ISUOG Basic Training

Typical Ultrasound Appearances of Common Pathologies in the Adnexae
Learning objectives

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

• Compare the differences between typical normal and common abnormal appearances of the adnexa in gynaecological ultrasound examination
Key questions

• How do I describe my ultrasound findings using the standardized International Ovarian Tumor Analysis (IOTA) terminology?
• What are the typical ultrasound appearances of the most common pathologies in the adnexa?
• What diagnostic methods can I use to discriminate between benign and malignant adnexal pathology?
• Which patients should I refer for specialist opinion?
Key points

• Understand the typical ultrasound features of a normal pre- and post-menopausal ovary

• Understand the typical ultrasound appearances of the most common pathologies in the adnexa

• Understand how to use IOTA terminology

• Know when to refer for a specialist opinion
Typical ultrasound appearances of the most common pathologies in the adnexa
Ovarian findings

- Normal ovary
- Functional cysts
- Benign tumours
- Borderline tumours
- Invasive tumours
- Metastatic tumours
Normal ultrasound findings

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

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)
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, 45-64 years old

Changes during the menstrual cycle

- **Post-menstruation**
- **Proliferative phase 3 days before ovulation**
- **Proliferative phase 1 day before ovulation**
- **Secretory phase 6 days after ovulation**
Some fluid in the pouch of Douglas is NORMAL before menopause.
A corpus luteum may look different
Ovarian findings

- Normal ovary
- Functional cysts
- Benign tumours
- Borderline tumours
- Invasive tumours
- Metastatic tumours
Functional cysts

Follicular cyst / simple cyst
Functional cysts

Corpus luteal cyst
Functional cysts

Corpus luteal cyst

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Ovarian findings

- Normal ovary
- Functional cysts
- Benign tumours
- Borderline tumours
- Invasive tumours
- Metastatic tumours
Common ovarian pathology

- Dermoid/mature teratoma
- Endometrioma
- Serous cystadenoma/cystadenofibroma
- Mucinous cystadenoma
- Fibroma
Benign tumours

Dermoid cyst

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Benign tumours

Dermoid cyst
Benign tumours

Endometrioma

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Benign tumours

Cystadenoma/ cystadenofibroma
Benign tumours

Fibroma

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Common extra-ovarian adnexal pathology

- Hydrosalpinx
- Paraovarian cysts
- Peritoneal inclusion cysts/ pseudocysts
Hydro-pyo-haemato-salpinx

- Sausage shape
- Cog wheel
- Beads on a string
- Incomplete septa
- Incomplete septa
Benign tumours

Hydrosalpinx
Benign tumours

Paraovarian cyst

Ovary
Paraovarian cyst

Benign tumours

Ovary

Clip paraovarian cyst TBA
Benign tumours

Peritoneal pseudocyst
Benign tumours

Peritoneal pseudocyst
Ovarian findings

- Normal ovary
- Functional cysts
- Benign tumours
- Borderline tumours
- Invasive tumours
- Metastatic tumours
Diagnostic methods to discriminate between benign and malignant adnexal pathology
### Malignant features
- Irregular solid tumor
- Presence of ascites
- \( \geq 4 \) papillary projections
- Irregular multilocular-solid tumor \( \geq 100\text{mm} \)
- Colour score 4 (strong blood flow)

### Benign features
- Unilocular cyst
- Tumor with largest solid component < 7mm
- Acoustic shadows
- Smooth multilocular tumor < 100mm
- Colour score 1 (no blood flow)
Simple Rules

• **Malignant** if *one or more* M-features apply *without* presence of B-features

• **Benign** if *one or more* B-features apply *without* presence of M-features

• Inconclusive if *no* features present or if *both* B and M-features apply
Benign Tumour

Borderline Tumour

FIGO Stage I Ovarian cancer

FIGO Stage II-IV Ovarian cancer

Metastasis to the ovary

IOTA
ADNEX
Assessment of Different Neoplasias in the adnexa

The ADNEX-model computes the risk that a detected adnexal mass for which surgery is indicated is benign, borderline, stage I invasive, stage II-IV invasive, or metastatic cancer to the adnexa.

Start Analysis
IOTA-ADNEX (Assessment of Different NEoplasias in the adneXa) variables

- Age of patient
- Type of centre
- Serum CA-125
- Six ultrasound variables
(1) maximum diameter of lesion (mm)

(2) proportion of solid tissue

(3) more than 10 cyst locules (yes vs no)

(4) number of papillary projections (0, 1, 2, 3, more than 3)

(5) acoustic shadows (yes vs no)

(6) ascites (yes vs no)
IOTA-ADNEX (Assessment of Different NEoplasias in the adneXa) app

Welcome

ADNEX
Assessment of Different NEoplasias in the adneXa

The ADNEX-model computes the risk that a detected adnexal mass for which surgery is indicated is benign, borderline, stage I invasive, stage II-IV invasive, or metastatic cancer to the adnexa.

- diameter of the largest solid part
- More than 10 locules?
- Yes
- No
- Number of papillations (papillary projections)
- Acoustic shadows present?
- None
- Yes
- Ascites (fluid outside pelvis) present?
- CA-125 (U/ml)
- 42

Results

Clear data

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Risk Metastatic Cancer to the Adnexa 11.2%
Risk stage II-IV Ovarian cancer 8.8%
Risk stage I Ovarian cancer 10.9%
Risk Borderline 37.2%
Risk of Malignancy 66.0%
Chance of Benign Tumor 32.0%
Which patients should I refer for specialist opinion?

• Those in whom you are uncertain about the diagnosis (especially if you suspect malignancy)
Key points

When in doubt: refer for second opinion
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