



ISUOG Basic Training

Gynecological Ultrasound: The Basics

Learning objectives

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

- Understand a systematic approach to performing abdominal and vaginal gynecological ultrasound scans

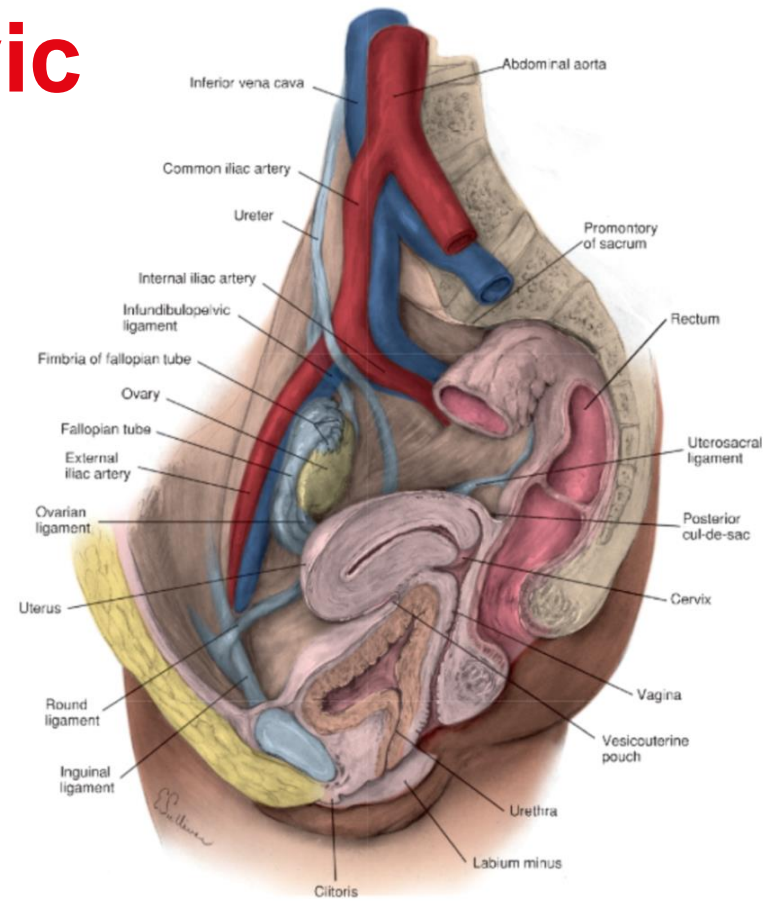
Key questions

1. How do you perform a thorough and systematic gynecological ultrasound examination?
2. When should you perform a transvaginal versus a transabdominal ultrasound?
3. What is the correct scanning technique to image the vagina, cervix, uterus and ovaries effectively?

Key points

- Understand when to perform a transvaginal versus a transabdominal ultrasound exam
- Understand the importance of probe orientation
- Understand the steps to performing a systematic gynecological to accurately assess the pelvis during ultrasound examination

Normal female pelvic anatomy



Gynecological ultrasound examination technique

Systematic examination technique

ALWAYS THE SAME PROCEDURE

Vaginal or abdominal scan?

Abdominal scan

- Low frequency
- Poor resolution
- Good overview
- Scan the abdomen
- Full bladder

Vaginal (rectal) scan

- High frequency
- Superb resolution
- Poor overview
- Abdomen not seen
- Empty bladder

Abdominal scan

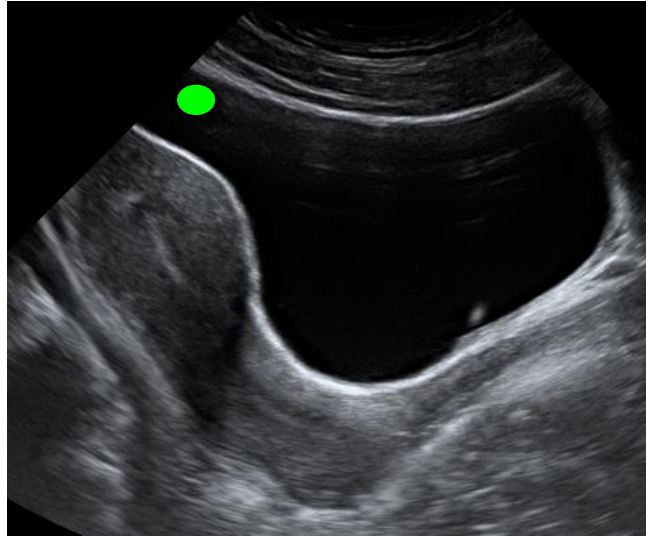
Full bladder?

**YES, if primary scan
(NO), if supplementary scan**

Abdominal gynecological ultrasound examination - orientation

On a longitudinal scan cranial is shown to the left on the screen

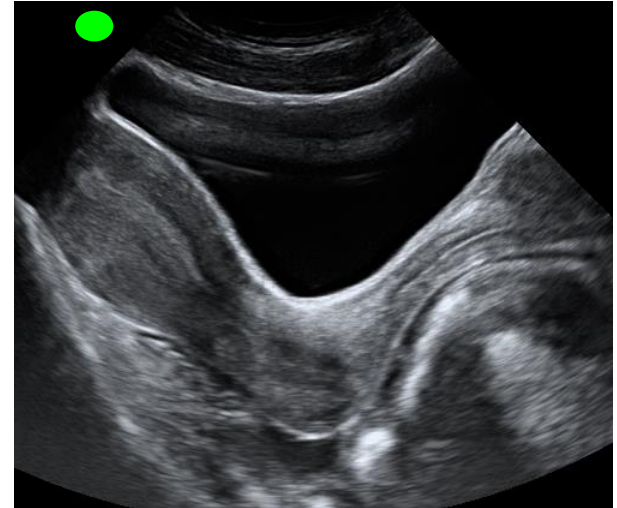
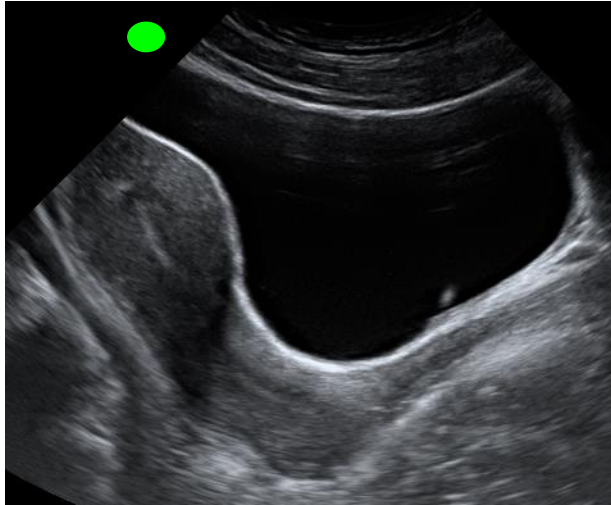
Cranial
(patient's head)



Caudal
(patient's feet)

Abdominal ultrasound

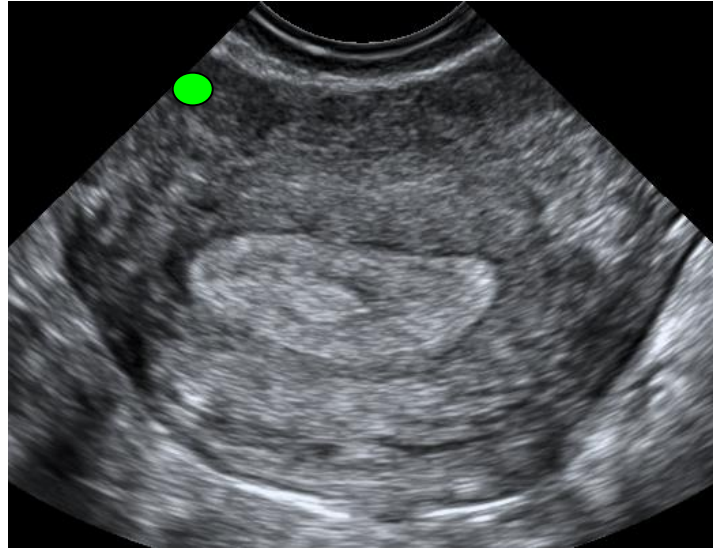
Sagittal scan of the uterus



Abdominal gynecological ultrasound examination - orientation

On a transverse scan patient's right side is shown to the left on screen

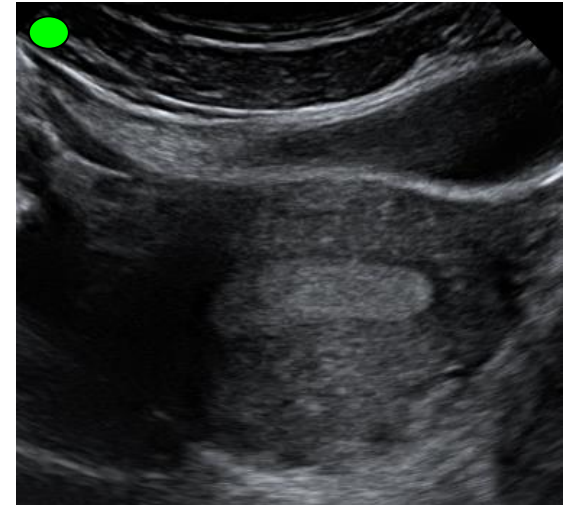
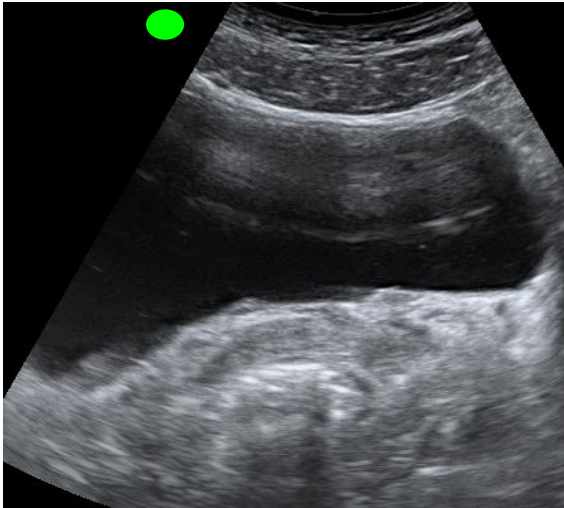
Patient's right side



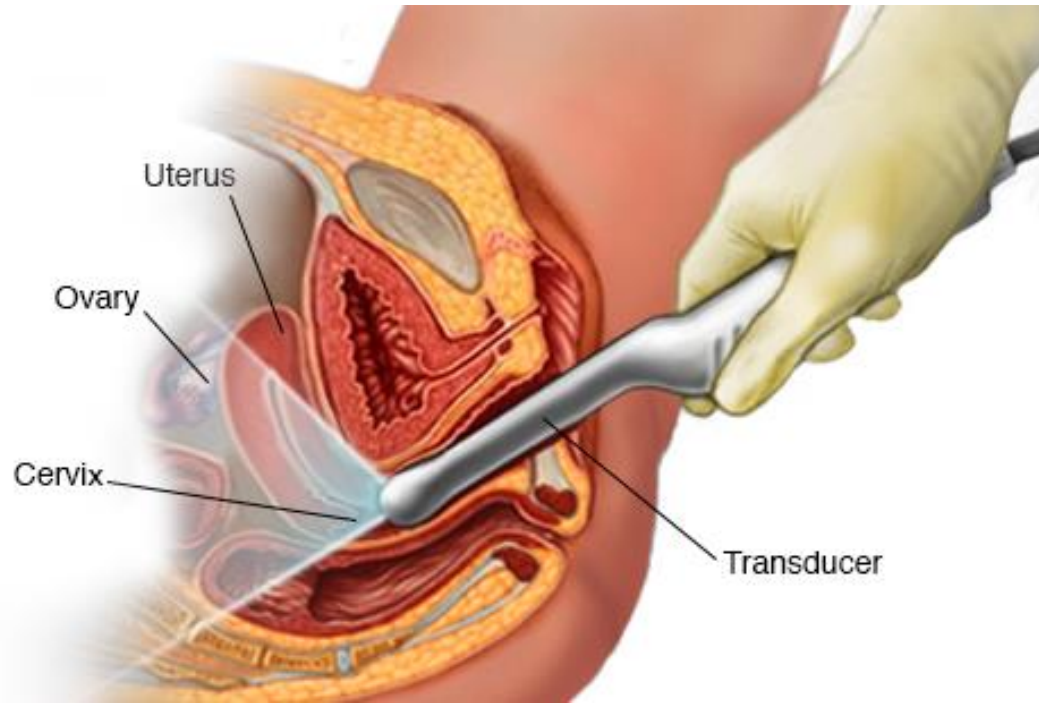
Patient's left side

Abdominal scan

Transverse scan through the uterus

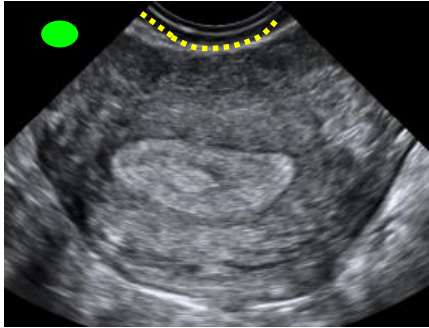


Vaginal scan

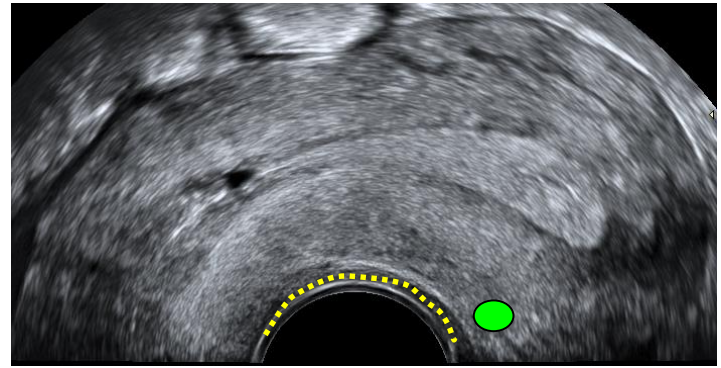
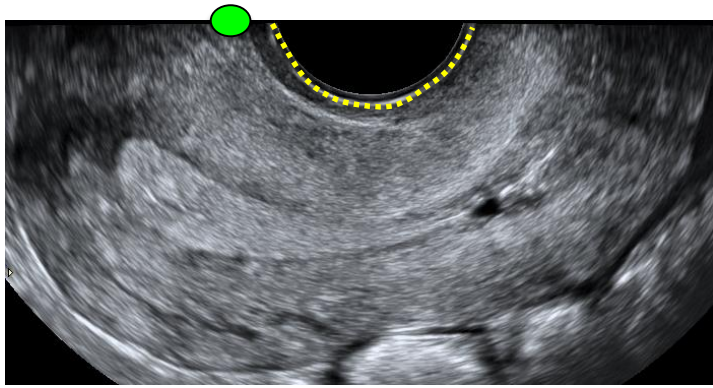
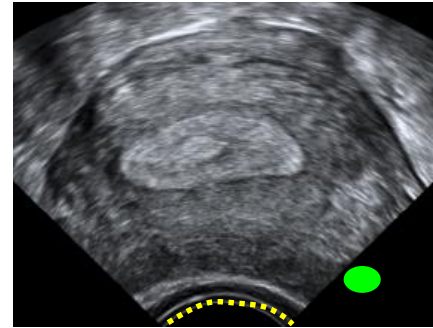


Vaginal gynecological ultrasound examination - orientation

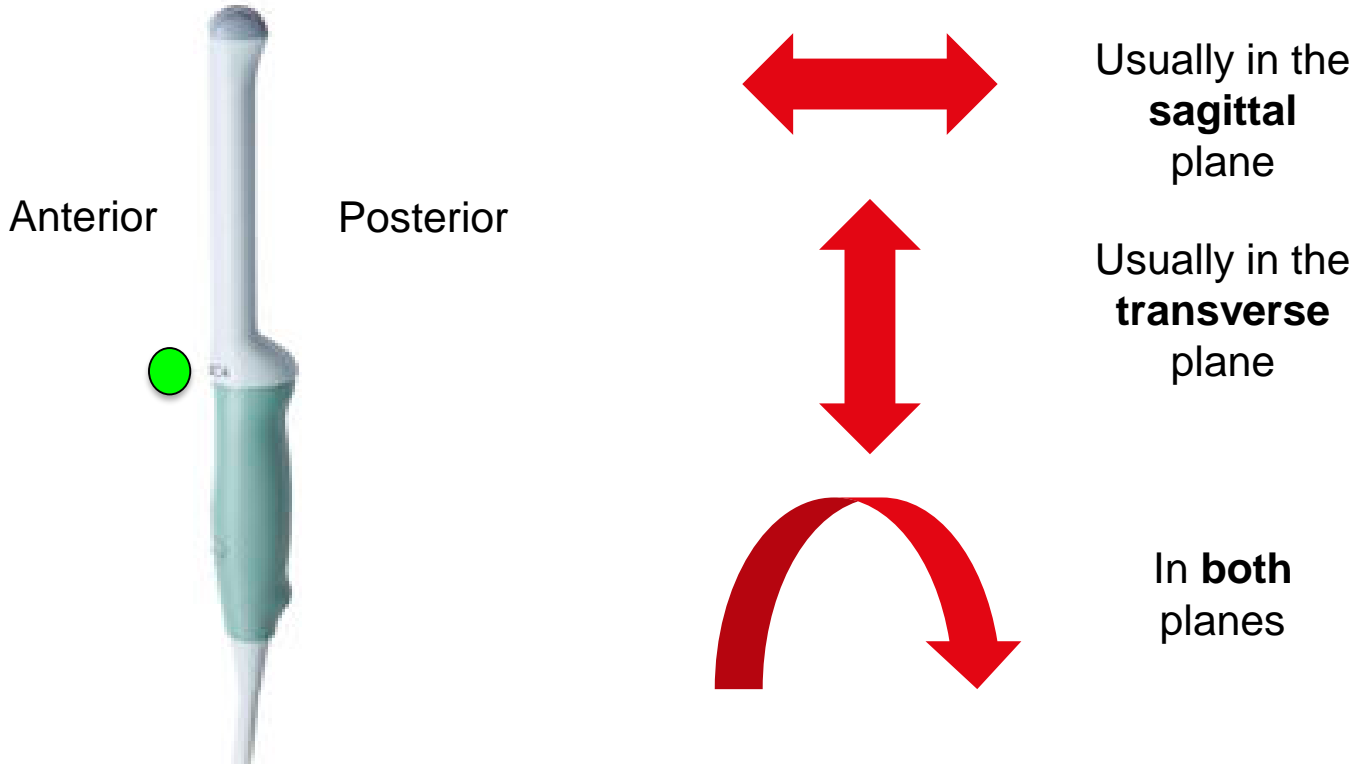
Patients'
right

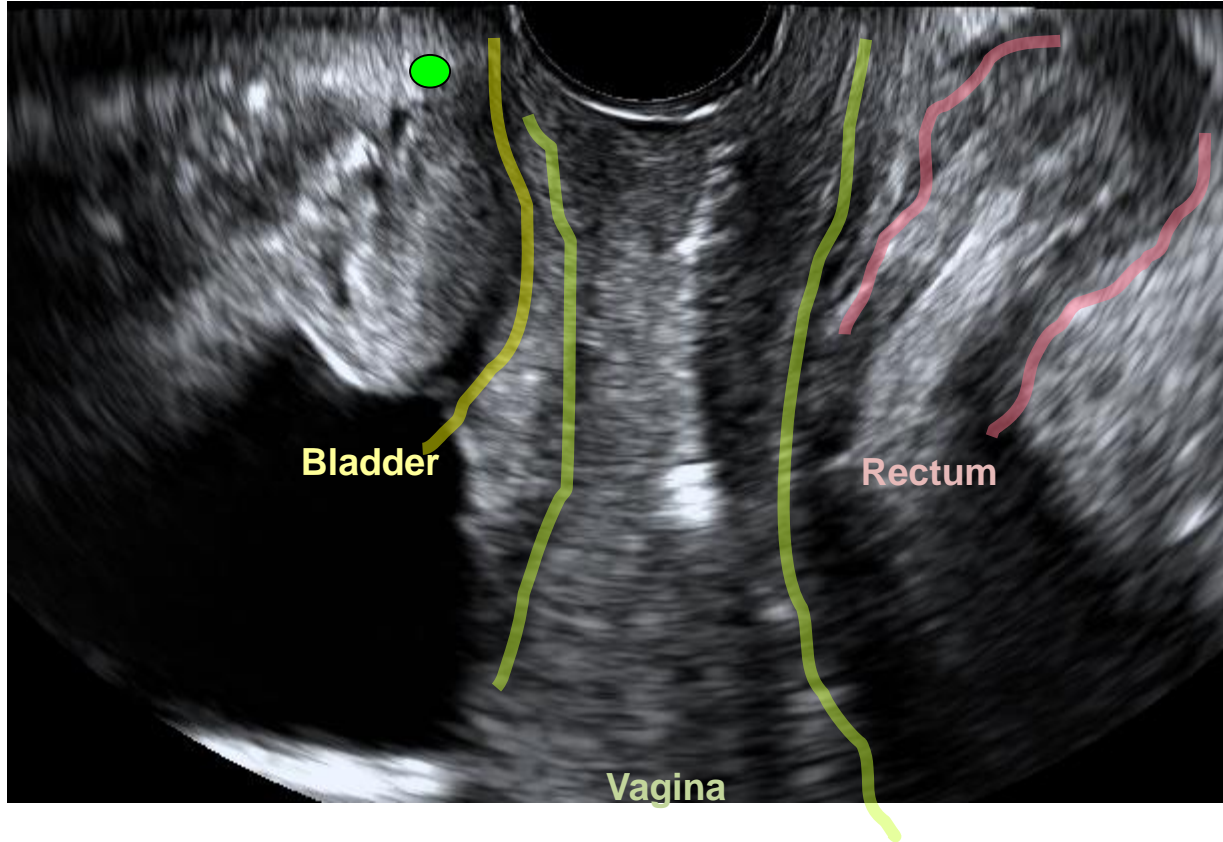


Patients'
right



Probe movement





Gynecology

Adnexa

General

General1

OB

1st Trimester

Urology

Prostate

User Preset

1stTrim Anom

-2

-4

-6



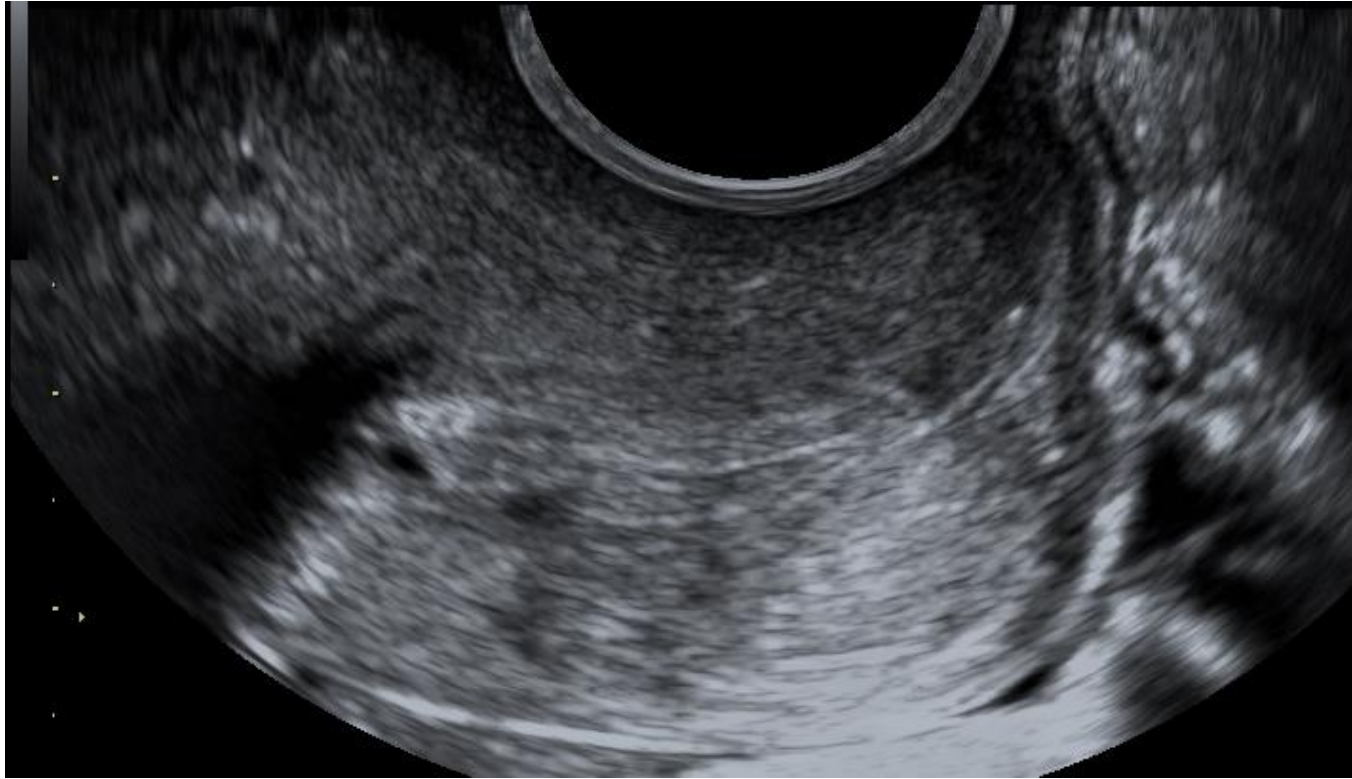
Control panel with buttons and functions:

- Set (left button)
- Exit (right button)
- P1 Cine/Send
- P2 Rec/Send
- U1 Application Change
- U2 Exit
- U3 None
- U4 Volume Save

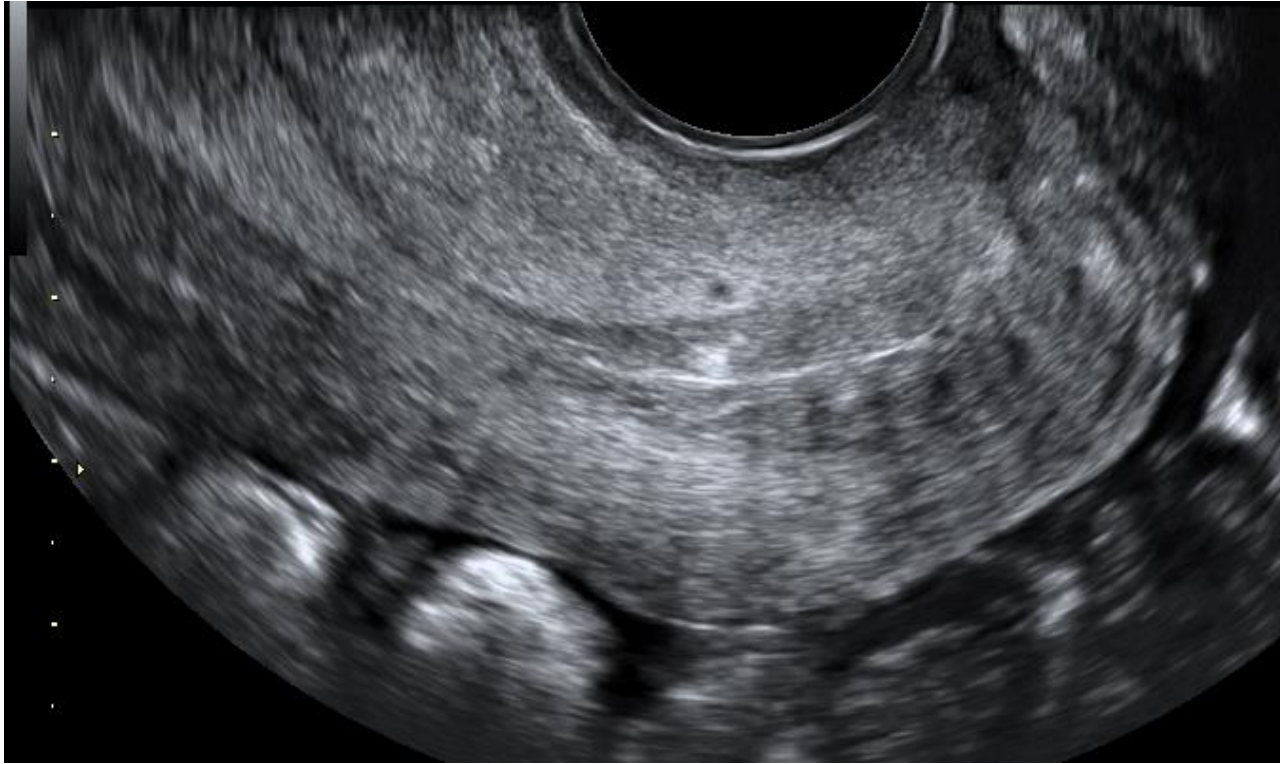
The uterus – follow the cervix



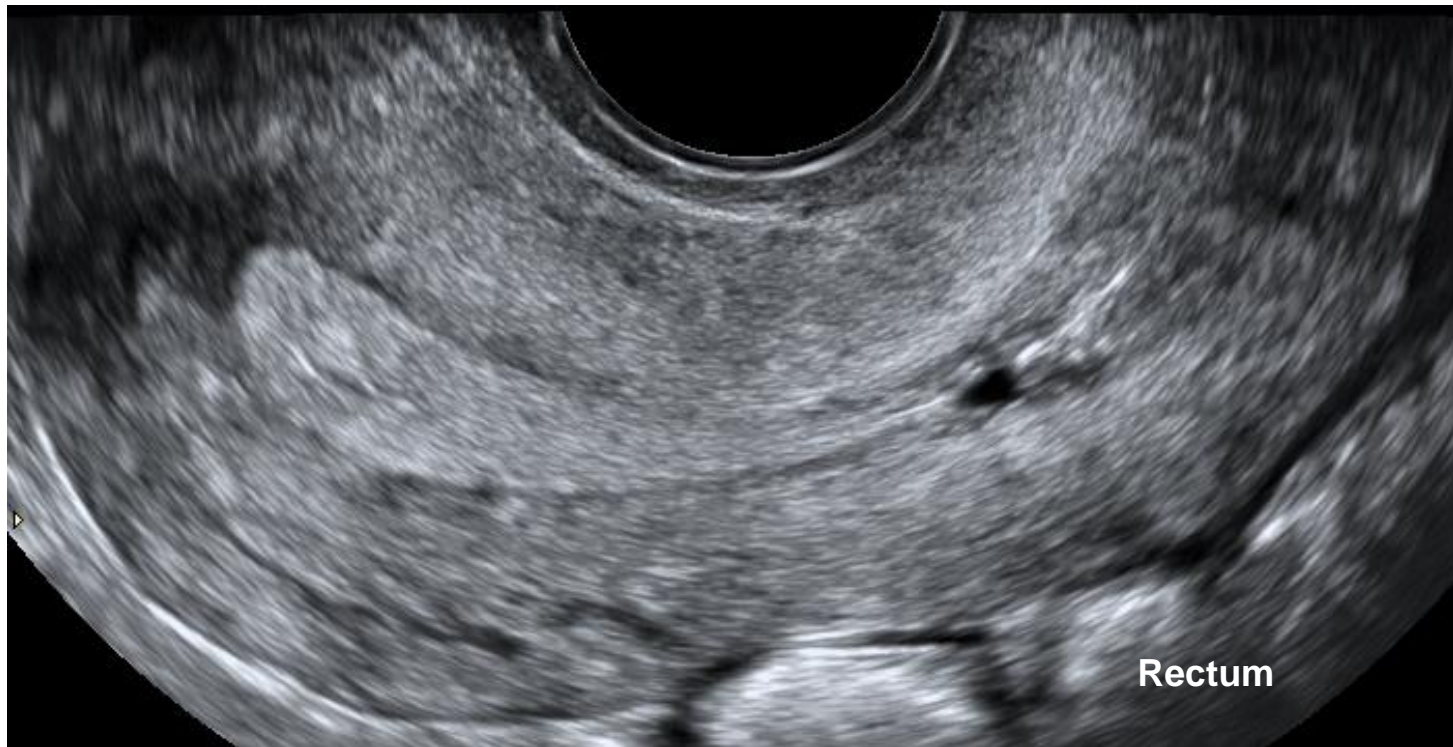
The uterus – follow the cervix



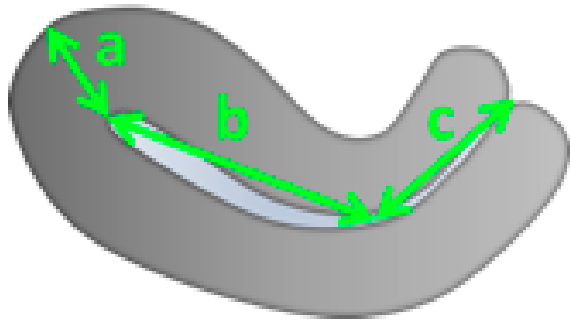
The uterus – follow the cervix



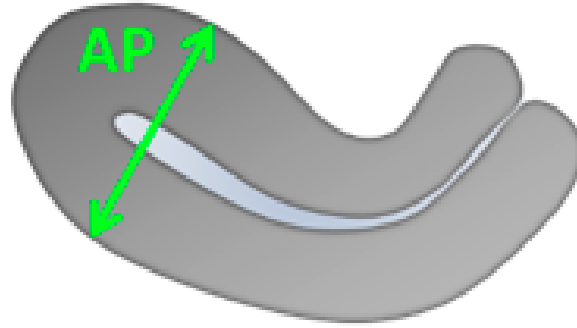
Bladder



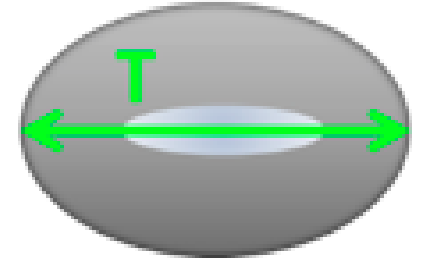
Measuring the uterus



Total length of the uterus

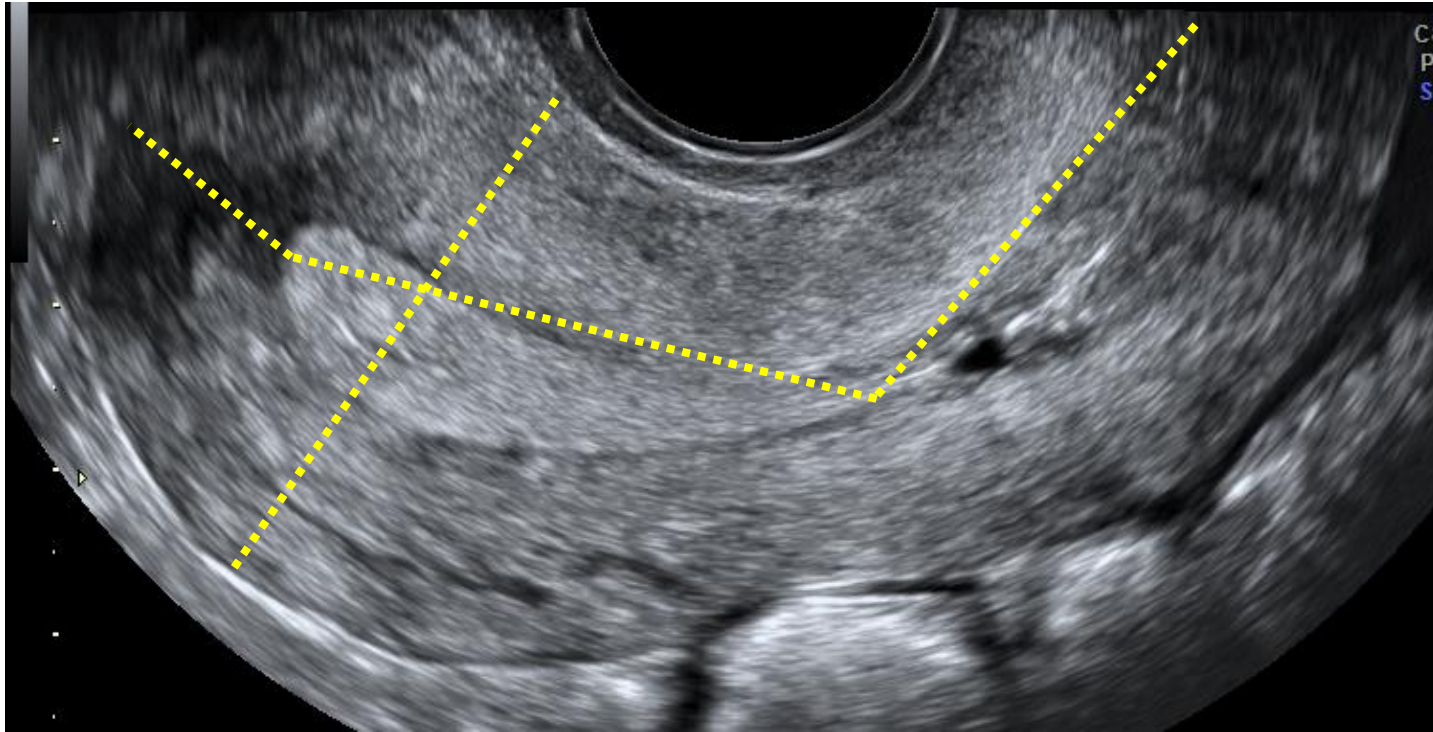


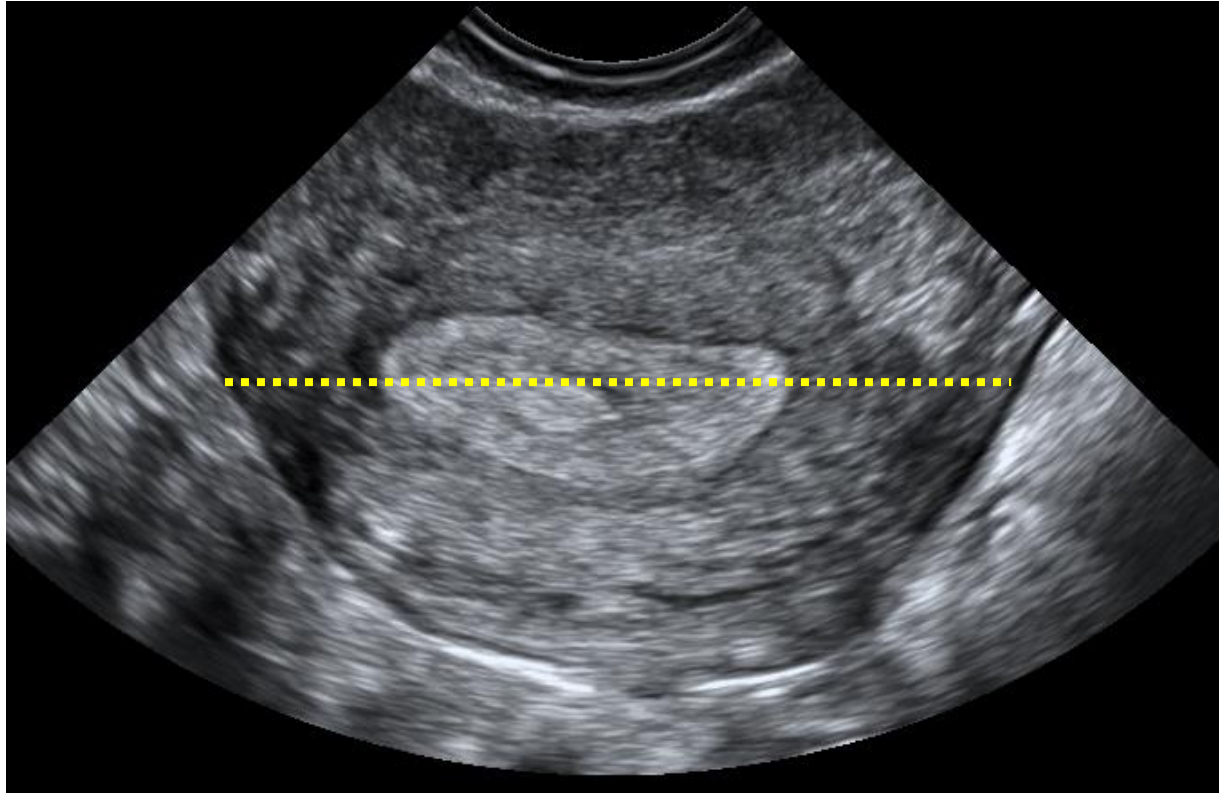
Antero-posterior measurement

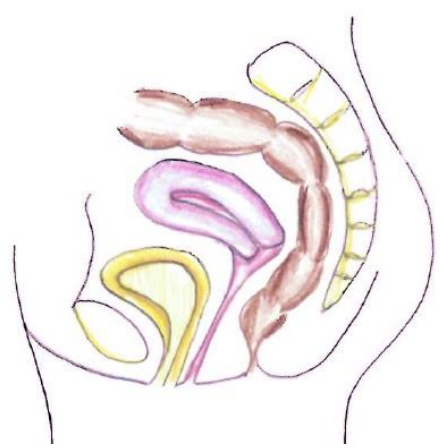


Transverse measurement

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

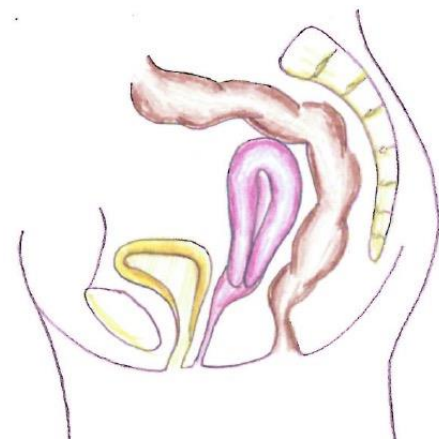




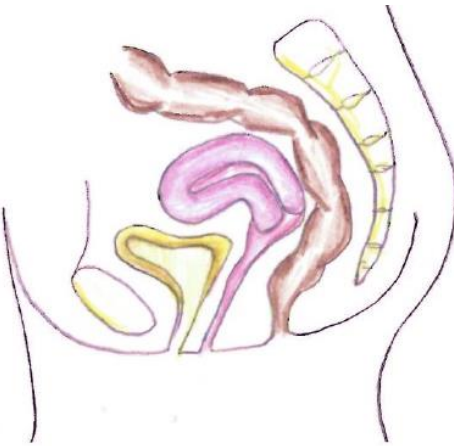


Anteverted

Retroverted



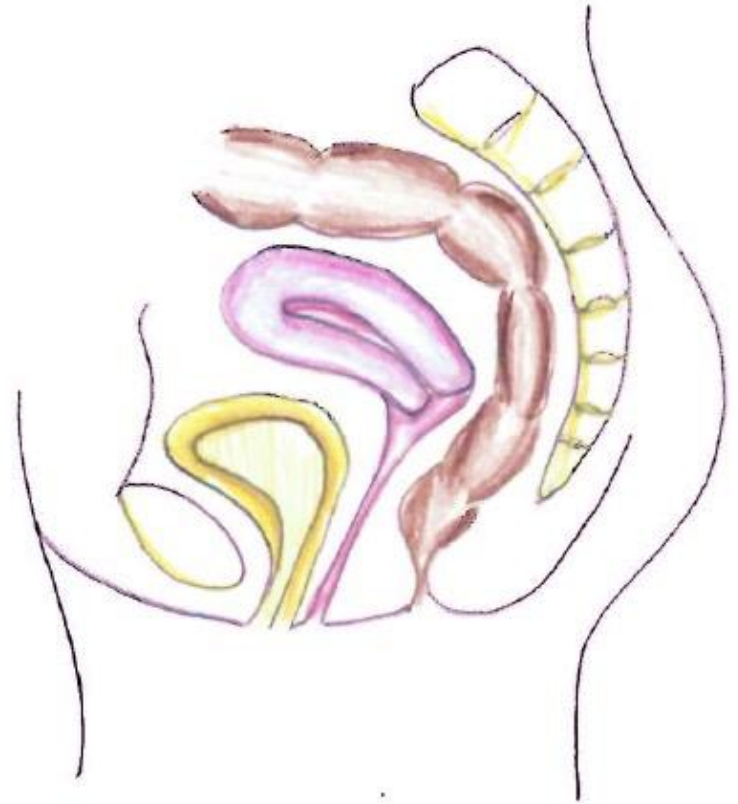
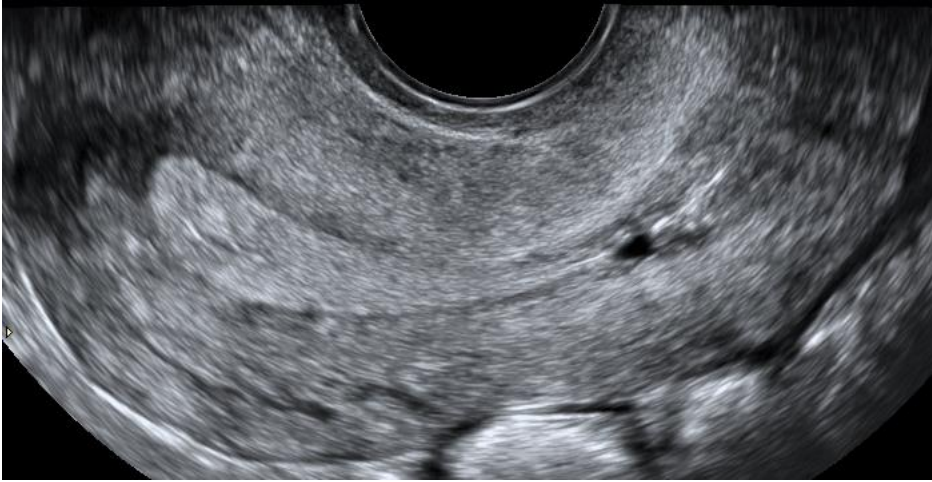
Anteflexed



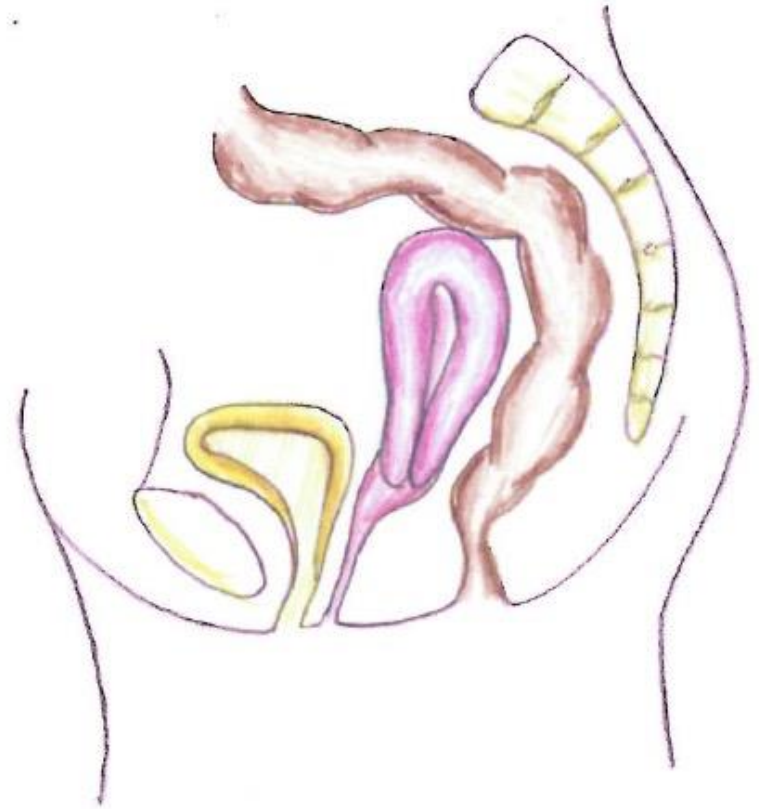
Retroflexed



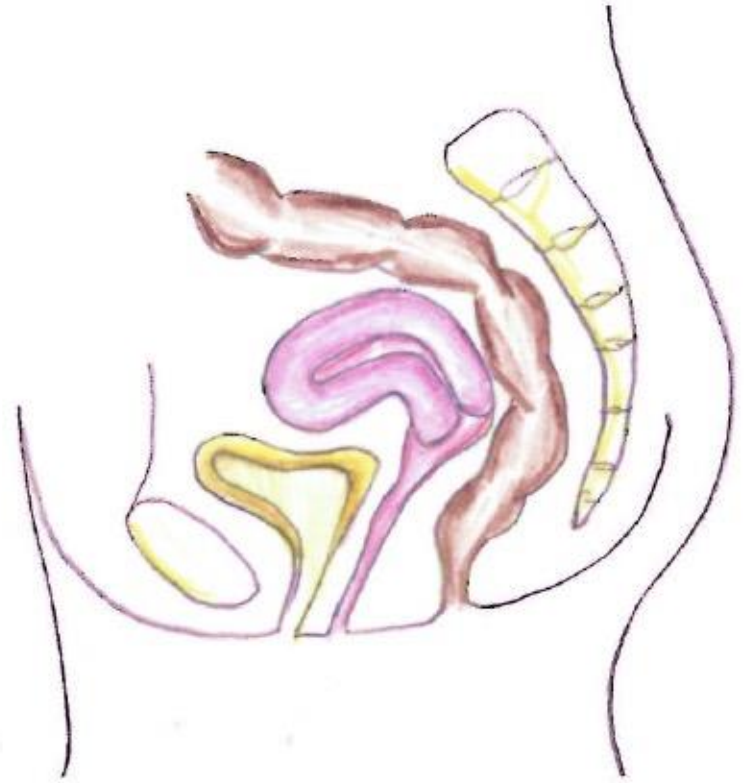
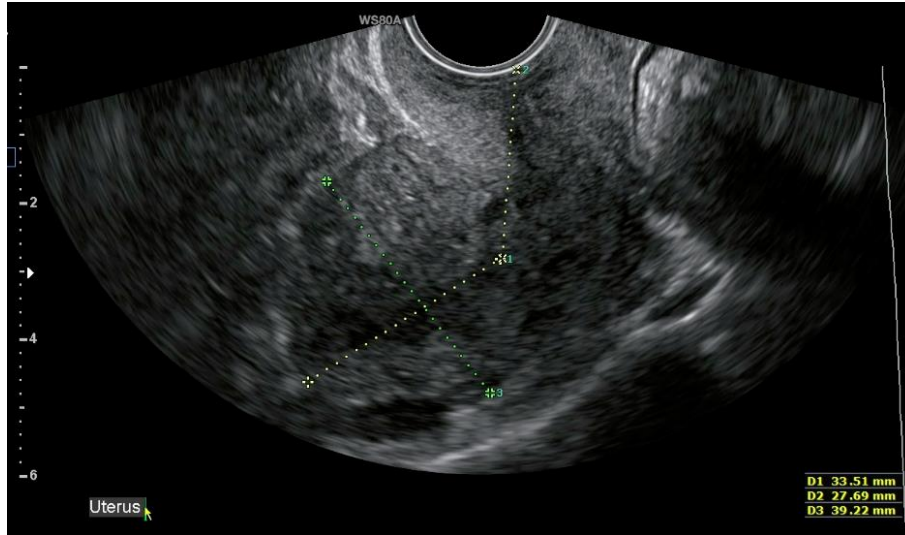
Anteverted uterus



Retroverted uterus



Anteflexed uterus



Retroflexed uterus



Ez Exam+

WS80A

Gynecology

Adnexa

General

General1

OB

1st Trimester

Urology

Prostate

User Preset

1stTrim Anom

-5

-10

Control panel for the ultrasound machine. It features a central circular button labeled "Set" and "Exit". To the right, there is a list of function keys and their actions:

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

Ez Exam+

WS80A

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

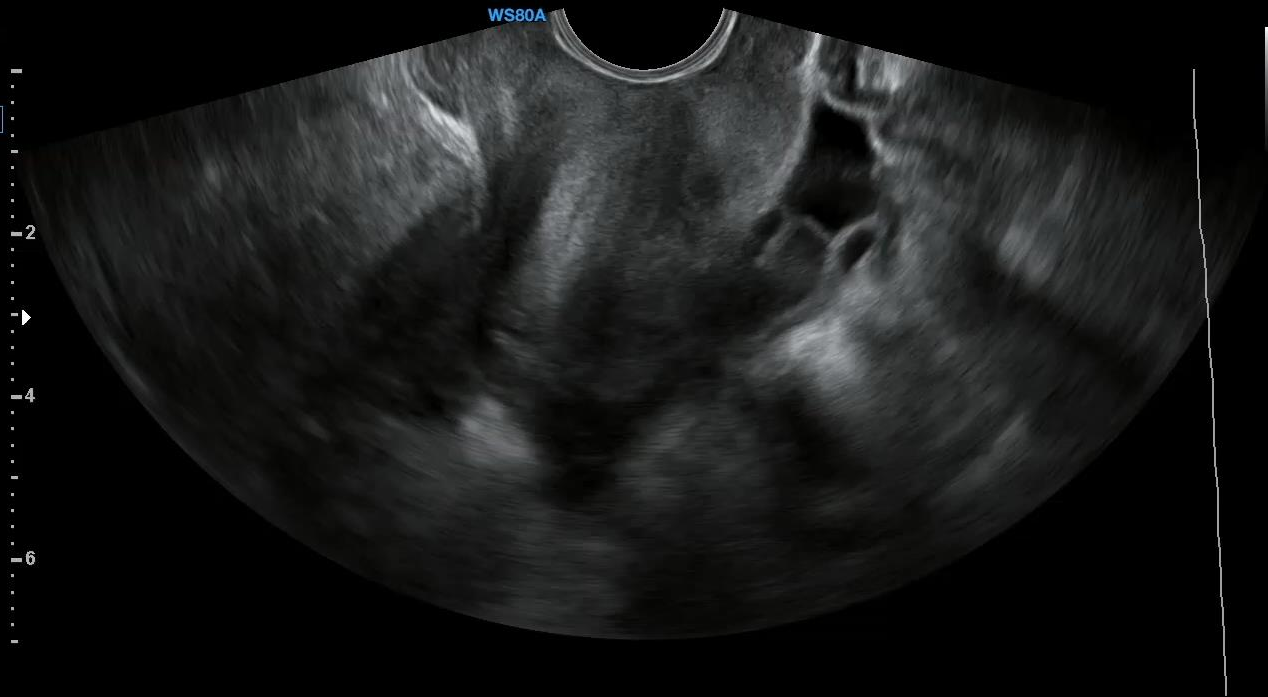
-2
-4
-6

Set Exit

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

Ez Exam+

WS80A

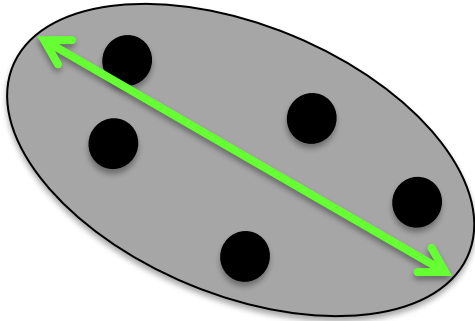


- Gynecology
- Adnexa
- General**
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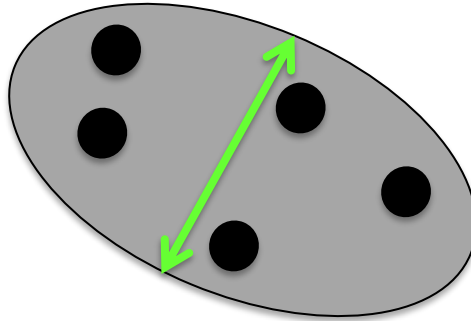
Control panel for the ultrasound machine, featuring a central trackball and several buttons. The trackball is labeled "Set" on the left and "Exit" on the right. To the right of the trackball is a list of function keys:

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

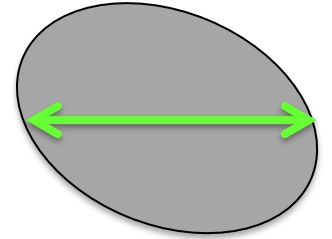
Measuring the ovaries



Total length of the ovary

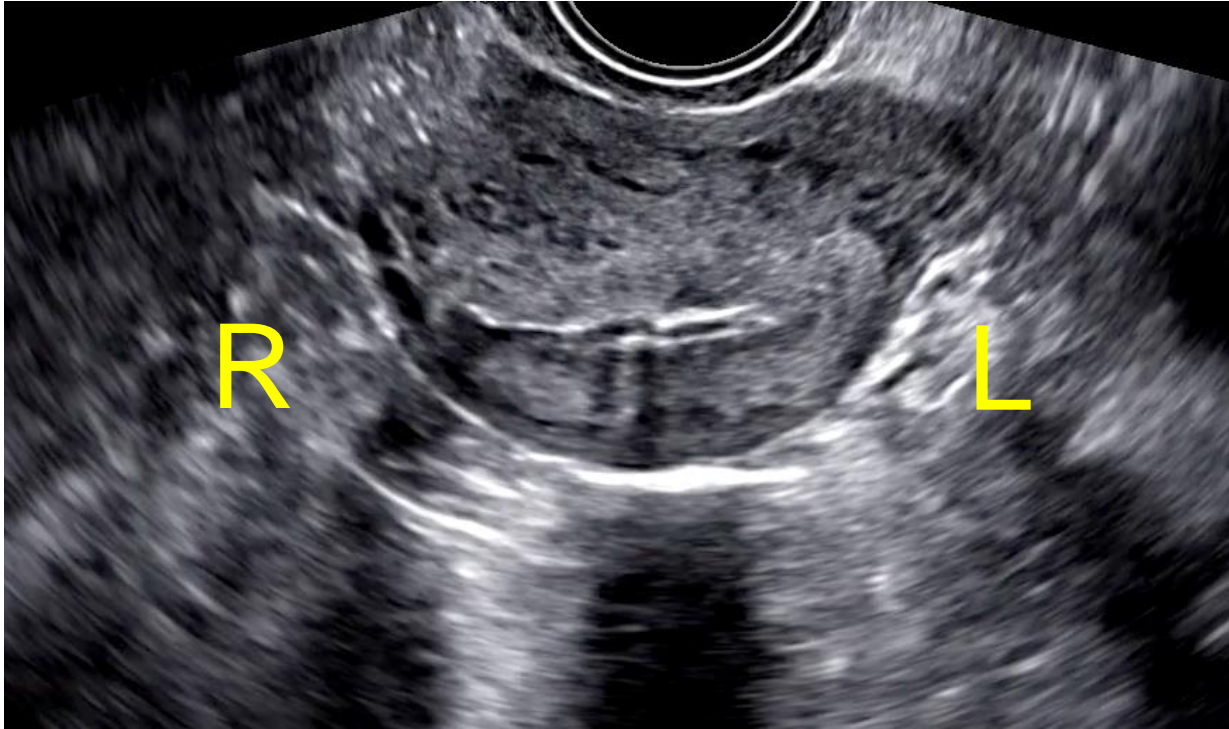


Antero-posterior measurement

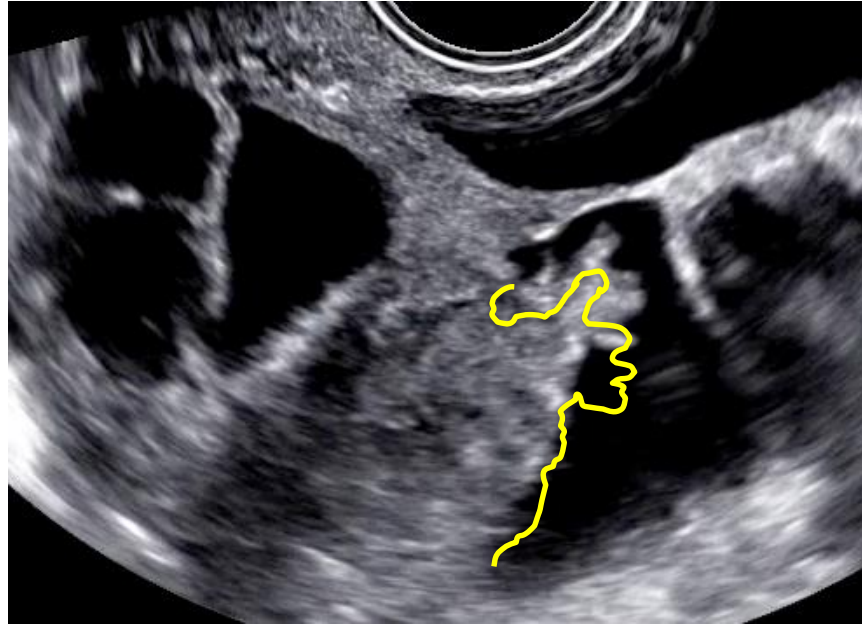


Transverse measurement

Scanning technique for the ovaries



Normal tubes may be seen if there is fluid in the pouch of Douglas



Vaginal ultrasound is a dynamic and interactive examination

- Check the mobility of organs
 - Fixed organs = adhesions
- Check for site specific tenderness
 - Which organs are involved in a painful process?

Normal ultrasound findings

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

Key points

THE BASIS for gynecological ultrasound

- Orientate yourself in the image
- Optimise your image
- Always use a systematic scanning technique

From here you move on by practising, reading books and articles, and attending more advanced ultrasound courses

How to describe ultrasound findings using standardised terminology

Ultrasound Obstet Gynecol. 2000 Oct;16(5):500

Terms, definitions and measurements to describe the sonographic features of adnexal tumors: a consensus opinion from the International Ovarian Tumor Analysis (IOTA) group

D. TIMMERMAN, L. VALENTIN*, T. H. BOURNE†, W. P. COLLINS‡, H. VERRELST§ and I. VERGOTE

Systematic approach to sonographic evaluation of the pelvis in women with suspected endometriosis, including terms, definitions and measurements: a consensus opinion from the International Deep Endometriosis Analysis (IDEA) group

S. GUERRIERO^{1#}, G. CONDOUS^{2#}, T. VAN DEN BOSCH³, L. VALENTIN⁴, F. P. G. LEONE⁵, D. VAN SCHOUBROECK³, C. EXACOUSTOS⁶, A. J. F. INSTALLÉ⁷, W. P. MARTINS⁸, M. S. ABRAO⁹, G. HUDELIST¹⁰, M. BAZOT¹¹, J. L. ALCAZAR¹², M. O. GONÇALVES¹³, M. A. PASCUAL¹⁴, S. AJOSSA¹, L. SAVELLI¹⁵, R. DUNHAM¹⁶, S. REID¹⁷, U. MENAKAYA¹⁸, T. BOURNE¹⁹, S. FERRERO²⁰, M. LEON²¹, T. BIGNARDI²², T. HOLLAND²³, D. JURKOVIC²³, B. BENACERRAF²⁴, Y. OSUGA²⁵, E. SOMIGLIANA²⁶ and D. TIMMERMAN³

Ultrasound Obstet Gynecol. 2010 Jan;35: 103

Terms, definitions and measurements to describe the sonographic features of the endometrium and intrauterine lesions: a consensus opinion from the International Endometrial Tumor Analysis (IETA) group

F. P. G. LEONE*, D. TIMMERMAN†, T. BOURNE‡, L. VALENTIN§, E. EPSTEIN¶, S. R. GOLDSTEIN**, H. MARRET††, A. K. PARSONS‡‡, B. GULL§§, O. ISTRE¶¶, W. SEPULVEDA***, E. FERRAZZI††† and T. VAN DEN BOSCH†

Consensus statements on how to:

- Measure
- Describe ultrasound images
 - Terms
 - Definitions



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