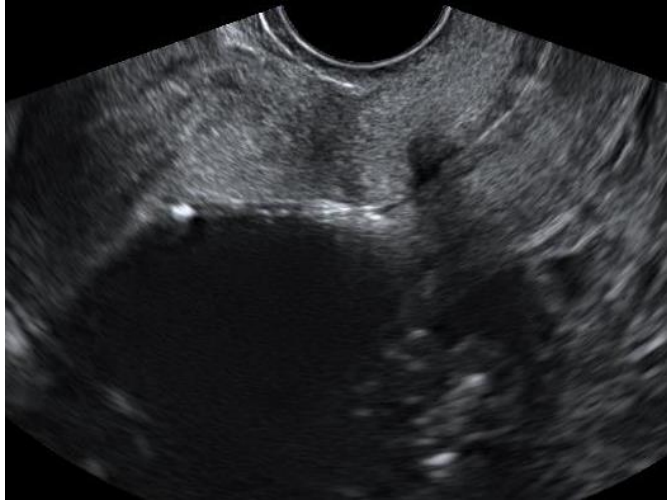
# Intrauterine adhesions



# Correct position of copper IUCD



# Correct position of hormonal IUD



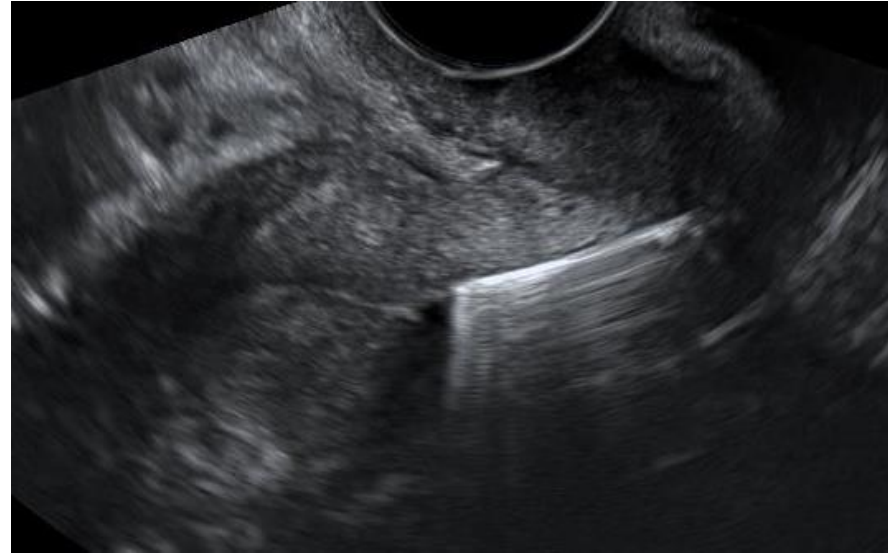
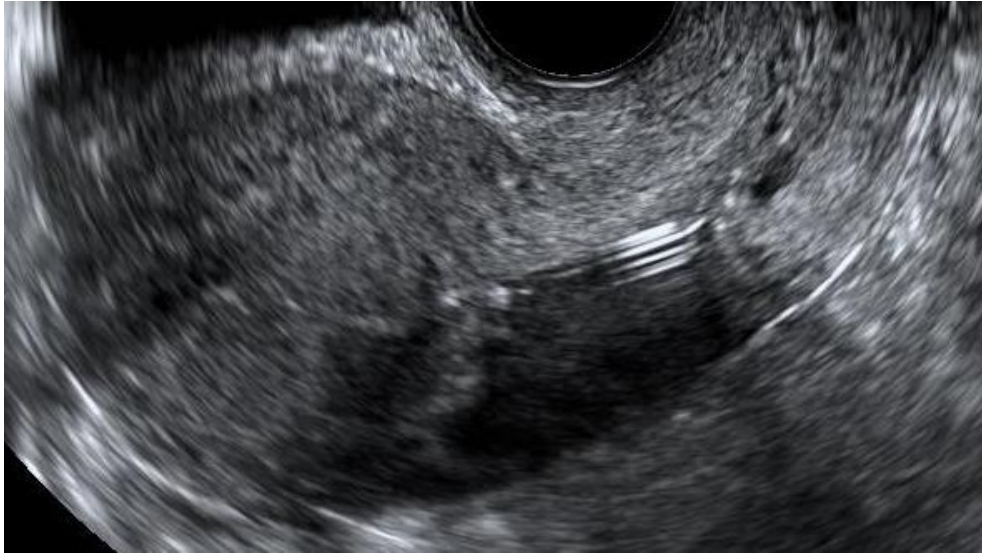
# IUD and 3D ultrasound

Correct placement



# Incorrect position of IUCD

Too low



# Which patients should I refer for specialist opinion?

- Those in whom you are uncertain about the diagnosis (especially if you suspect malignancy)

# Key points

We should use a standardized terminology when we describe ultrasound images of:

- Adnexal lesions (IOTA)
- The endometrium/uterine cavity (IETA)
- The myometrium (MUSA)
- Deep infiltrating endometriosis (IDEA)

# Key points

**When in doubt:  
refer for second opinion**

# Acknowledgements

These slides were created by:

- Shabnam Bobdiwala
- Maya Al-Memar
- Lil Valentin



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**Examining the Uterus: Cervix & Endometrium**