

ISUOG Basic Training

Examining the Uterus, Cervix, Ovaries and Adnexae:

Abnormal Findings

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Learning objective

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

 compare the differences between typical normal and common abnormal appearances presenting in gynecological ultrasound examinations







- How do the ultrasound appearances of fibroids and adenomyosis differ?
- What are the typical ultrasound appearances of the most common endometrial and intracavitary pathologies?
- What are the typical ultrasound appearances of the most common pathologies in the adnexae?
- How do I describe my ultrasound findings using the standardized IOTA and IETA terminology?
- Which patients should I refer for specialist opinion?



The basis for ultrasound diagnosis in gynecology

- Gray scale ultrasound
- To use Doppler ultrasound, you must
 - be familiar with Doppler physics
 - understand the pitfalls of Doppler ultrasound
 - recognize Doppler artefacts
- Doppler settings must be correct
 - Pulse repetition frequency (PRF) 0.3- 0.6 KHz





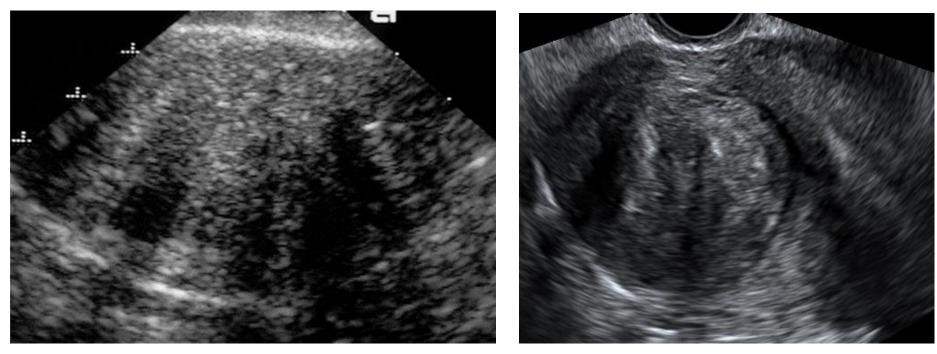
Common myometrial pathology

- Myoma
- Adenomyosis





Most common myometrial pathology - myoma



Round, oval or lobulated solid tumor casting stripy shadows



Hyperechogenic uterine myoma



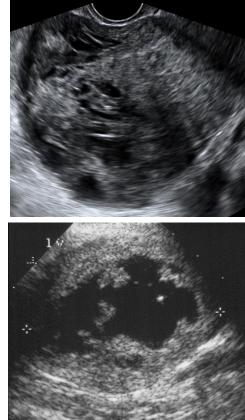


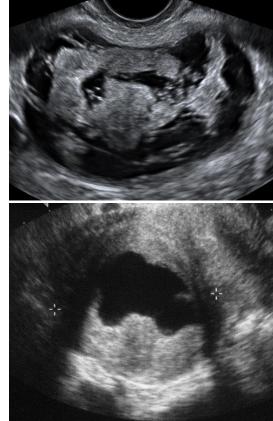






Cystically degenerated myomas







Typical myoma



Round, oval or lobulated solid tumor casting stripy shadows







- Enlarged uterus
 - asymmetrically enlarged
 - globally enlarged
- Fan shaped shadowing
- Cysts in the myometrium
- Poorly defined endometrial-myometrial border



Enlarged uterus





Asymmetrically enlarged Globally enlarged



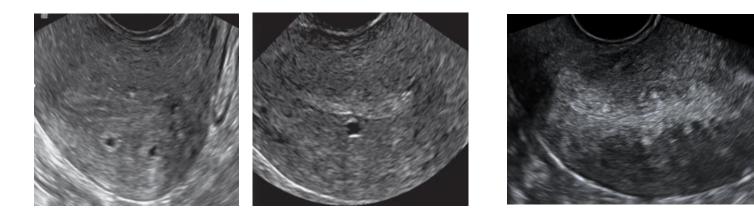
Abnormal myometrial echogenicity





Fan shaped shadowing Rain in the forest sign





Cysts in the myometrium

Poorly defined endometrium (subendometrial lines and buds)

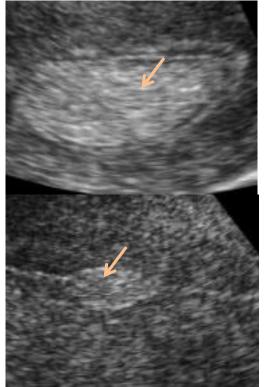


Most common intracavitary pathology

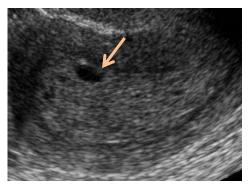
- Polyp
- Submucuous myoma
- Hyperplasia
 - without atypia
 - with atypia
- Cancer

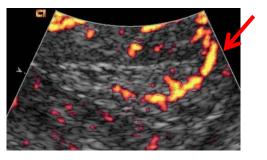


Typical ultrasound features of endometrial polyp



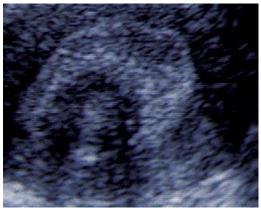
- Bright edge
- Hyperechogenic
- Regular cysts
- Feeding vessel

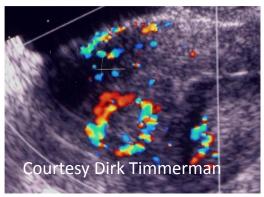






Typical ultrasound features of submucous myoma



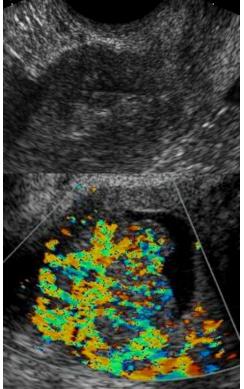


 Solid tumor protruding into the uterine cavity, same echogenicity as myometrium

On colour Doppler possibly ring of colour



Typical ultrasound features of endometrial cancer



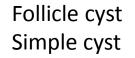
Basic training

- Thick endometrium
- Inhomogenous echogenicity

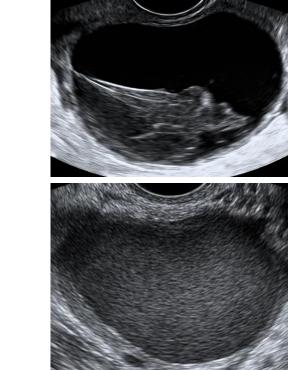
• Richly vascularized on colour Doppler



Common ovarian pathology



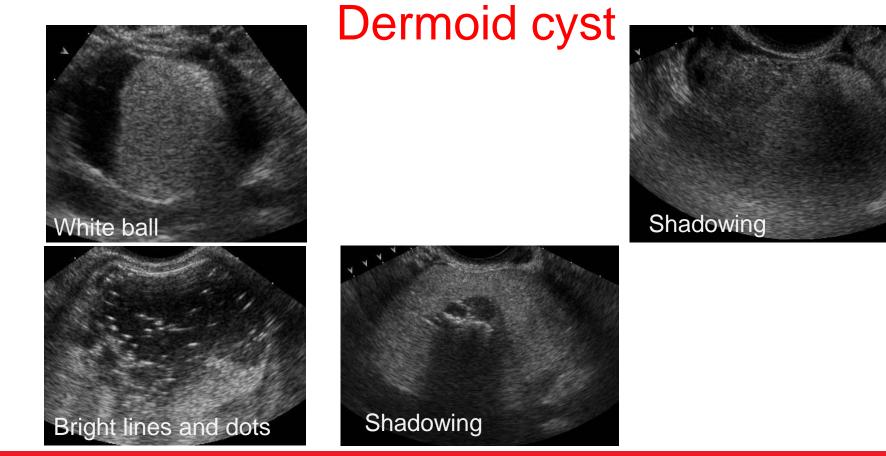
Dermoid cyst



Corpus luteum cyst

Endometrioma







Endometrioma



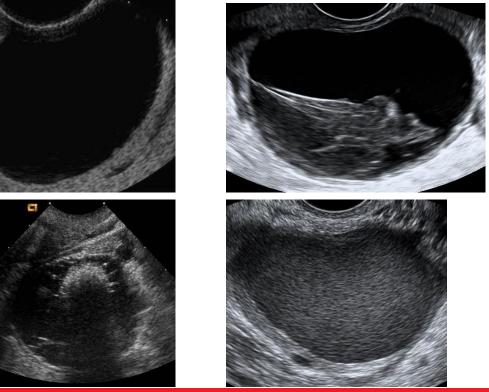


Wall nodularity



Common ovarian pathology

Follicle cyst Simple cyst



Corpus luteum cyst

Dermoid cyst

Basic training



Endometrioma

Common extraovarian adnexal pathology

- Hydrosalpinx
- Paraovarian cysts
- Peritoneal inclusion cysts



Hydro-pyo-hemato-salpinx



Sausage shape



Cog wheel



Beads on a string



Incomplete septa



Incomplete septa



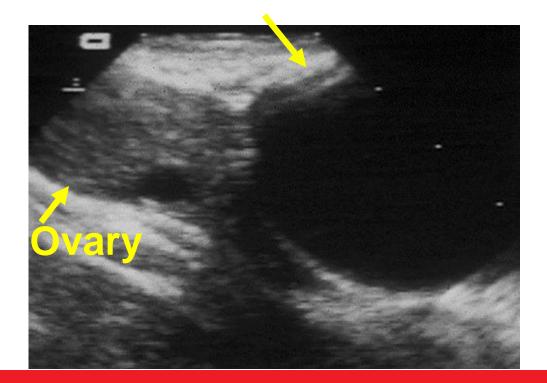


Hydrosalpinx





Paraovarian cyst



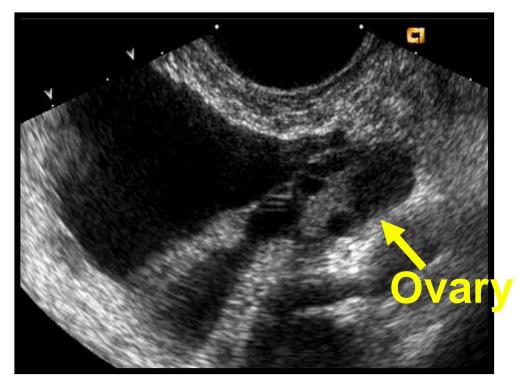


Paraovarian cyst





Peritoneal pseudocyst





Rules of thumb for discriminating between benign and malignant adenxal masses







Multilocular with many locules

Mucinous borderline gastrointestinal type



We need standardised terms, definitions and measurements to describe ultrasound images

- To understand each other
- To compare scientific studies
- To perform meta-analyses
- To conduct multicenter studies





How to describe ultrasound findings using standardised terminology

Ultrasound Obstet Gynecol. 2000 Oct;16(5):500	Ultrasound Obstet Gynecol. 2010 Jan;35: 103
Terms, definitions and measurements to describe the sonographic features of adnexal tumors: a consensus opinion from the International Ovarian Tumor Analysis [IOTA] group	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
D. TIMMERMAN, L. VALENTIN*, T. H. BOURNE†, W. P. COLLINS‡, H. VERRELST§ and I. VERGOTE	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†
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 BOSCH ³ , L. VALENTIN ⁴ , F. P. G. LEONE ⁵ , D. VAN SCHOUBROECK ³ , C. EXACOUSTOS ⁶ , A. J. F. INSTALLÉ ⁷ , W. P. MARTINS ⁸ , M. S. ABRAO ⁹ , G. HUDELIST ¹⁰ , M. BAZOT ¹¹ , J. L. ALCAZAR ¹² , M. O. GONÇALVES ¹³ , M. A. PASCUAL ¹⁴ , S. AJOSSA ¹ , L. SAVELLI ¹⁵ , R. DUNHAM ¹⁶ , S. REID ¹⁷ , U. MENAKAYA ¹⁸ , T. BOURNE ¹⁹ , S. FERRERO ²⁰ , M. LEON ²¹ , T. BIGNARDI ²² , T. HOLLAND ²³ , D. JURKOVIC ²³ , B. BENACERRAF ²⁴ , Y. OSUGA ²⁵ , E. SOMIGLIANA ²⁶ and D. TIMMERMAN ³	Consensus statement on how to •measure •describe ultrasound images •terms •definitions



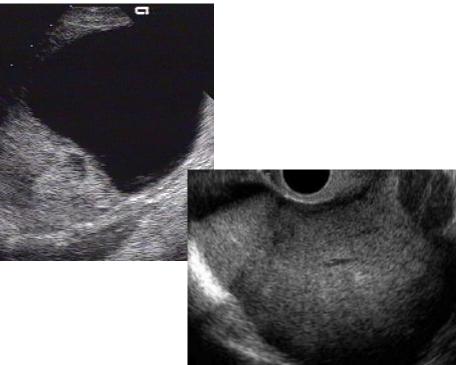
IOTA terms for describing an adnexal mass



- Solid component
- Papillary projection
- Type of tumor
- Echogenicity of cyst fluid
- Shadowing
- Ascites
- Color score



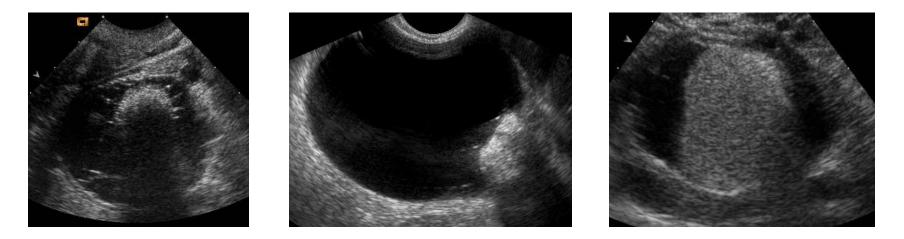
- A structure that has echogenicity suggestive of <u>tissue</u>
 - (myometrium, ovarian stroma)







• The "white ball" in a dermoid cyst is NOT a solid component





 Blood clot or other amorphous material is NOT a solid component







- Blood clot, amorphous material or solid tissue?
 - push on the lesion







IOTA definition of solid component

 Blood clot, amorphous material or solid tissue?

– colour Doppler

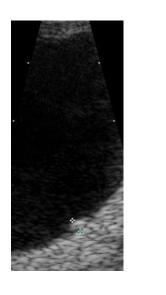
If in doubt – classify as solid tissue





IOTA definition of papillary projection

- Protrusion of solid tissue into a cyst cavity <u>></u>3 mm (height)
- Protrusions <3 mm (height)
 = irregularities
- Papillary projections
 = solid component



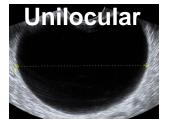


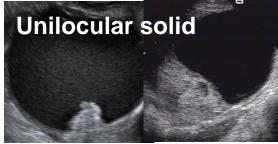
Not a papillary

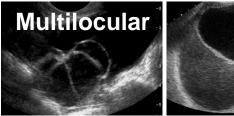
projection



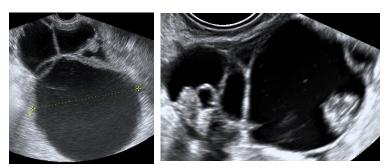
Five types of lesion/tumor (IOTA)



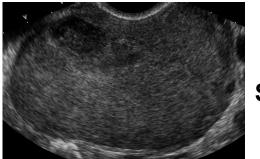








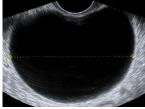
Multilocular solid



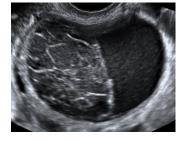
Solid



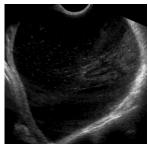
Five types of cyst contents (IOTA)



Anechoic

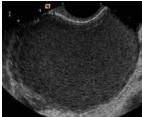


Haemorrhagic



Low level





Ground glass



Mixed



Shadowing (IOTA)





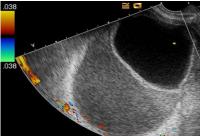
Ascites (IOTA)



Fluid outside the pouch of Douglas



The IOTA colour score



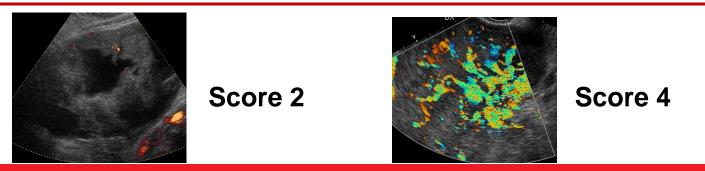
Score 1



Score 3

Adjust settings: maximize detection of flow without artifacts

(Pulse repetition frequency 0.3-0.6 KHz, 3-6 cm/s velocity scale)



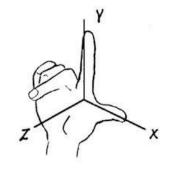


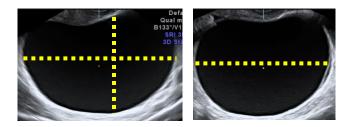
Measurements



How to measure a lesion, an ovary or a solid component of a lesion

- Three orthogonal diameters
- Where the lesion/ovary/solid component appears to be at its largest
 - maximum diameter
 - mean diameter
 - volume
 - (L*D*W*0.5)

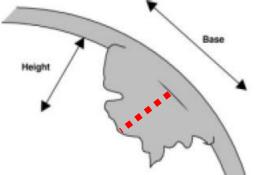


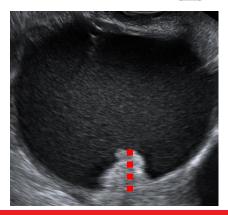




How to measure a papillary projection

- Measure the largest papillary
 projection
- Three orthogonal diameters
- Height: do not include cyst wall or septum







The IETA consensus statement

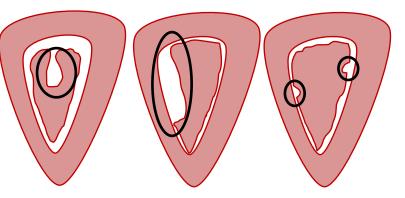
How to describe

- endometrial echogencitiy
- endometrial midline
- endometrial-myometrial junction
 If fluid in the cavity
- fluid echogenictiy
- endometrial outling
- Intracavitary lesion

On colour/power Doppler

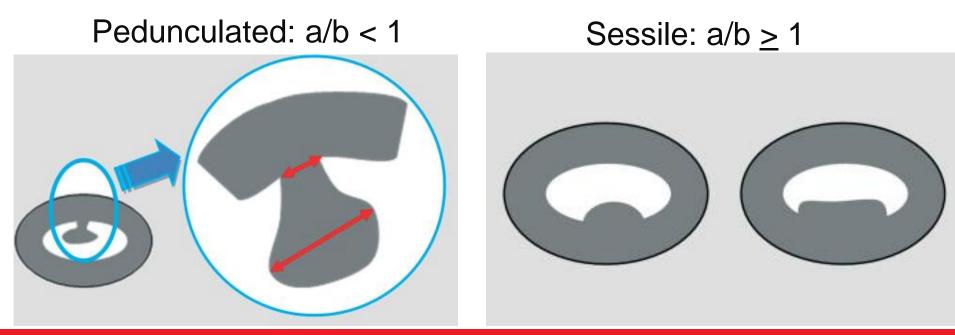
- colour content
- morphology of endometrial vessels and more....

Anything that protrudes into a fluid-filled uterine cavity





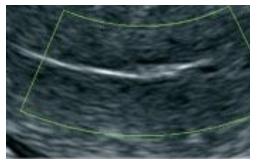
The IETA consensus statement Intracavitary lesion - pedunculated or sessile?



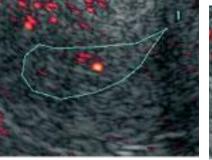


IETA consensus statment Doppler ultrasound examination of the endometrium

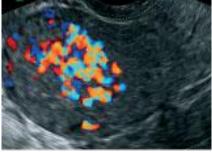
Adjust settings: maximize detection of flow without artifacts (Pulse repetition frequency 0.3-0.6 KHz, 3-6 cm/s velocity scale)



Colour score 1 = no colour



Colour score 2 = minimal colour



Colour score 3 = moderate colour

Colour score 4 = abundant colour



= no colour

Basic training

Which patients should I refer for specialist opinion?

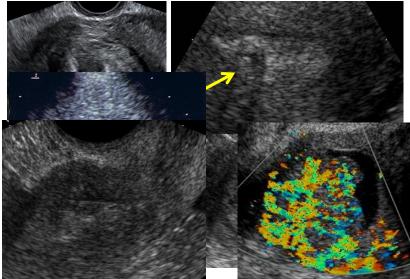
 Those in whom you are uncertain about the diagnosis (especially if you suspect malignancy)



Key points

Common uterine pathology that manifests typical ultrasound appearance is _____

- Myoma
- Adenomyosis
- Polyps
- Endometrial cancer





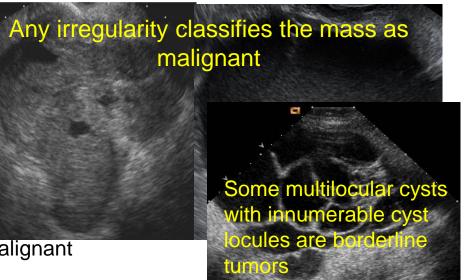
Key points

Common cystic structures in the adnexa with typical ultrasound appearances are

- Functional cysts
- "Simple cysts"
- Dermoid cyst
- Endometrioma
- Hydrosalpinx
- Paraovarian cysts
- Peritoneal inclusion cysts

For other adnexal lesions the following

Any irregularity classifies the mass as malignant







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

Sisuog.

THANK YOU



ISUOG's basic training curriculum