



ISUOG Basic Training

Examining the Uterus: Myometrium

Learning objectives

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

- Recognise the typical ultrasound appearances of the normal myometrium
- Recognise the typical ultrasound appearances of abnormalities in the myometrium

Key questions

1. What are the typical ultrasound findings of a normal myometrium?
2. What are the typical ultrasound findings of common abnormalities in the myometrium?
3. Know when to refer for a specialist opinion

Normal myometrium before menopause



Myometrial pathology: MUSA

Ultrasound Obstet Gynecol 2015; 46: 284–298

Published online 10 August 2015 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/uog.14806

Terms, definitions and measurements to describe sonographic features of myometrium and uterine masses: a consensus opinion from the Morphological Uterus Sonographic Assessment (MUSA) group

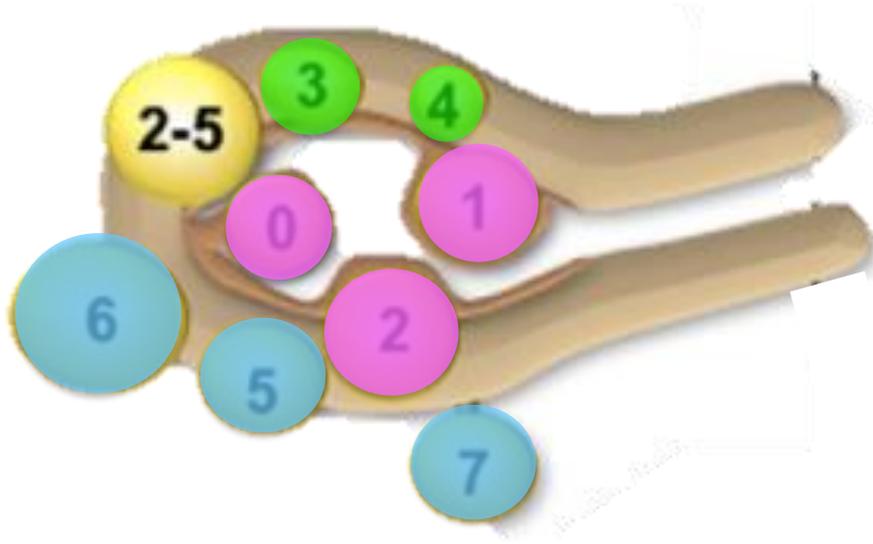
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Myometrial pathology: MUSA

- Common
 - Leiomyoma (fibroids)
 - Adenomyosis
- Rare
 - Calcifications
 - Enhanced myometrial vascularity

Most common myometrial pathology - myoma

“Benign tumour of the smooth muscle”



SM - Submucosal	0	Pedunculated intracavitary
	1	<50% intramural
	2	≥50% intramural
O - Other	3	Contacts endometrium; 100% intramural
	4	Intramural
	5	Subserosal ≥50% intramural
	6	Subserosal <50% intramural
	7	Subserosal pedunculated
	8	Other (specify e.g. cervical, parasitic)
Hybrid leiomyomas (Impact both endometrium and serosa)	Two numbers are listed separated by a hyphen. By convention, the first refers to the relationship with the endometrium while the second refers to the relationship to the serosa. One example is below	
	2-5	Submucosal and subserosal, each with less than half the diameter in the endometrial and peritoneal cavities, respectively.

Munro et al, Int J Gynaecol Obstet. 2011,113(1):3-13

Most common myometrial pathology - myoma

- Echogenicity
- Shadowing
- Vascularity

Myoma

Echogenicity



Uniform
Hypoechogenic



Non-uniform
Mixed echogenicity



Uniform
Isoechogenic



Non-uniform
Echogenic areas



Uniform
Hyperechogenic



Non-uniform
Cystic areas

Van Den Bosch et al. UOG, 2015, 46: 284–298

Myoma

Echogenicity

Low threshold for specialist referral if atypical features



Uniform Hypoechoogenic



Non-uniform Mixed echogenicity



Uniform Isoechogenic



Non-uniform Echogenic areas



Uniform Hyperechogenic



Non-uniform Cystic areas

Van Den Bosch et al. UOG, 2015, 46: 284–298

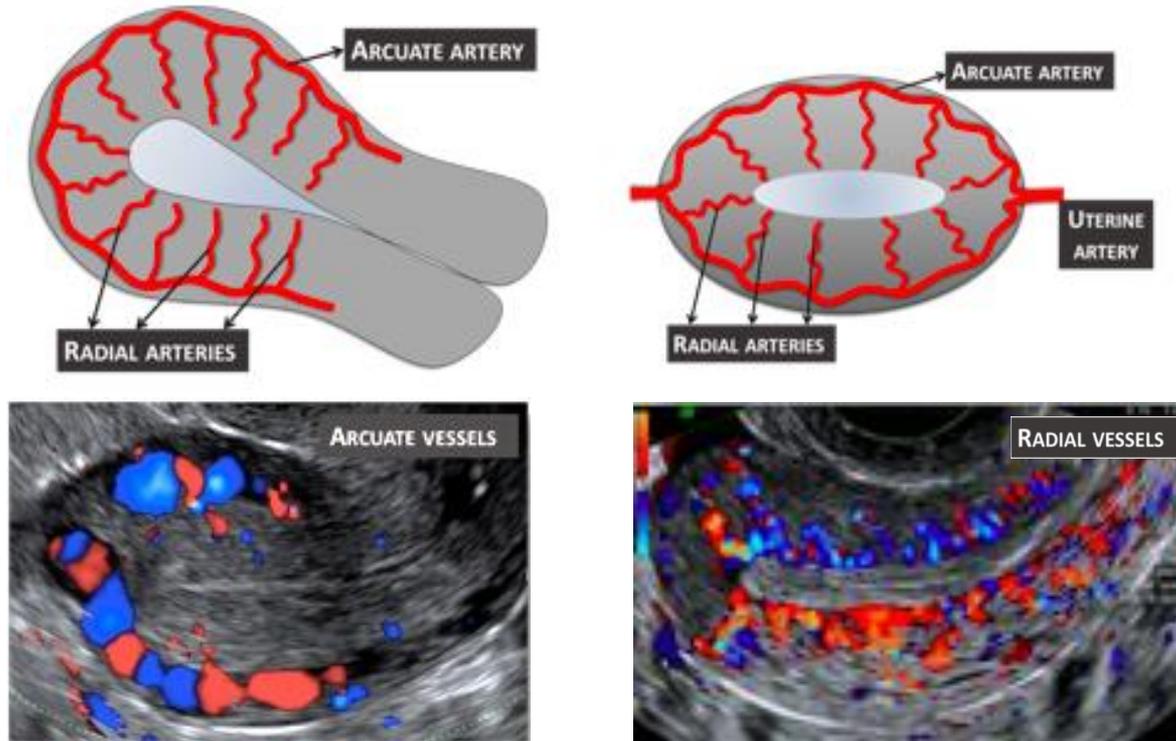
Most common myometrial pathology - myoma

- Shadowing



Van Den Bosch et al, UOG, 2015, 46

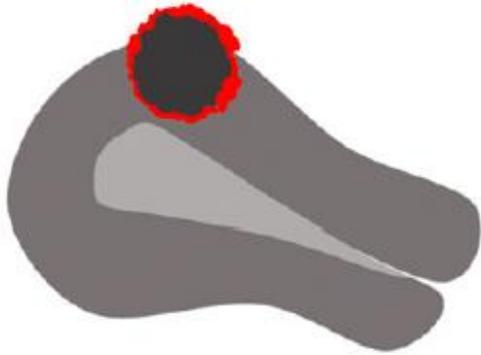
Normal vascularity in the myometrium



Van Den Bosch et al, UOG, 2015, 46

Most common myometrial pathology - myoma

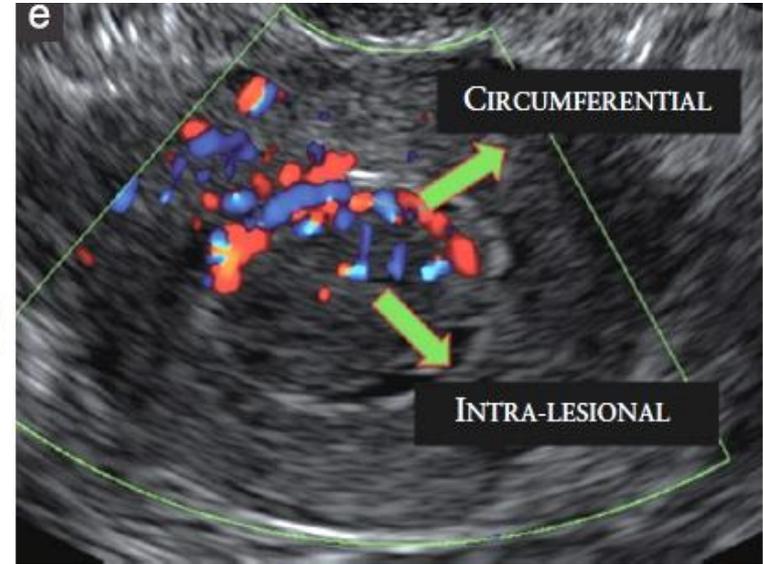
- Vascularity



Circumferential



Intra-lesional

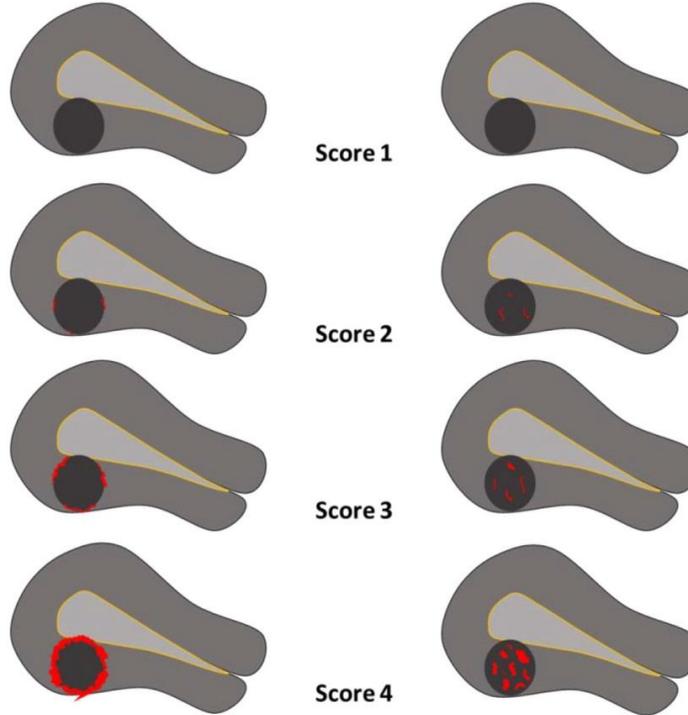


Van Den Bosch et al, UOG, 2015, 46

Vascularity in myoma

Circumferential vascularity

Intra-lesional vascularity



Van Den Bosch et al, UOG, 2015, 46

Gynecology

Adnexa

General

General1

OB

1st Trimester

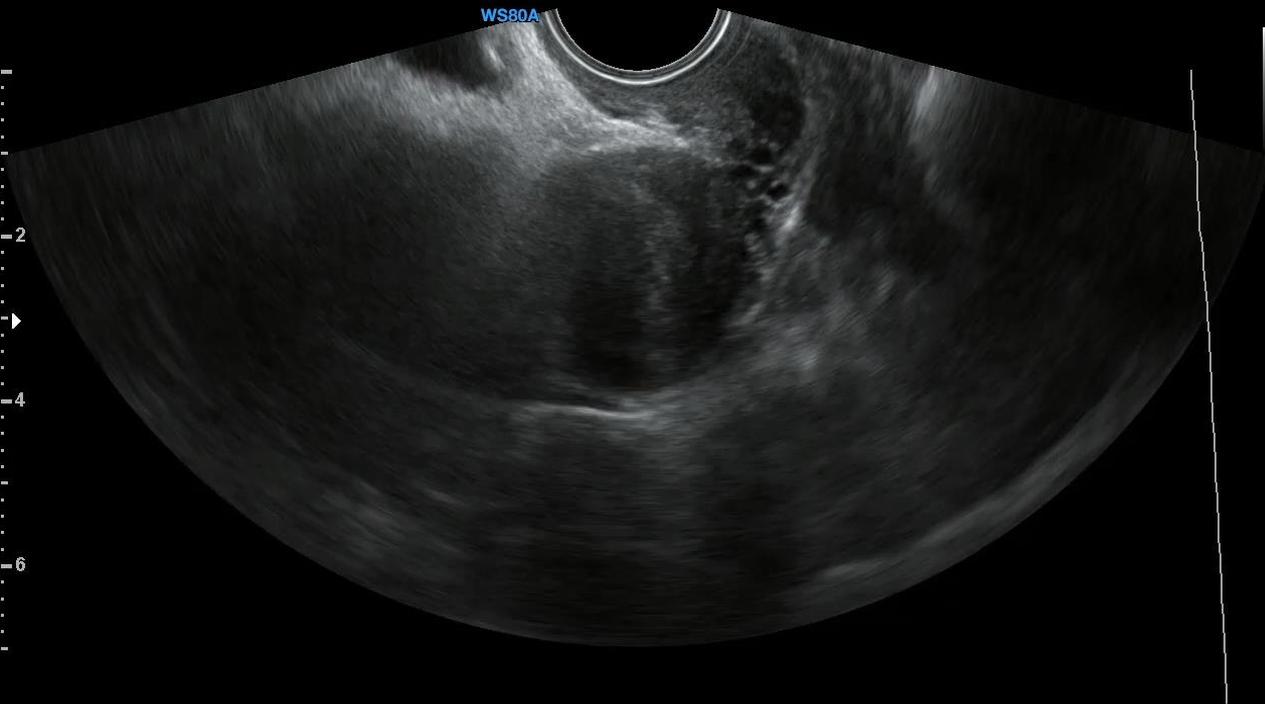
Urology

Prostate

User Preset

1stTrim Anom

-2
-4
-6

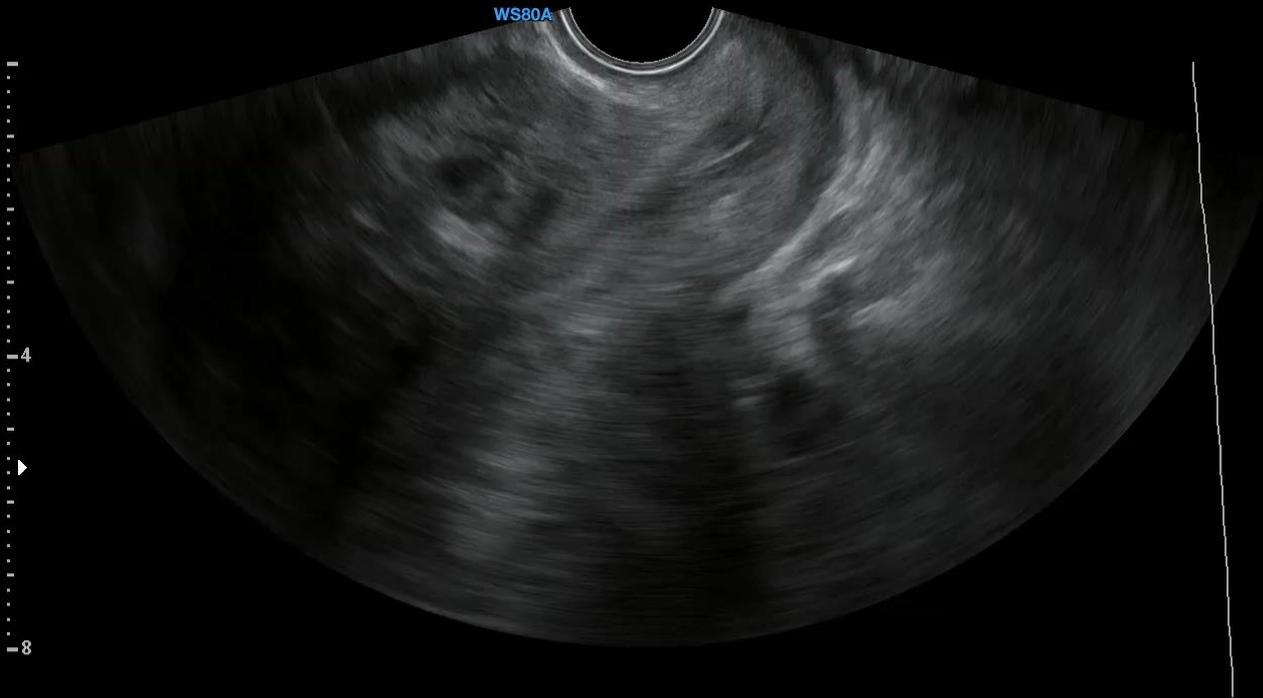


Control panel with buttons and labels:

- Set
- Exit
- P1 Cine/Send
- P2 Rec/Send
- U1 Application Change
- U2 Exit
- U3 None
- U4 Volume Save

Ez Exam+

- Gynecology
- Adnexa
- General**
- General1
- OB
- 1st Trimester
- Urology
- Prostate
- User Preset
- 1stTrim Anom

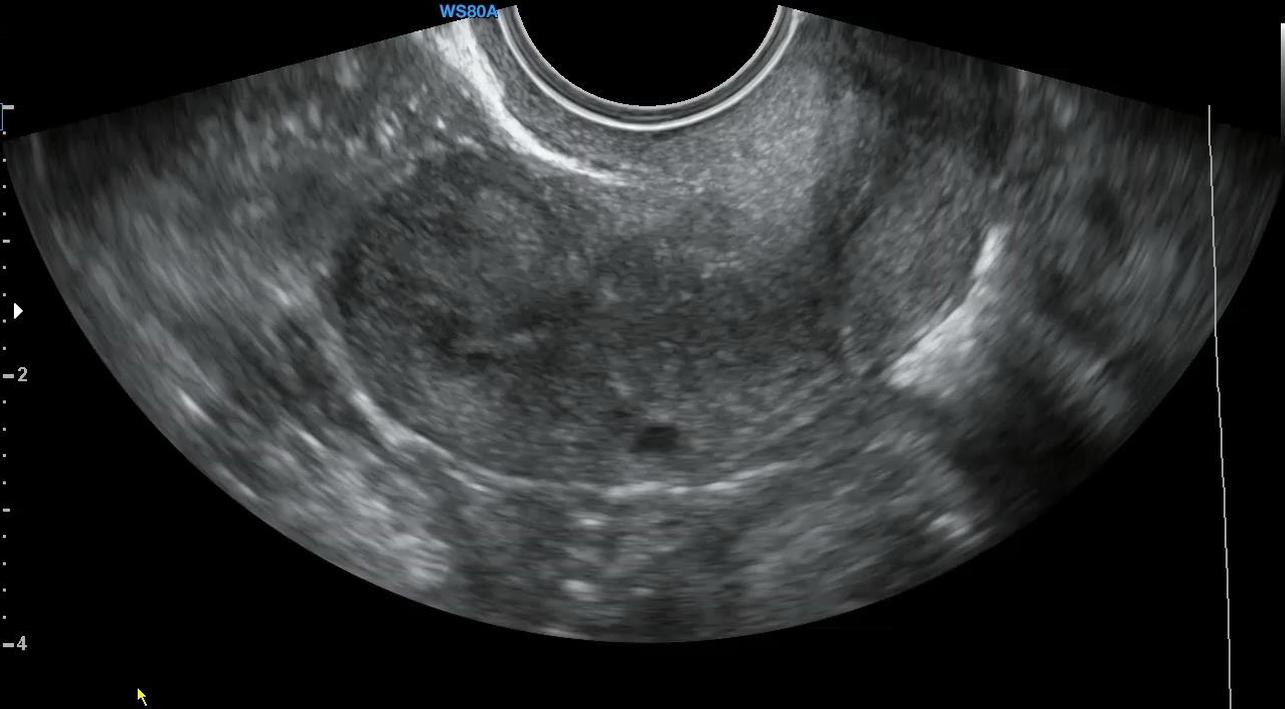


Set Exit

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- Gynecology
- Adnexa
- General**
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-2
-4

A

Control panel with a joystick and buttons:

- Set
- Exit
- P1 Cine/Send
- P2 Rec/Send
- U1 Application Change
- U2 Exit
- U3 None
- U4 Volume Save

Relatively common myometrial pathology - adenomyosis

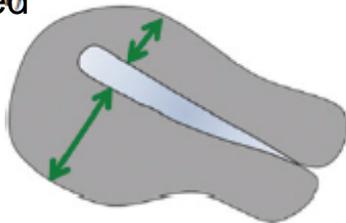
Abnormal presence of endometrium tissue within the myometrium



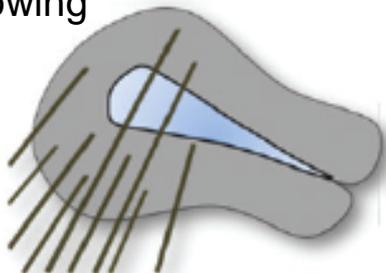
Relatively common myometrial pathology - adenomyosis

- Enlarged uterus

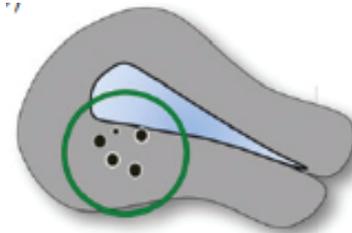
- Asymmetrically enlarged
- Globally enlarged



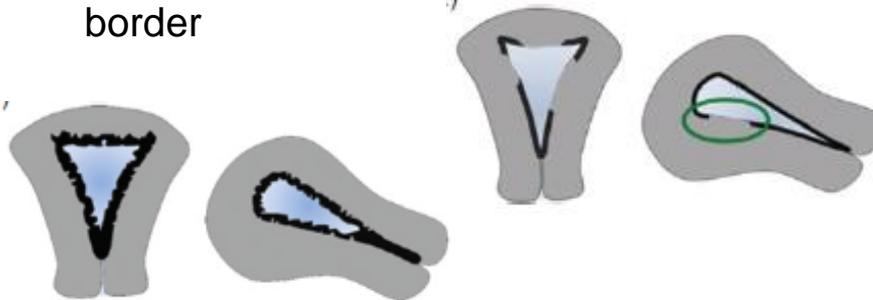
- Fan shaped shadowing



- Myometrial cysts



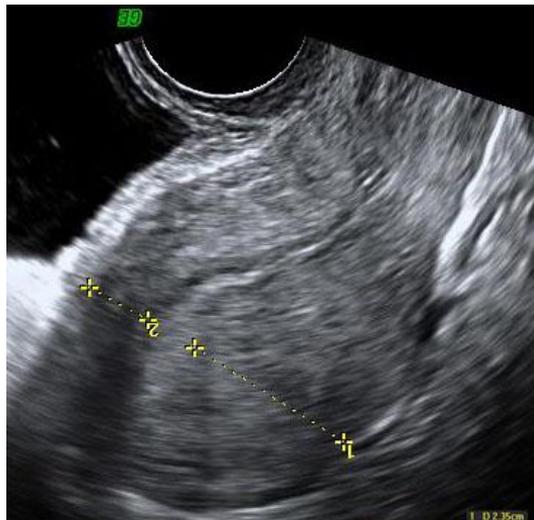
- Poorly defined endometrial-myometrial border



Van Den Bosch et al. Ultrasound Obstet Gynecol 2015, 46: 284–298

Relatively common myometrial pathology - adenomyosis

- Enlarged uterus



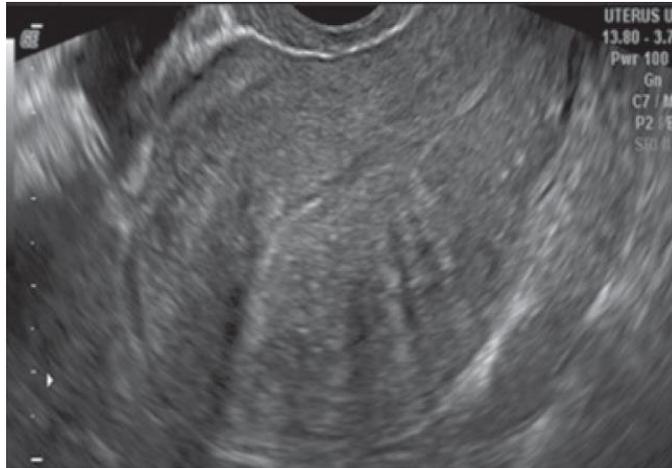
Asymmetrically enlarged



Globally enlarged

Relatively common myometrial pathology - adenomyosis

- Abnormal myometrial echogenicity



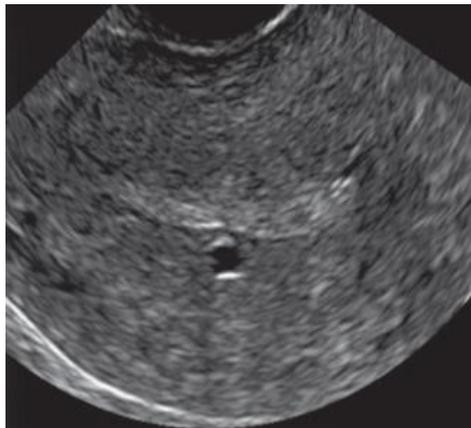
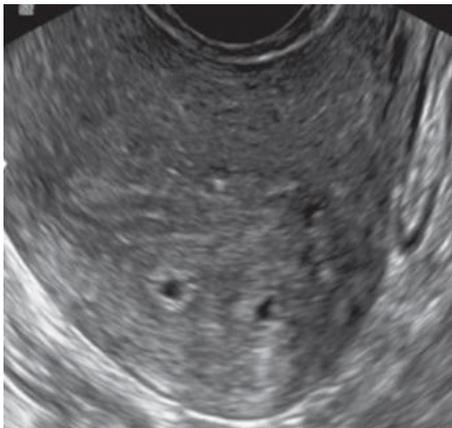
Fan shaped shadowing



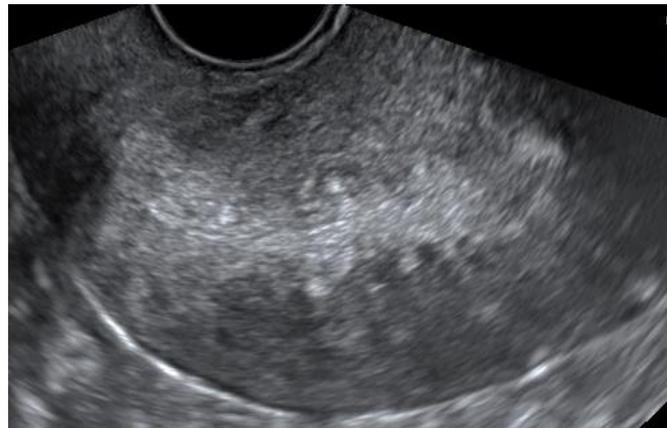
'Rain in the forest' sign

Relatively common myometrial pathology - adenomyosis

- Myometrial cysts



- Poorly defined endometrial-myometrial border



Relatively rare myometrial pathology

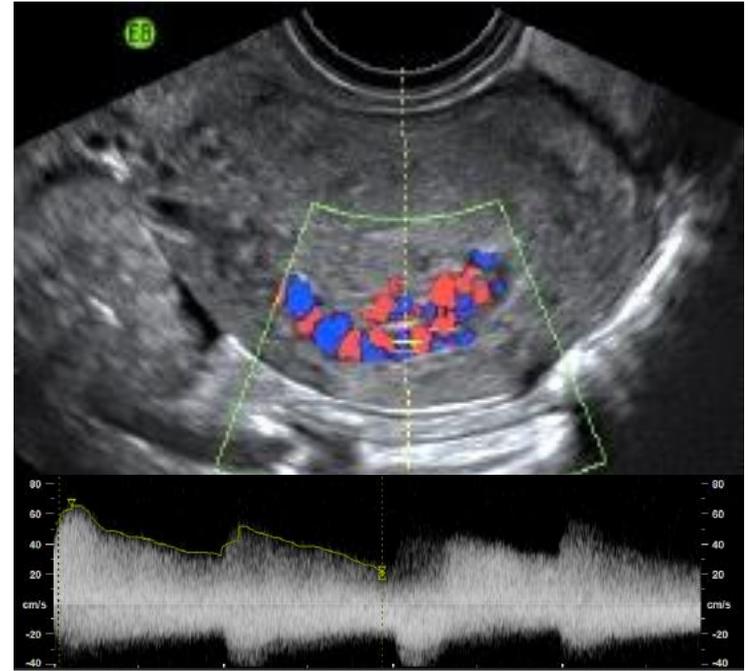
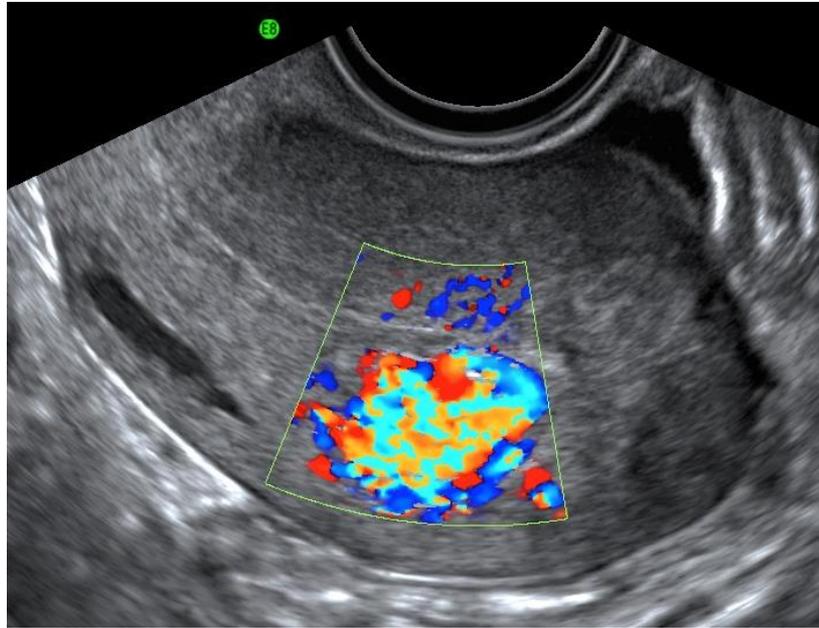
- Myometrial calcifications
- Enhanced myometrial vascularity

Normal myometrium after menopause

- Myometrial calcifications



Retained products of conception (RPOC) / Enhanced myometrial vascularity (EMV)



Timmerman D. UOG, 2003, 21:570-7; Van den Bosch, JUM, 2015, 34:1577-82; Timor-Tritsch IE, AJOG, 2016:214:731 e1-10

Ez Exam+

Gynecology

Adnexa

General

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-2

OB

1st Trimester

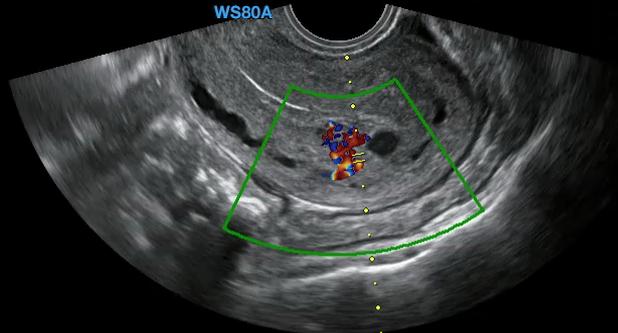
-4

Urology

Prostate

User Preset

1stTrim Anom



ROI Position ROI Size **SV Position** SV Size

Set Exit

- P1 Cine/Send
- P2 Rec/Send
- U1 Application Change
- U2 Exit
- U3 None
- U4 Volume Save

Standardisation of the routine examination of the myometrium

- Measurement of the uterus
- Symmetry of the myometrium walls
- Echogenicity
- Myometrial lesions (well / ill defined)
- Number of lesions (location/max diameter)
- Vascularity
- Midsagittal/ transverse/ 3D

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 standardised 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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