ISUOG Basic Training

Examining the Uterus, Cervix, Ovaries & Adnexae: Normal Findings

Lil Valentin, Sweden
Learning objective 5

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

• recognise the typical ultrasound appearances of a normal gynaecological ultrasound examination
Key questions

• What is the correct scanning technique to image the cervix, uterus and ovaries effectively?

• What are the principal ultrasound features of:
  – the normal cervix
  – the normal uterus
  – the normal ovary/adnexae

• How do I recognise a correctly positioned IUD?
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 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)
Vaginal gynecological ultrasound examination - orientation

Patient’s right

Patient’s right

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Uterus in anteversion (and slight anteflexion)
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
Gynecological ultrasound Examination technique

Systematic examination technique

ALWAYS THE SAME  PROCEDURE
Vaginal scan
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Finding the ovaries
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Normal tubes may be seen if there is fluid in the pouch of Douglas
Urinary Bladder
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?
Abdominal scan
Abdominal scan

Full bladder?

YES, if primary scan
(NO), if supplementary scan
Gynecological ultrasound examination technique

Systematic examination technique

ALWAYS THE SAME PROCEDURE
Abdominal ultrasound
Sagittal scan of the uterus
Abdominal scan

Transverse scan through the uterus
Abdominal scan
- finding the ovaries
Normal ultrasound findings

• Differ between women before and after menopause
• Change throughout the menstrual cycle
Normal myometrium before menopause
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
A corpus luteum may look different
Some fluid in the pouch of Douglas is NORMAL before menopause
How big is a normal ovary in a woman of fertile age?

Very variable

- Median 7 ml
- Range 2-17 ml
- (Range 1-20 ml)

303 women 20-39 years old with regular menstrual cycles, cd 4-8

Jokubkiene et al 2012
What is a normal number of antral follicles before menopause?

Text books

6-7 follicles/ovary
Jokubkiene et al

Median 11 follicles (2-10 mm) /ovary
  Range 1-36
  10th-90th percentile 4-20
57% had
  >12 follicles/ovary, i.e. PCO*

*PCO : > 12 follicles/ovary
or ovary > 10 ml (Rotterdam)
Correct position of copper IUD
Correct position of gestagen IUD
Correct position of gestagen IUD
Incorrect position of IUD

Too low

Too low

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Three-dimensional (3D)ultrasound
Incorrect position of IUD
Normal ultrasound findings in postmenopausal women

Uterus with calcifications
The endometrium in postmenopausal women

Median endometrial thickness 3 mm
10th and 90th percentile: 2 – 5 mm

Endometrium >5 mm is
NOT necessarily pathological

Uterus
Normal ultrasound findings in postmenopausal women

Ovary

Ovary with "cyst"
How big is a normal ovary in a postmenopausal woman?

- Median 1x1x2 cm
- Median volume 1 ml
  - range: 0.4 - 4 ml

144 asymptomatic postmenopausal women 45 to 64 years old

Sladkevicius et al. 1995
Key points

THE BASIS for gynecological ultrasound

• Orientate yourself in the image
• Optimize 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
Argument for showing vaginal longitudinal scans with footprint down and bladder to the right