ISUOG Basic Training

Examining the Ovaries and Adnexa

Learning objectives

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

- Use International Ovarian Tumor Analysis (IOTA) terms, definitions and measurements

Key questions

- How do I describe my ultrasound findings using the standardized (IOTA) terminology?
- How do I assess and describe vascular flow in structures in the adnexa?
- How do I measure and describe papillations in ovarian lesions?

Key points

- Understand how to use IOTA terminology
- Understand how to arrange ultrasound settings to assess vascular flow in ovarian lesions
- Understand how to measure and assess papillations in ovarian lesions

International Ovarian Tumour Analysis (IOTA)

Terms, definitions and measurement methods

Definitions

- Ovarian lesion
- Solid component
- Papillary projection – cyst wall irregularity
- Complete – incomplete septum
- Five tumor types
- Different types of cyst content
- Acoustic shadowing
- Color score
- Ascites

Ovarian lesion

Ultrasound Obstet Gynecol 2000; 16: 500-505.

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

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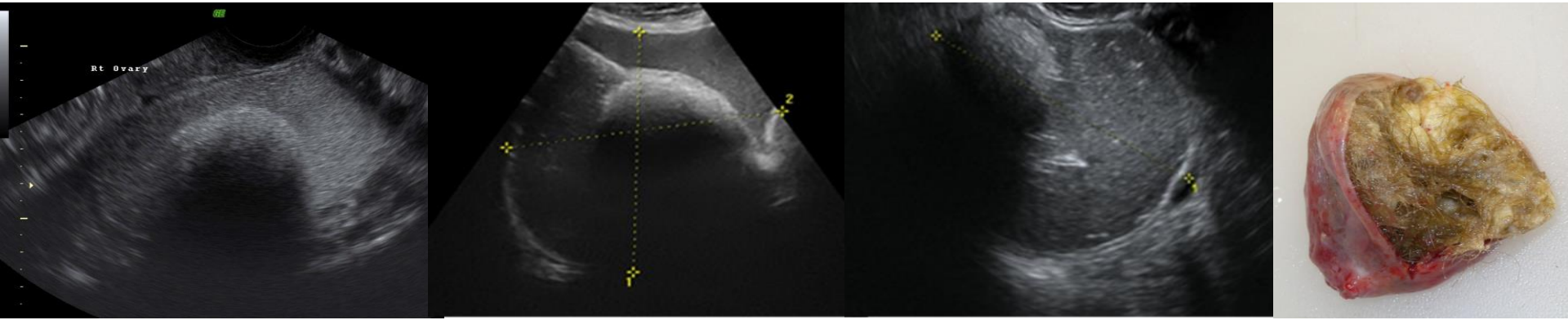
- Part of an ovary inconsistent with normal physiology
- Adnexal mass inconsistent with normal physiology

IOTA definition of a solid component

- A structure that has (high) echogenicity suggestive of *tissue* (myometrium, ovarian stroma, myomas, fibromas)

IOTA definition of a solid component

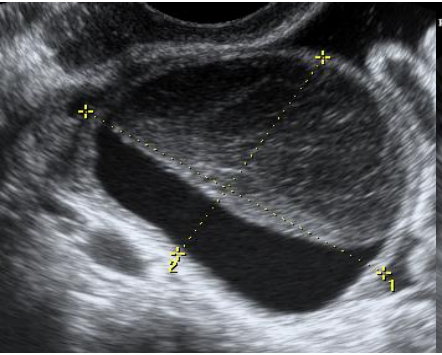
- The white ball in a dermoid cyst is NOT solid tissue

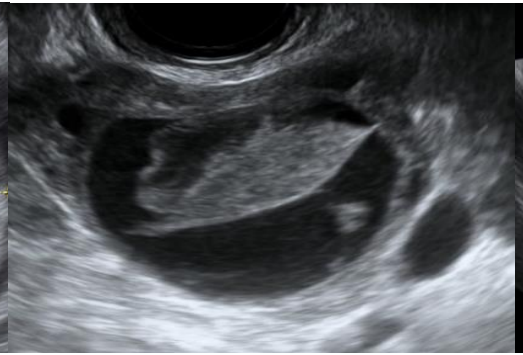


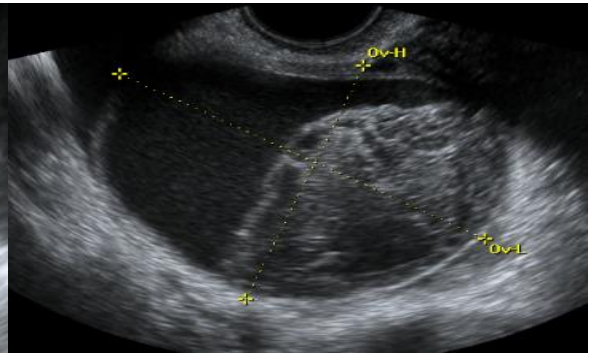
IOTA definition of a solid component

- Blood clot, amorphous material or solid tissue?
- Push on the lesion
- Use colour doppler

If in doubt – classify as solid tissue!

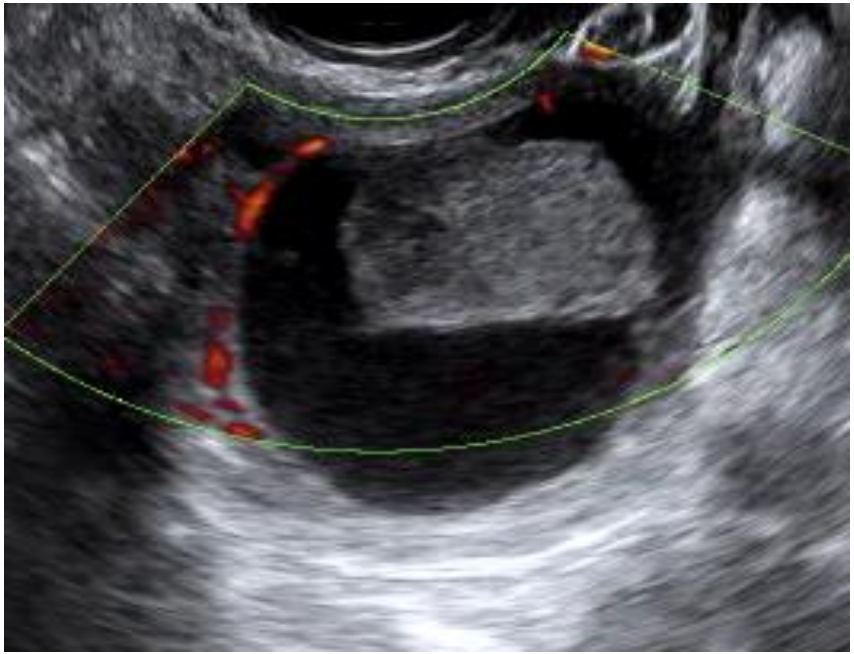


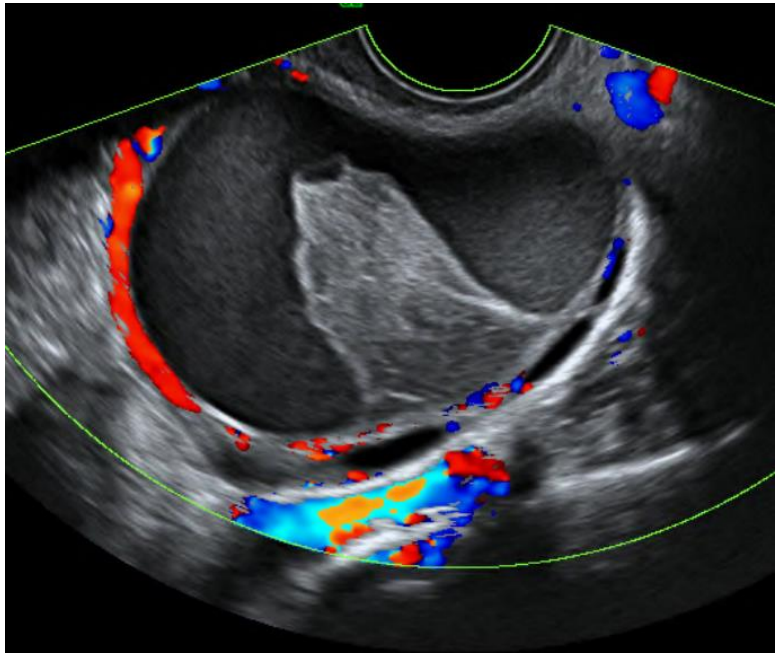




Push on the lesion

Use colour Doppler

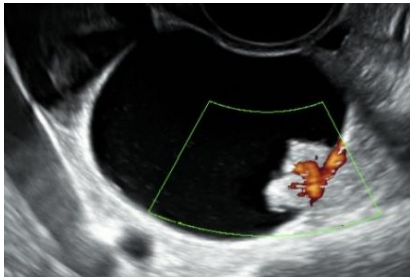
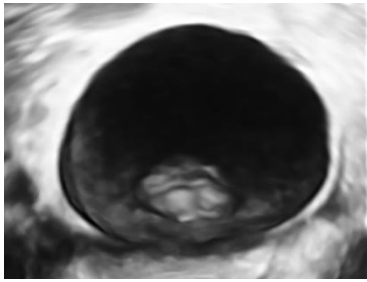


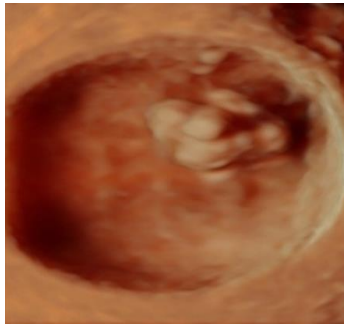
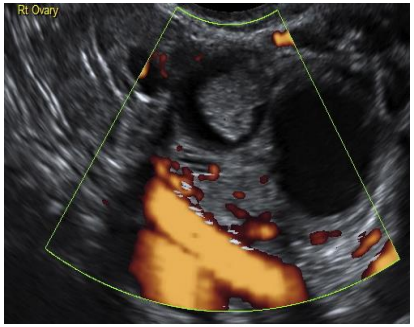


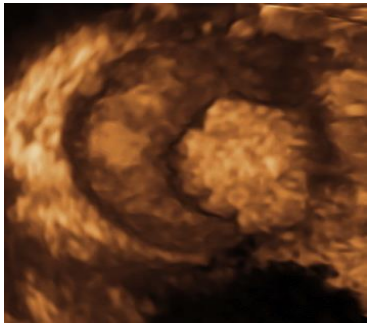
IOTA definition of a papillary projection

- A papillary projection is any solid protrusion into the cyst cavity from the cyst wall with a height of ≥ 3mm

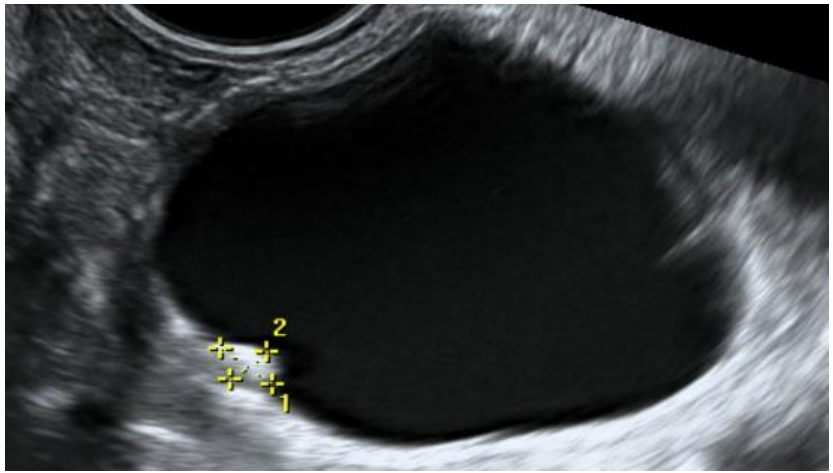
- Papillary projection = solid tissue

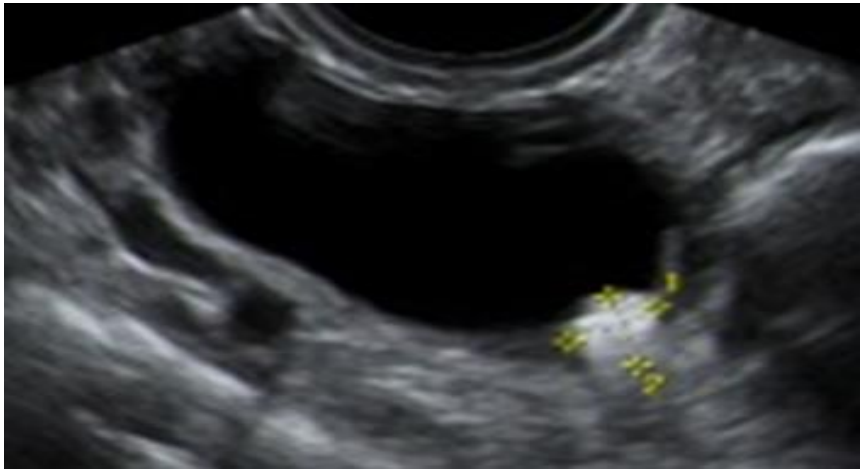





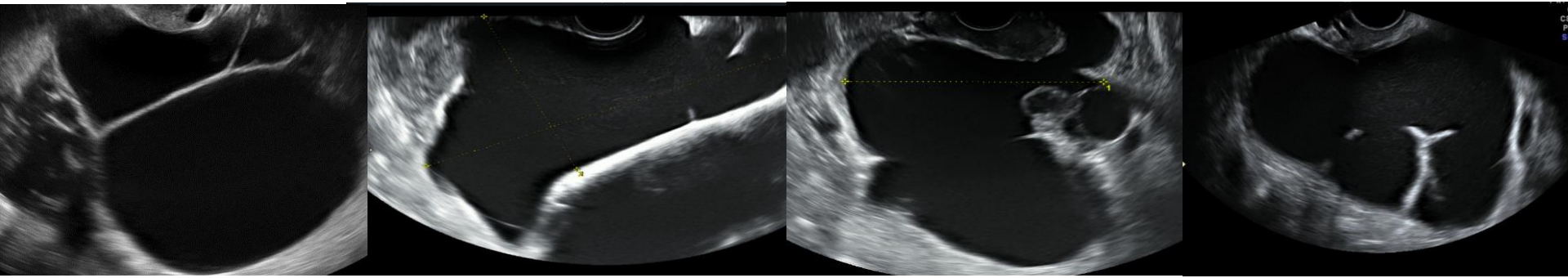
A protrusion <3mm: cyst wall irregularity





IOTA definition of septum and incomplete septum

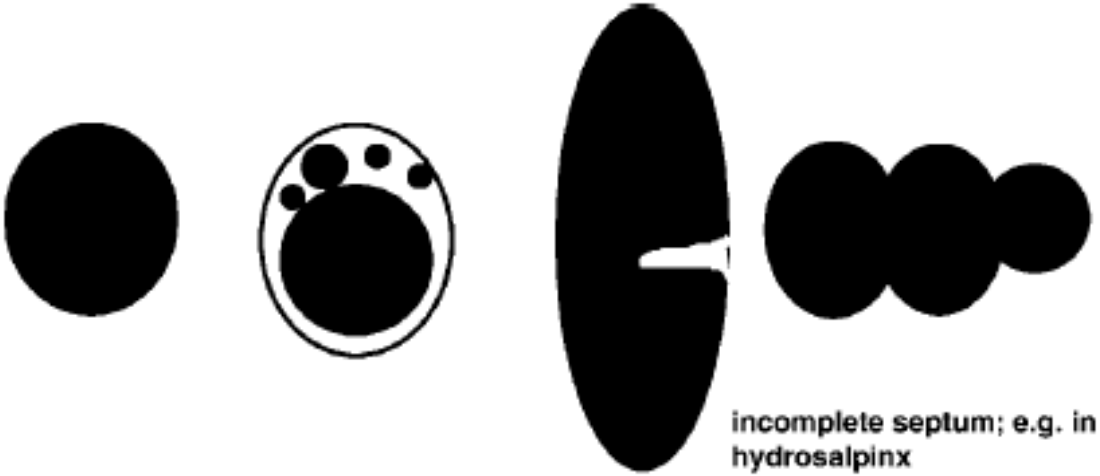
- Septum = thin strand of tissue that runs from one internal cyst surface to another
- Incomplete septum = thin strand of tissue that does not reach the opposite wall of the cystic structure in some scanning planes (seen in diseased tubes)



Five types of lesions

- Unilocular
- Unilocular-solid
- Multilocular
- Multilocular-solid
- Solid

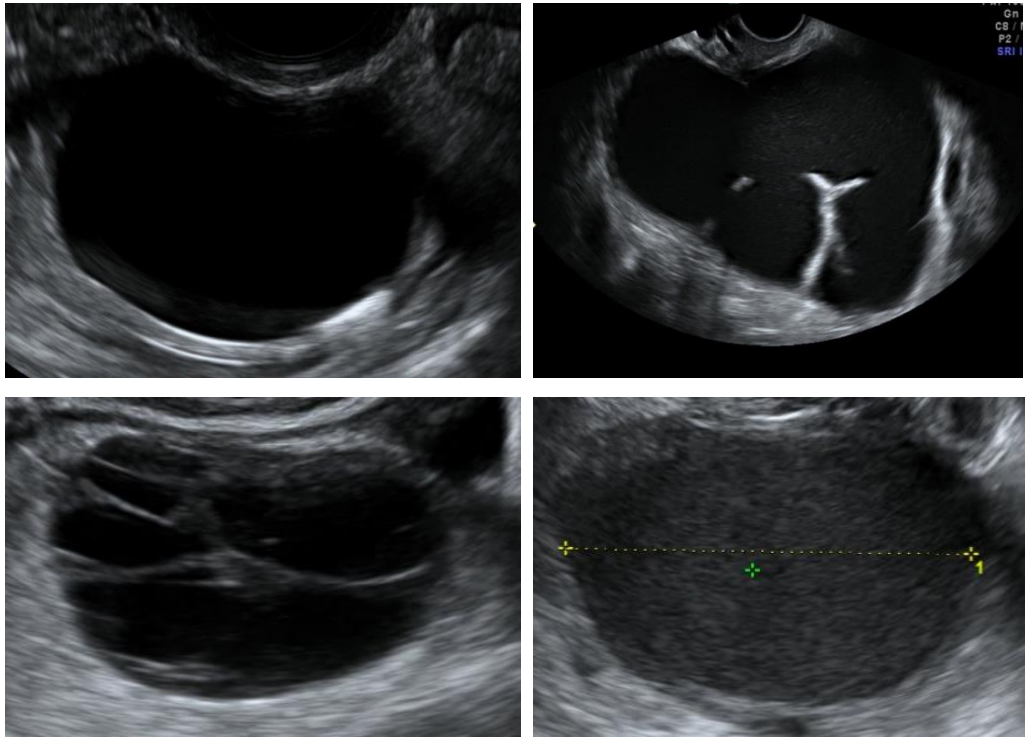
Unilocular



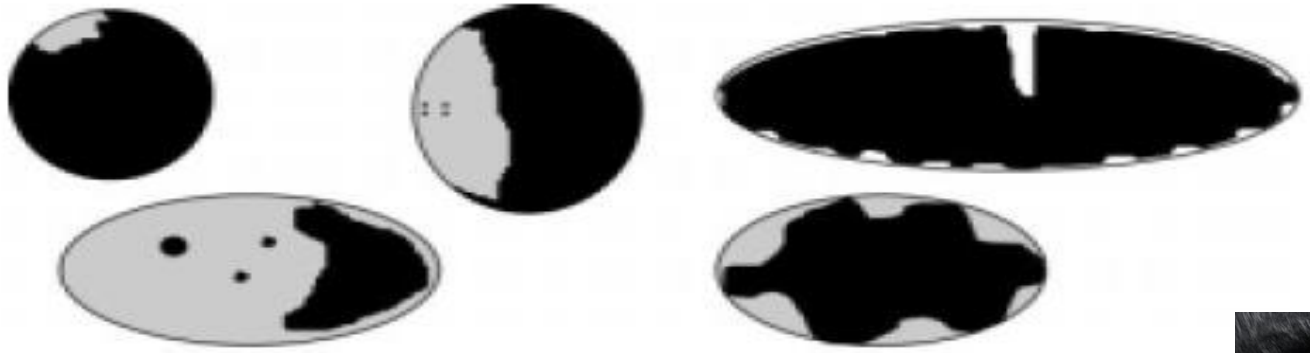
Timmerman et al. Ultrasound Obstet Gynecol 2000;16:500-5

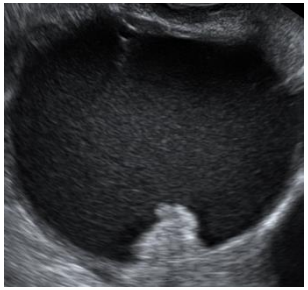
Definition of a unilocular cyst

- ONE cyst locule
- No septa
- No solid components
- Any type of cyst fluid



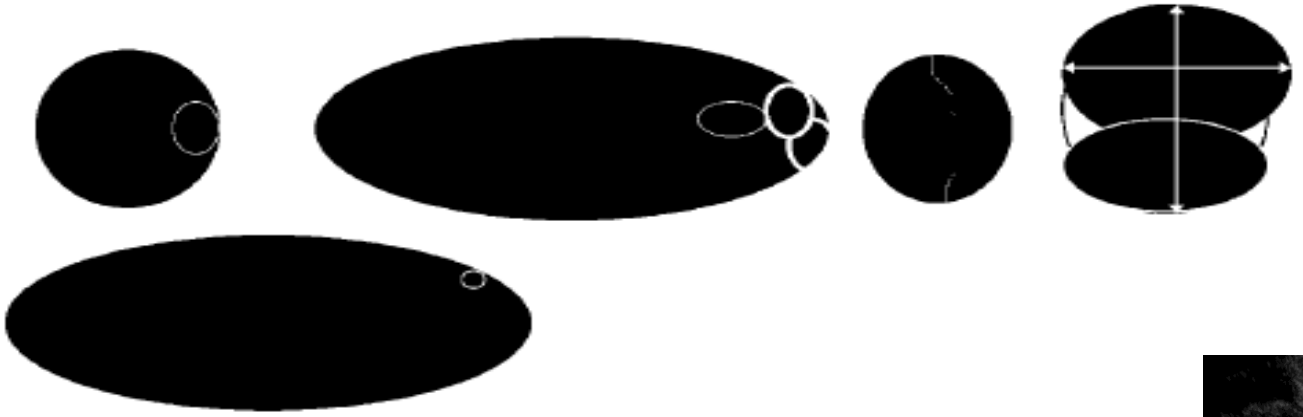
Unilocular-solid





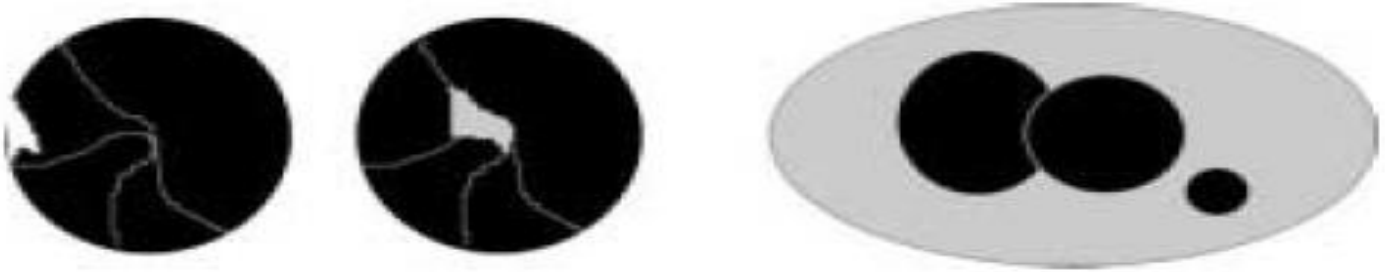
Timmerman et al. Ultrasound Obstet Gynecol 2000;16:500-5

Multilocular



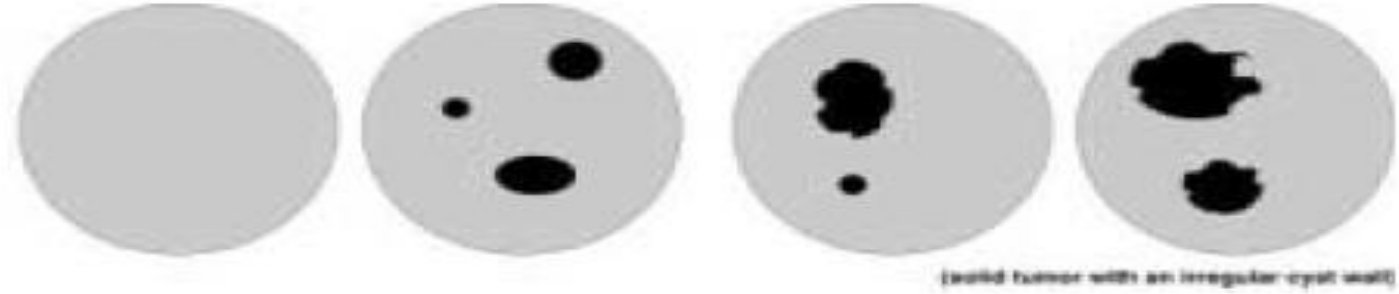
Timmerman et al. Ultrasound Obstet Gynecol 2000;16:500-5

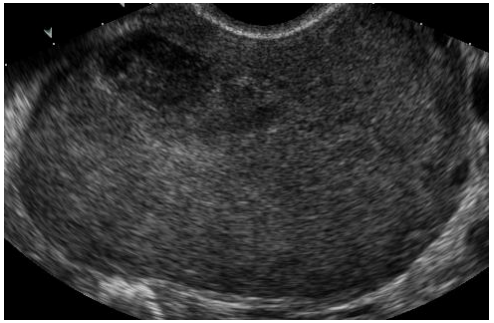
Multilocular-solid



Timmerman et al. Ultrasound Obstet Gynecol 2000;16:500-5

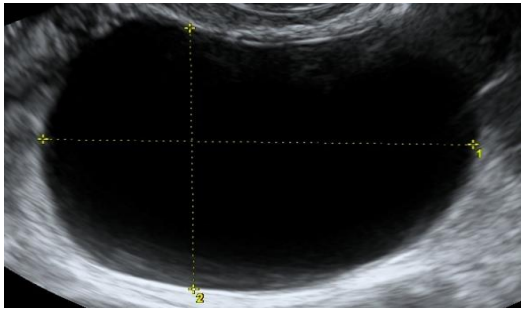
Solid



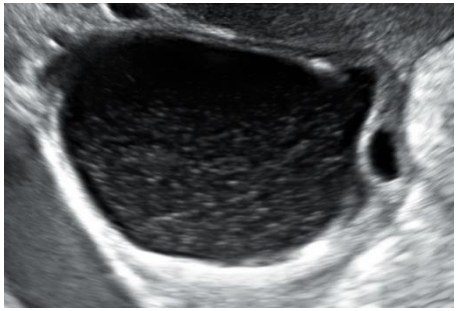


Timmerman et al. Ultrasound Obstet Gynecol 2000;16:500-5

Five types of cyst content

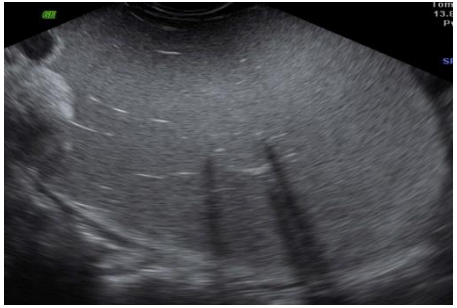


Anechoic

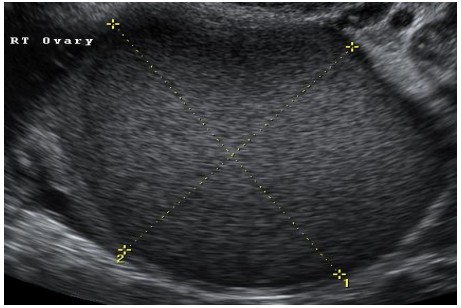


Low level

Hemorrhagic

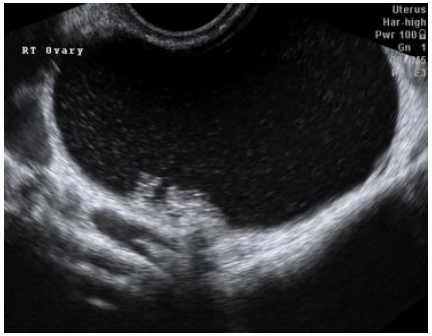


Mixed



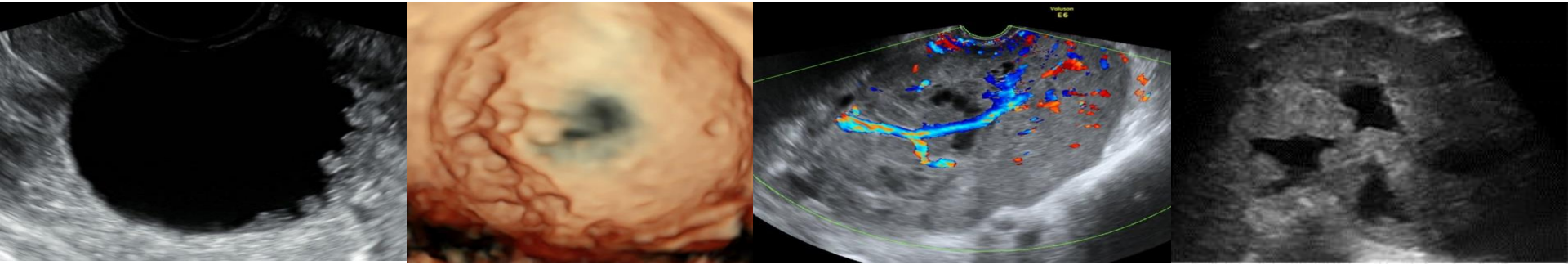
Ground glass

Acoustic shadowing



Irregular cyst wall

- Irregularity in the inner wall of a cyst
- Irregularity of outer contour of a solid tumor or irregularity of the inner wall of a cystic component in a solid tumor



Color score

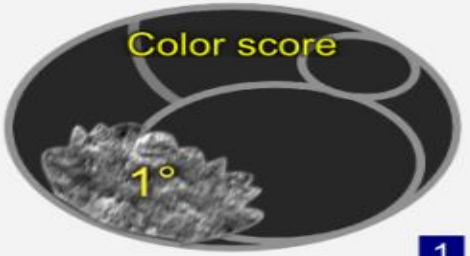
Subjective assessment of blood flow

1 **Color score of 1** is given when no blood flow within the septa, cyst walls, or solid tumor areas.

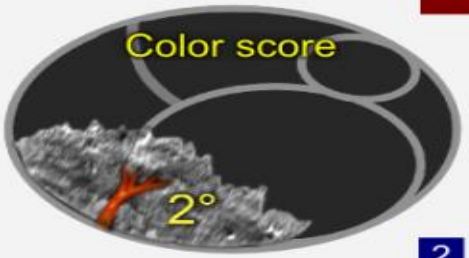
2 **Color score of 2** is given when only minimal flow can be detected.

3 **Color score of 3** is given when moderate flow is present.

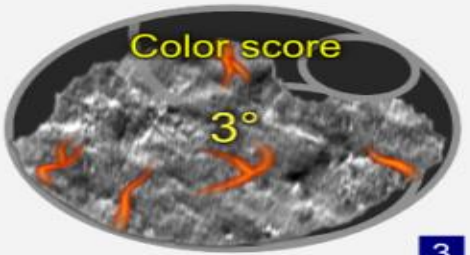
4 **Color score of 4** is given when the adnexal mass appears highly vascular with marked blood flow.



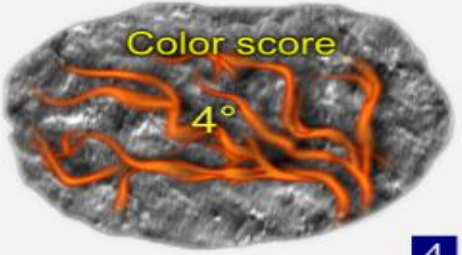
1



2

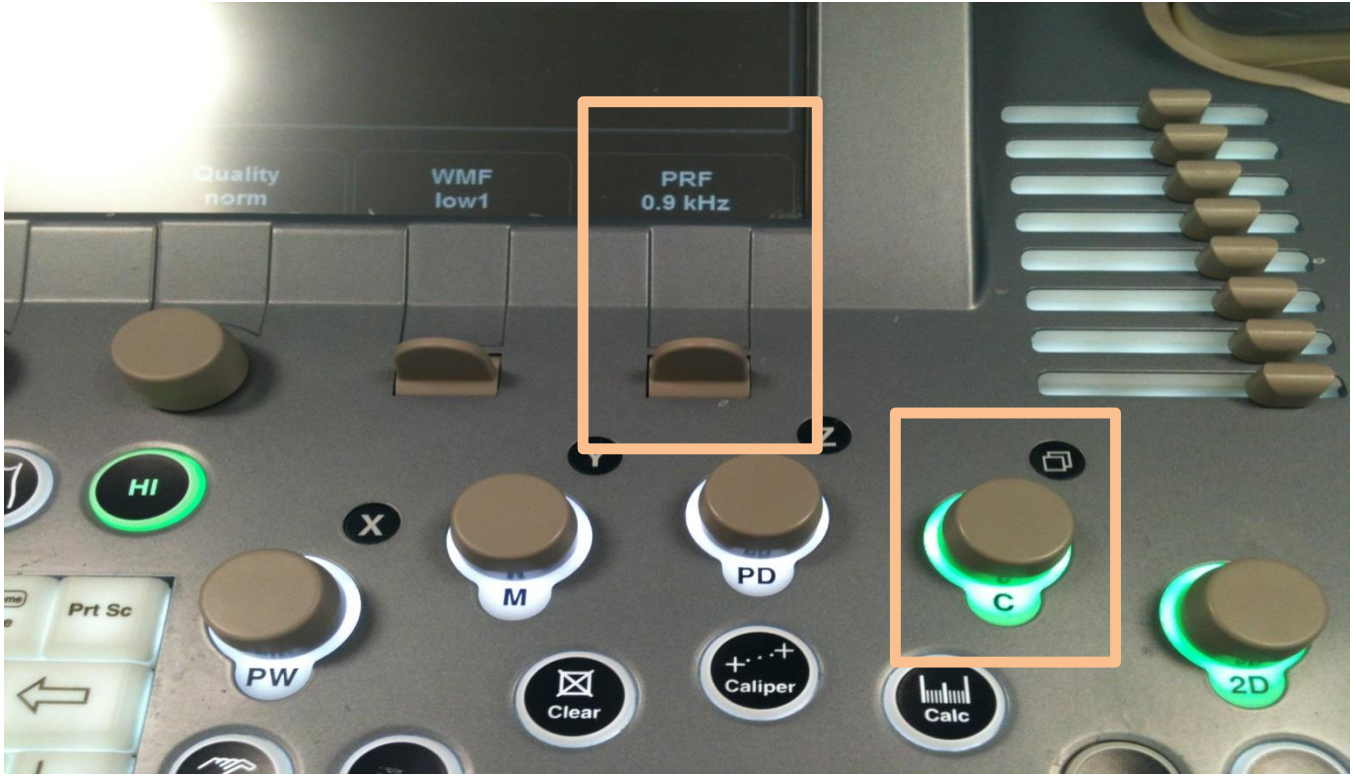


3



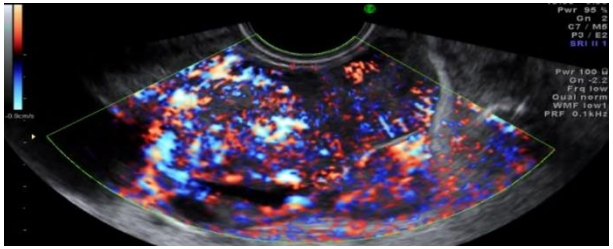
4

Use of color or power Doppler

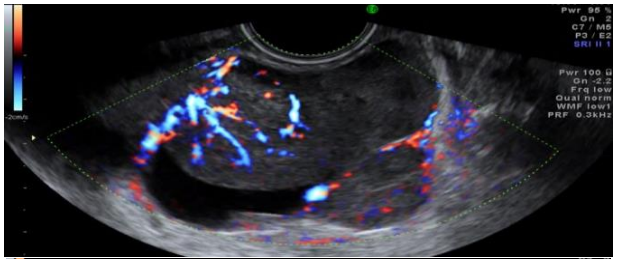


Use of Pulse Repetition Frequency (PRF)

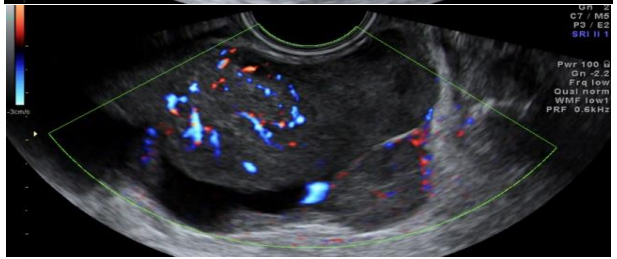
0.1

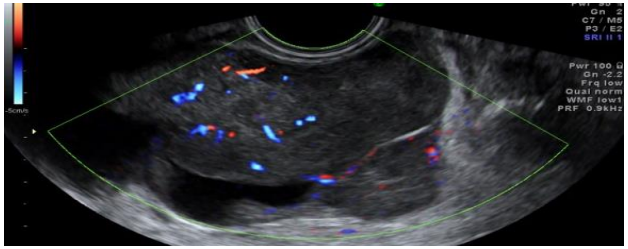


0.3

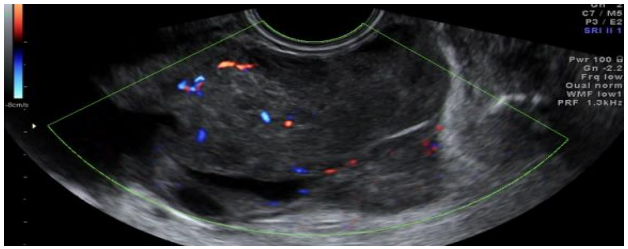


0.6

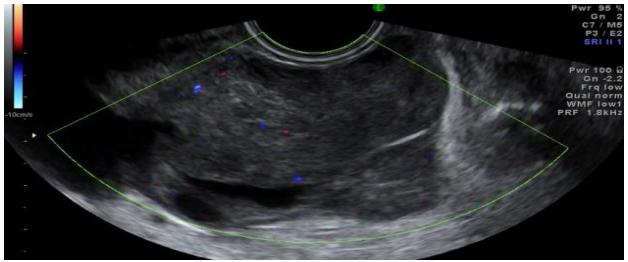




0.9

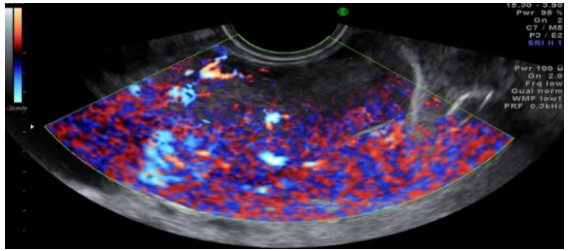


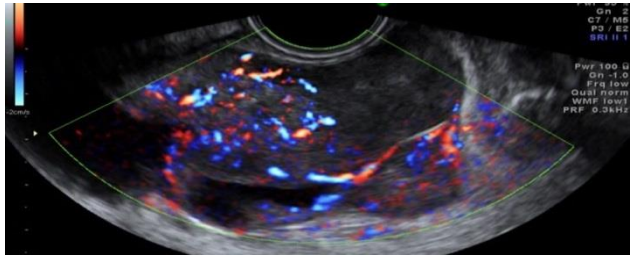
1.3

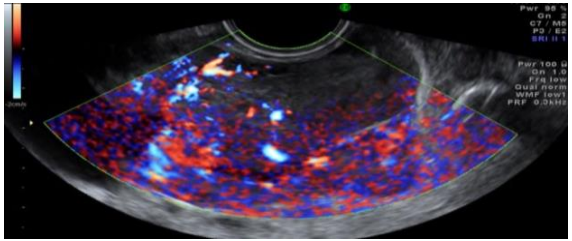


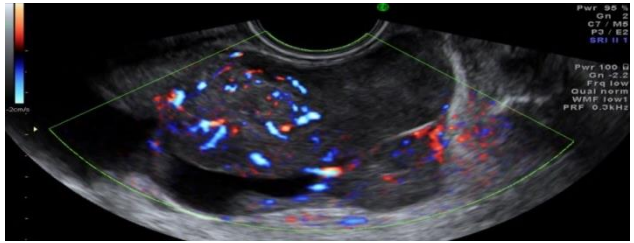
1.8

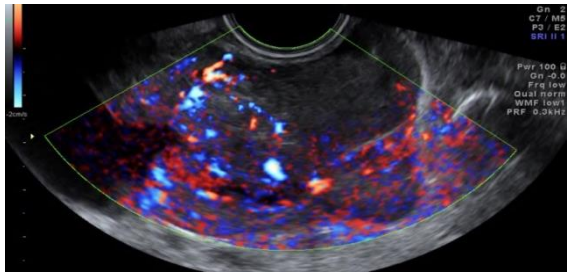
PRF fixed at 0.3, lower GAIN…

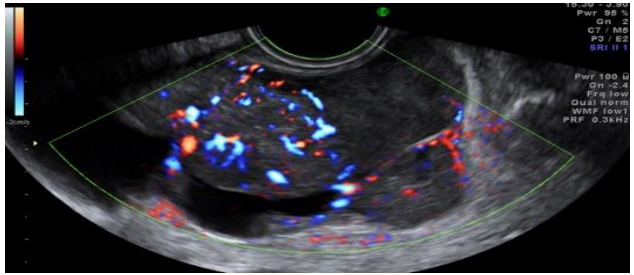










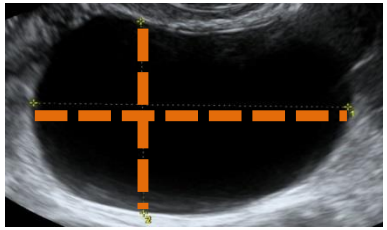


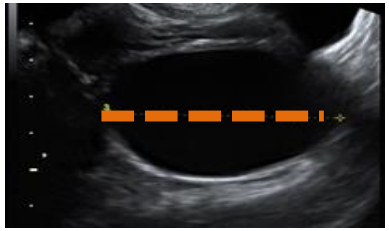
Ascites

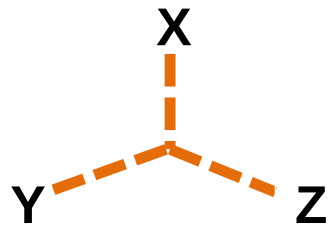
- Fluid outside the pouch of Douglas

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

- Three orthogonal diameters
- Where the lesion/ ovary/ solid component appears to be at its largest
  - Maximum diameter
  - Mean diameter
  - Volume: (L x D x W x 0.5)

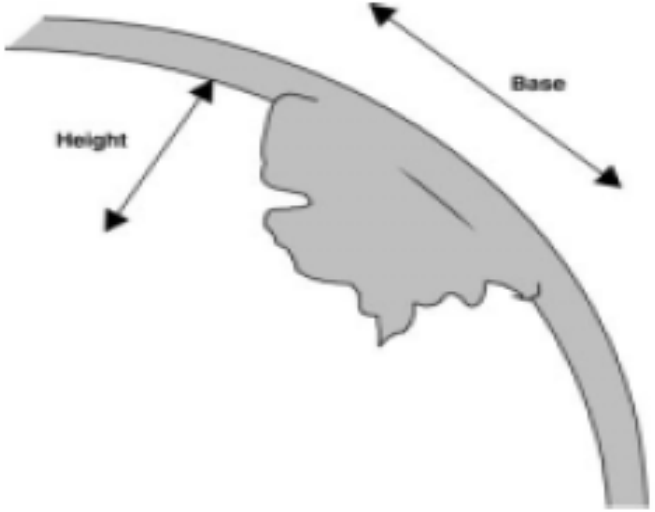




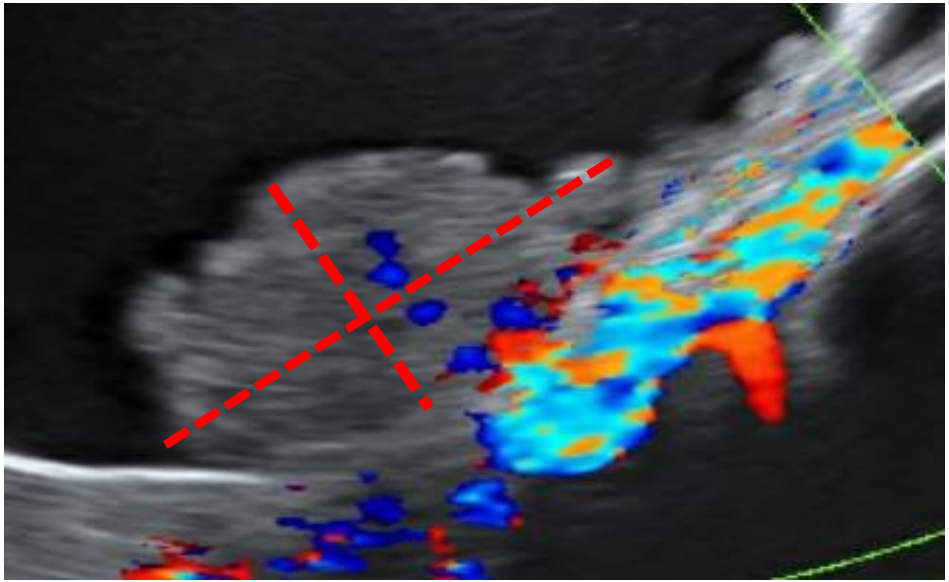


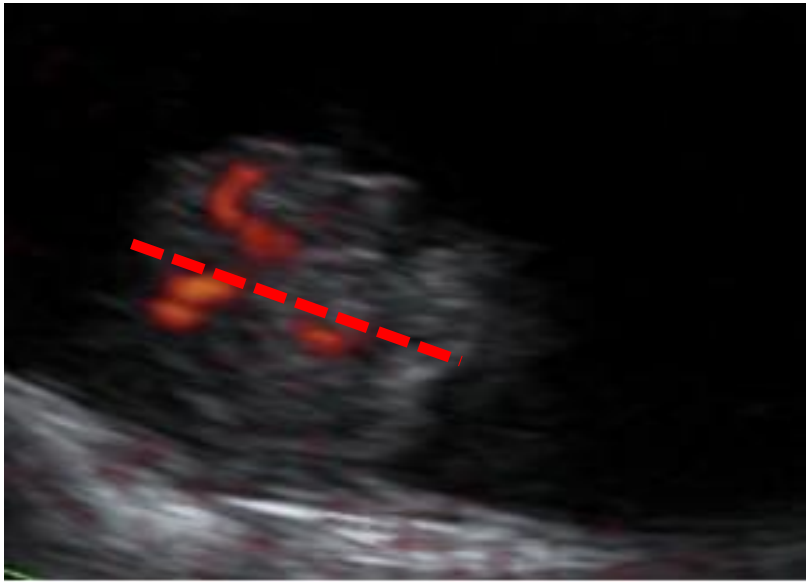
How to measure a papillary projection

- All papillary projections are measured in two perpendicular planes: *height* and *base*



How to measure a papillary projection





Maximum diameter of largest solid component