



ISUOG Basic Training

Examining the Uterus: Cervix & Endometrium

Learning objectives

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

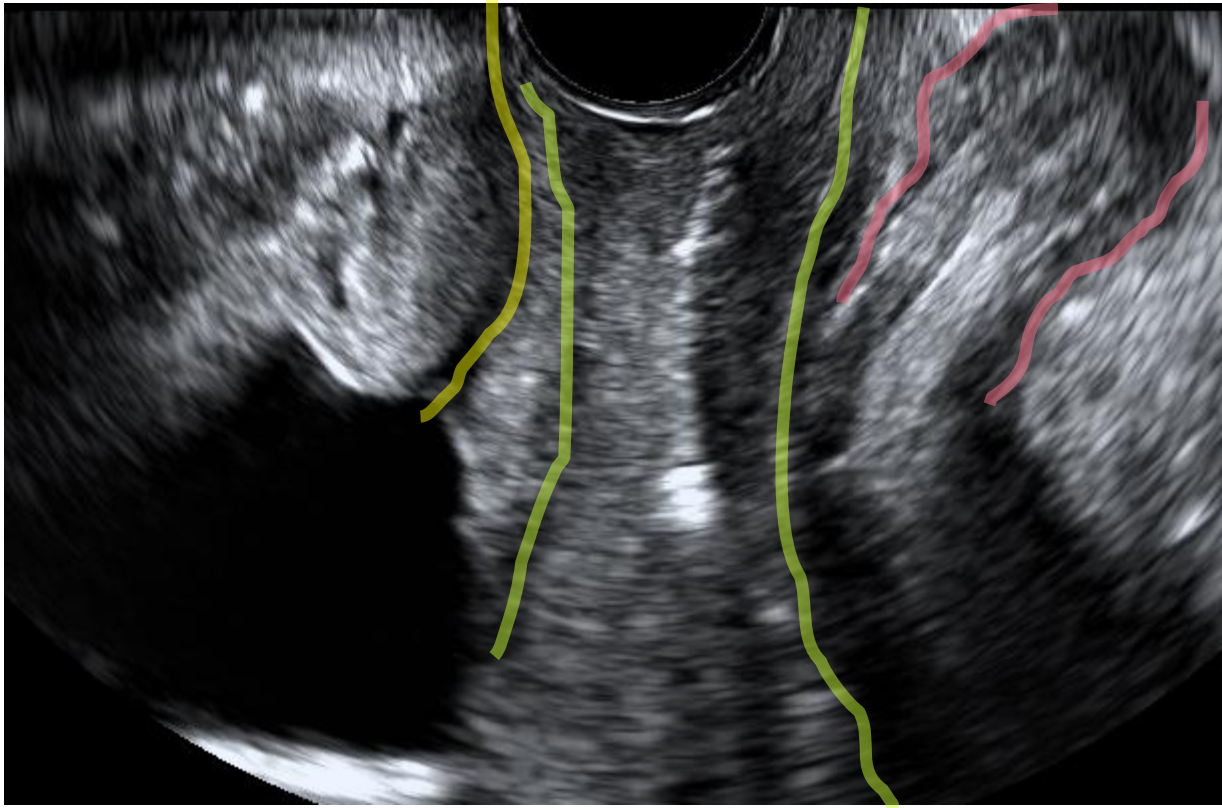
- Recognize the typical ultrasound appearances of a normal cervix and endometrium
- Recognize the typical ultrasound appearances of abnormalities in the cervix and endometrium

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



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

Preset Change

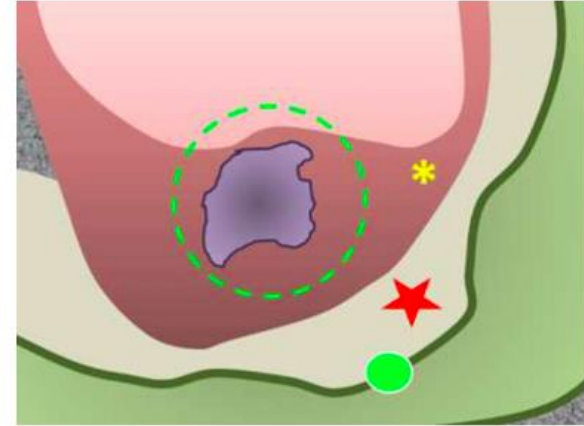
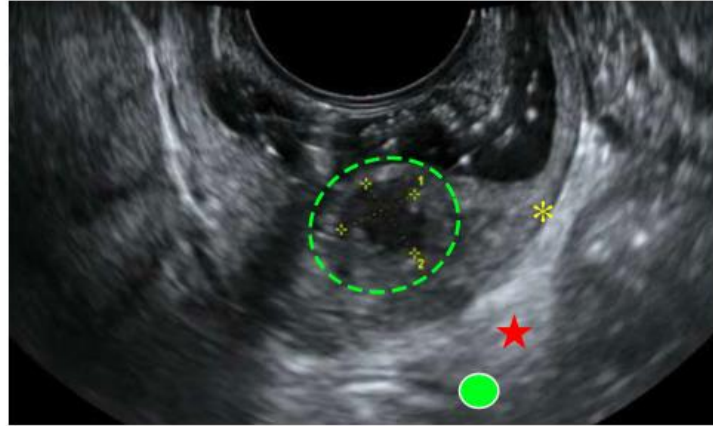
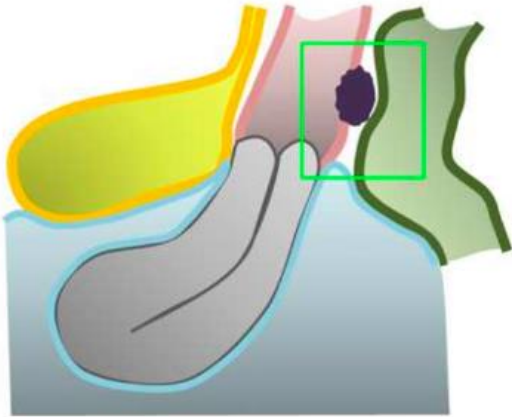
- Ez Exam+
- Gynecology
 - Adnexa
 - General
 - General1
- OB
 - 1st Trimester
- Urology
 - Prostate
- User Preset
 - 1stTrim Anom



Set Exit

- F1 Cine/Send
- F2 Rec/Send
- F11 Application Change
- F12 Exit
- F13 None
- F14 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

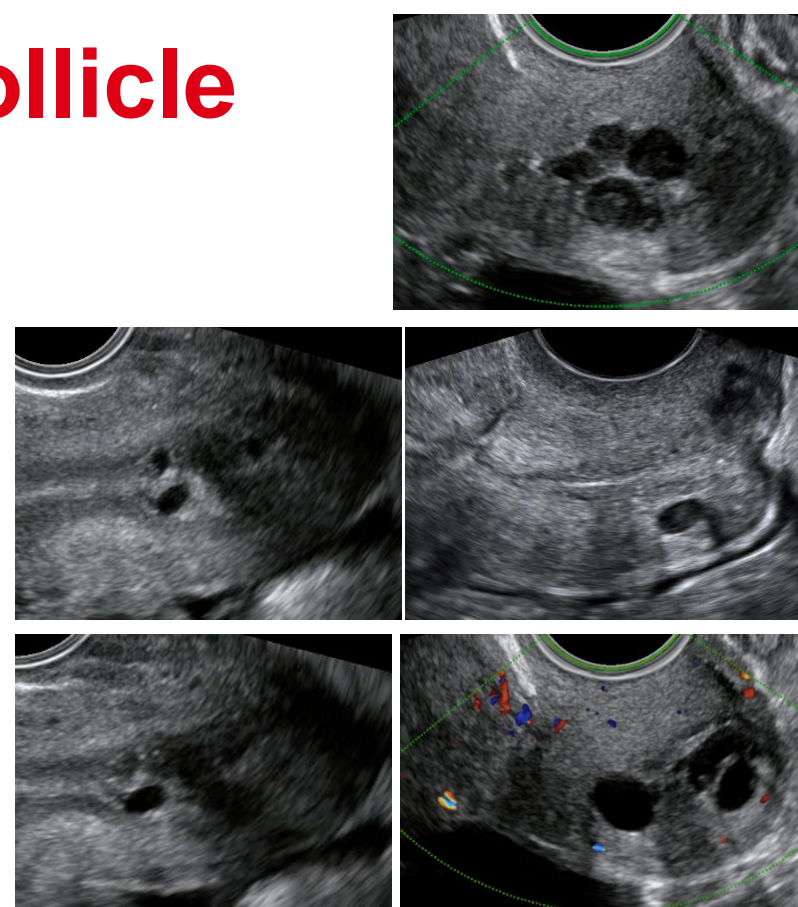


Cervical findings

- 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

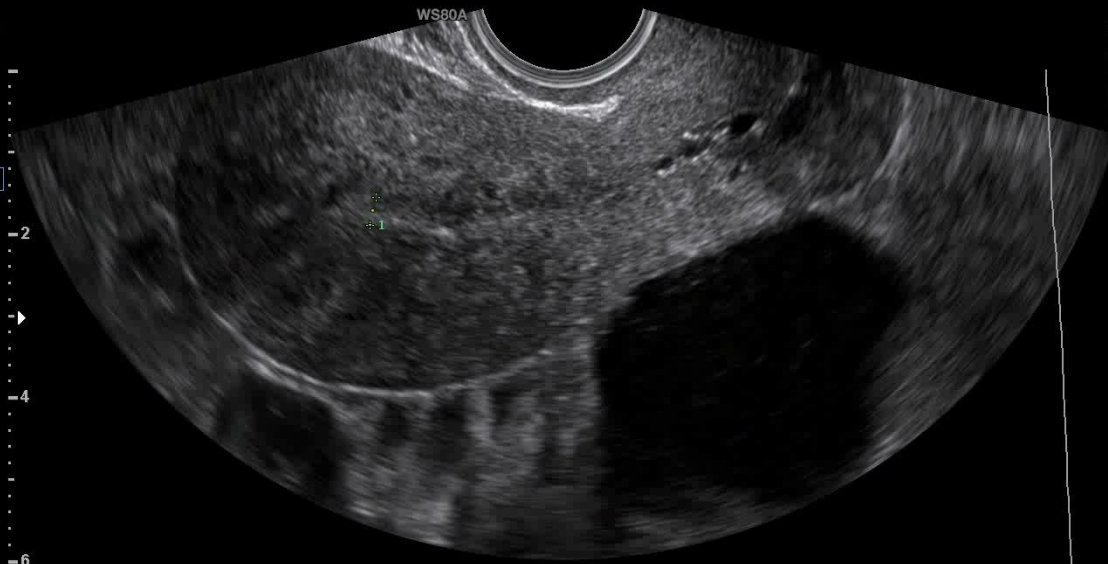


2D G50 DR123/FA10/P90/Frq Gen./6.0cm

Preset Change

Ez Exam+

- Gynecology
- Adnexa
- General
- General1
- OB
- 1st Trimester**
- Urology
- Prostate
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ET

D1 3.49 mm

A

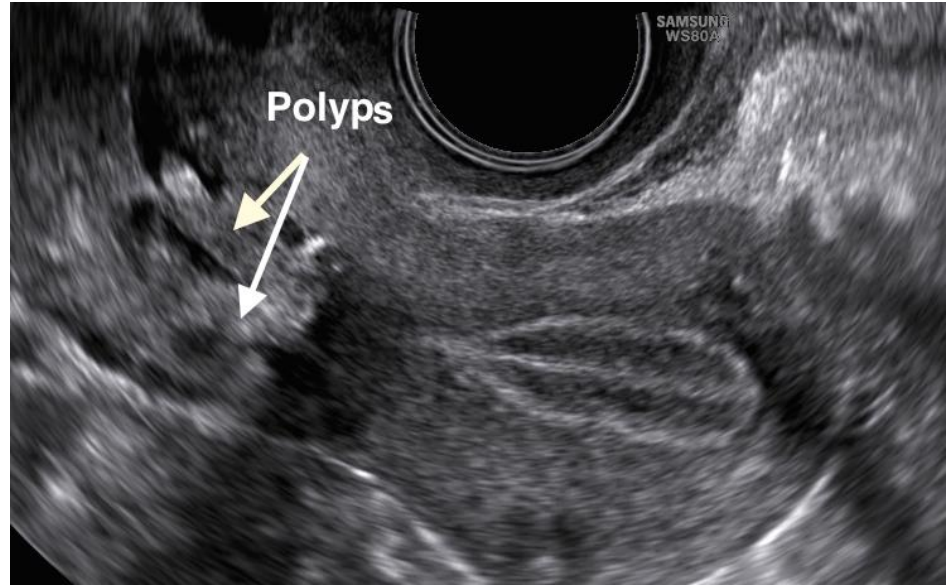
Set Exit

- F1 Cine/Send
- F2 Rec/Send
- F3 Application Change
- F4 Exit
- F5 None
- F6 Volume Save

#223/223

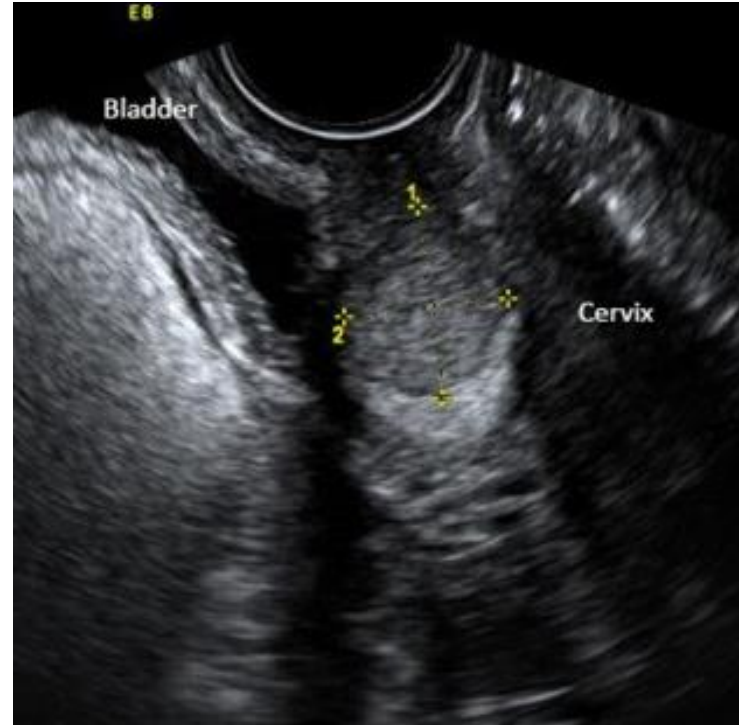
Cervical polyps

- 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

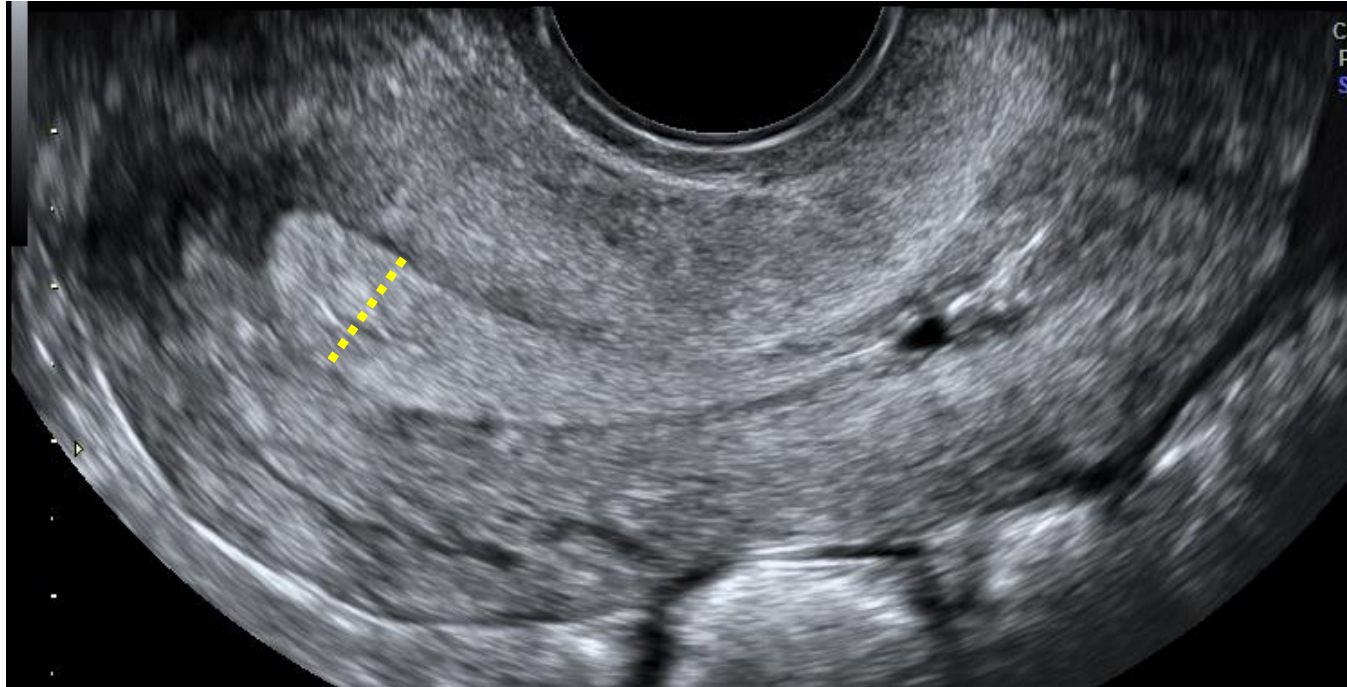


Cervical cancer

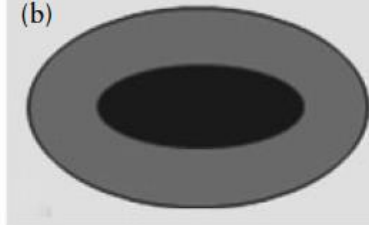
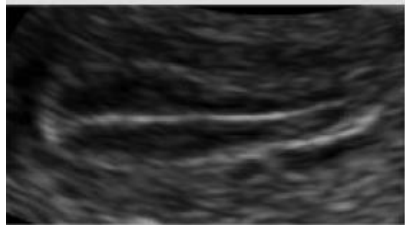
- Heterogeneous mass involving the cervix
- May show increased vascularity on color Doppler
- Ultrasound can be useful to evaluate:
 - size (<4 cm or ≥ 4 cm)
 - parametrial invasion
 - tumor invasion into the vagina
 - tumor invasion into adjacent organs
 - hydronephrosis (implies stage IIIB tumour)



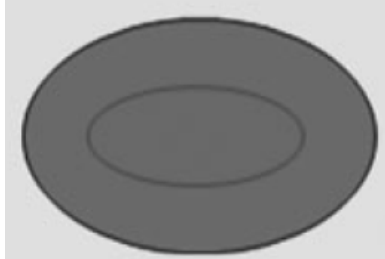
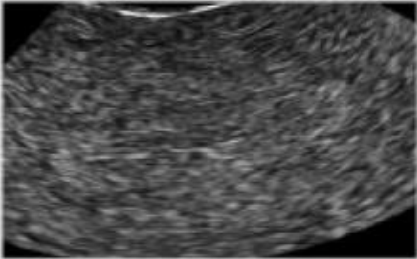
Endometrium



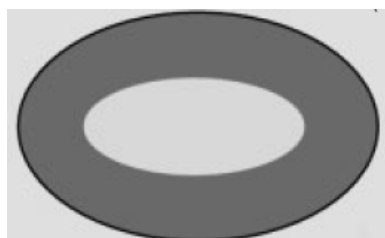
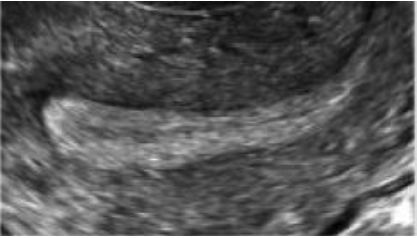
Describing the endometrium



Hypoechogenic



Isoechogenic



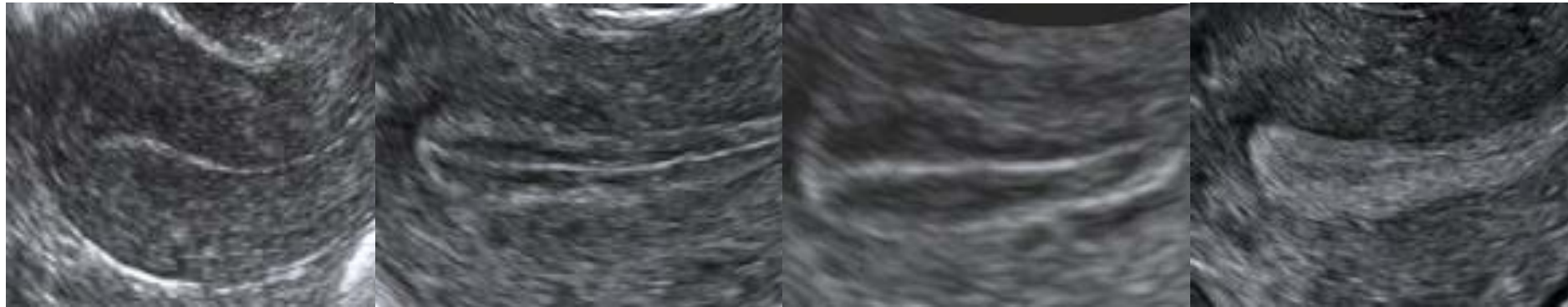
Hyperechogenic

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

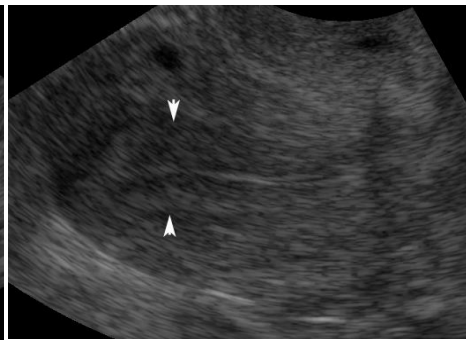
Changes during menstrual cycle



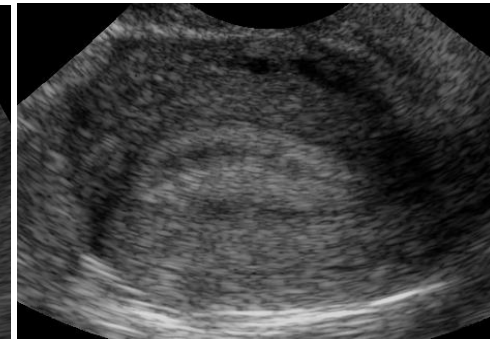
Shortly after menstruation



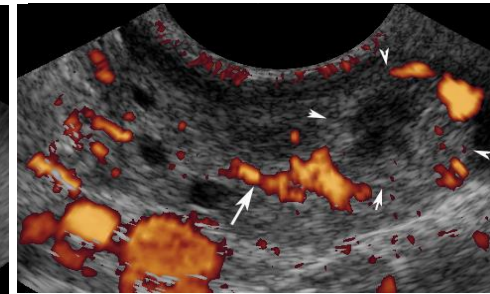
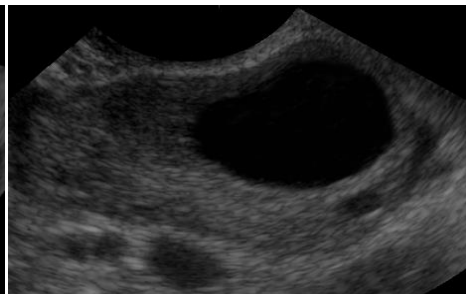
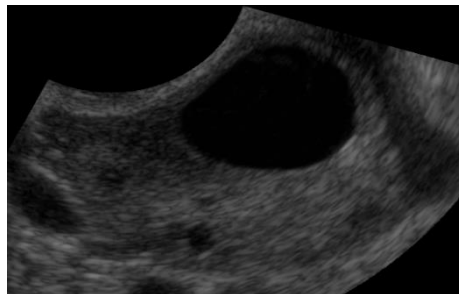
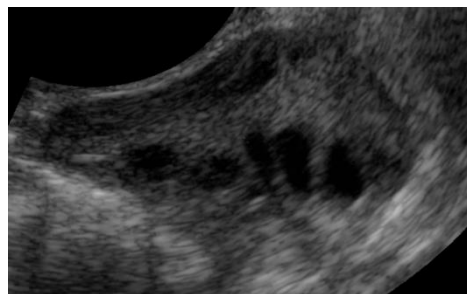
Proliferative phase
3 days before ovulation



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

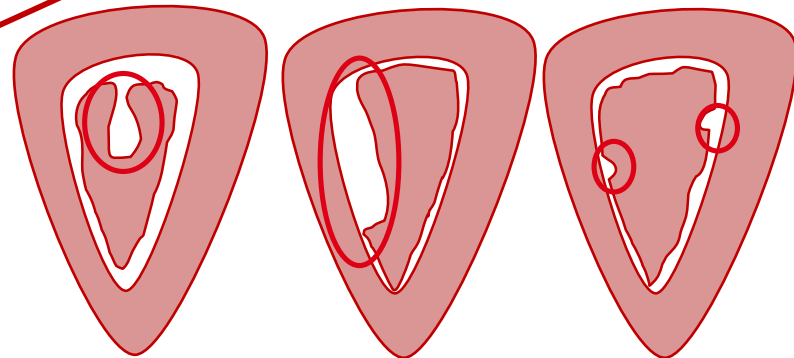
If fluid in the cavity

- 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

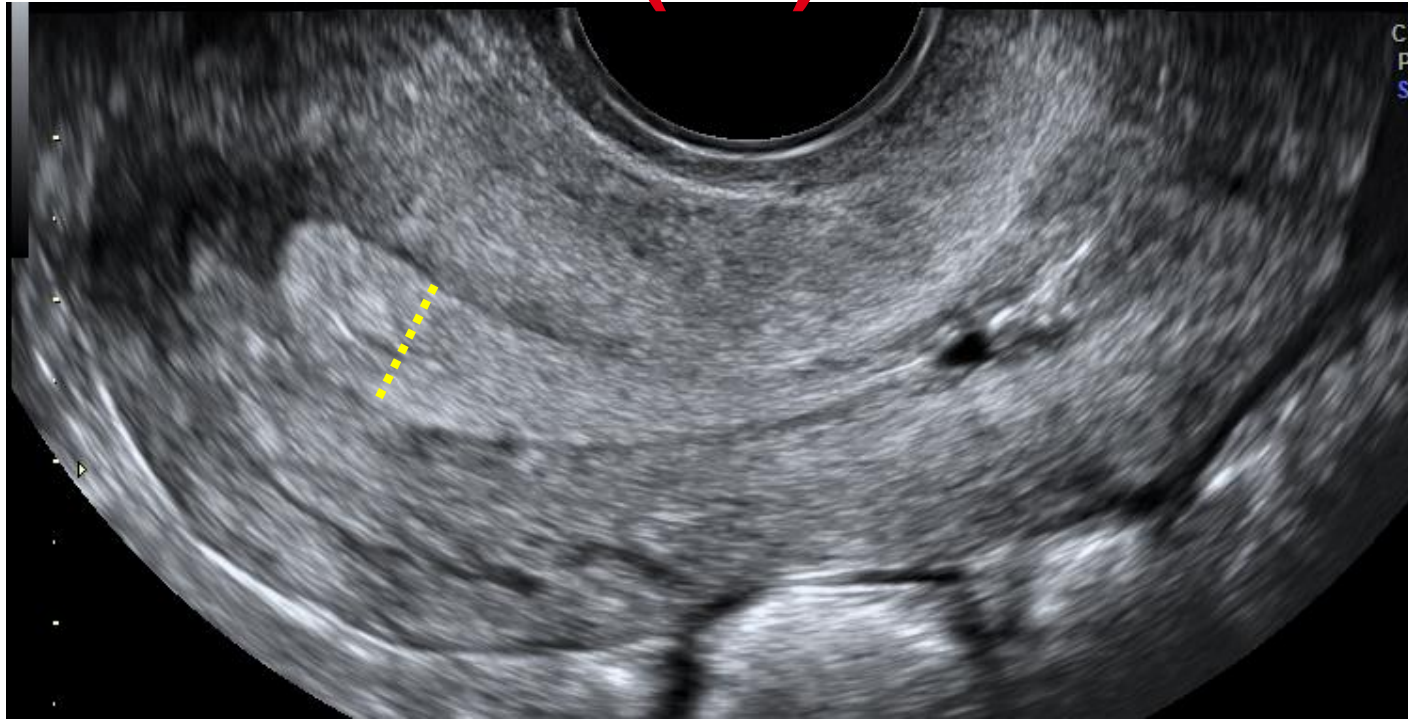


Pedunculated

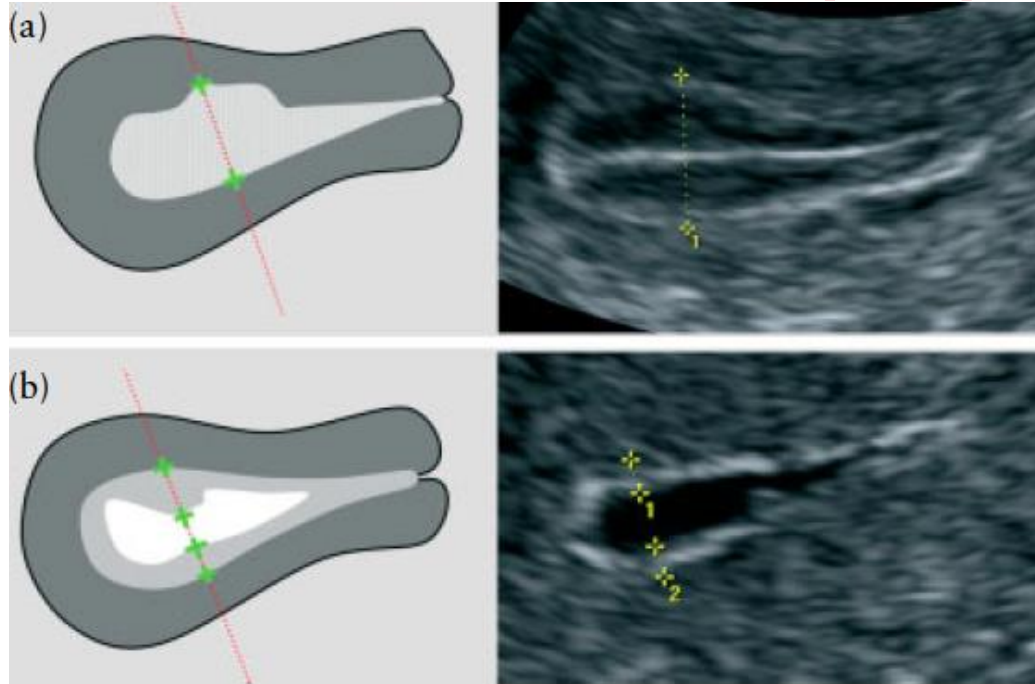
Sessile

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

- EDITED VIDEO OF MEASURING ET

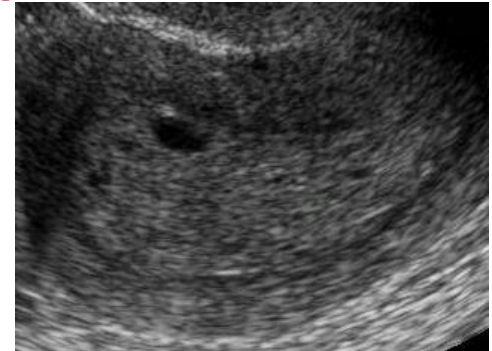
Most common endometrial pathology

- Polyp
- Submucous myoma
- Endometrial thickening
- Cancer

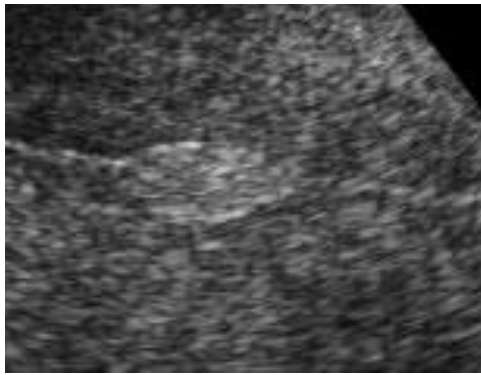
Typical ultrasound features of endometrial polyp



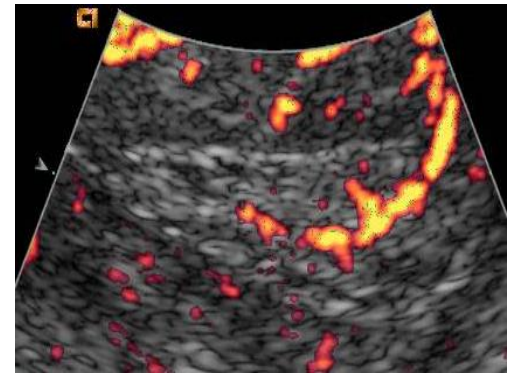
Bright edge



Regular cysts



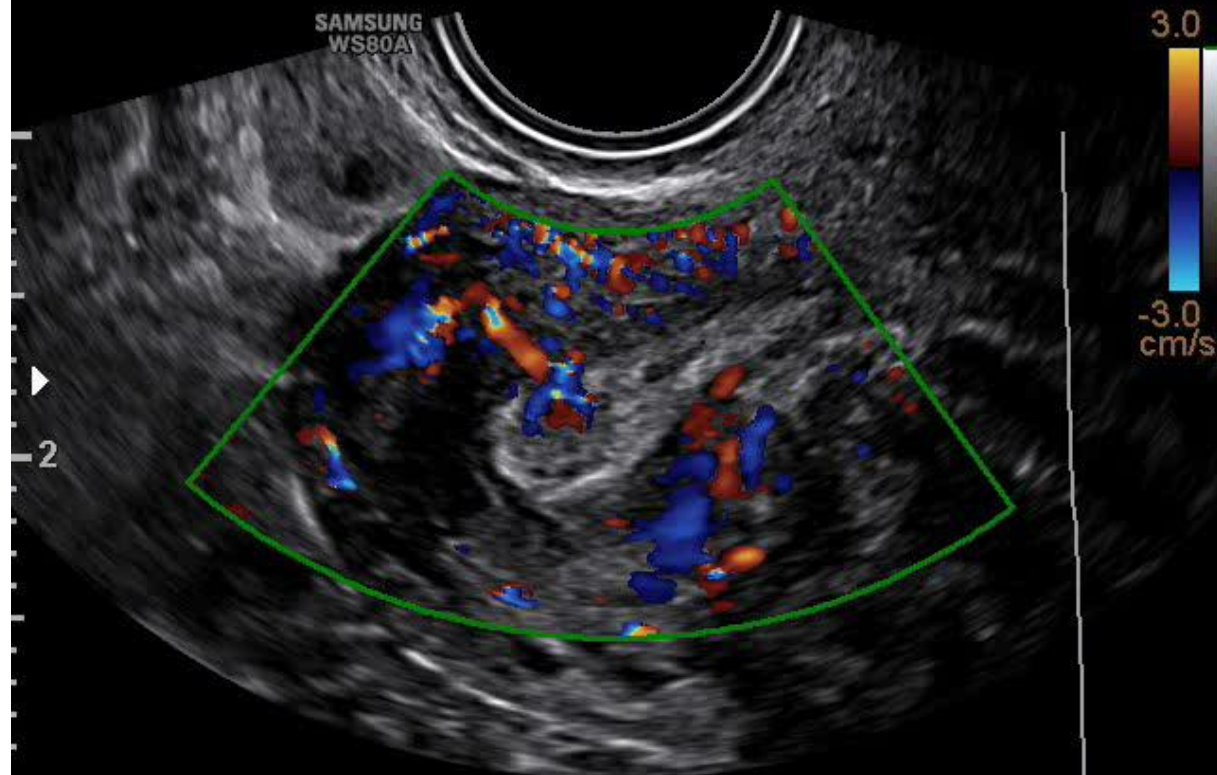
Hyperechogenic



Feeding vessel

2D G25/DR110/FA10/P90/Frq Gen./4.0cm
C G50/0.40kHz/F1/FA8

SAMSUNG
WS80A



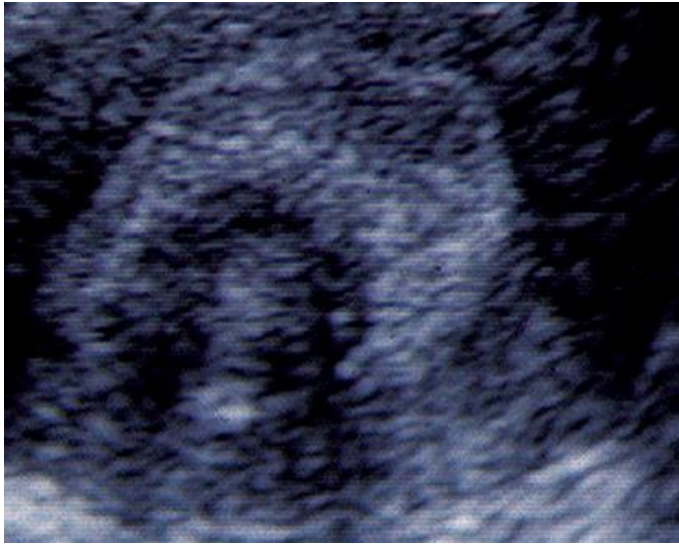
2D G25/DR110/FA10/P90/Frq Gen./4.0cm



SAMSUNG
WS80A



Typical ultrasound features of submucuous myoma

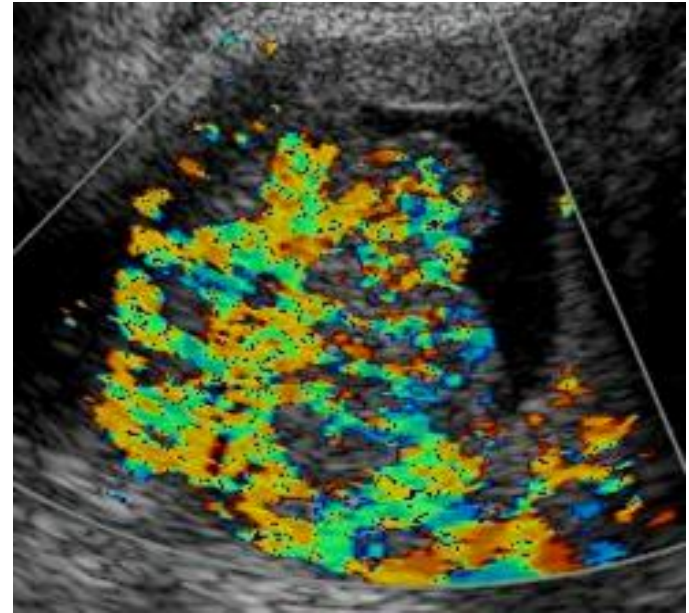


- Solid tumor protruding into uterine cavity
- Same echogenicity as myometrium
- Color Doppler: ring of color

Typical ultrasound features of endometrial cancer



- Thick endometrium
- Inhomogenous echogenicity



- Richly vascularized on color Doppler

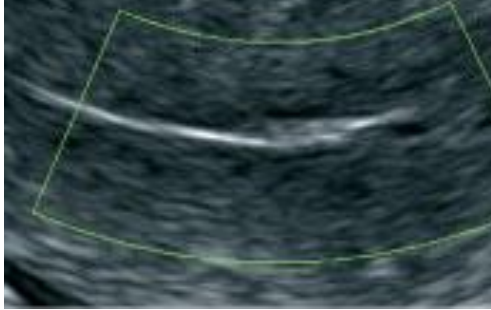
Diffuse vs focal endometrial thickening



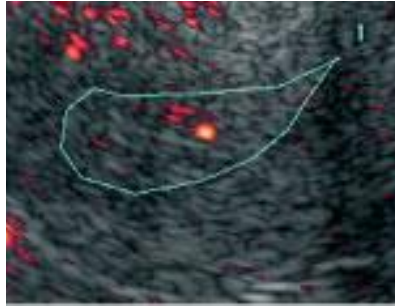
IETA consensus statement

Doppler ultrasound examination of the endometrium

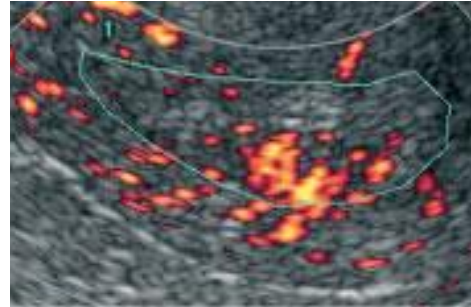
Quantification of the color content of the endometrial scan



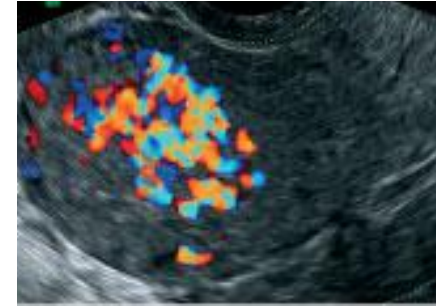
color score **1**
= no color



color score **2**
= minimal color



color score **3**
= moderate color



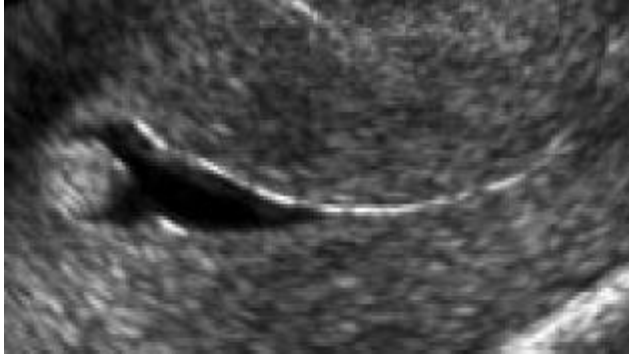
color score **4**
= abundant color

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

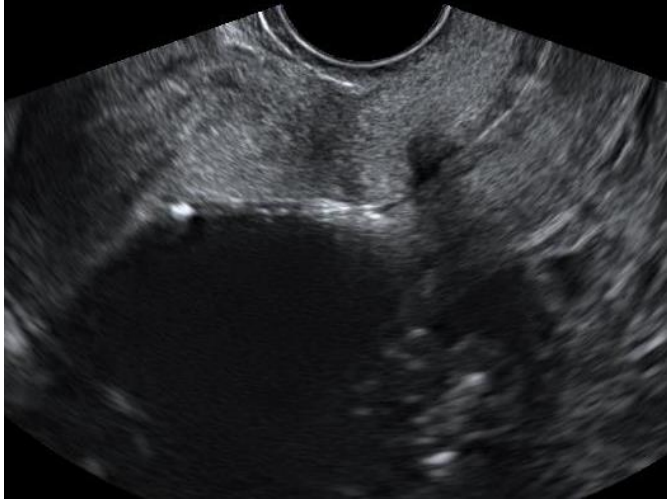
Intrauterine adhesions



Correct position of copper IUCD



Correct position of hormonal IUD



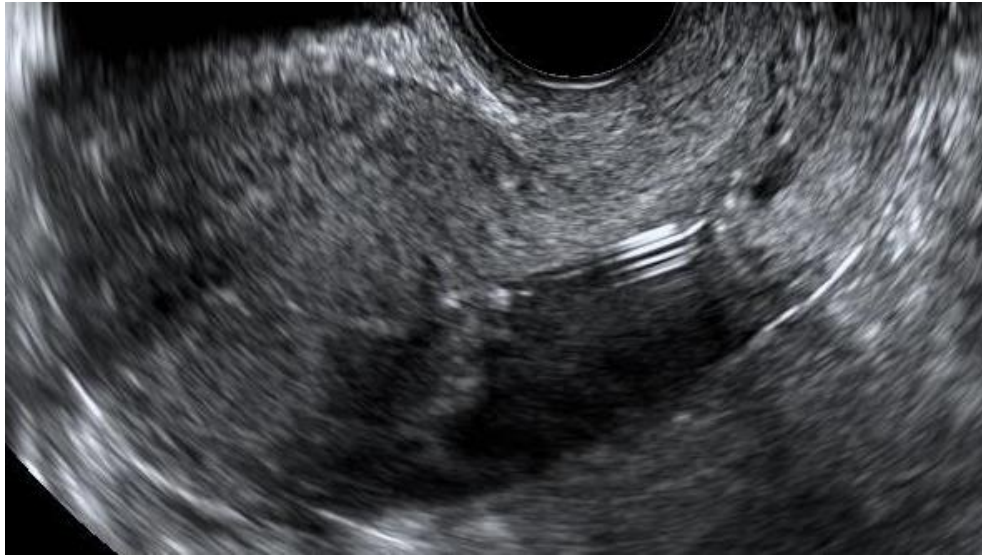
IUD and 3D ultrasound

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**



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