

BMUS)))

Test your skills: Adnexal Masses Quiz

Presented by : Janet Villars



WHICH REPORTING SYSTEM SHOULD BE USED?

- **Several ultrasound-based scoring systems:**

 - International Ovarian Tumour Analysis Simple Rules (IOTA-SR)

 - Risk of Malignancy Index (RMI)

 - Ovarian-Adnexal Reporting and Data System (O-RADS)

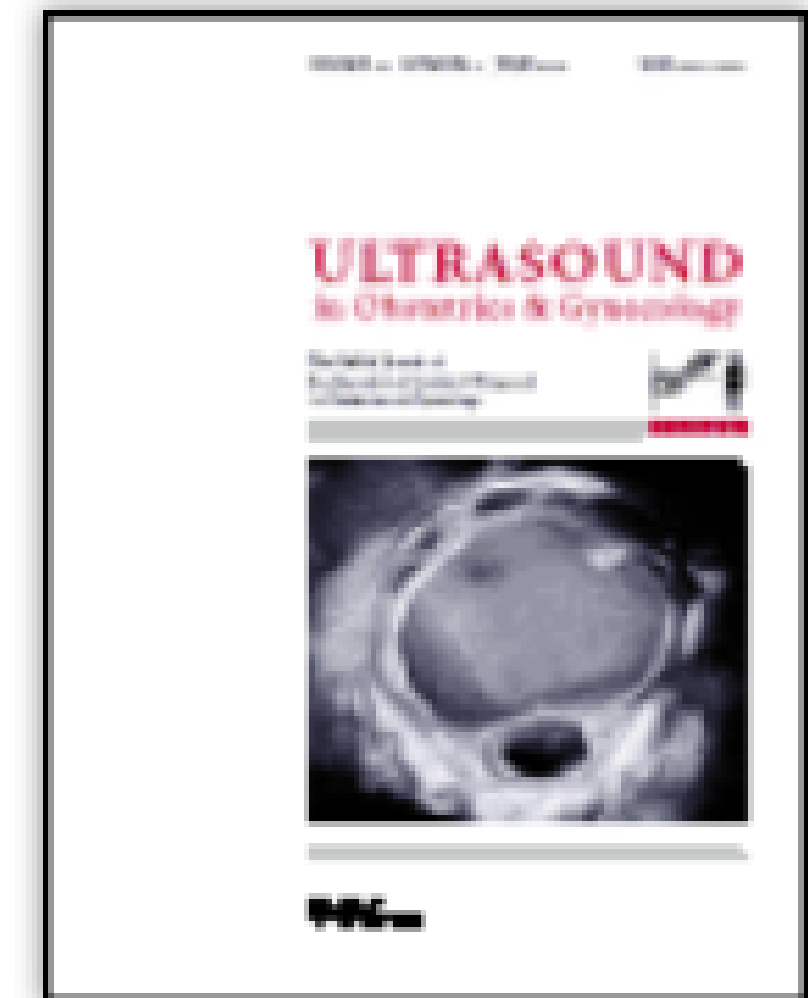
 - Gynaecologic Imaging–Reporting and Data System (GI-RADS)

- **RCOG / NICE** : support RMI, but highlight that IOTA-SR have comparable sensitivity and specificity - an effective alternative (RCOG 2011, 2016).
- **BMUS** advocate IOTA-SR for adnexal lesion classification (BMUS, 2021)
- **LOCAL PRACTICE:** RCOG 2016 and Society of Radiologists in Ultrasound Consensus Conference Statement, Levine et al. (2010)

Simple ultrasound-based rules for the diagnosis of ovarian cancer

D. TIMMERMAN*, A. C. TESTA†, T. BOURNE*, L. AMEYE‡, D. JURKOVIC§, C. VAN HOLSBEKE*, D. PALADINI¶, B. VAN CALSTER‡, I. VERGOTE*, S. VAN HUFFEL‡ and L. VALENTIN**

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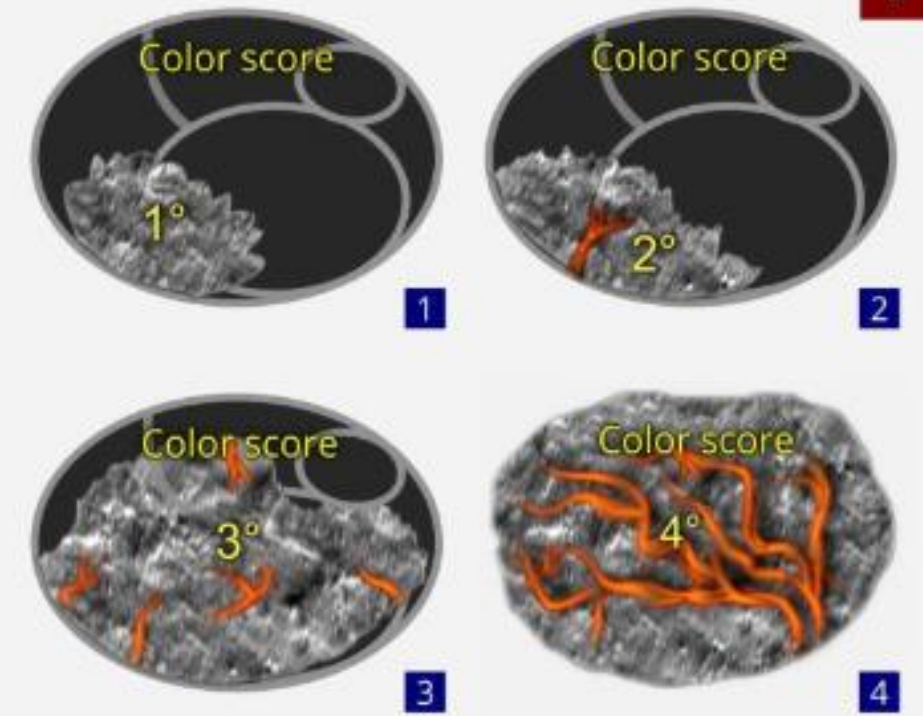
“ easy to train and use. In conclusion, the IOTA simple rules have high diagnostic accuracy in differentiating between benign and malignant adnexal masses. Application of the IOTA simple rules yielded acceptable results in terms of sensitivity and specificity and its histopathological correlation proved to be effective statistically. ”

International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Sharma B et al. *Int J Reprod Contracept Obstet Gynecol.* 2020 Feb;9(2):652-658
www.ijrcog.org

IOTA-SR GRADING

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.



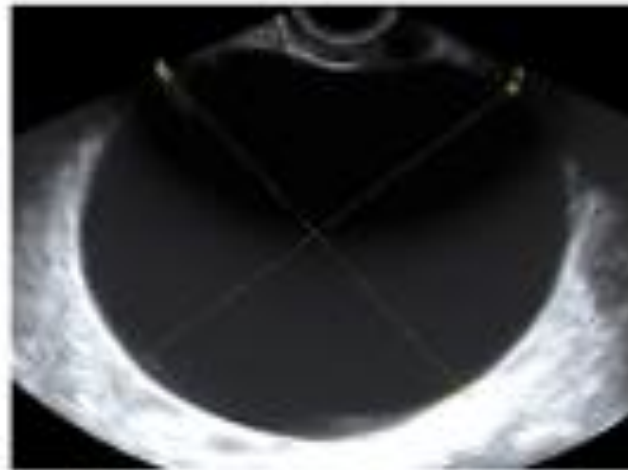
M rules	B-rules
M1 – Irregular solid tumour	B1 – Unilocular cyst
M2 – Presence of ascites	B2 – Presence of solid component where largest solid component is less than 7mm in diameter
M3 – At least four papillary structures	B3 – Presence of acoustic shadows
M4 – Irregular multilocular solid tumour with largest diameter >100mm	B4 – Smooth multilocular tumour with largest diameter <100mm
M5 – Very strong blood flow (Colour score 4)	B5 – No blood flow (Colour score 1)

***Benign - Only B-features apply**

***Malignant - Only M-features apply**

***Inconclusive - no features apply, or both B- and M-features apply**

B1 Unilocular



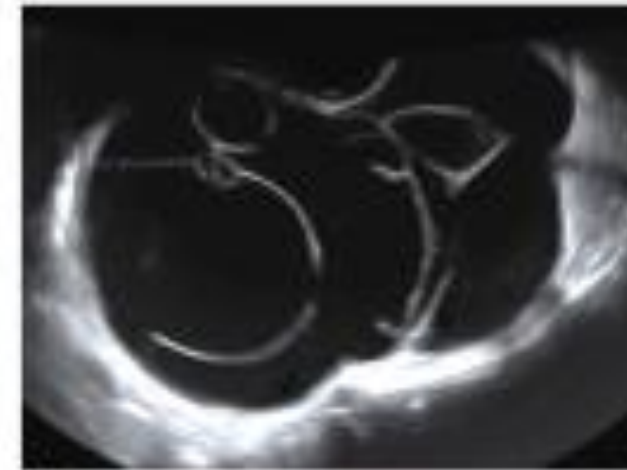
B2 Presence of solid components with largest diameter < 7 mm



B3 Presence of acoustic shadows



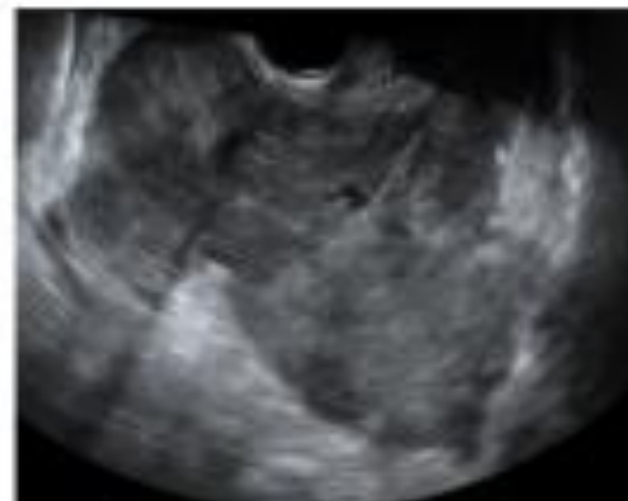
B4 Smooth multilocular tumor with largest diameter < 100 mm



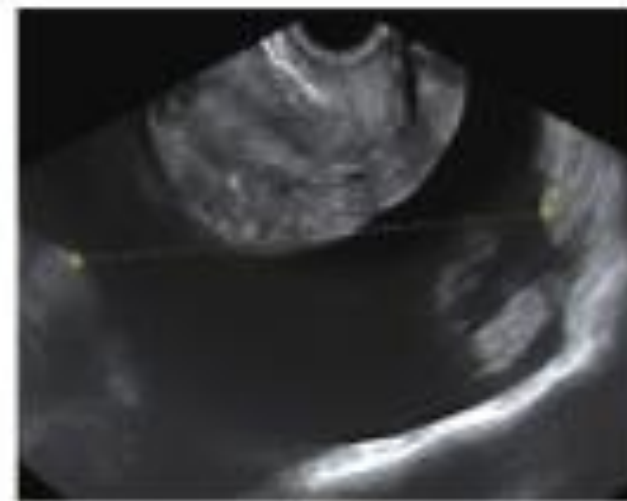
B5 No blood flow (color score 1)



M1 Irregular solid tumor



M2 Presence of ascites



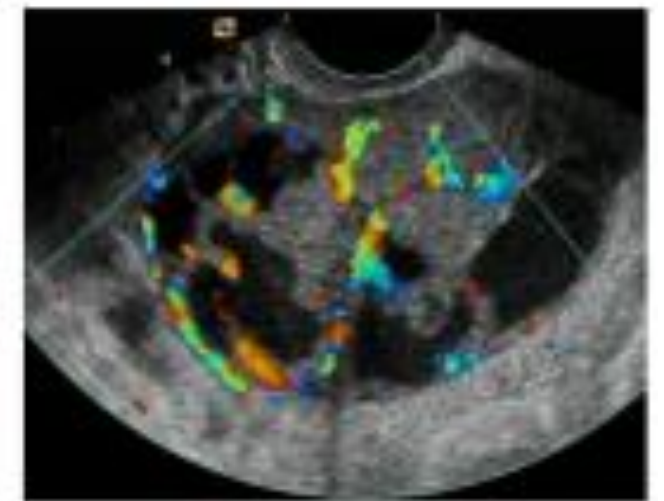
M3 At least 4 papillary structures



M4 Irregular multilocular-solid tumor with largest diameter ≥ 100 mm



M5 Very strong blood flow (color score 4)





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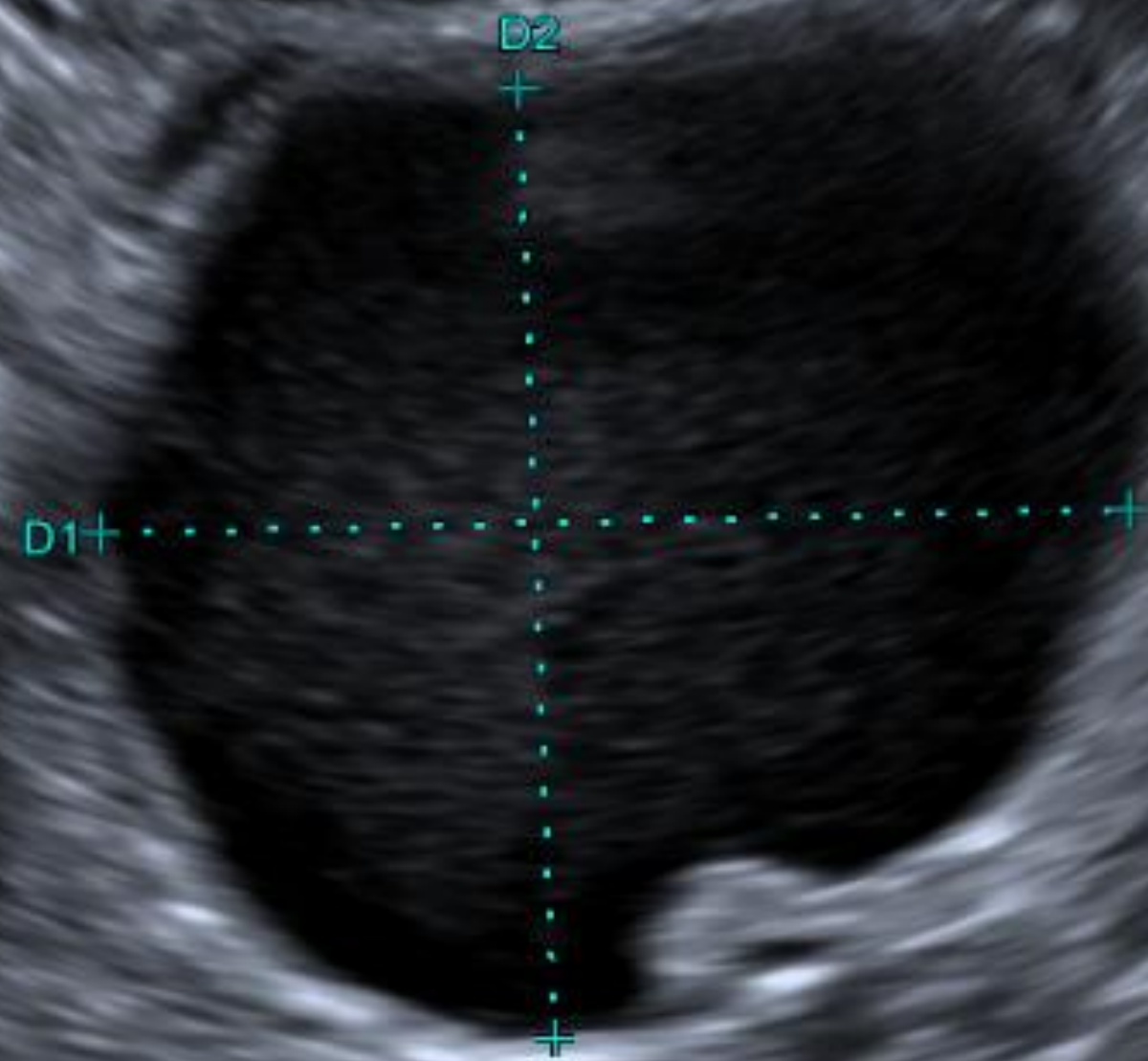


CASE 1

Clinical history:
49-year-old with
asymmetrically
enlarged ovary
on CT TAP. TVS advised to
investigate

MI
(1.2)
11C3
d8.5
21 fps
Qscan
G:86
DR:70

A:2
P:1



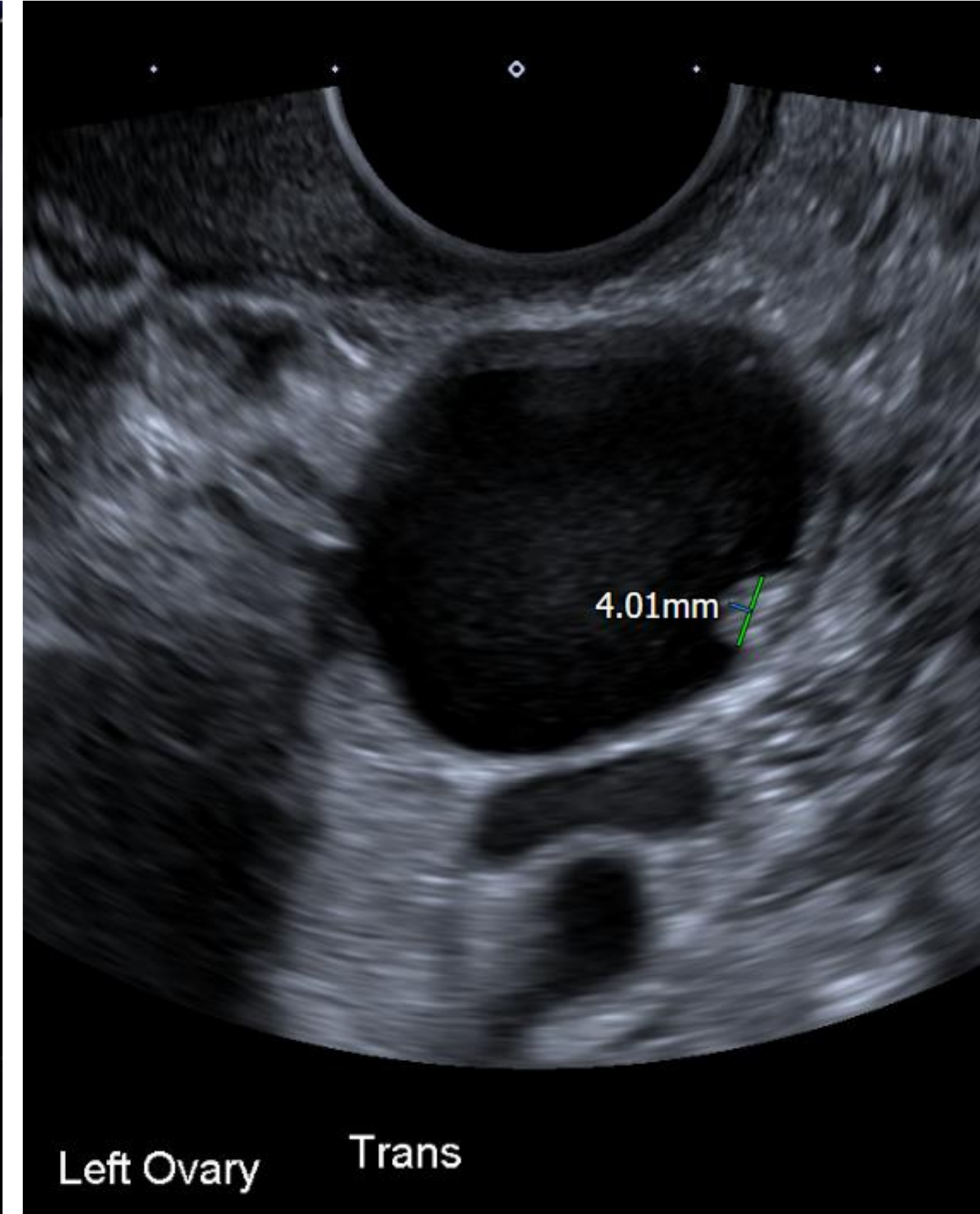
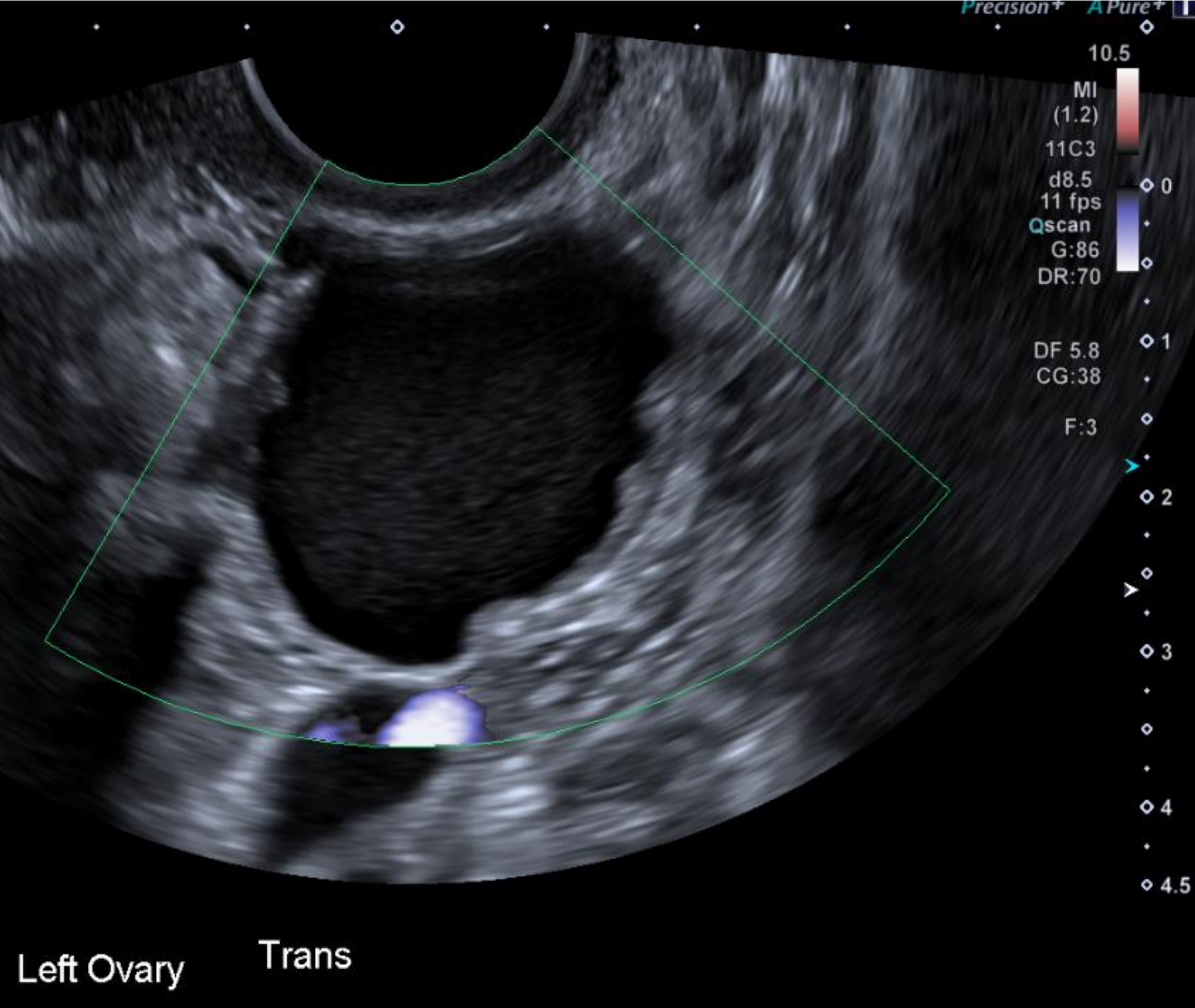
Volume	12.5 cm ³
Dist1	28.3 mm
Dist2	26.5 mm
Dist3	31.9 mm

MI
(1.2)
11C3
d8.5
21 fps
Qscan
G:86
DR:70

A:2
P:1



- ◇ 0
-
- ◇ 1
-
- ◇ 2
-
- ◇ 3
-
- ◇ 4
-
- ◇ 4.5



Case 1: Malignant, Benign or Inconclusive?



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IOTA-SR GRADING

M-FEATURES		B-FEATURES	
M1- Irregular solid tumour		B1 – Unilocular cyst	
M2 – Presence of Ascites		B2 – Presence of solid component where largest solid component is less than 7mm in diameter	X (largest 4mm)
M3 – At least 4 papillary structures	X	B3 – Presence of acoustic shadows	
M4 – Irregular multilocular solid tumour with largest diameter >100mm		B4 – Smooth multilocular tumour with largest diameter <100mm	
M5 – Very strong blood flow (Colour flow score 4)		B5 – No blood flow (Colour score 1)	

Expert opinion:
Inconclusive

Histology:
Benign serous cystadenoma

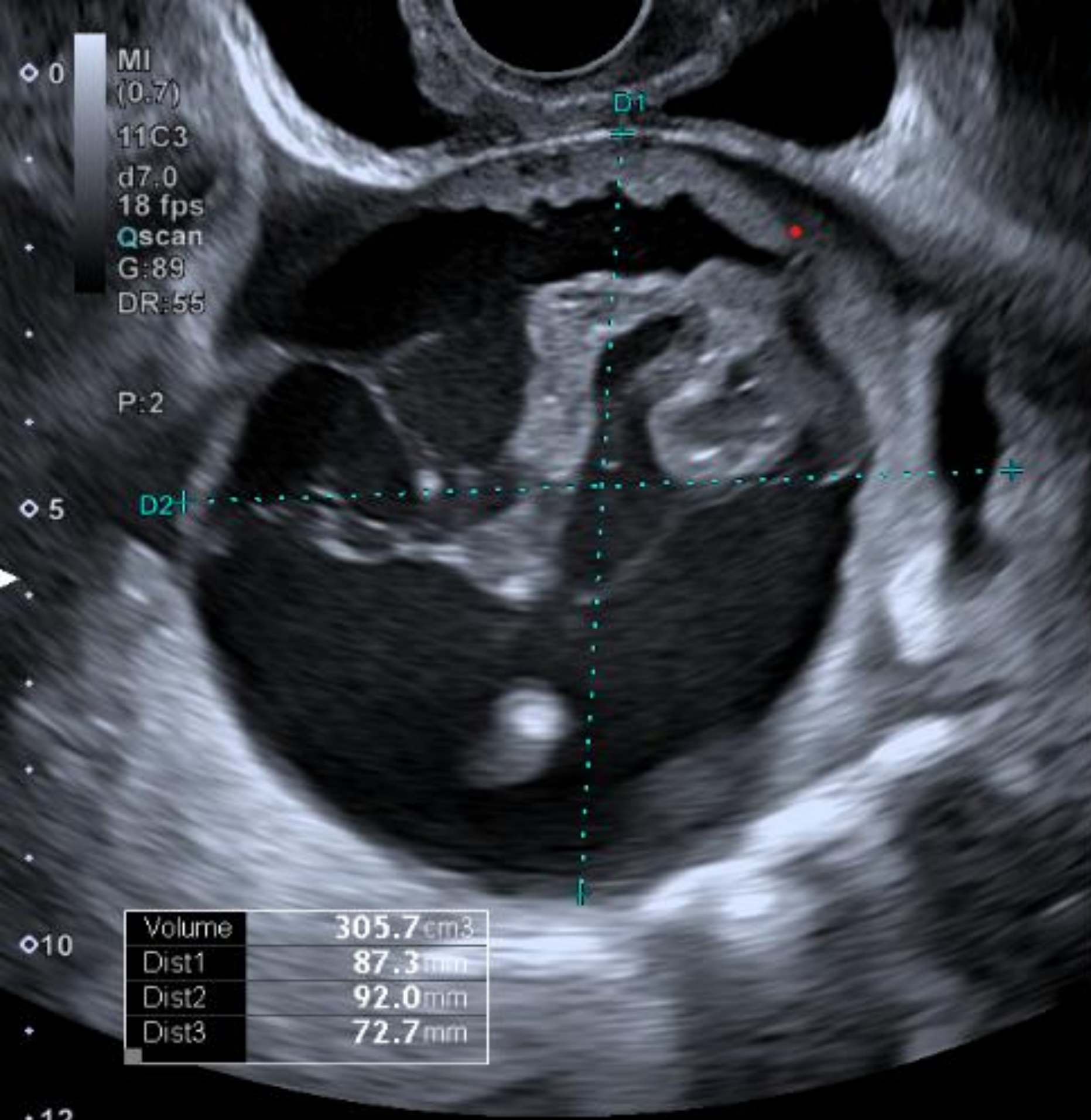


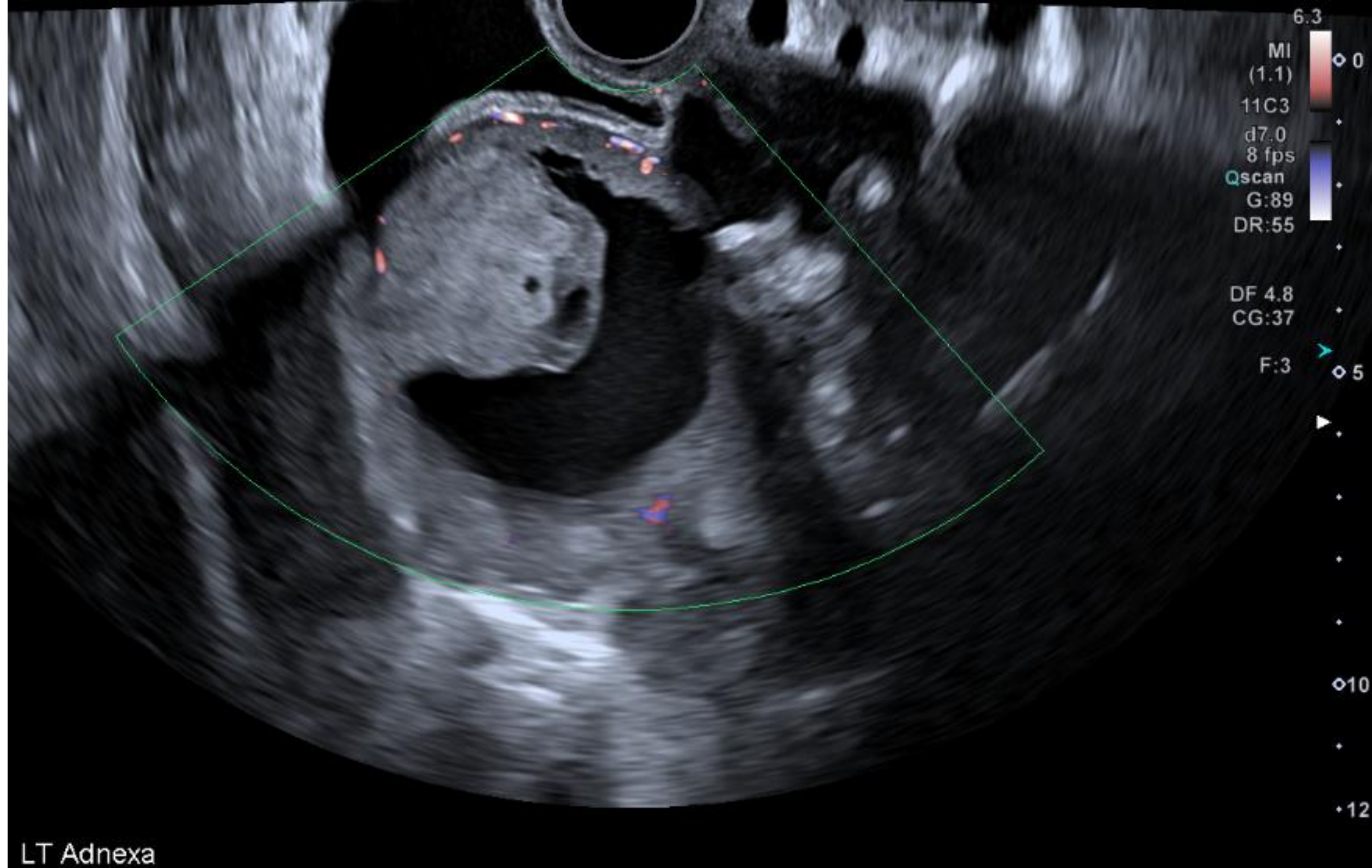
CASE 2

Clinical History:

43-year-old with previous hysteroscopy with resection of fibroids in 2022 ?Further fibroids

LT Adnexa





6.3
MI (1.1)
11C3
d7.0
8 fps
Qscan
G:89
DR:55
DF 4.8
CG:37
F:3
0
5
10
12

LT Adnexa

Case 2: Malignant, Benign or Inconclusive?



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IOTA-SR GRADING

M-FEATURES		B-FEATURES	
M1- Irregular solid tumour	X	B1 – Unilocular cyst	
M2 – Presence of Ascites		B2 – Presence of solid component where largest solid component is less than 7mm in diameter	
M3 – At least 4 papillary structures		B3 – Presence of acoustic shadows	
M4 – Irregular multilocular solid tumour with largest diameter >100mm		B4 – Smooth multilocular tumour with largest diameter <100mm	
M5 – Very strong blood flow (Colour flow score 4)		B5 – No blood flow (Colour score 1)	X

Expert opinion:
Inconclusive → MRI

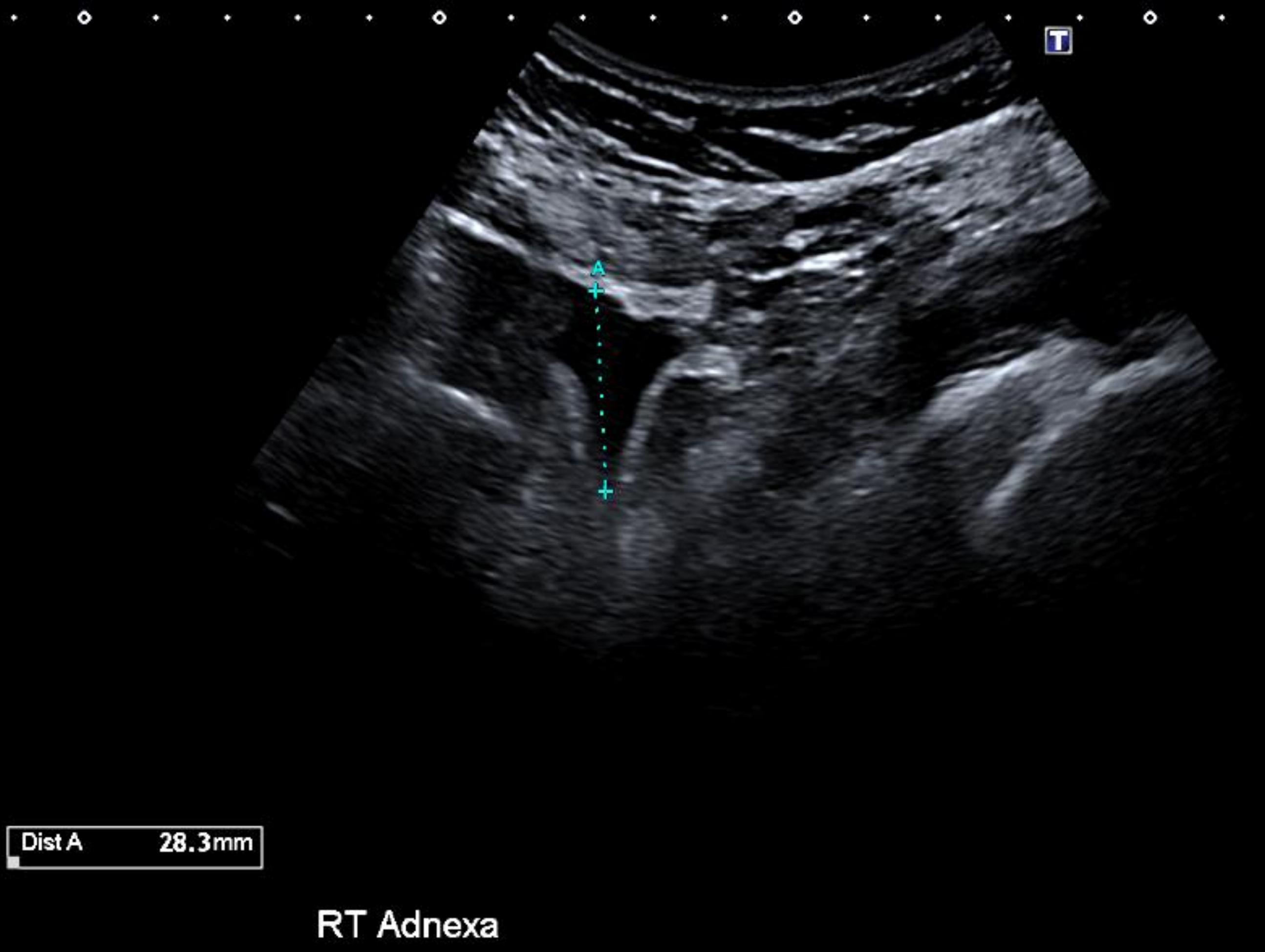
Histology:
Malignant clear cell carcinoma

CASE 3

Clinical history:

53 year old presented on Surgical Assessment Unit with Rt sided loin pain. CTKUB shows large pelvic mass - ? Ovarian vs fibroid.

Characterisation with ultrasound: no fibroids reported on previous imaging



A Pure Precision+

Precision+ A Pure

MI (1.6)
i8CX1
d5.5
21 fps
Qscan
G:71
DR:65

MI (1.6)
i8CX1
d5.5
18 fps
Qscan
G:71
DR:65

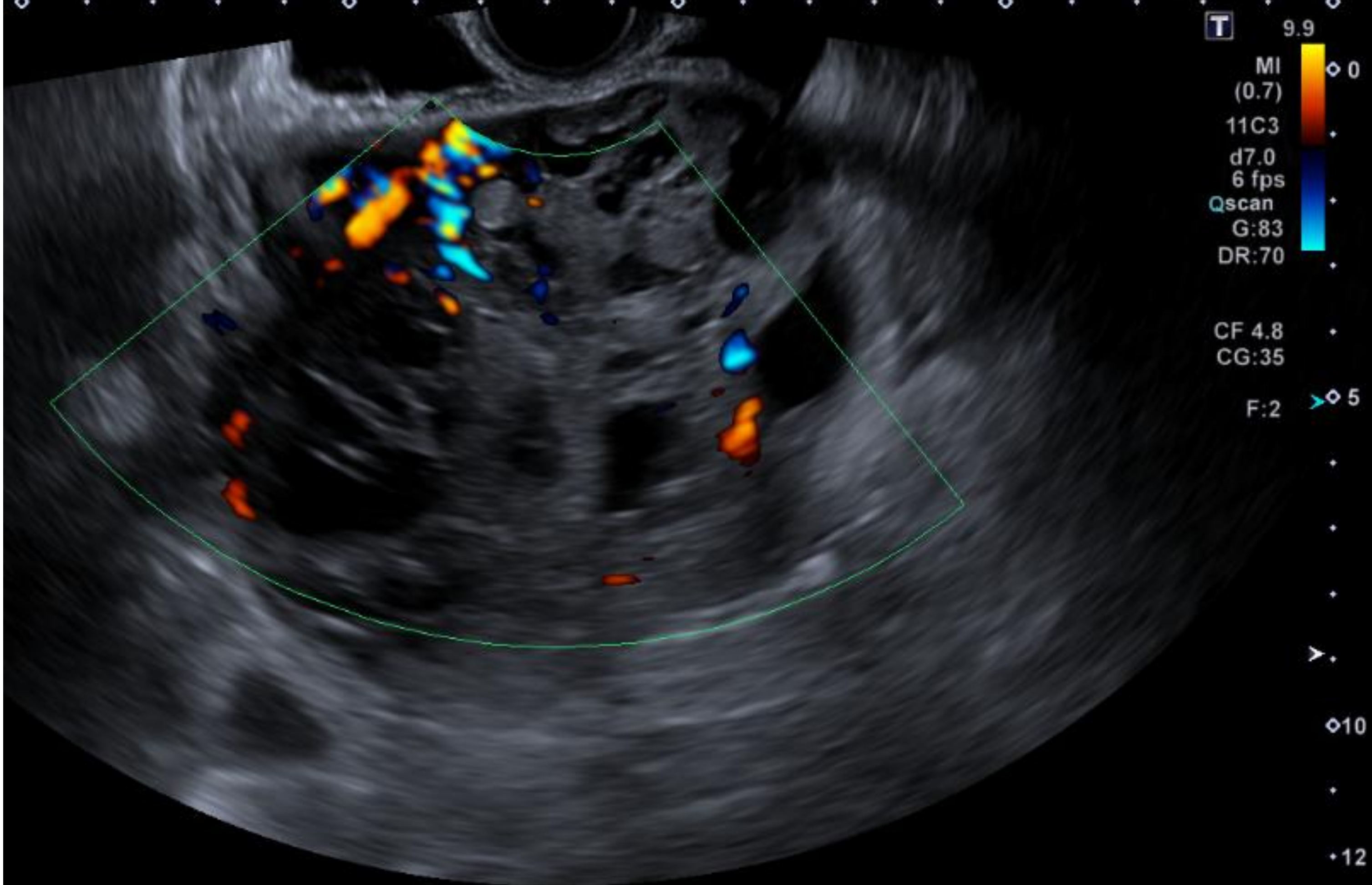
A:1
P:4

A:1
P:4

Volume	413.0cm ³
Dist1	100.7mm
Dist2	67.7mm
Dist3	115.7mm

PAIN Long

Trans



?RIGHT OVARY? MIDLINE TS

Case 3: Malignant, Benign or Indeterminate?



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IOTA-SR GRADING

M-FEATURES		B-FEATURES	
M1- Irregular solid tumour		B1 – Unilocular cyst	
M2 – Presence of Ascites		B2 – Presence of solid component where largest solid component is less than 7mm in diameter	
M3 – At least 4 papillary structures		B3 – Presence of acoustic shadows	
M4 – Irregular multilocular solid tumour with largest diameter >100mm	X	B4 – Smooth multilocular tumour with largest diameter <100mm	
M5 – Very strong blood flow (Colour flow score 4)		B5 – No blood flow (Colour score 1)	

Expert opinion:

Malignant

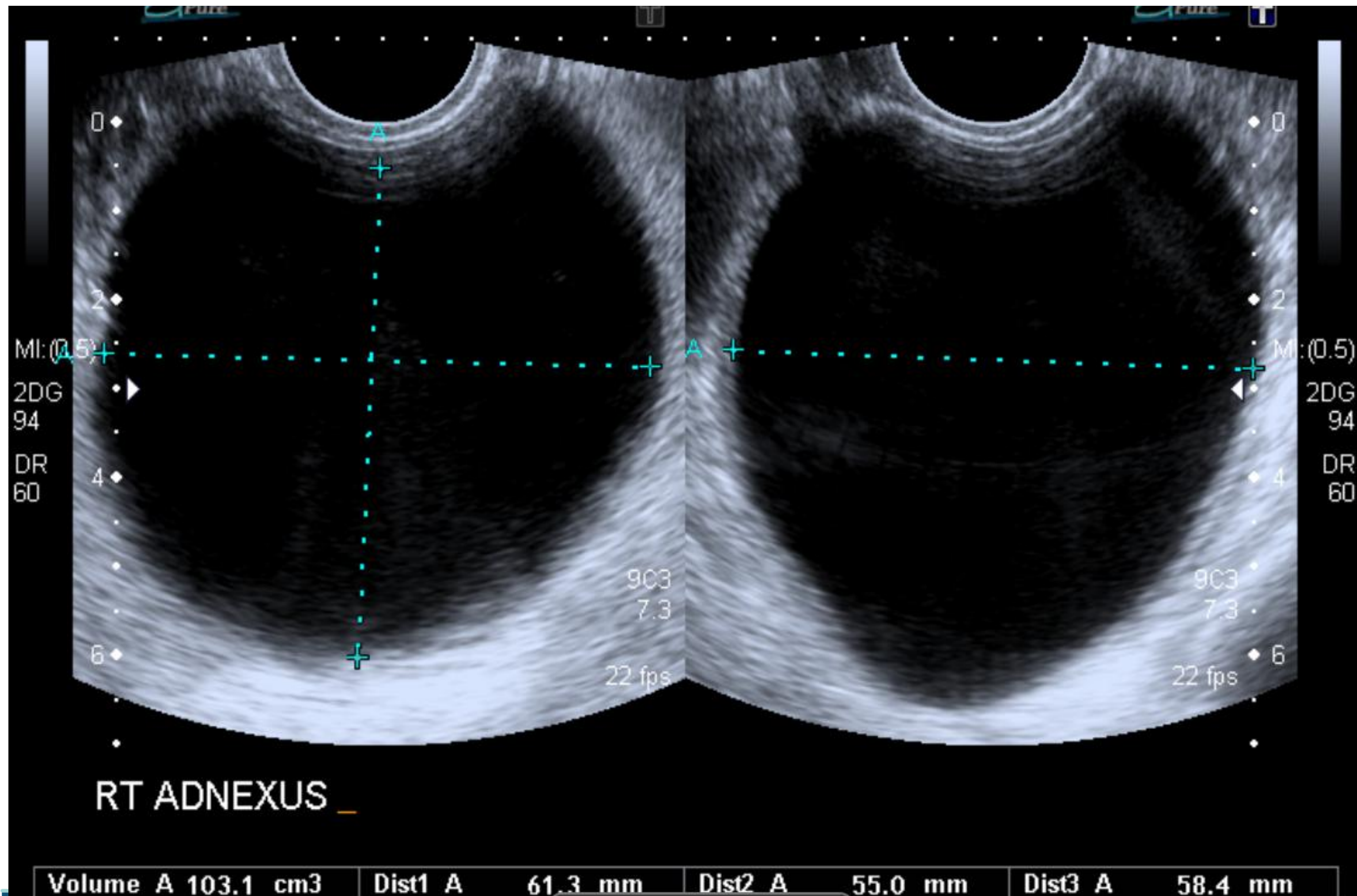
Histology:

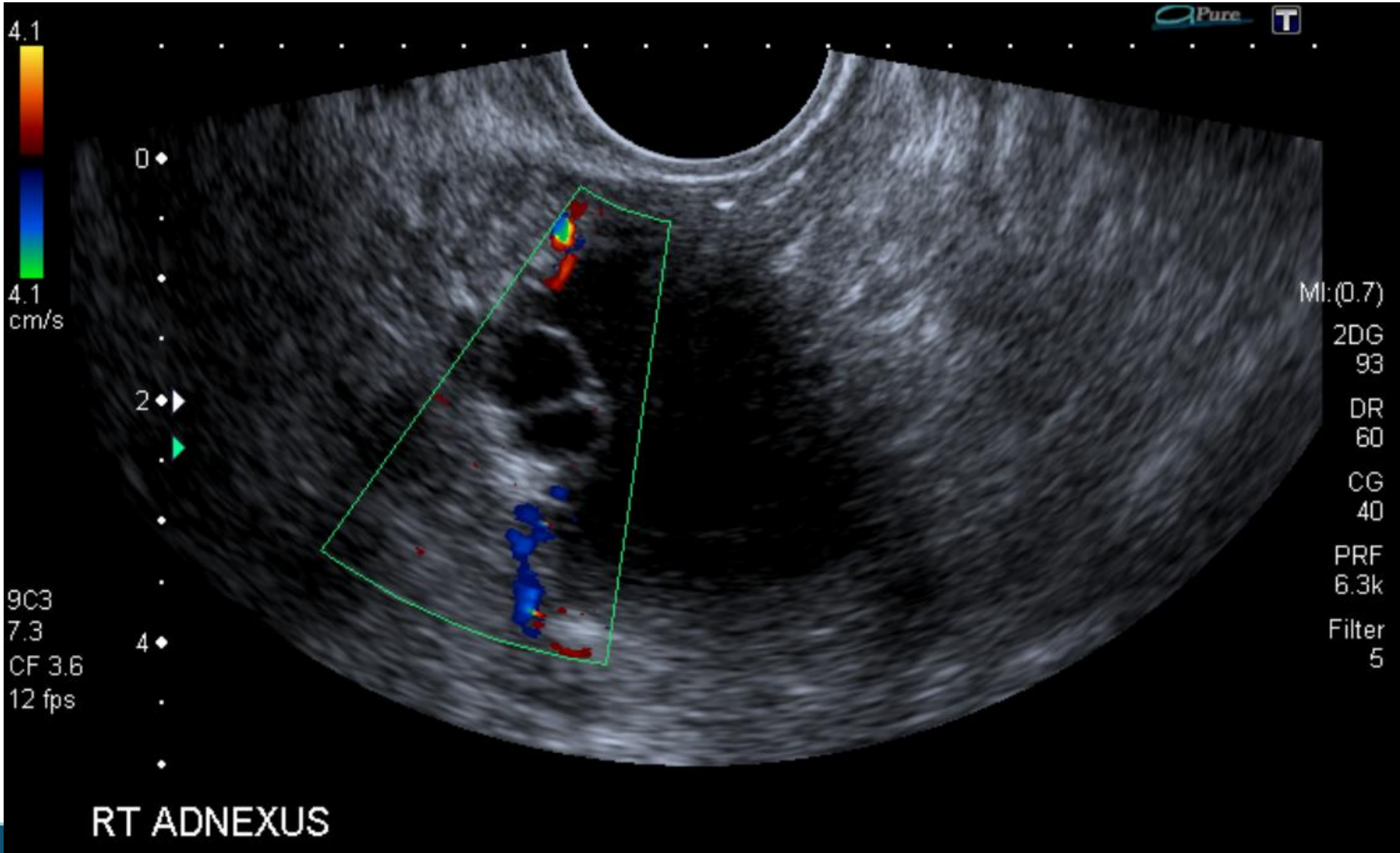
Malignant granulosa cell tumour

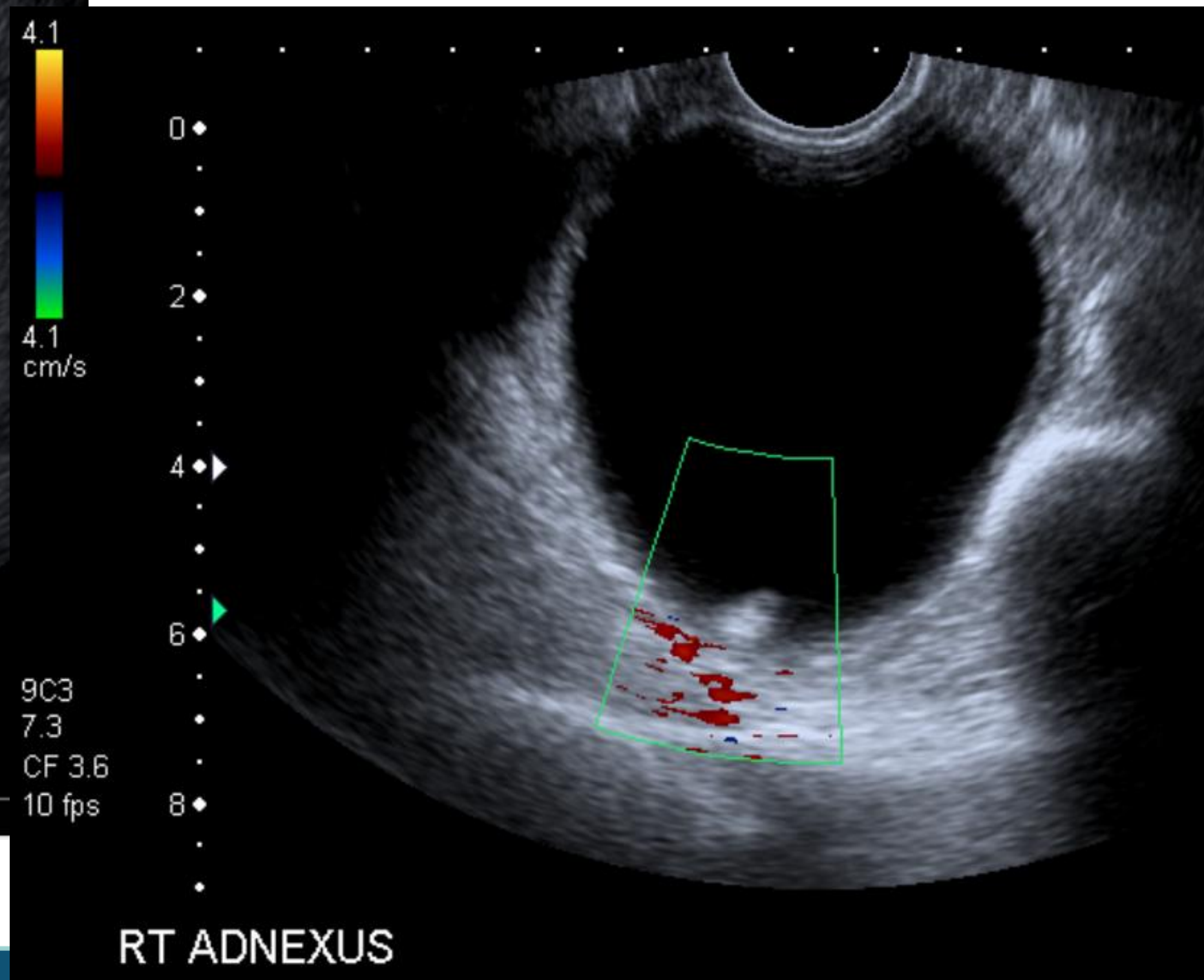
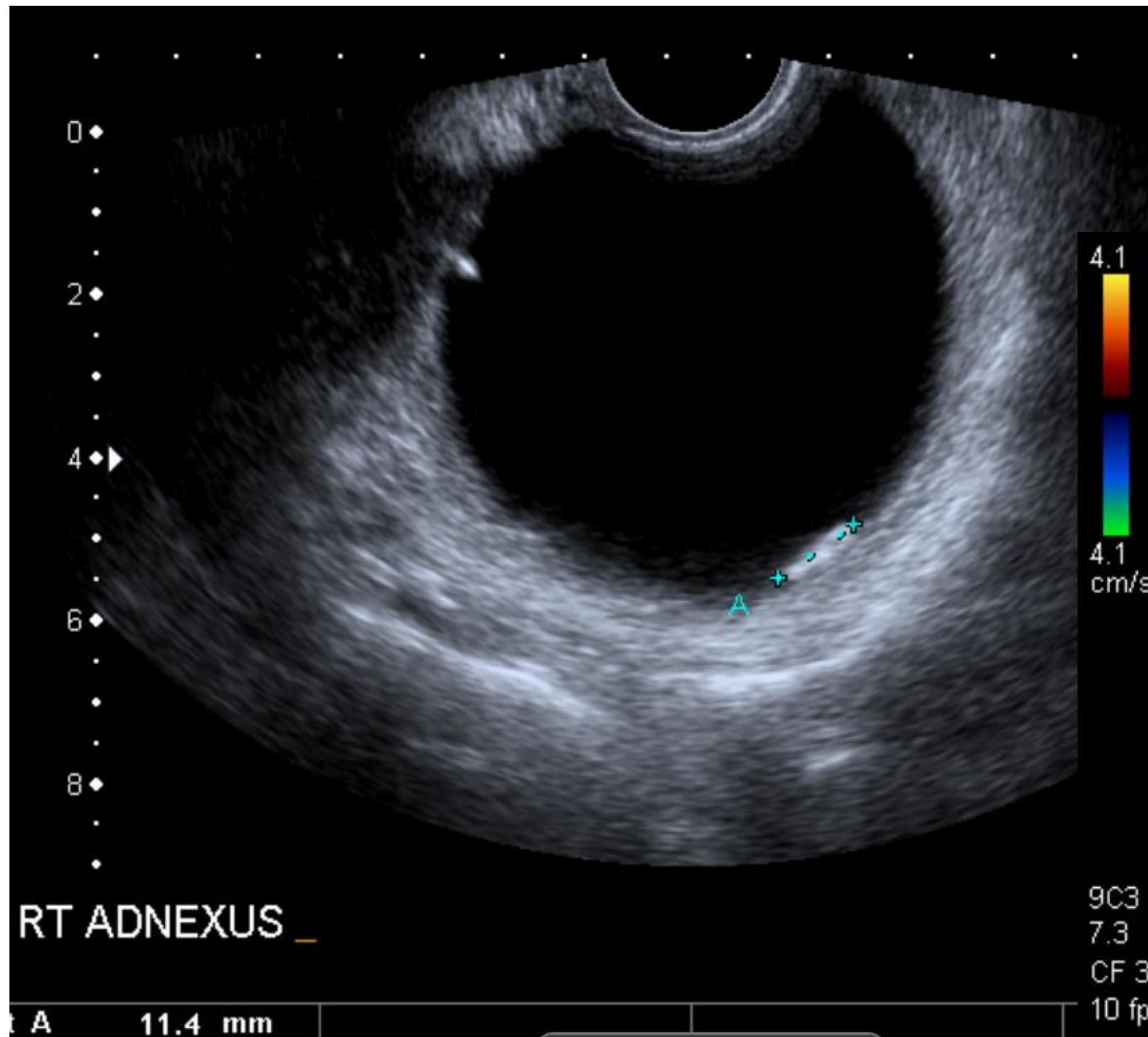
CASE 4

Clinical history:

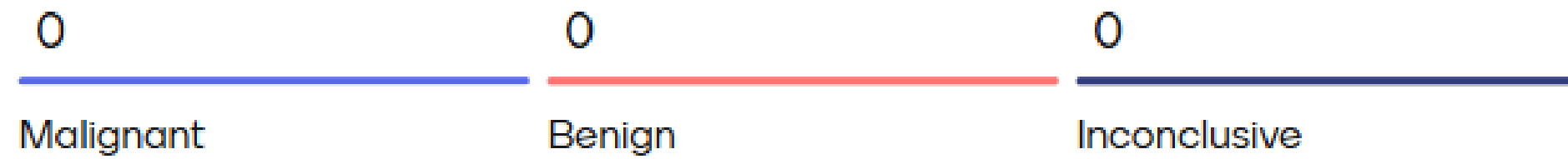
80 year old right lower abdominal pain.
Previous right ovarian cyst (prev 6.6cm simple cyst)







Case 4: Malignant, Benign or Indeterminate?



Mentimeter

ET

Replace this slide



Open Menti to edit



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IOTA-SR GRADING

M-FEATURES		B-FEATURES	
M1- Irregular solid tumour		B1 – Unilocular cyst	
M2 – Presence of Ascites		B2 – Presence of solid component where largest solid component is less than 7mm in diameter	
M3 – At least 4 papillary structures		B3 – Presence of acoustic shadows	
M4 – Irregular multilocular solid tumour with largest diameter >100mm		B4 – Smooth multilocular tumour with largest diameter <100mm	X
M5 – Very strong blood flow (Colour flow score 4)		B5 – No blood flow (Colour score 1)	X

Expert opinion:
Benign

Histology:
Serous cystadenoma



CASE 5

Clinical history:

Assess 13cm complex mass seen on CT – for correlation with TVS



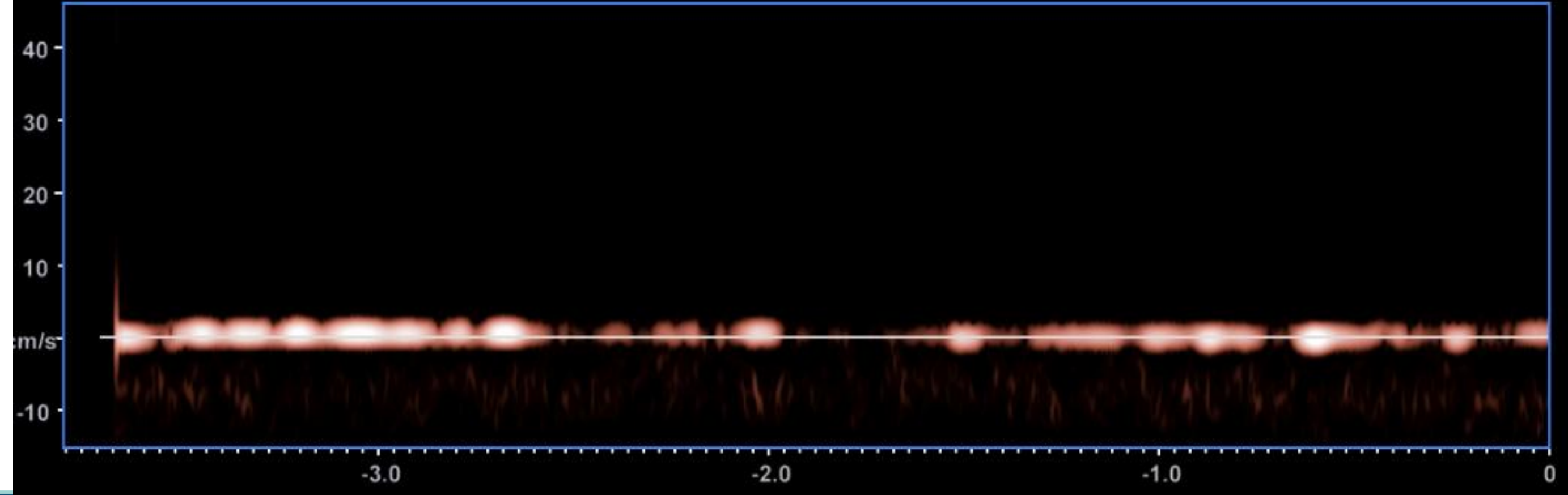
118

Precision+ A Pure

2.3



MI:(0.8)
i8CX1
d5.5
20 fps
Qscan
G:77
DR:65
SMI 2.0
CG:38
F:4
3.0
0°
10.5cm



Case 5: Malignant, Benign or Inconclusive?



IOTA-SR GRADING

M-FEATURES		B-FEATURES	
M1- Irregular solid tumour		B1 – Unilocular cyst	
M2 – Presence of Ascites		B2 – Presence of solid component where largest solid component is less than 7mm in diameter	
M3 – At least 4 papillary structures		B3 – Presence of acoustic shadows	x
M4 – Irregular multilocular solid tumour with largest diameter >100mm	x	B4 – Smooth multilocular tumour with largest diameter <100mm	
M5 – Very strong blood flow (Colour flow score 4)		B5 – No blood flow (Colour score 1)	

Expert opinion:
Inconclusive

Histology:
Borderline tumour

USEFUL SITES FOR IOTA EDUCATION

[IOTA Simple Rules - Susanne Johnson.pdf](#)
<https://youtu.be/867egELOUfE>



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References

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