international bowel ULTRASOUND GROUP

IBUS HYBRID module 1

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MILAN, ITALY

Transperineal ultrasound in IBD

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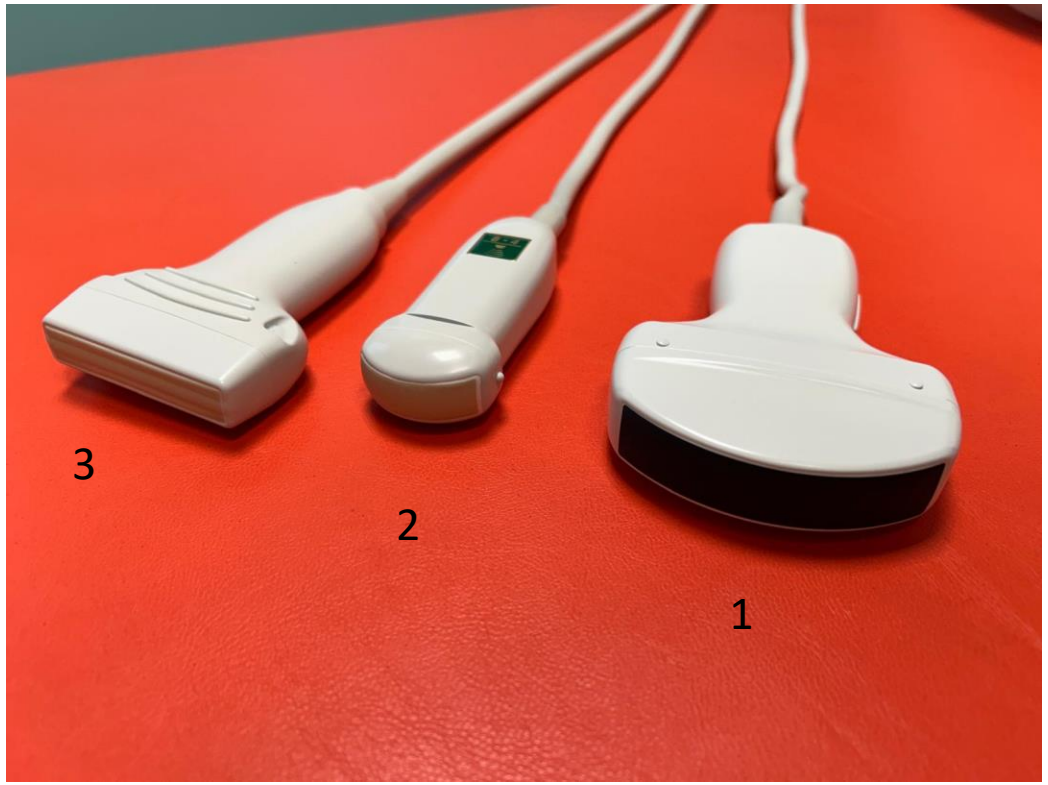
Disclosure of Conflicts of Interest

Dr. Mariangela Allocca received consulting fees from Nikkiso Europe, Mundipharma, Alfasigma, Janssen, Abbvie, Ferring, Galapagos, Sandoz, Lilly and Pfizer

Transperineal ultrasound (TPUS)

- ✓ assessment of the rectum
- ✓ assessment of the pouch
- ✓ assessment of the perianal disease

TPUS: Equipment

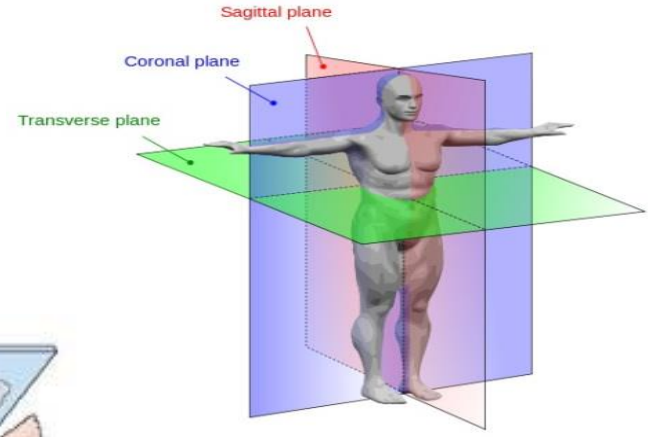


- The same transducers we use for IUS
- Both low-frequency (1: 6-1 MHz) and high-frequency (2-3: 8-4 MHz and 13-5 MHz) transducers

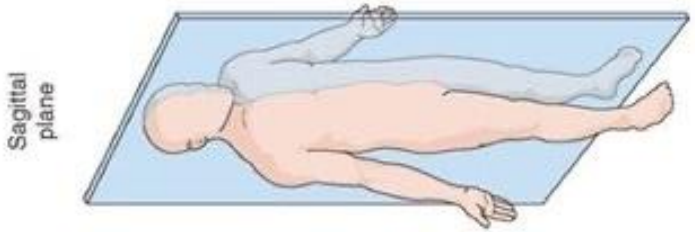
TPUS: Position

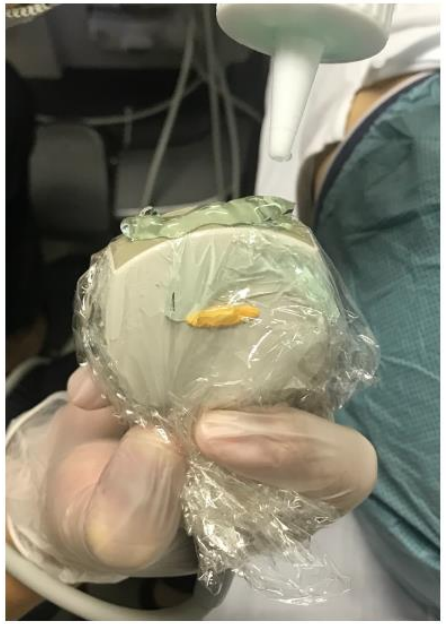
Left lateral position

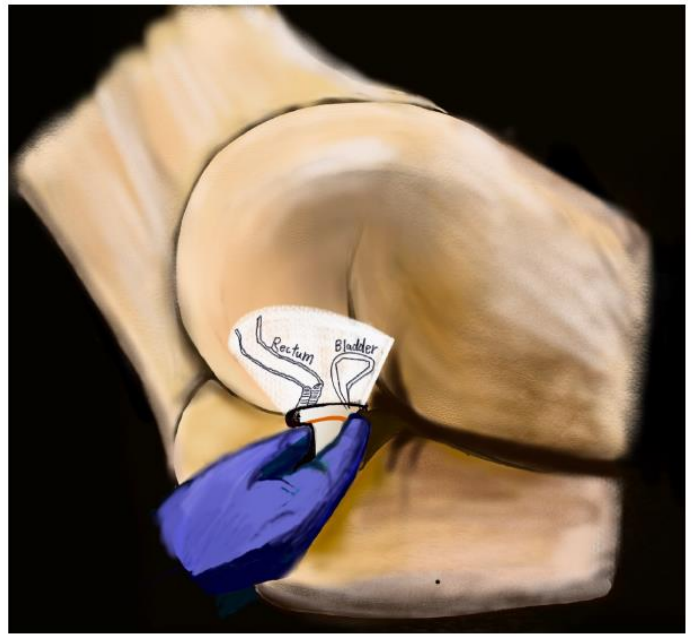
TPUS for the assessment of the rectum



Position the probe over the anus in the sagittal scan (or postero-anterior scan) in patients in the left lateral position







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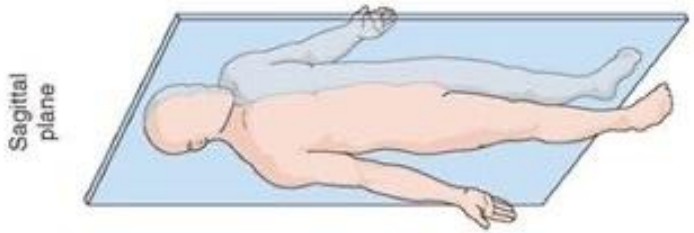
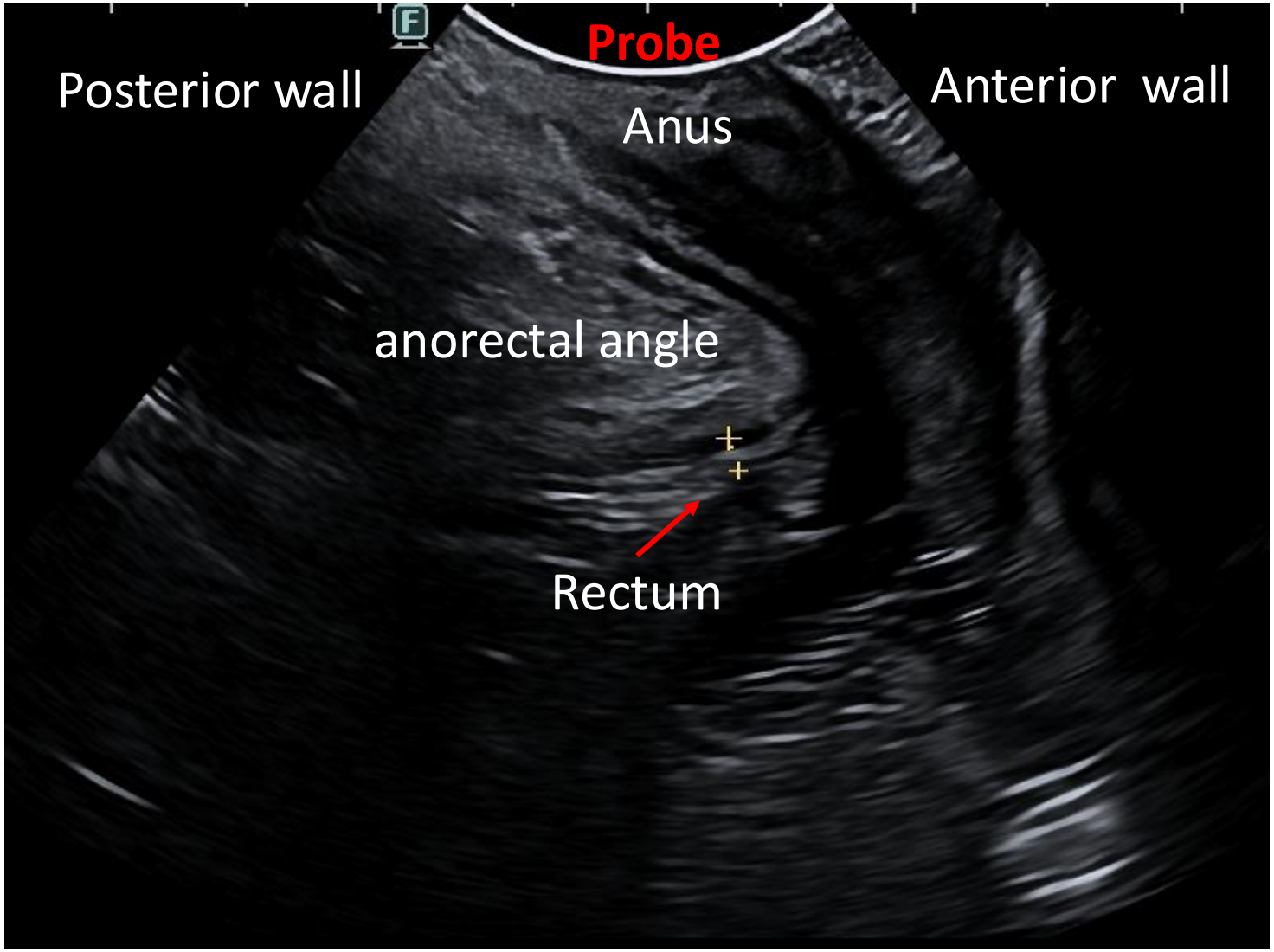
TPUS for the assessment of the rectum

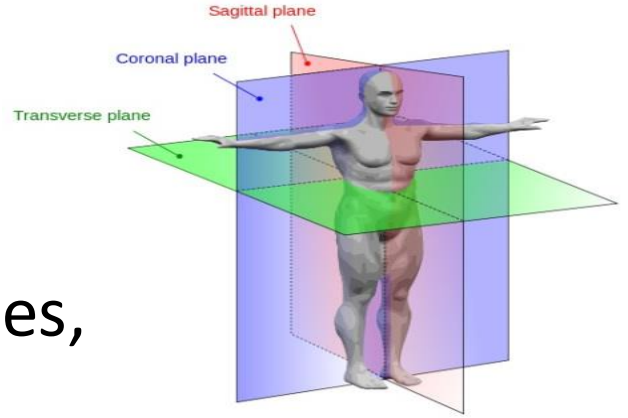




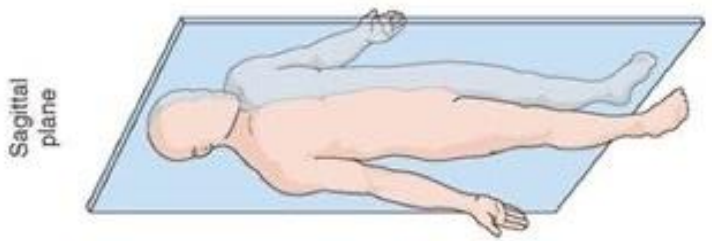
Sagittal scan

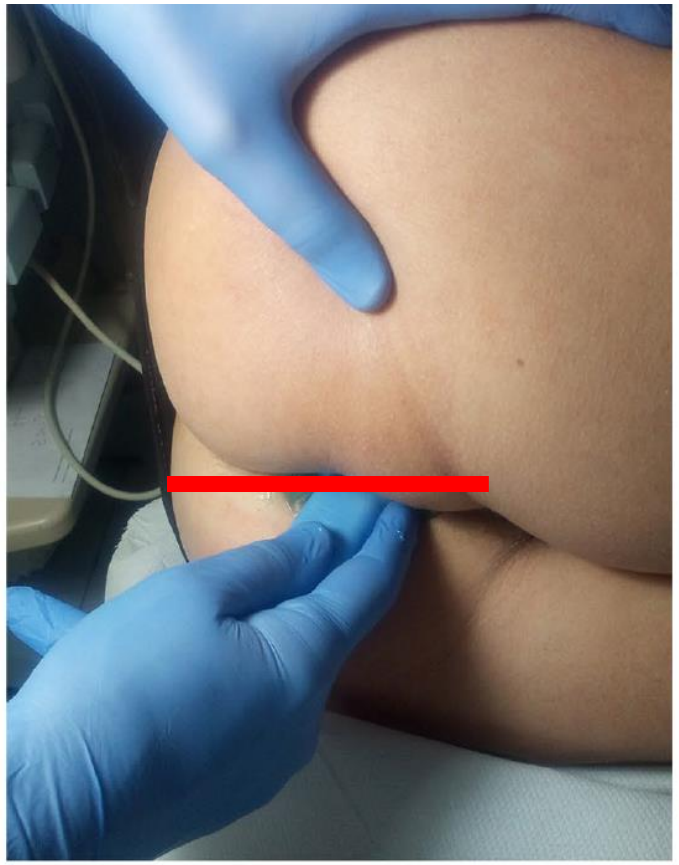
By placing the probe over the anus in a sagittal (or postero-anterior) scan in patients lying on their left side, a dark shadow can be seen under the probe, representing the anal canal. After this shadow, an angle becomes visible, marking the anorectal angle where the puborectal muscle inserts. From this point, moving posteriorly, the rectum with its stratified wall is visible

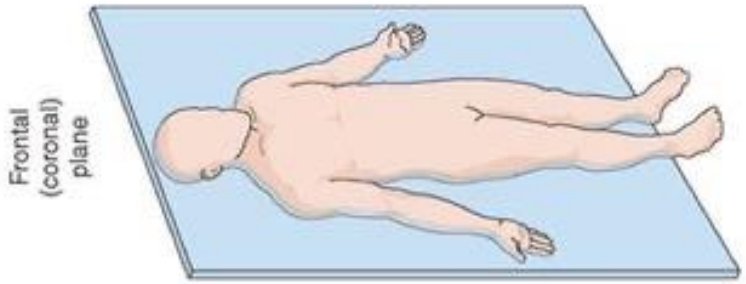
TPUS for the assessment of the rectum



From the sagittal scan, by rotating the transducer of 90 degrees, you can get a coronal scan (or laterolateral scan)







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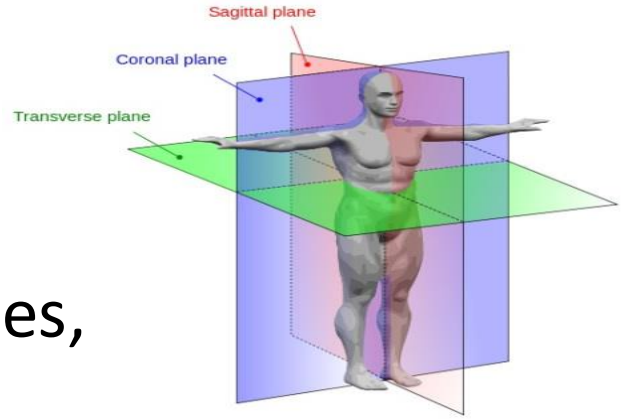
TPUS for the assessment of the rectum



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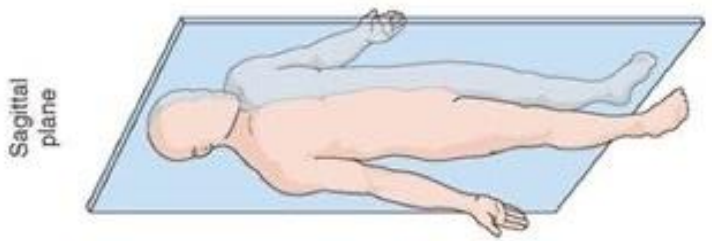

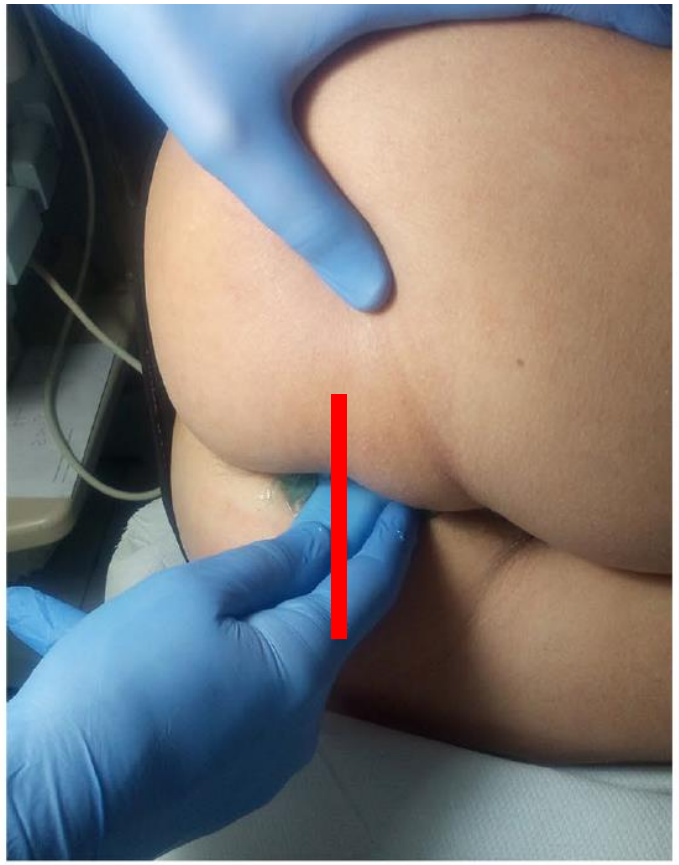

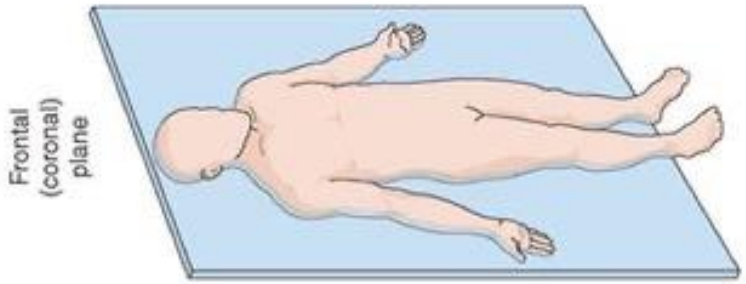

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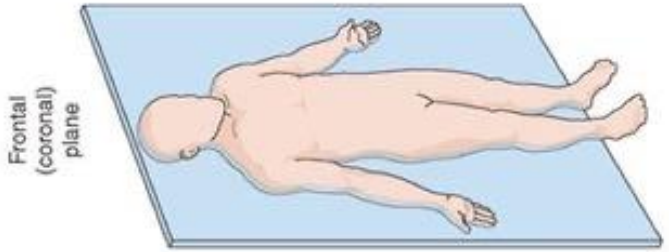
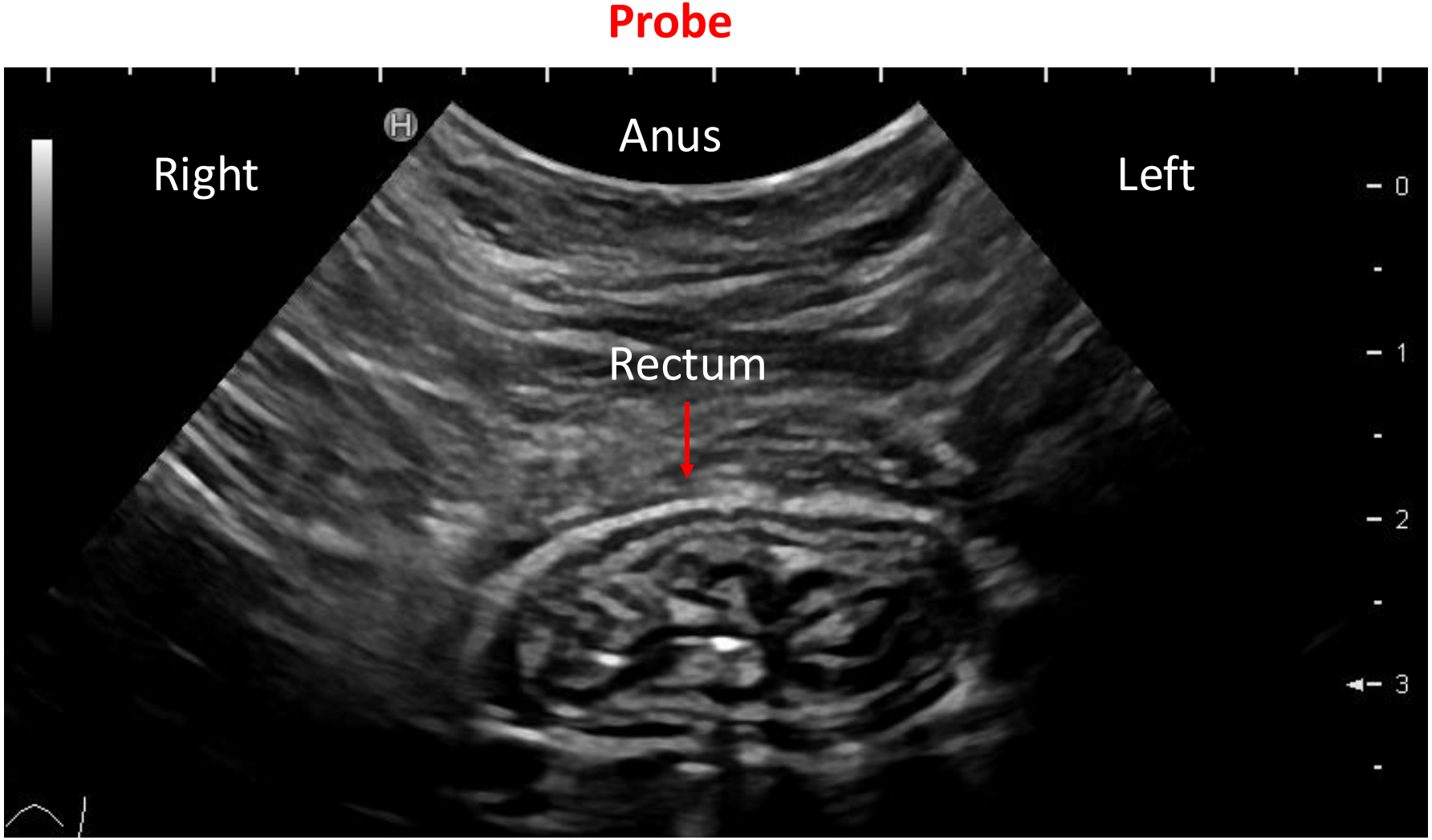
TPUS for the assessment of the rectum

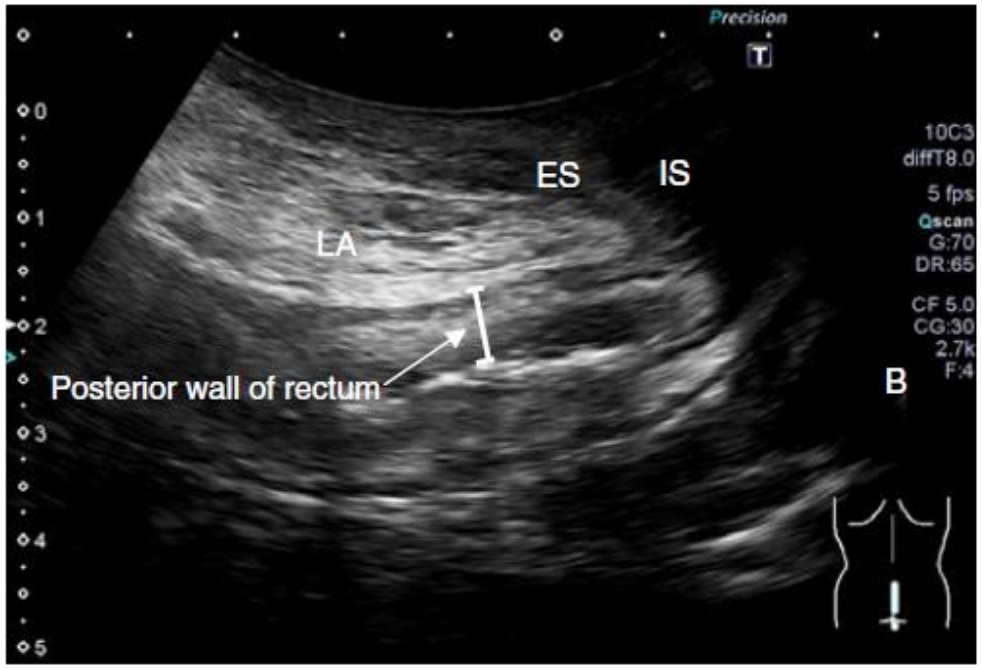


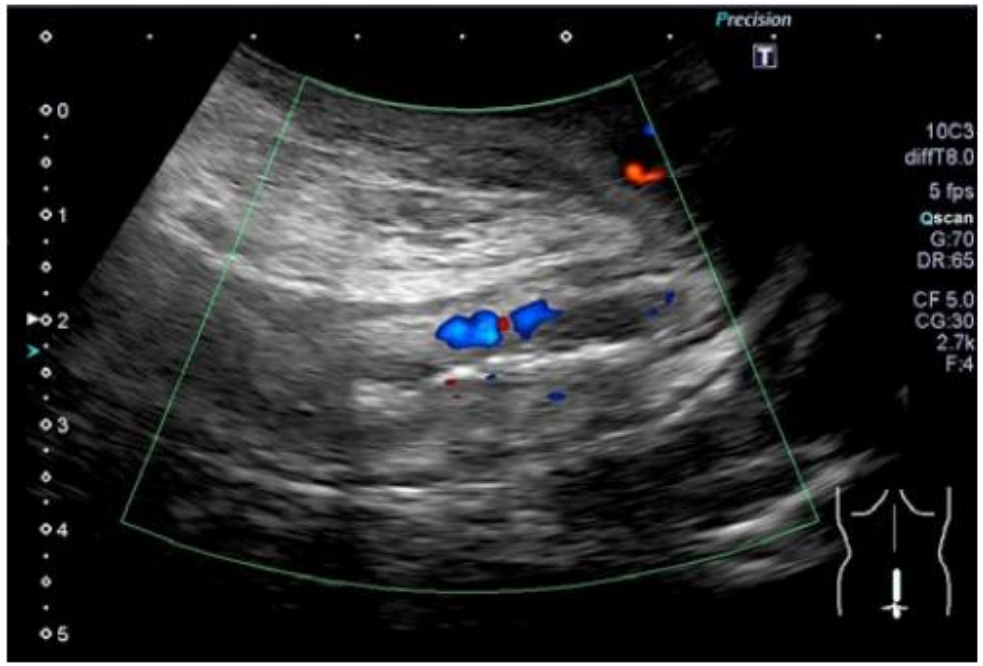


Coronal scan

By rotating the transducer 90 degrees from the sagittal position, you can obtain an image of the rectum in a coronal (or lateral) scan

BWT assessed by TPUS detects endoscopic activity in the rectum (as defined by Mayo Endoscopic Score > 1)





BWT in TPUS > 4 mm:
sensitivity 100%,
specificity 45.8%,
AUC = 0.904
(95% CI 0.787-0.957)

		Univariate			Multivariable		
	Variable	OR	95% CI	*P* value	Adjusted OR	95% CI	*P* value
TPUS	Bowel wall thickness (mm)	4.21[a]	2.00-8.84[a]	0.0002*	3.18[a]	1.43-7.06[a]	0.0003*
	Bowel wall flow[c] (LS 0-1 vs 2-3)	13.78	3.59-52.84	0.0001*	4.07	0.79-23.1	0.1044
Faecal calprotectin		1.41[b]	0.94-2.12[b]	0.0993	1.17[b]	0.91-1.52[b]	0.2208

internal sphincter (IS), external sphincter (ES) and levator ani muscle (LA)

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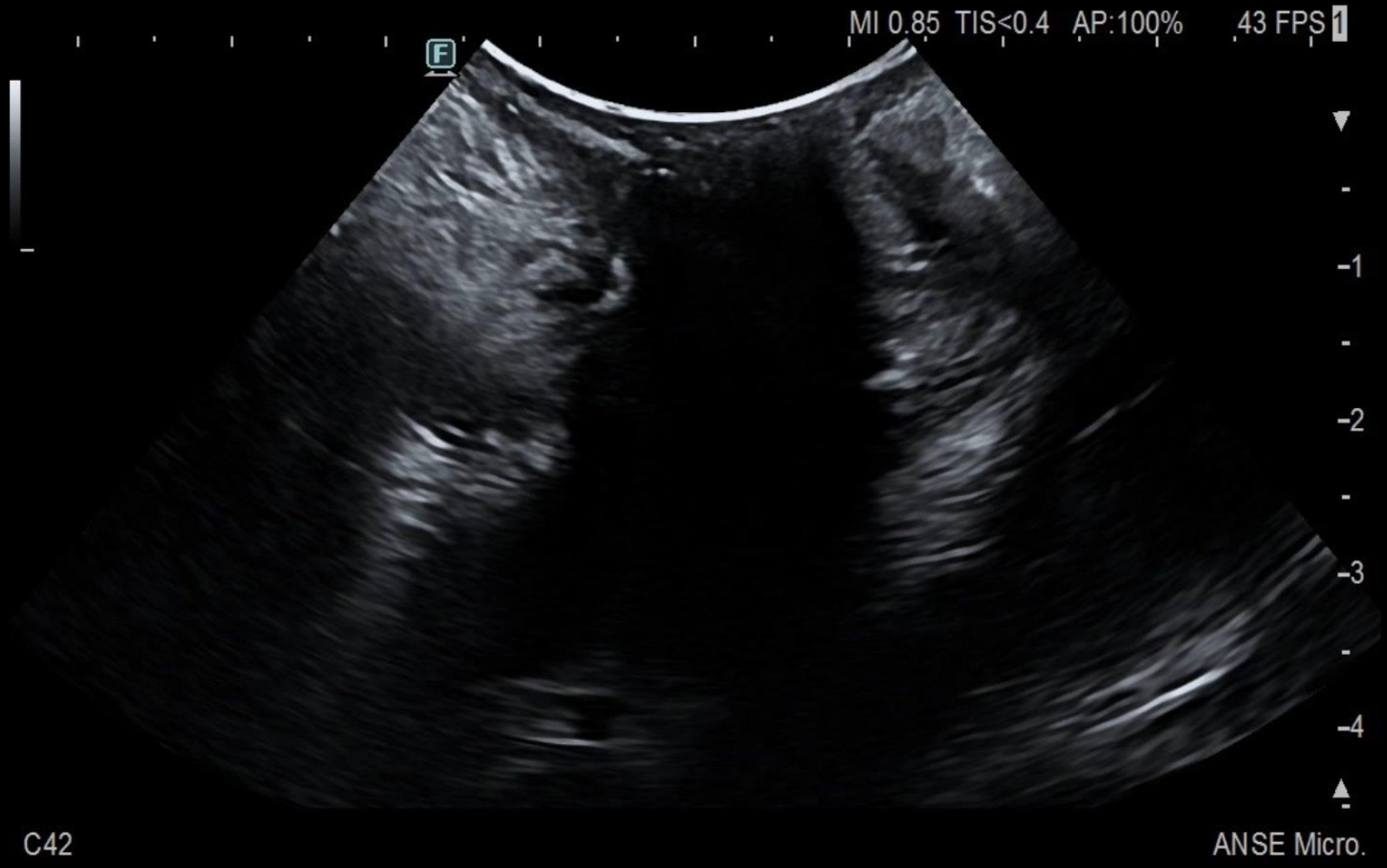
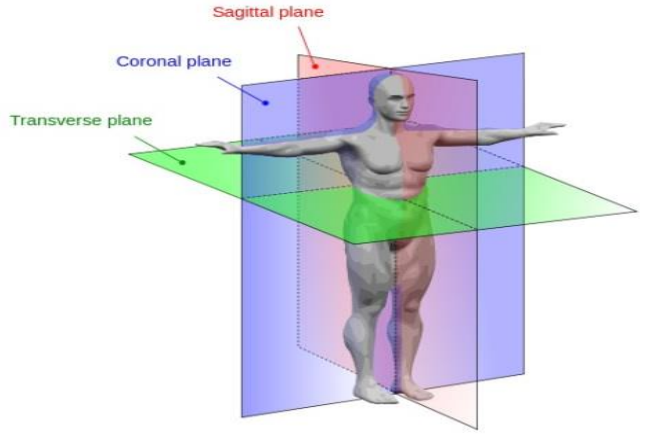
Assessment of a pathological rectum in sagittal scan



Assessment of a pathological rectum in coronal scan

TPUS for the assessment of the pouch



The same as for the evaluation of the rectum

TPUS for the assessment of the pouch

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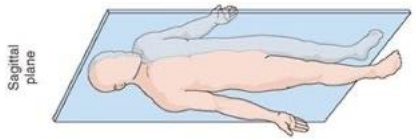
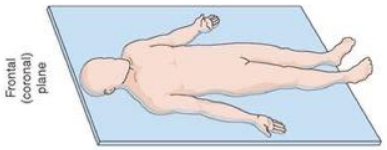
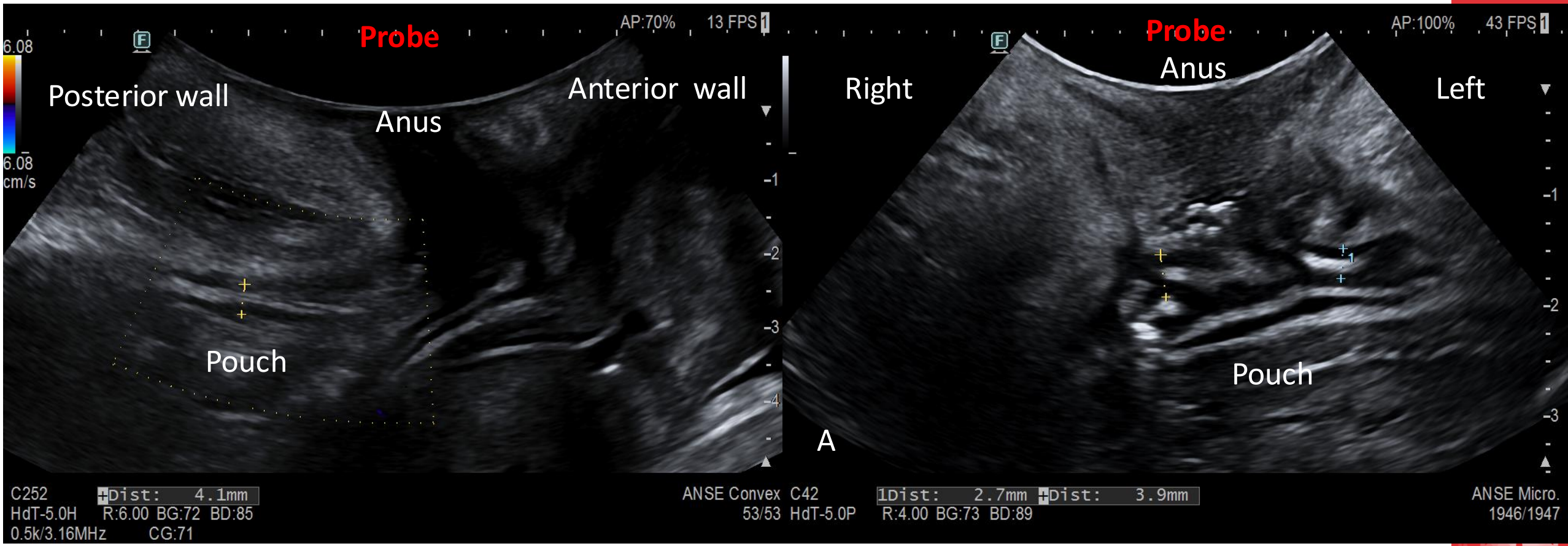
Sagittal scan



Coronal scan

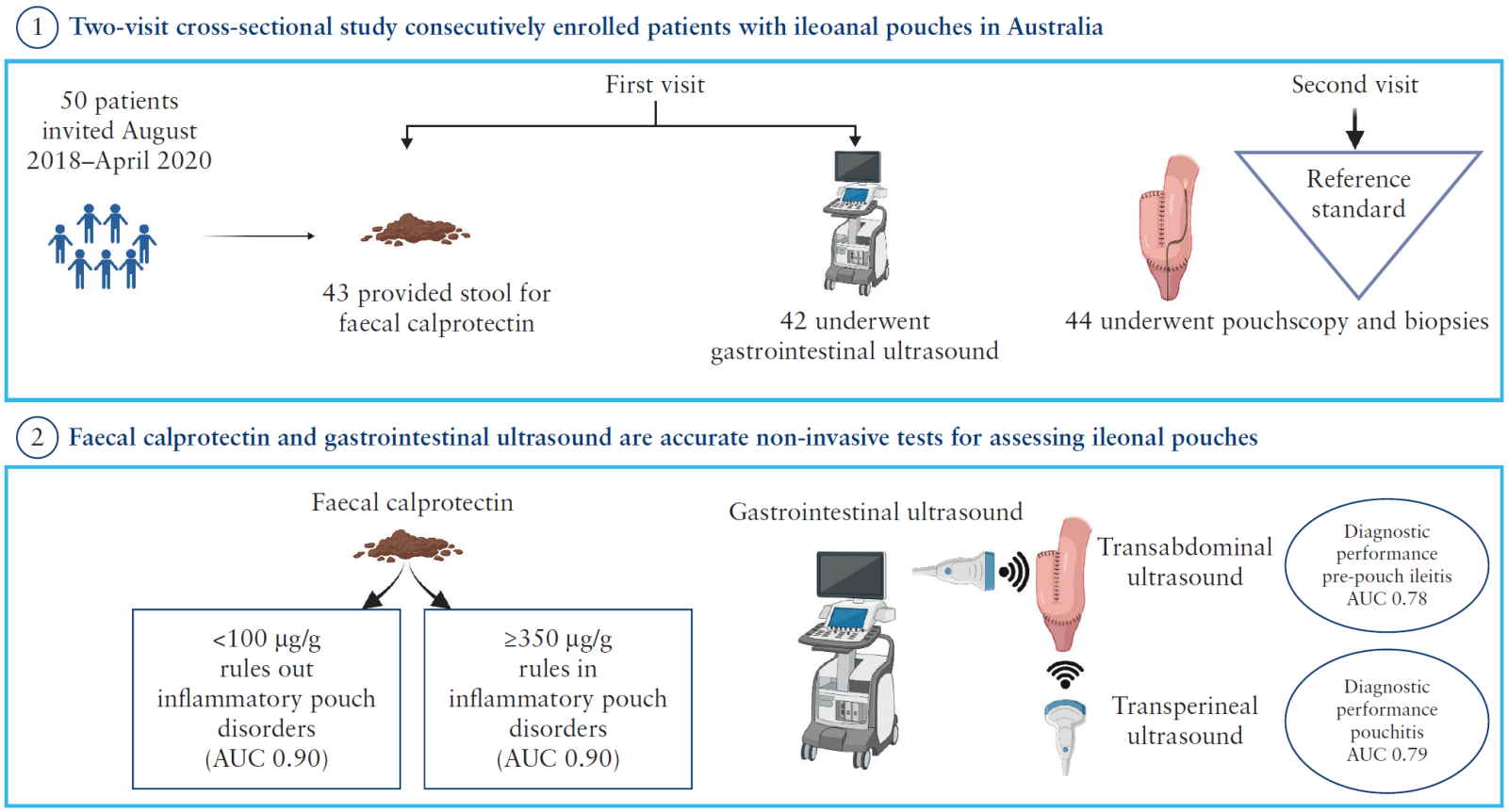


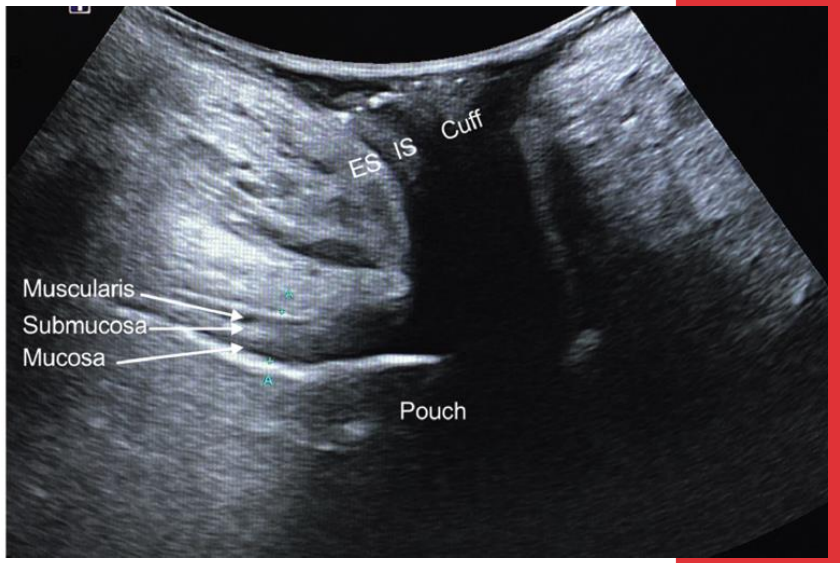


A

Pouch wall thickness assessed by TPUS detects pouchitis (as defined by PDAI ≥ 7 and Endoscopic Subscore ≥ 2)

Pouch wall thickness of <3 mm was 88% sensitive in excluding pouchitis, and pouch wall thickness of ≥4 mm was 87% specific in diagnosing pouchitis





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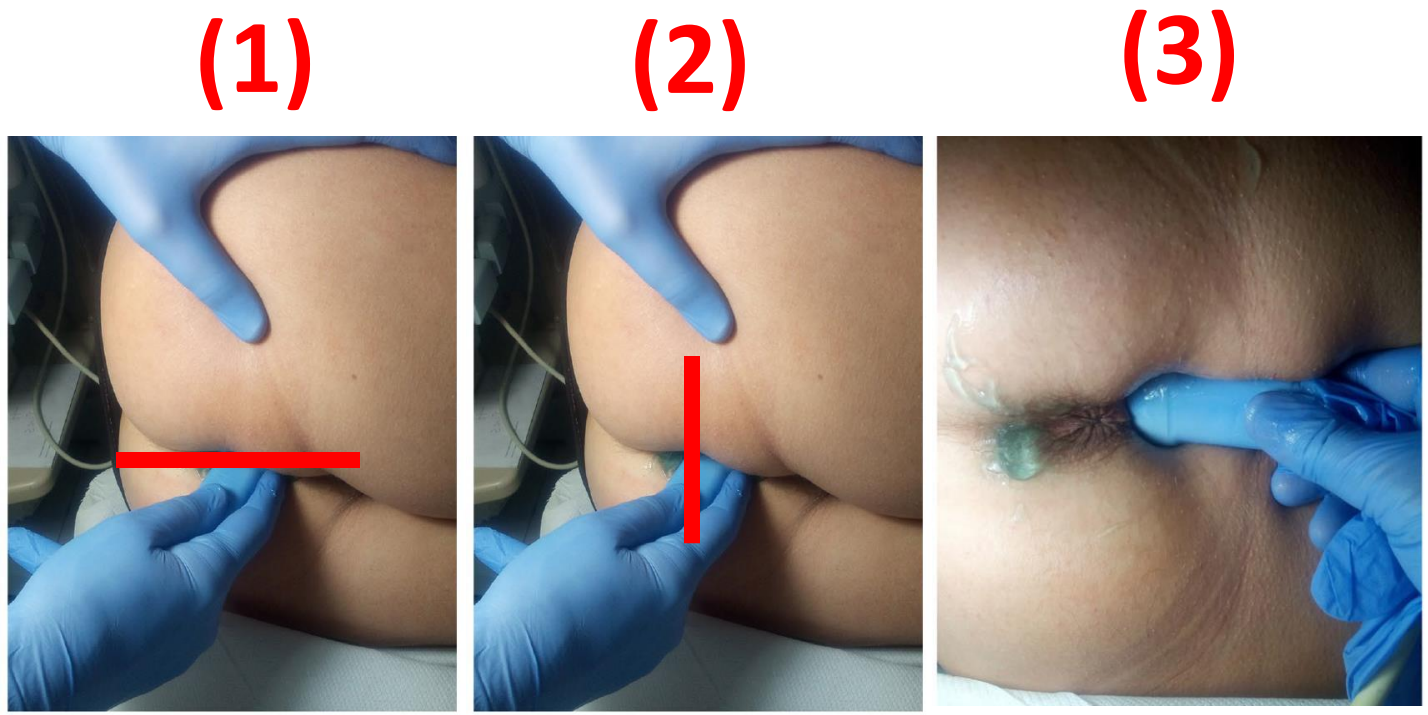
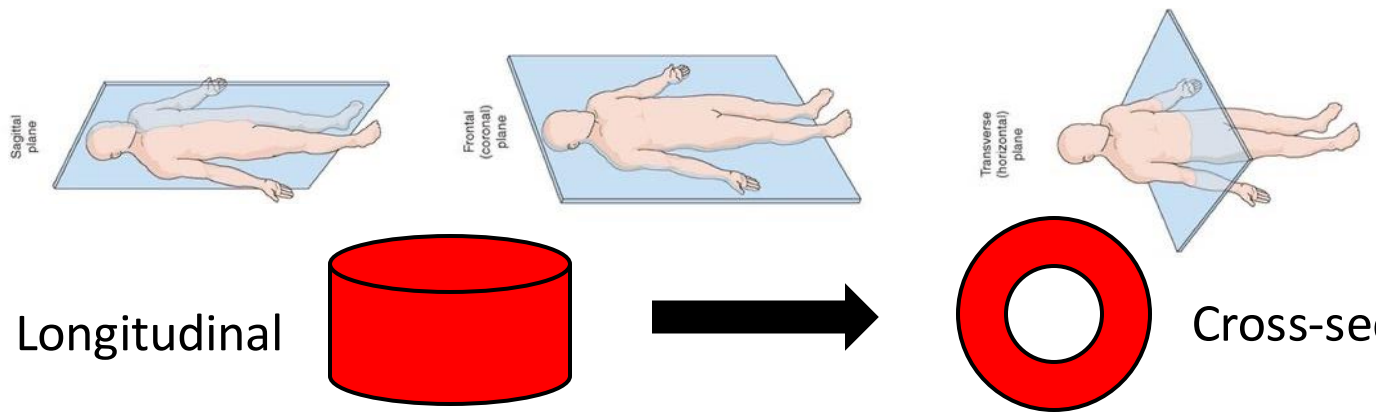
Assessment of a pathological pouch

TPUS for the assessment of the perianal disease





The examination can be performed in left lateral decubitus (or gynaecological position).

1) transducer above the anus to obtain a sagittal scan;
2) rotation of the transducer by 90 degrees to obtain a coronal scan;
3) transducer between the anus and the vagina (or scrotum) to obtain a transverse scan of the anus;
4) Finally, if the external orifice of a fistula or tumefaction is visible, place the transducer directly above

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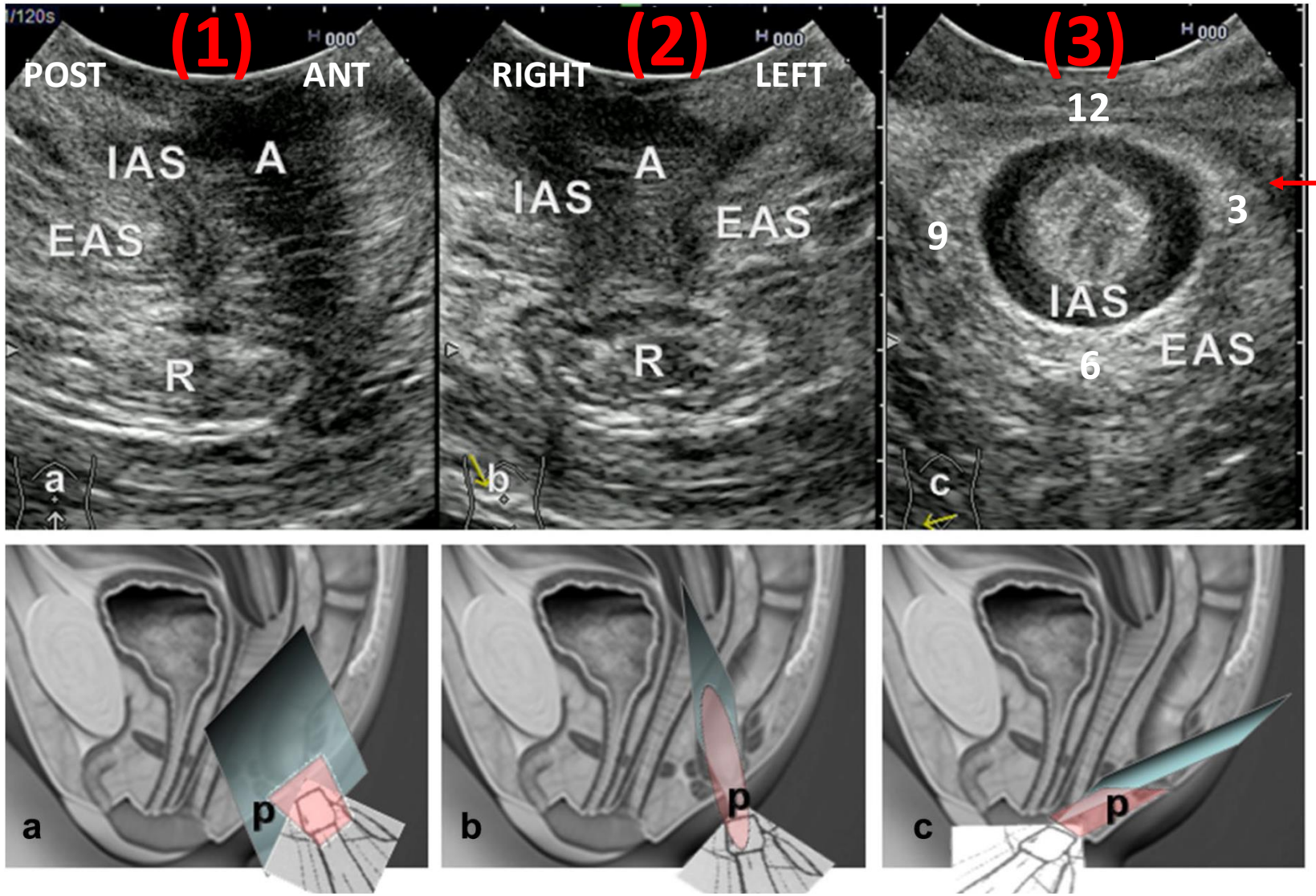
TPUS for the assessment of the perianal disease



Fistulas in the anal canal are described using a clock face, with 12 o'clock as anterior and 6 o'clock as posterior

1) sagittal scan
2) coronal scan
3) transverse scan

A, anus; IAS internal anal sphincter; EAS external anal sphincter; R rectum; p, probe

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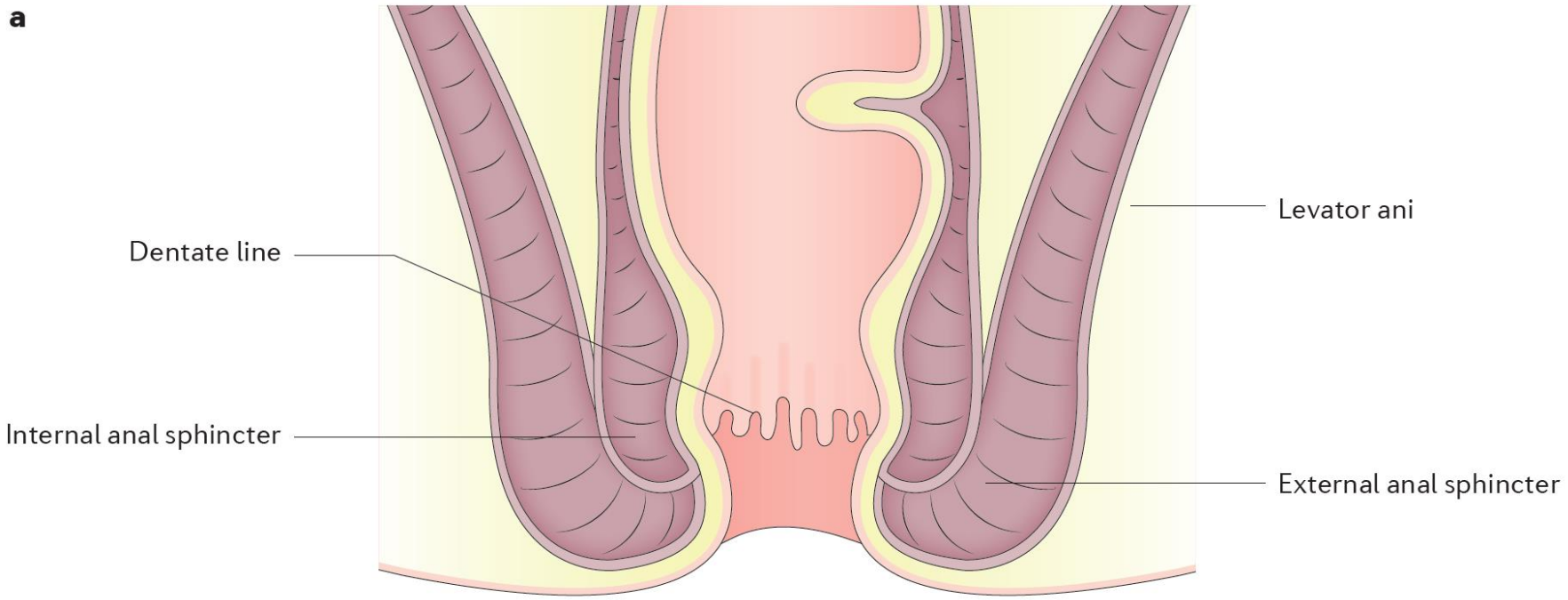
Classification of perianal fistulas: Parks classification

Parks classification	
Superficial	Superficial fistula without crossing any sphincter or muscular structure
Intersphincteric	Fistula tract between the internal anal sphincter and external anal sphincter, in the intersphincteric space
Trans-sphincteric	Fistula tract crosses the external anal sphincter
Suprasphincteric	Fistula tract penetrates the intersphincteric space and continues over the top of the puborectalis and penetrates the levator muscle before reaching the skin
Extrasphincteric	Fistula tract outside the external anal sphincter and penetrating the levator muscle



Panés and Rimola. Nat Rev Gastroenterol Hepatol 2017

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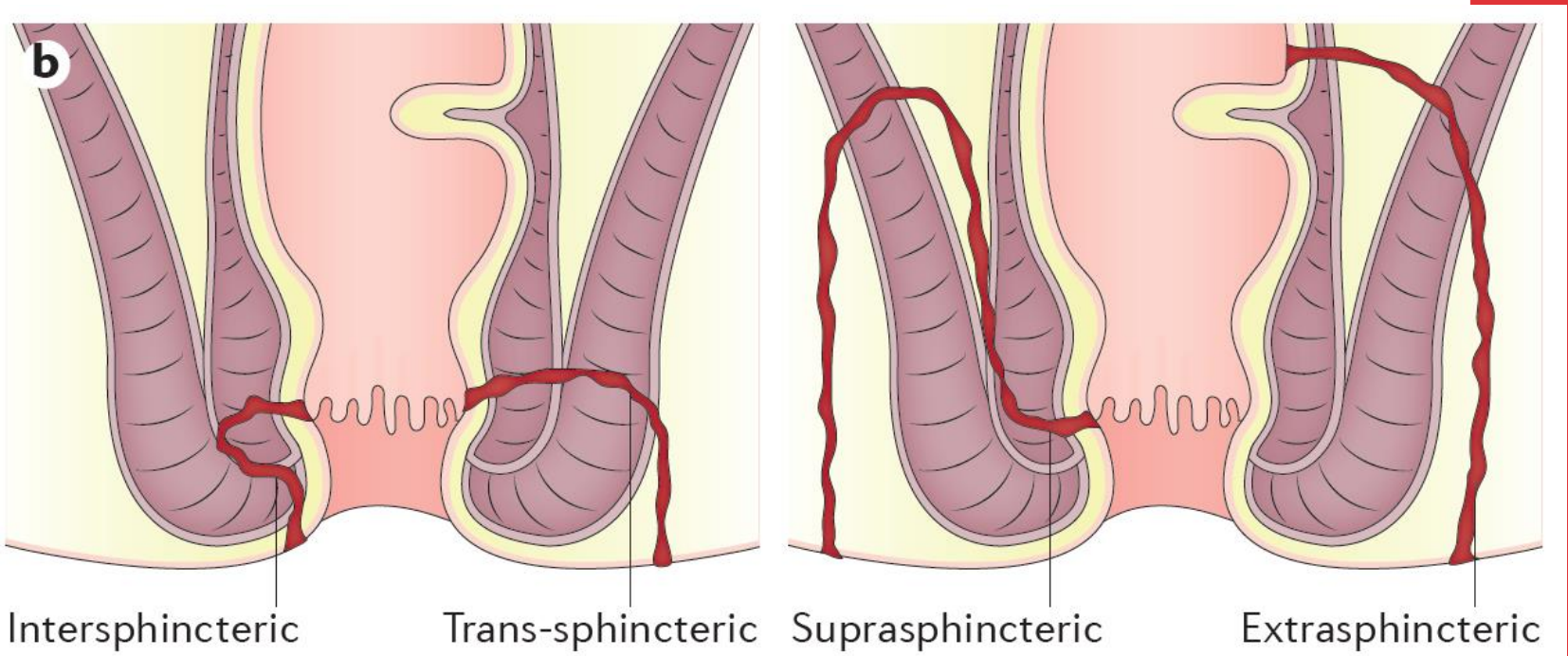

Panés and Rimola. Nat Rev Gastroenterol Hepatol 2017

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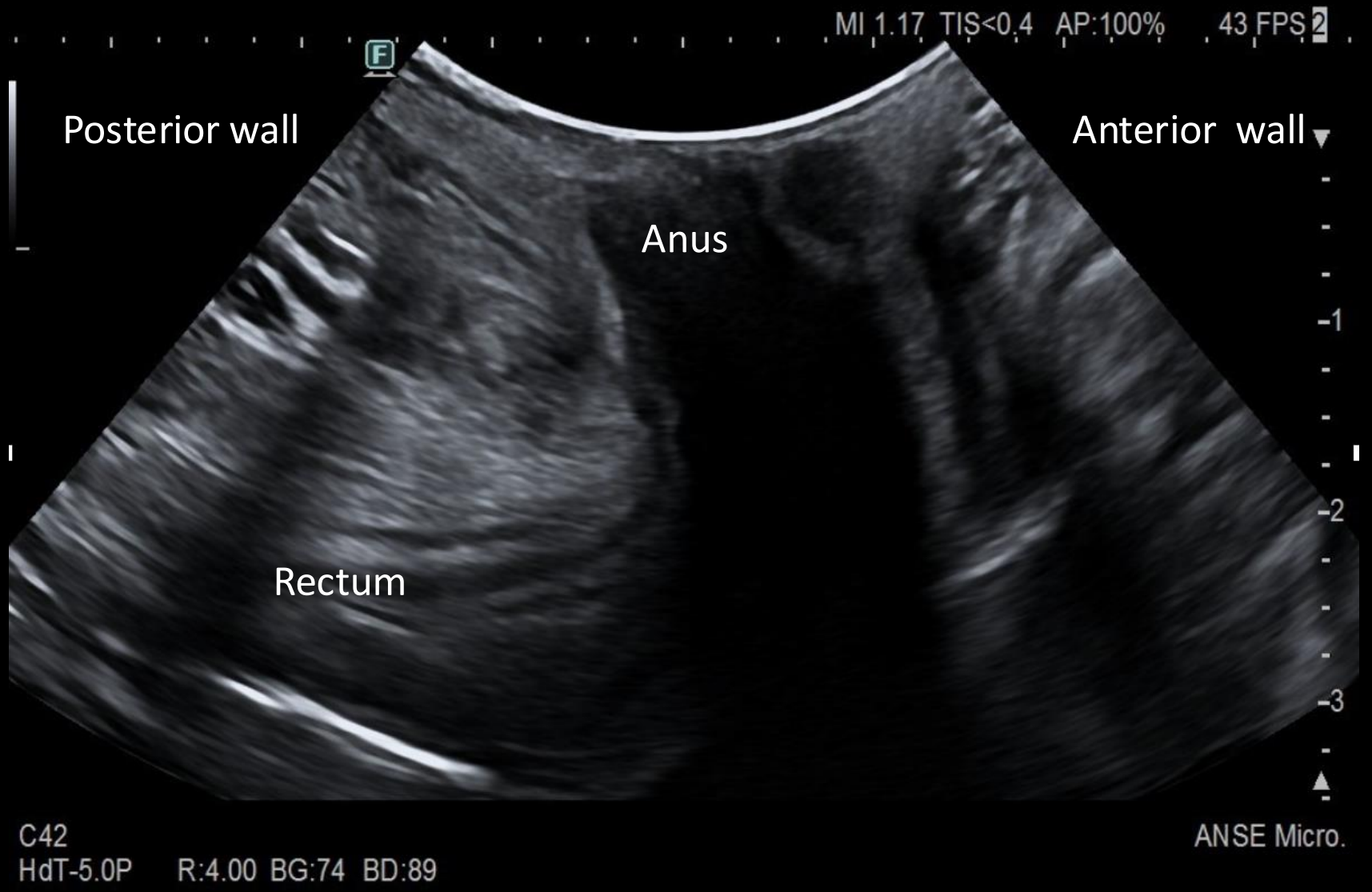
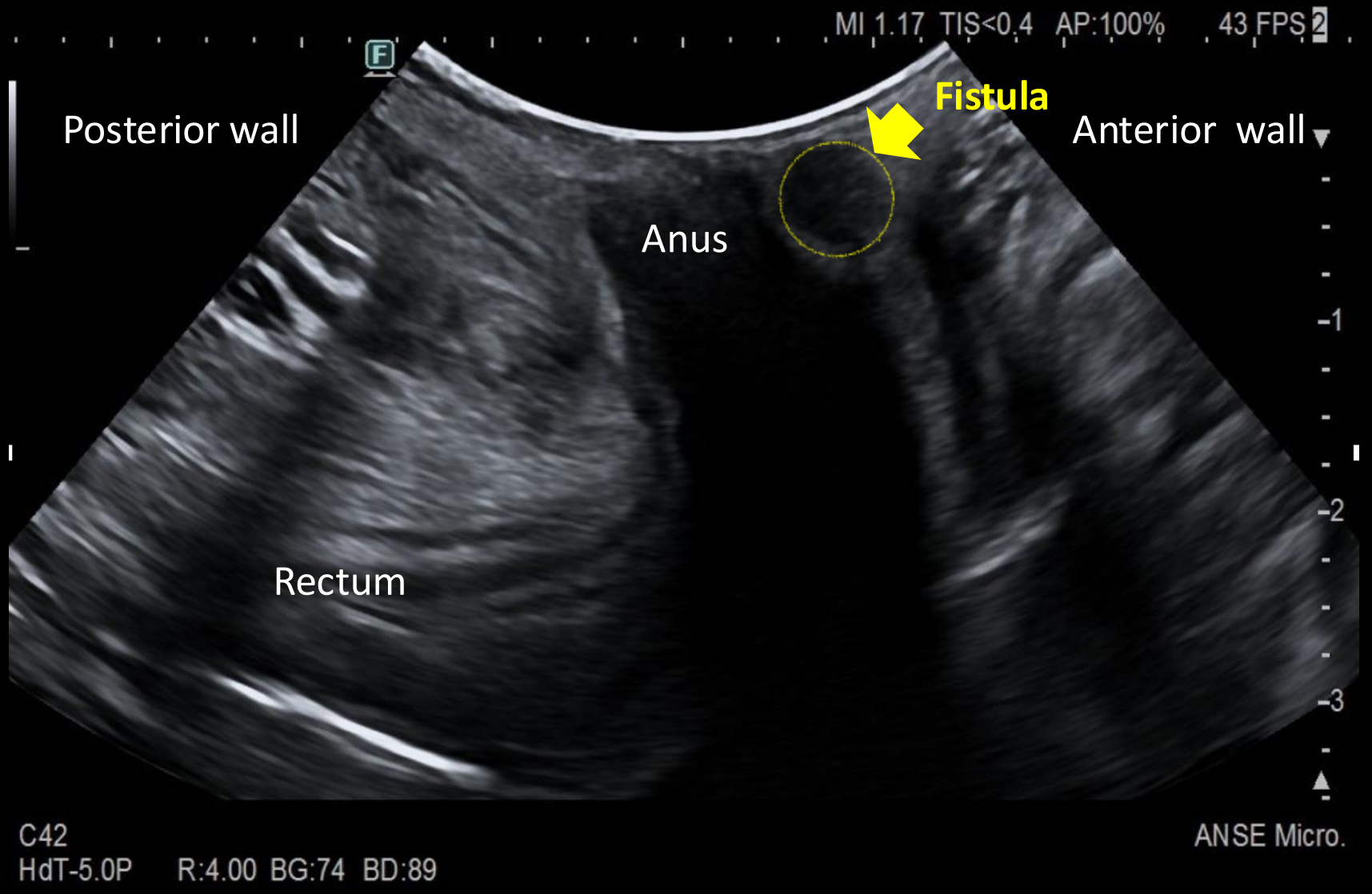
Intersphincteric fistula

An anterior intersphincteric fistula is identified between the internal and external anal sphincter. It presents as a hypoechogenic bulging within the internal anal sphincter, extending from the anterior anal wall to the skin surface

Intersphincteric fistula, sagittal scan

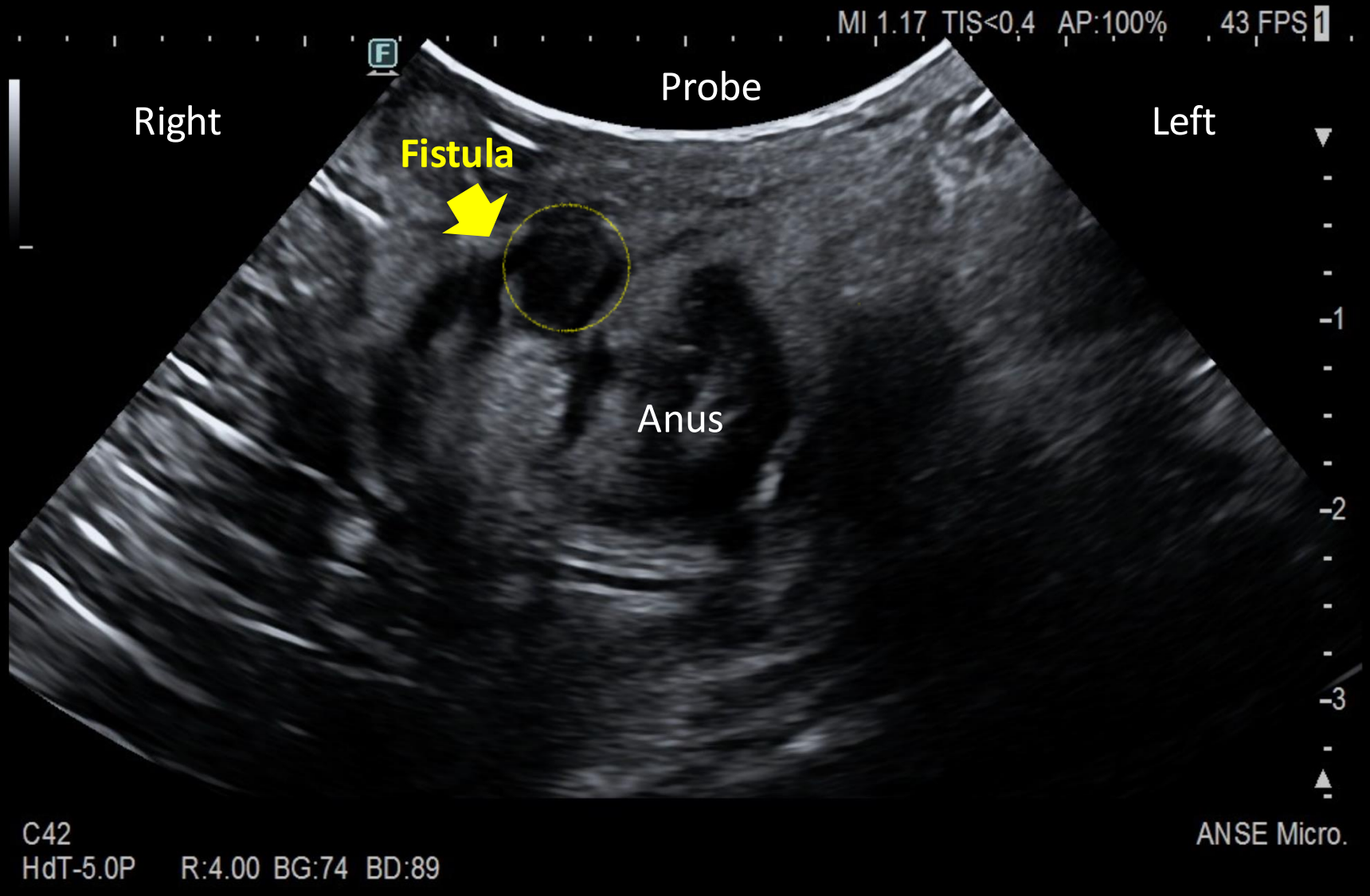


Intersphincteric fistula, sagittal scan



Intersphincteric fistula, transverse scan

Intersphincteric fistula, transverse scan

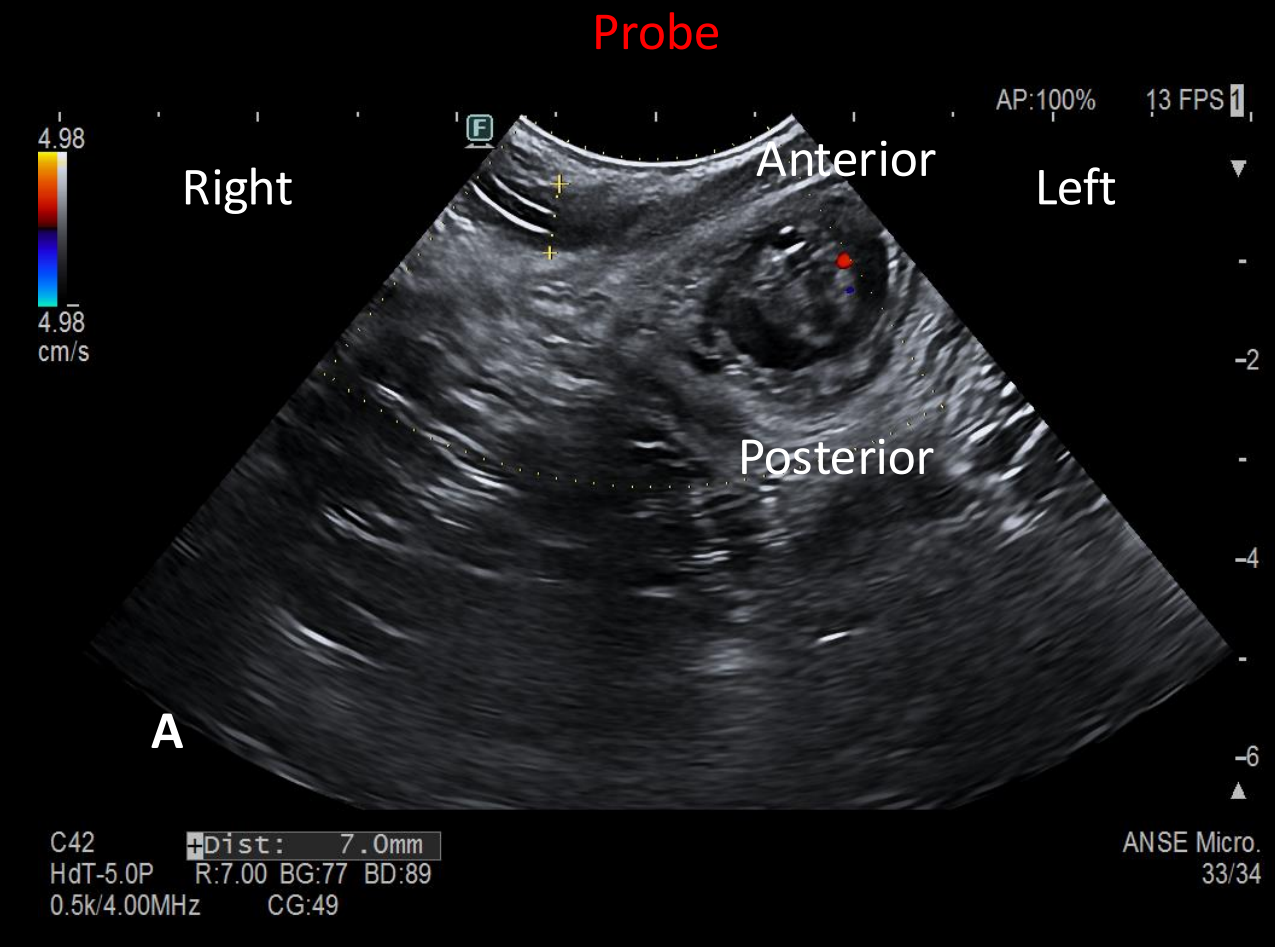


Transphincteric fistula, transverse scan

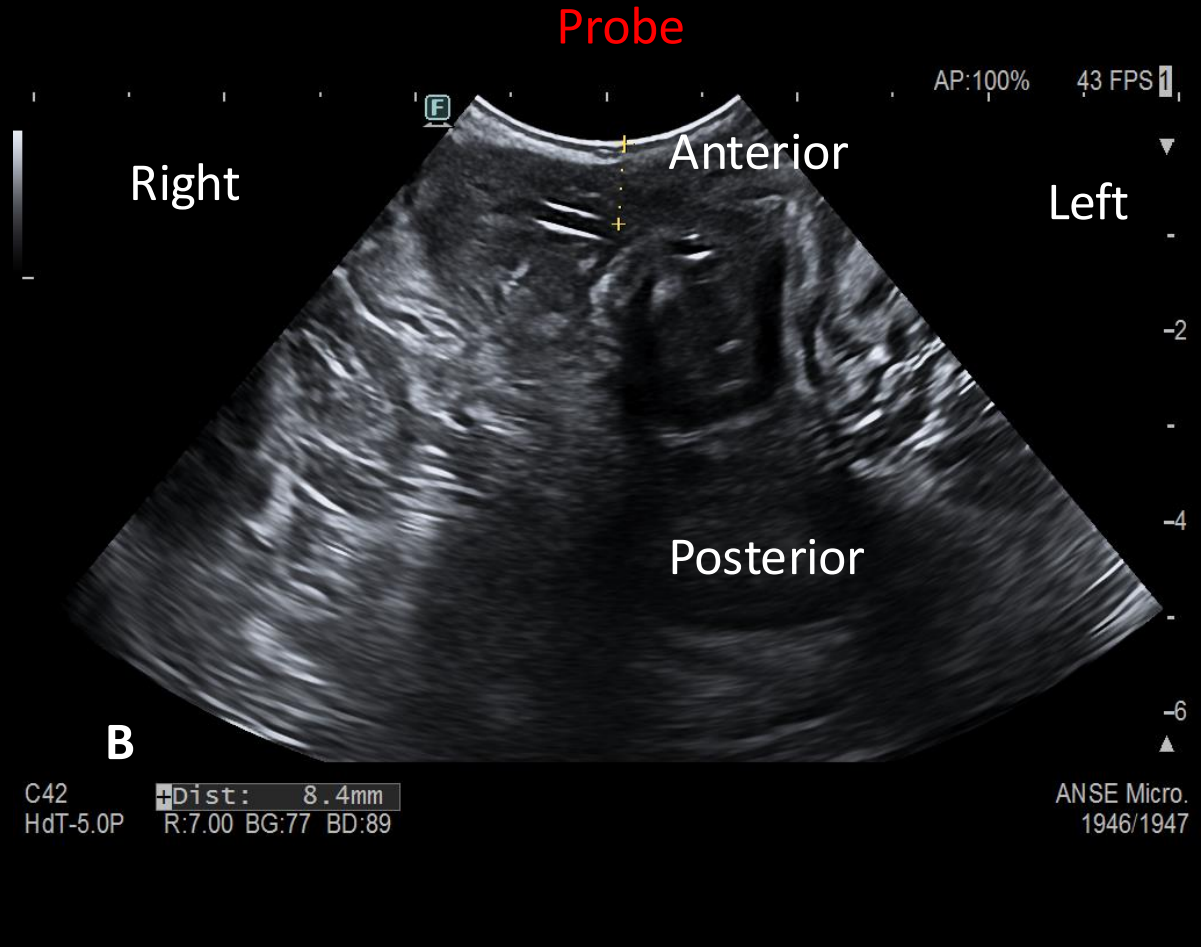
A transphincteric fistula containing a seton, which appears as a ‘binary’ hyperechoic structure. The fistula has an internal opening at 11 o'clock and extends anteriorly to the right, reaching the skin surface

Transphincteric fistula, transverse scan

Fistula diameter 7 mm



Distance of the fistula from the skin 8.4 mm



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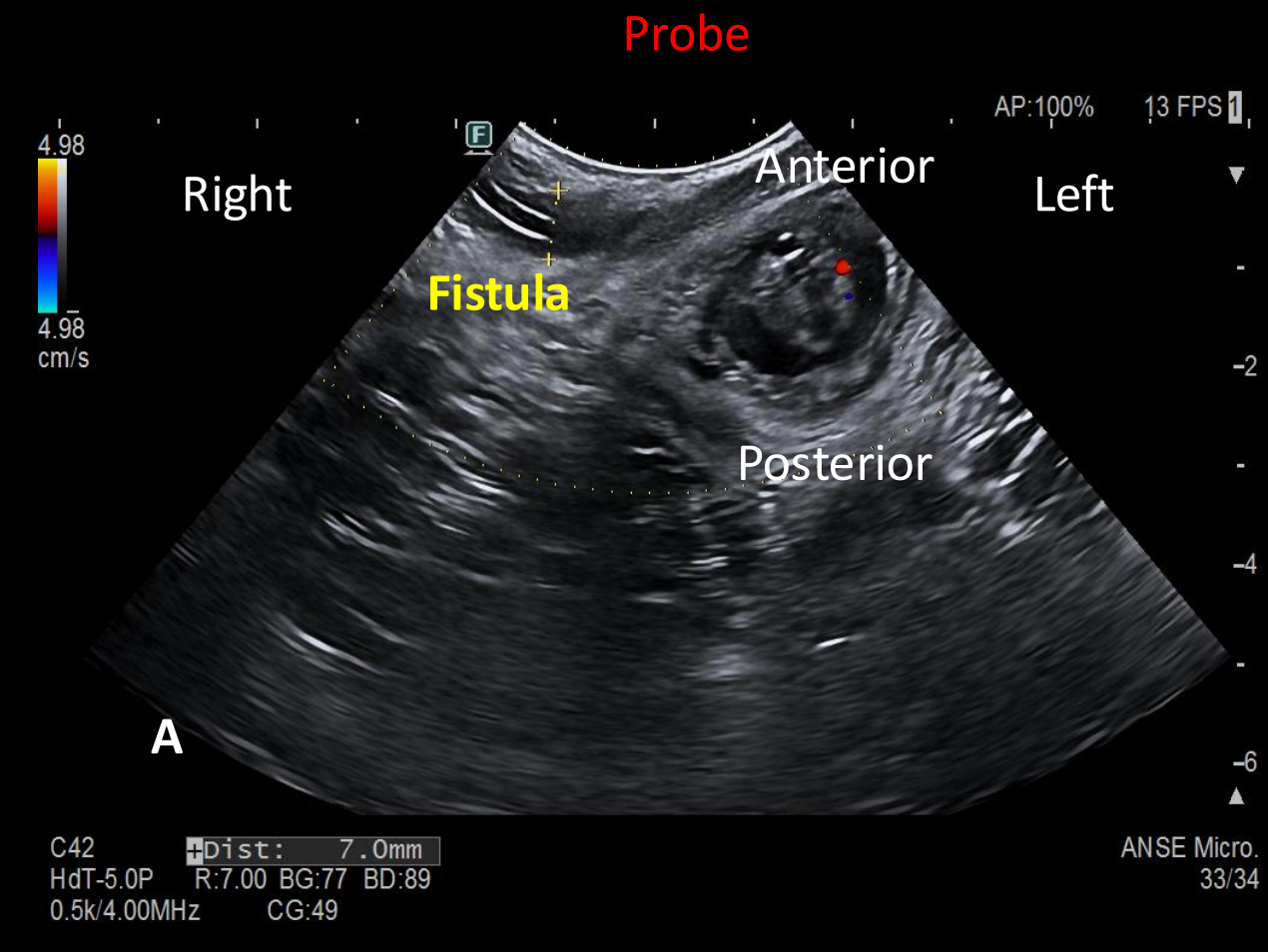
Fistula diameter 7 mm



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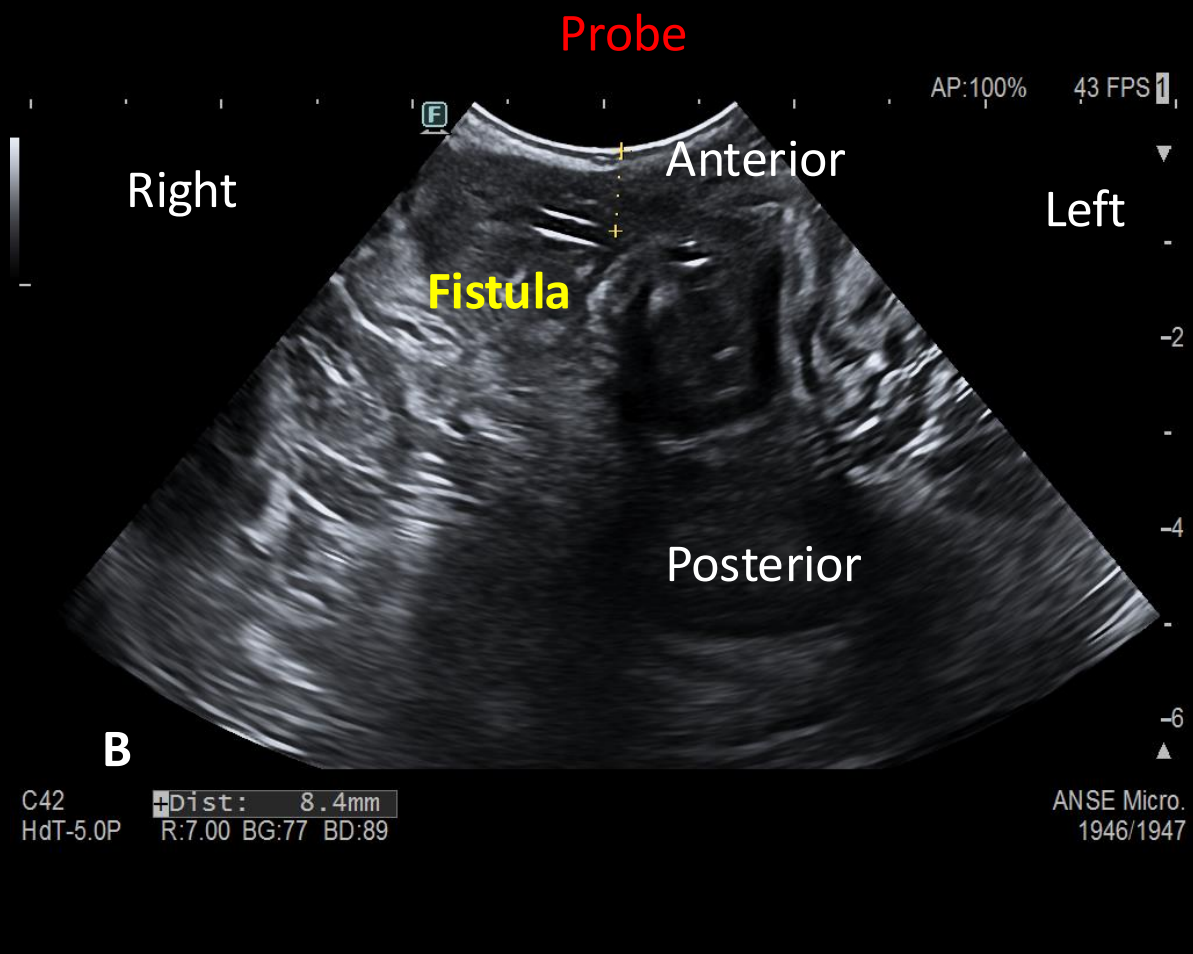
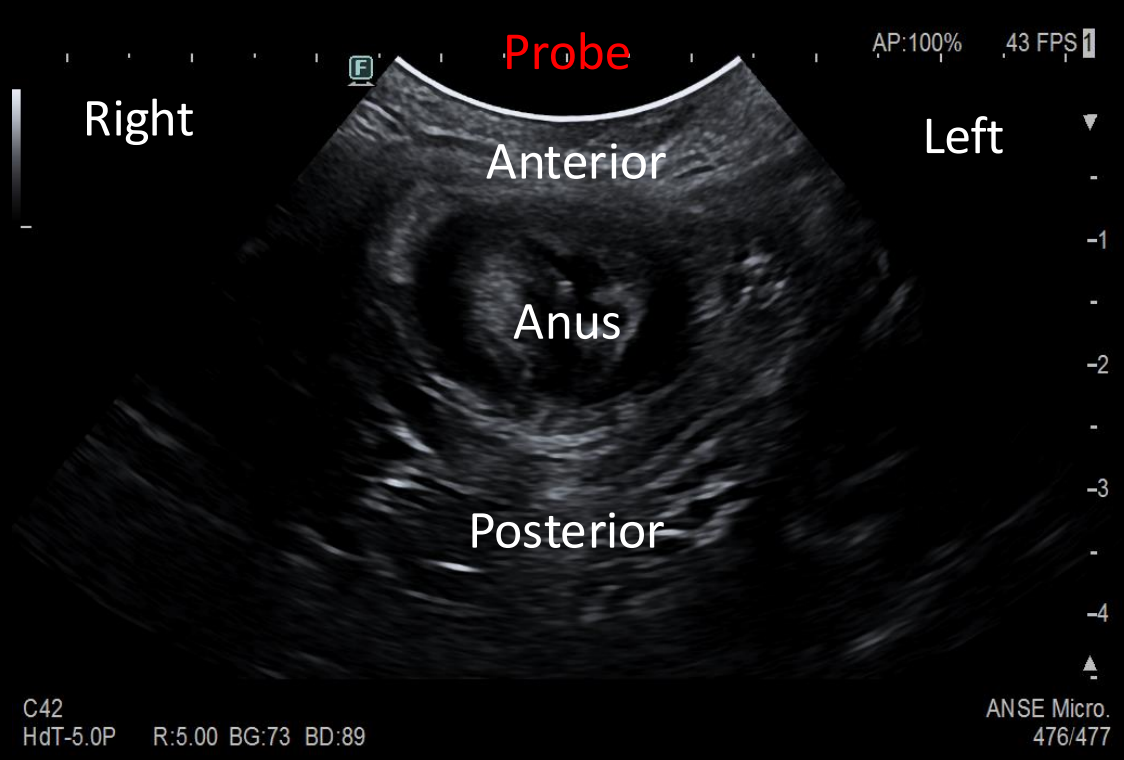
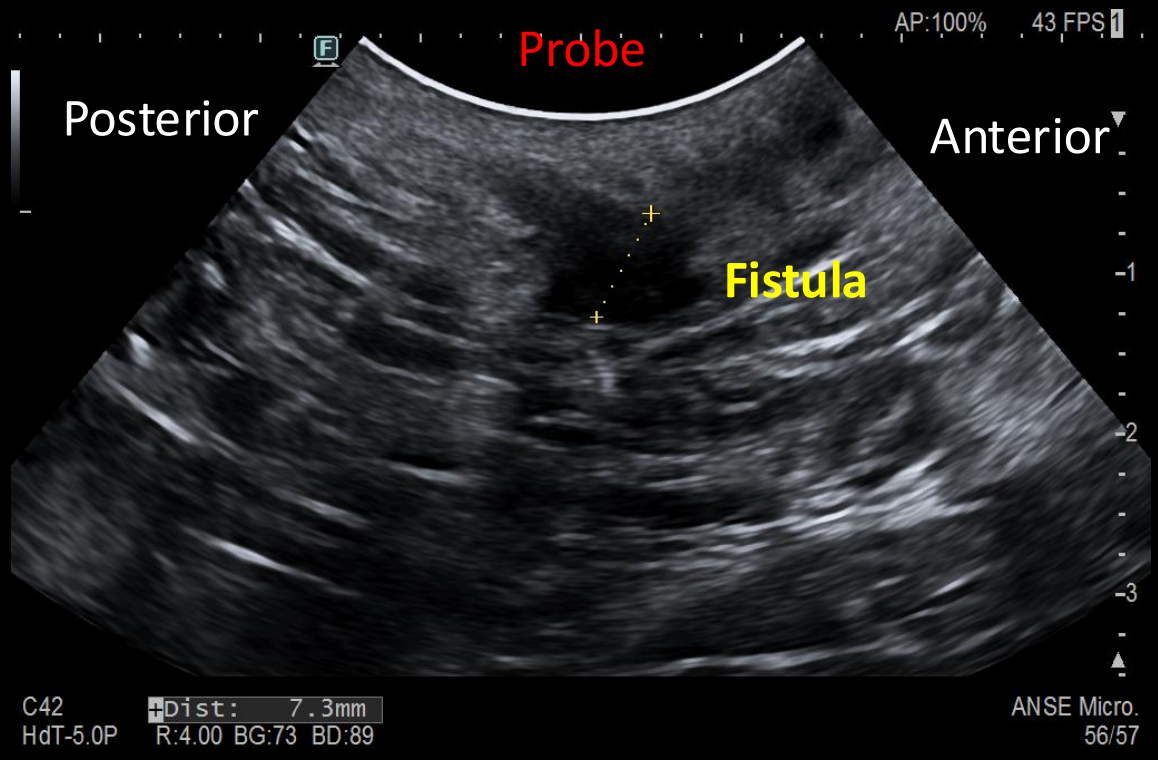


Extraspinteric fistula



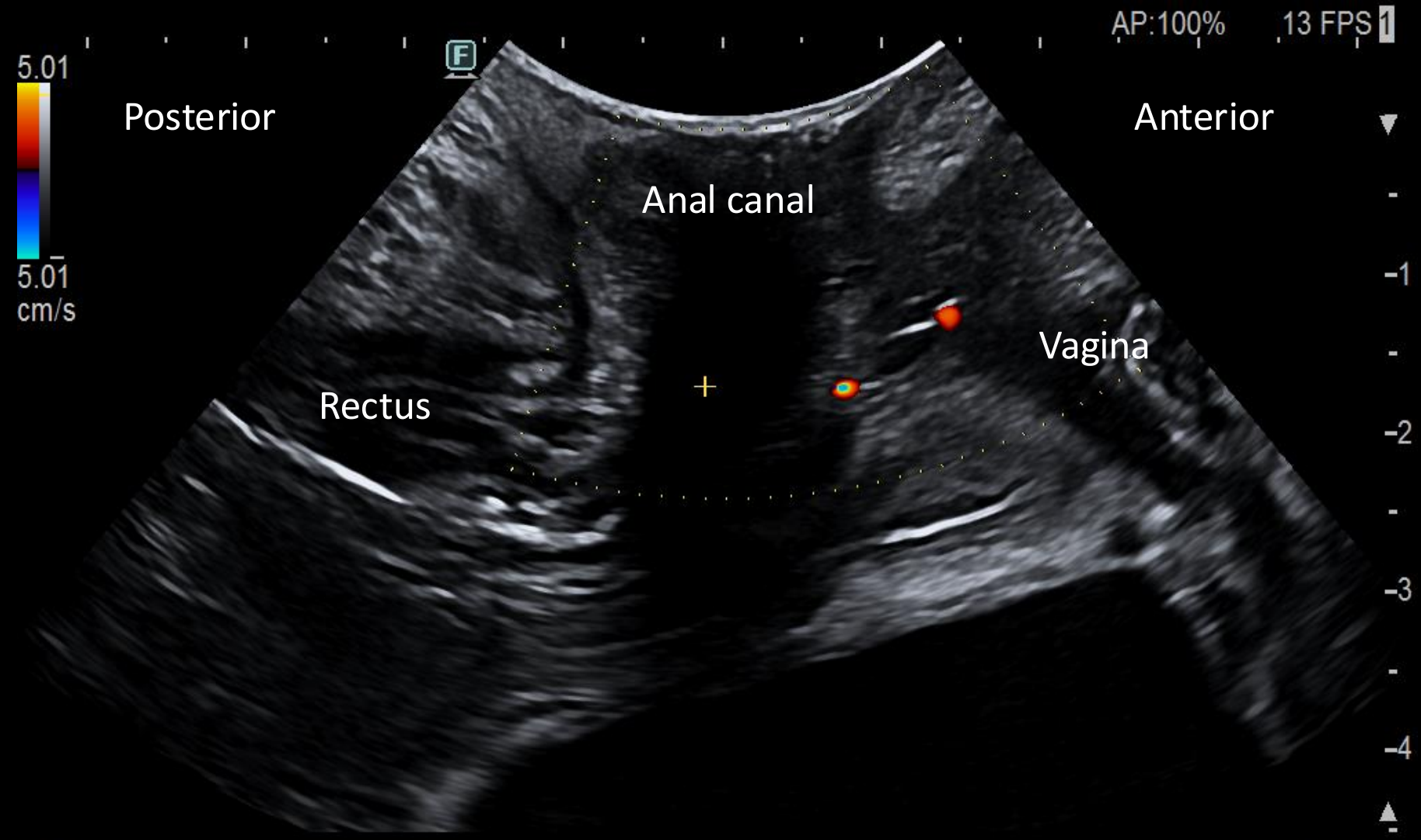


In transverse section, the anus appears normal. However, sagittal scanning reveals a hypoechoic tract running close to the anus without direct contact. It is not possible to identify an internal opening, as the fistulous tract is extra-sphincteric and located higher up

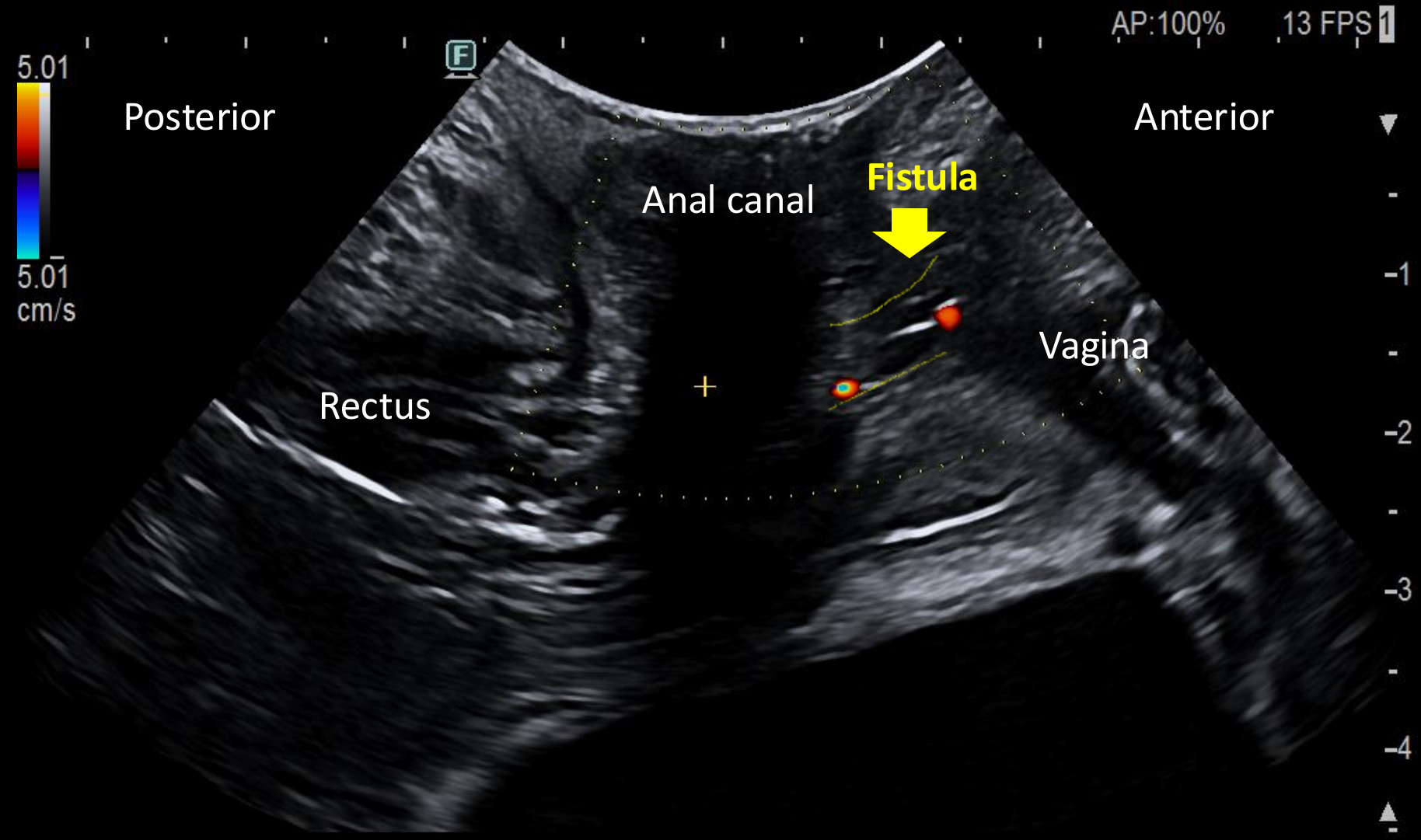
Extraspinteric fistula

In the coronal scan, a fistulous tract extends from the rectum through the right ischiorectal fossa, reaching the skin of the right gluteal region

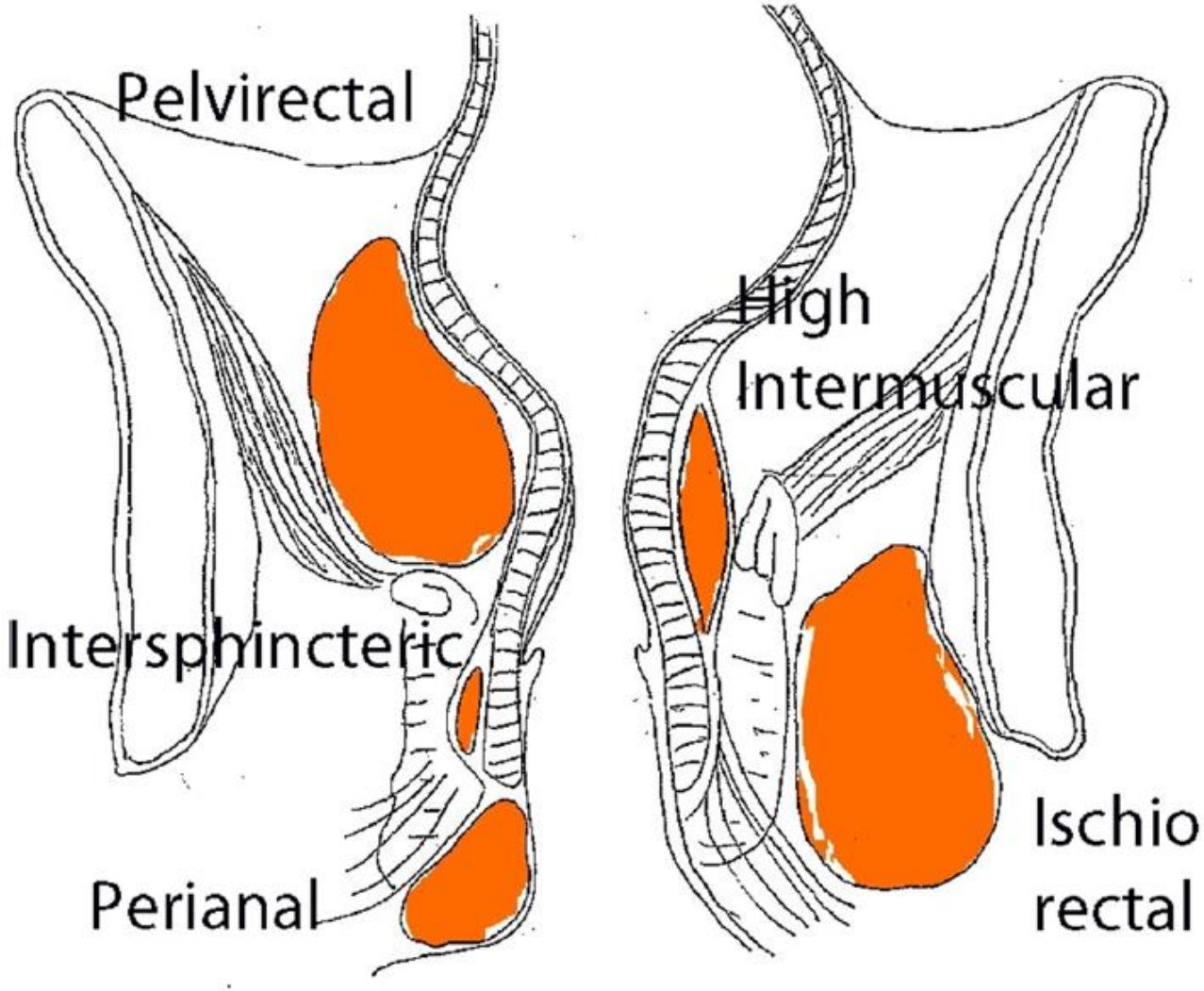
Recto-vaginal fistula



Recto-vaginal fistula



Classification of perianal abscesses



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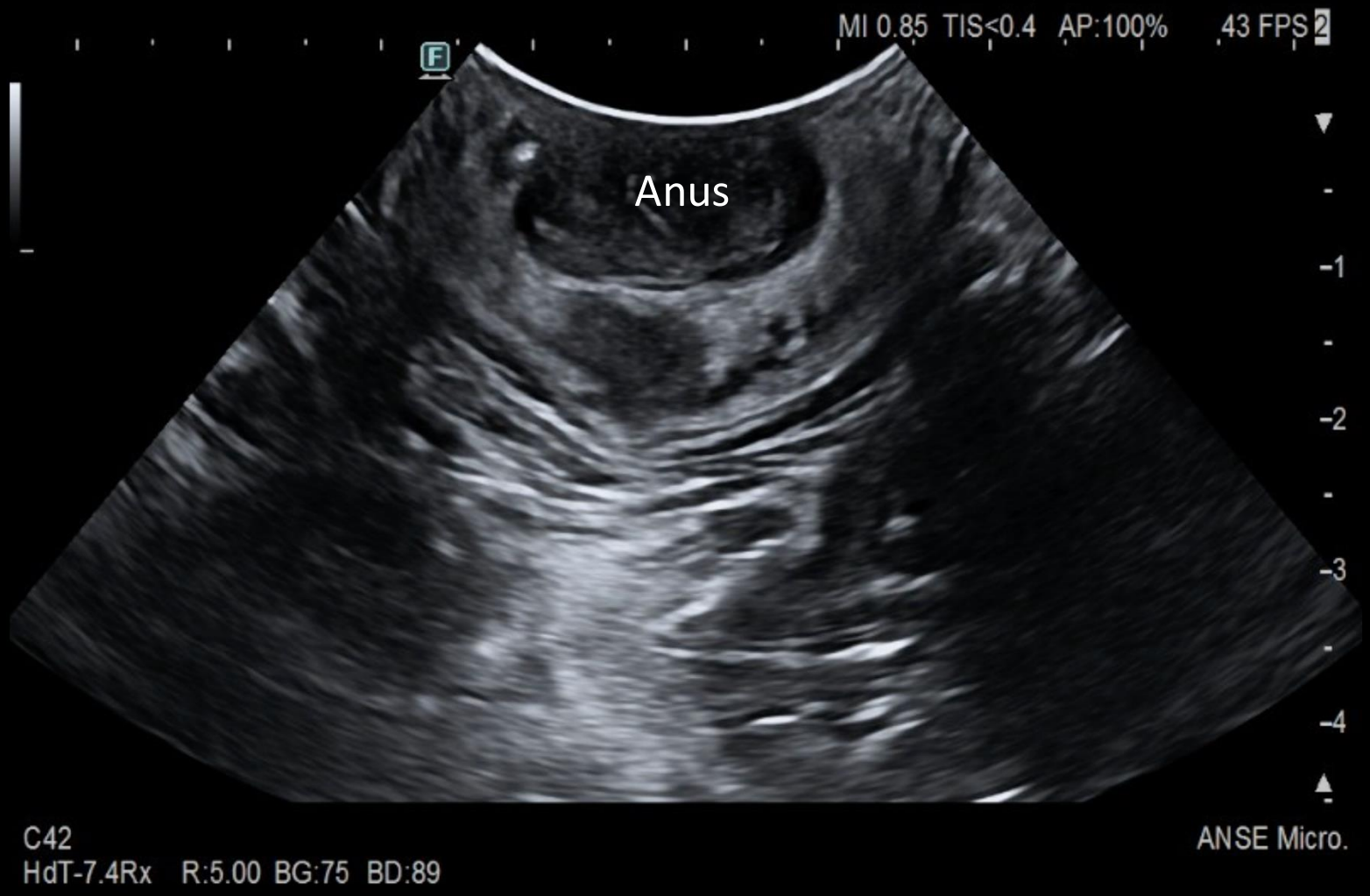
Perianal superficial abscess

Intersphincteric abscess, trasverse scan

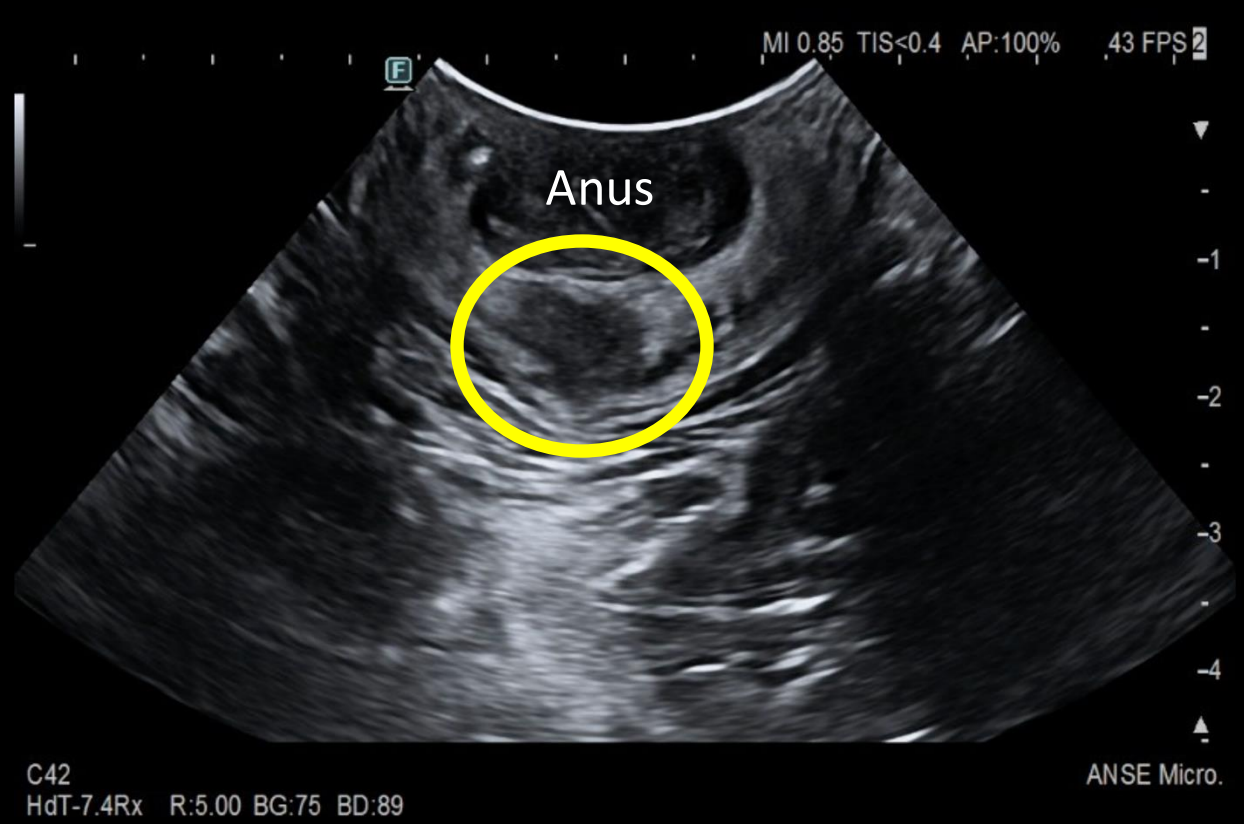


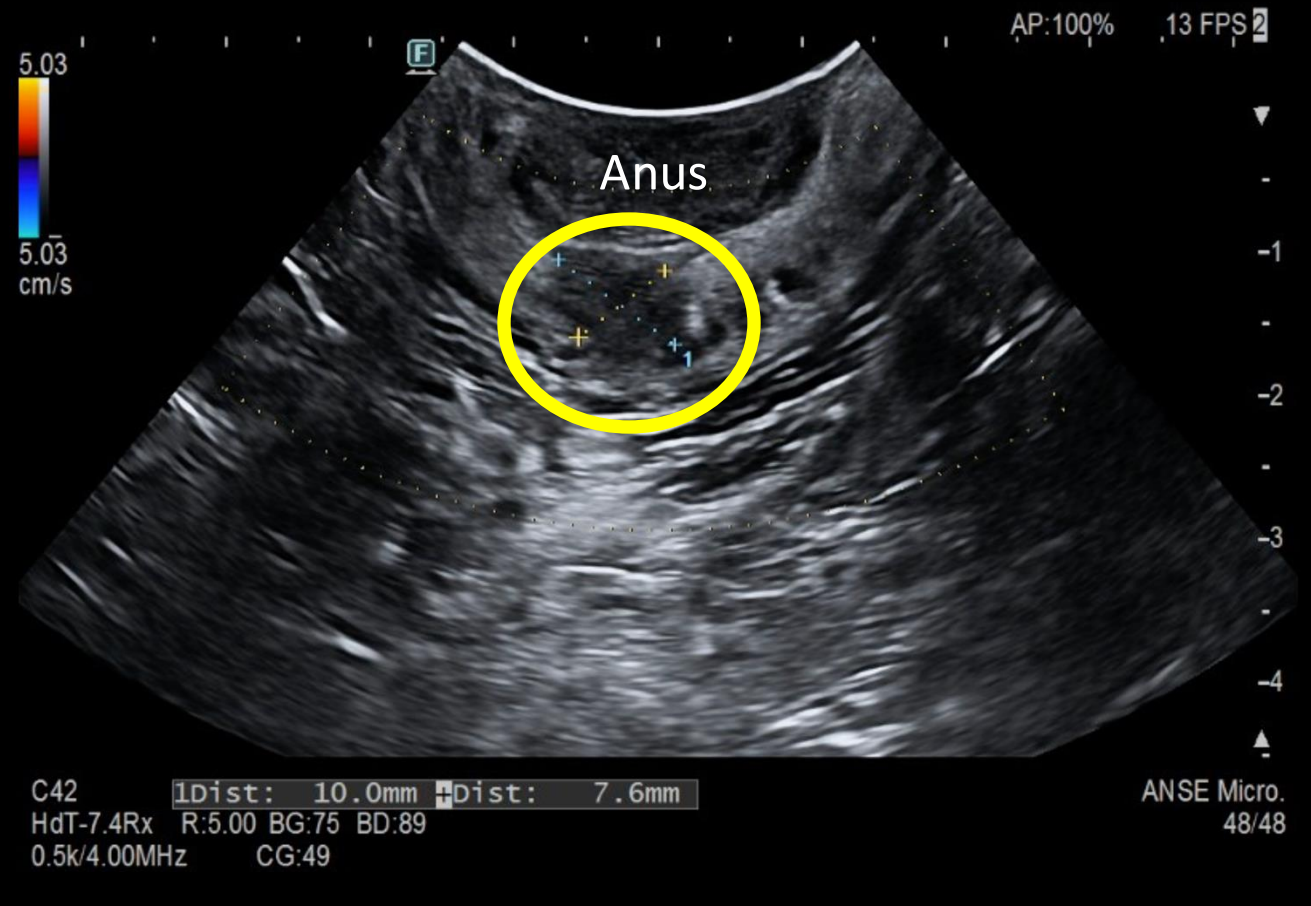
Intersphincteric abscess, trasverse scan

Posterior intersphincteric sbscess, 6 o'clock,
with no vascular signals on colour Doppler

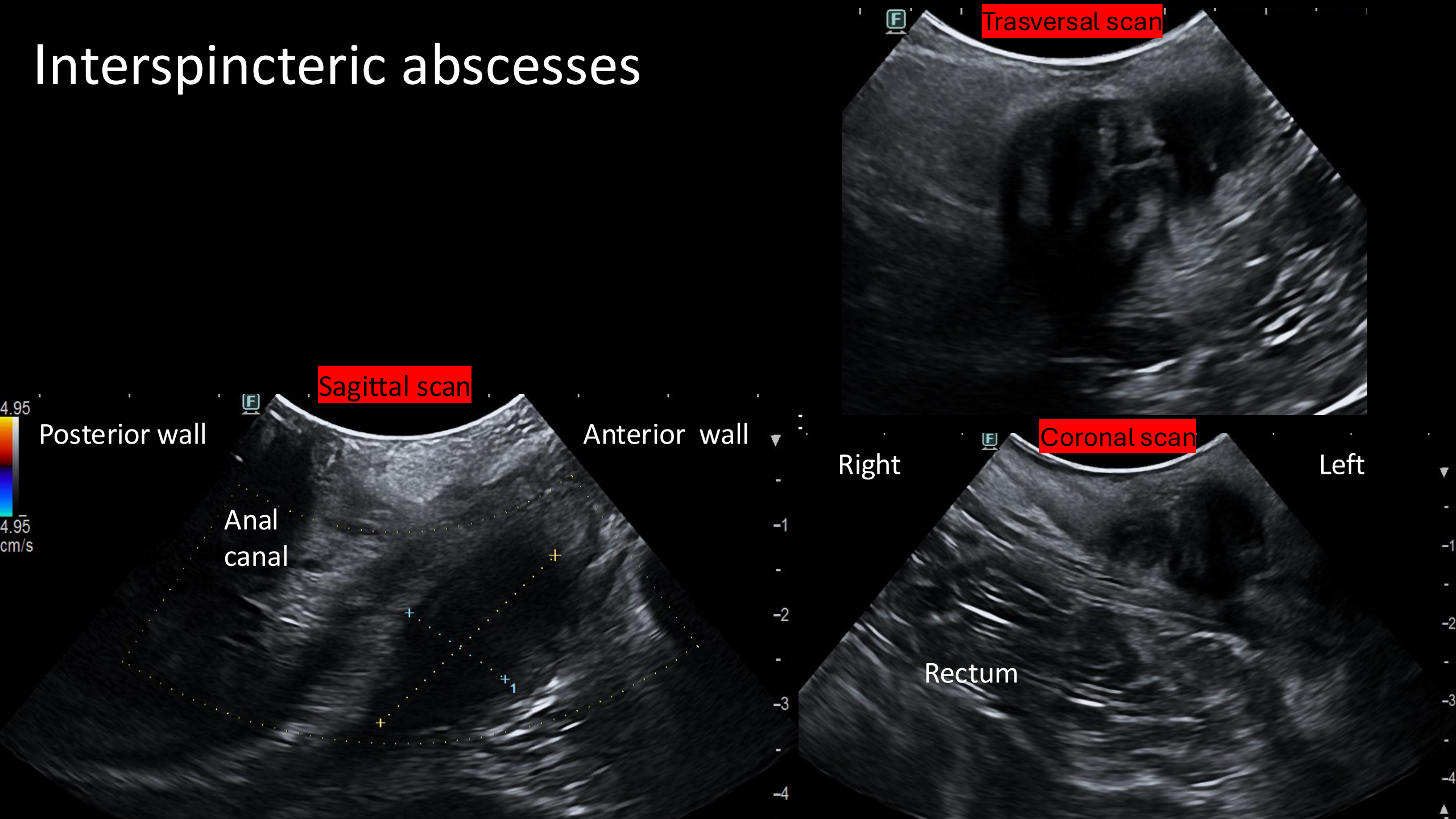
Intersphincteric abscess, trasverse scan

Posterior intersphincteric sbscess, 6 o'clock,
with no vascular signals on colour Doppler



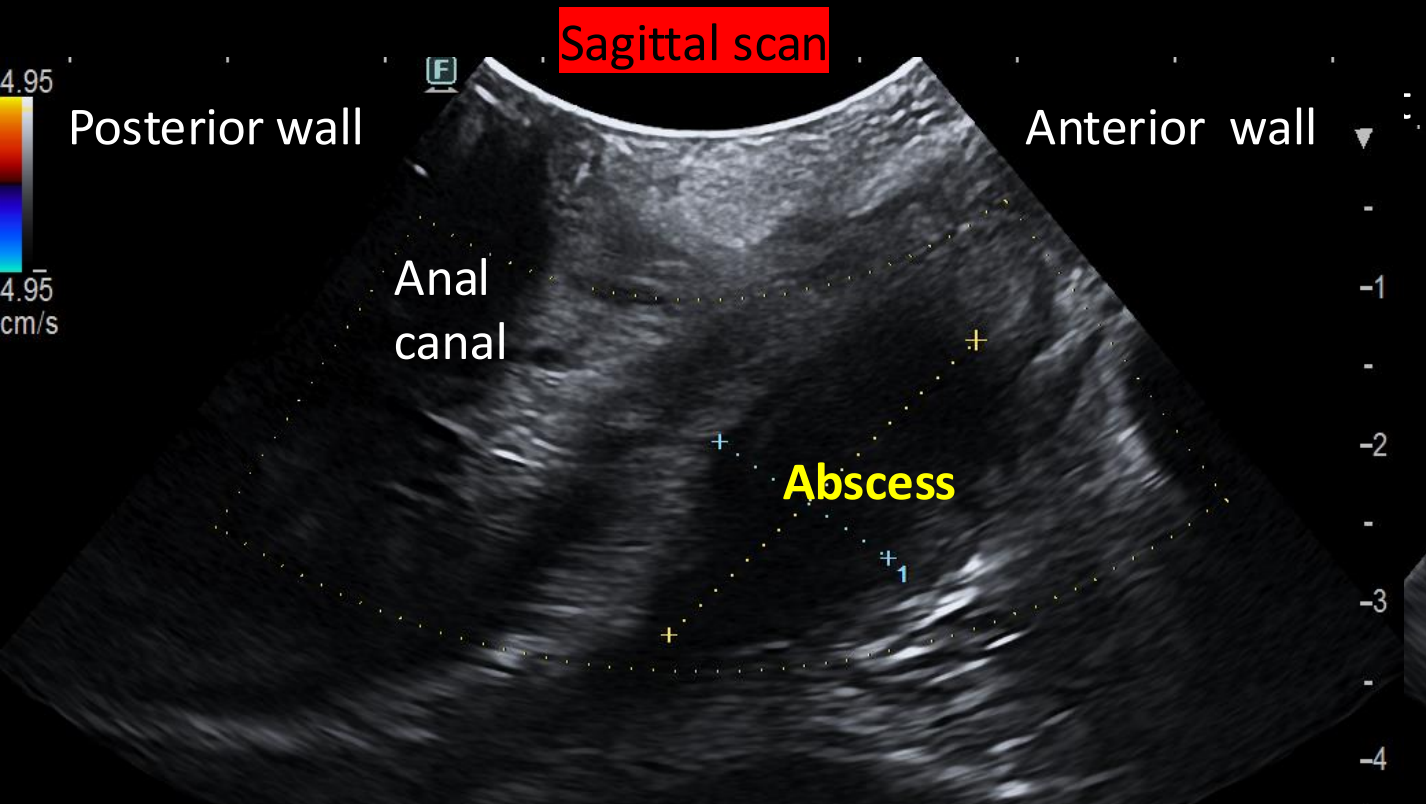


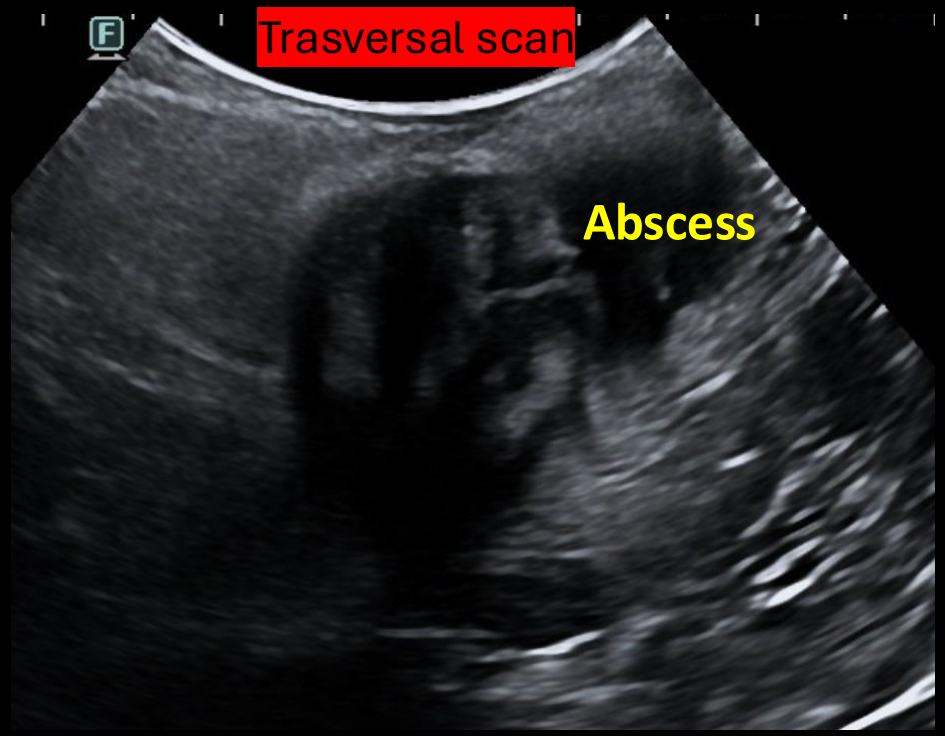
Interspincteric abscesses

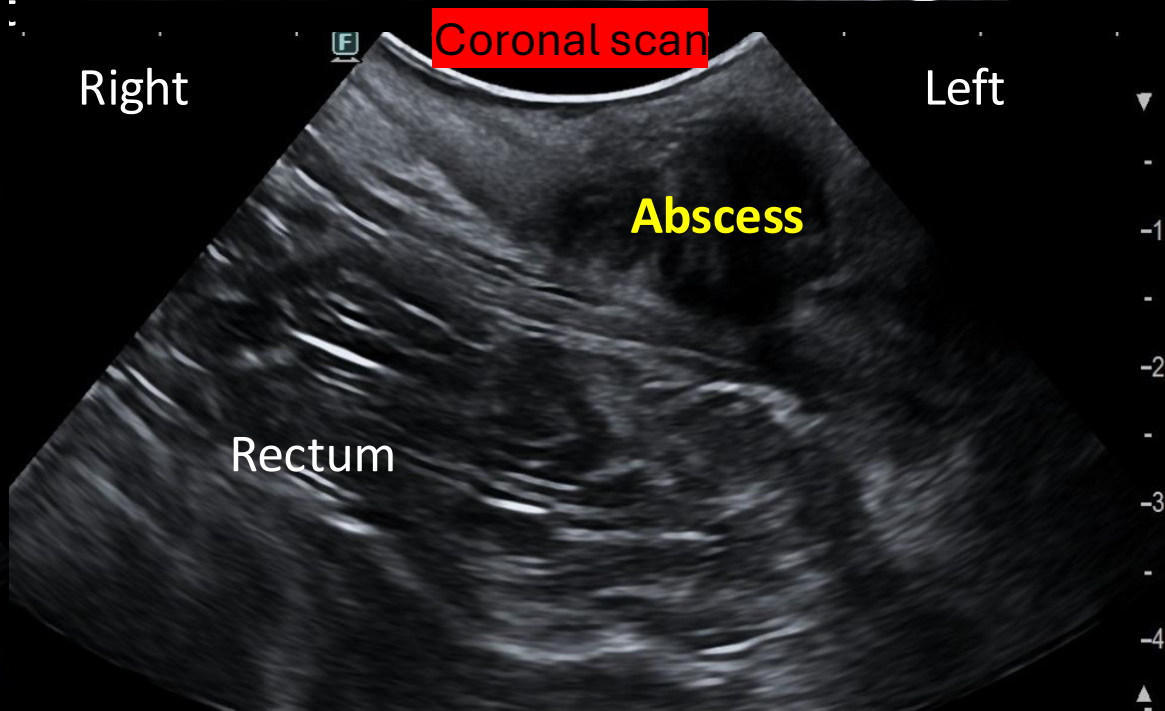


Interspincteric abscesses

Left anterior hypoechoic lesion, 2 o'clock,
no vascular signals on colour Doppler







Interspincteric abscesses

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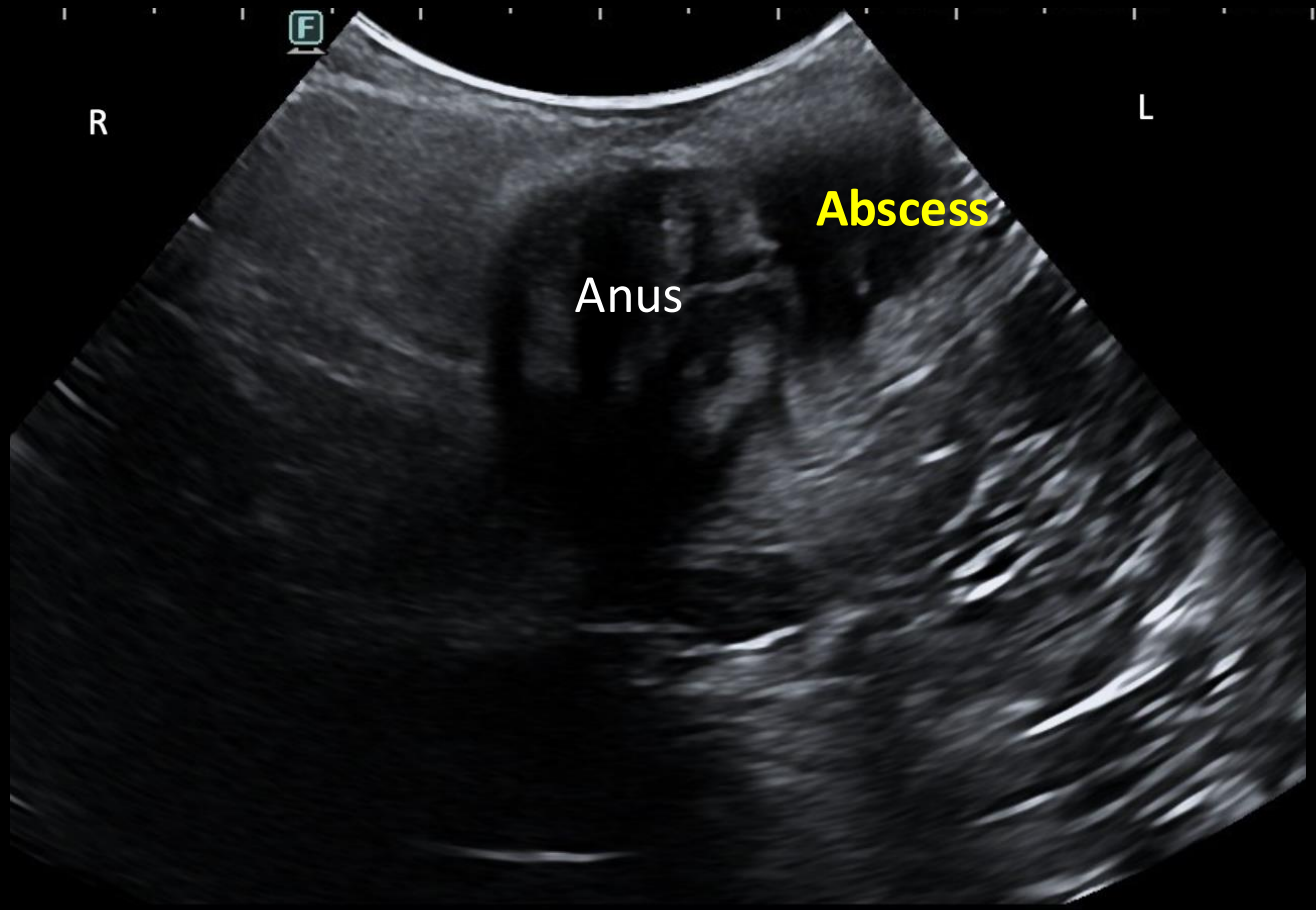
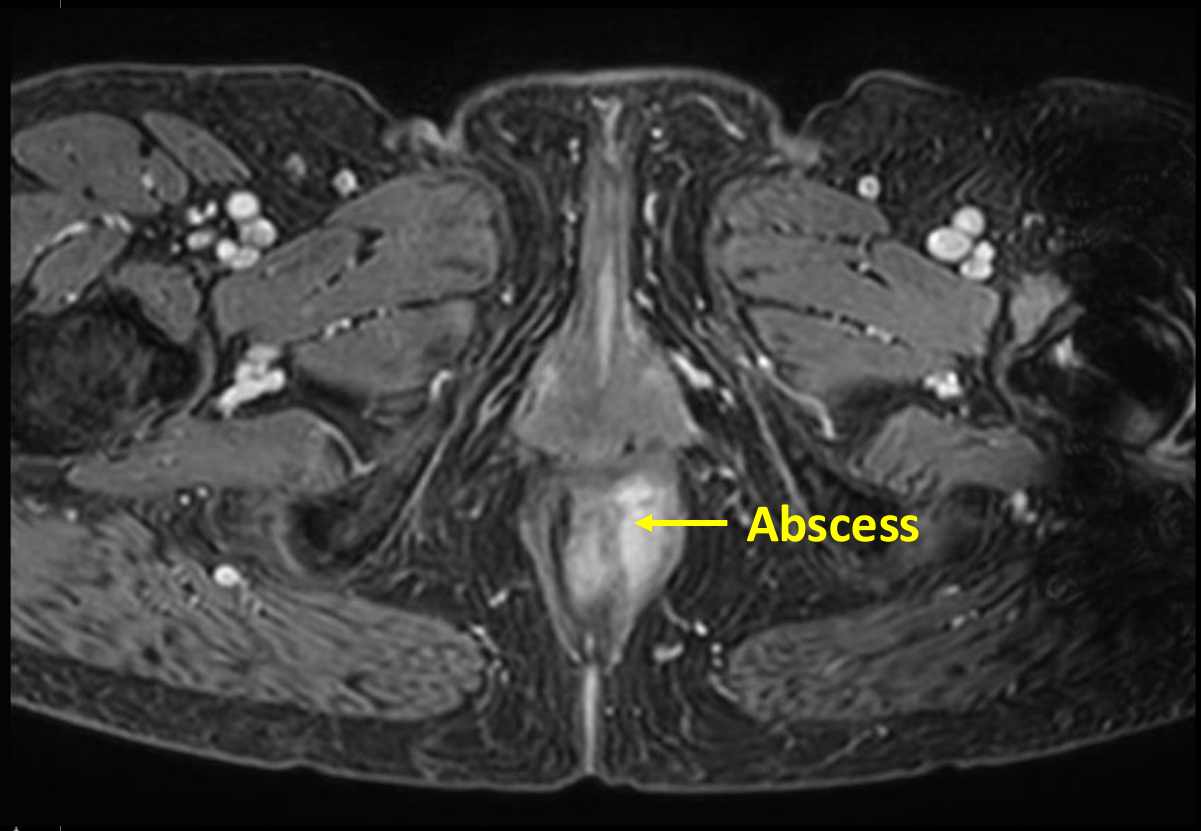
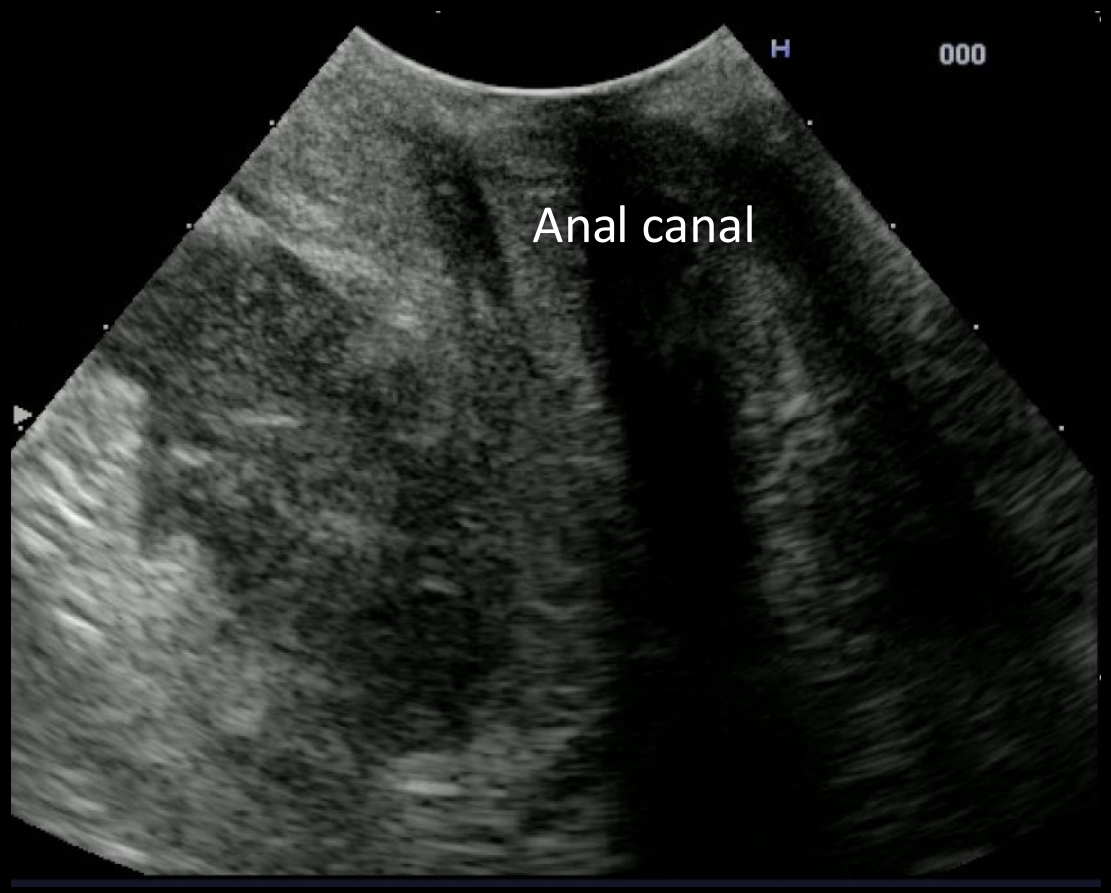
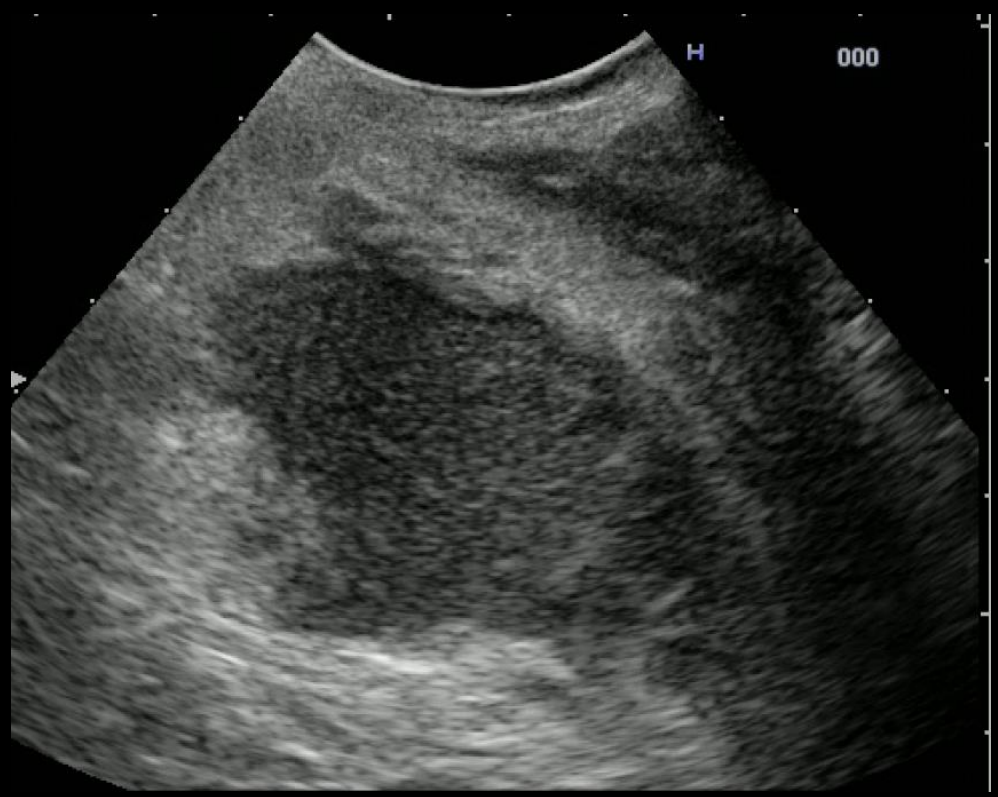


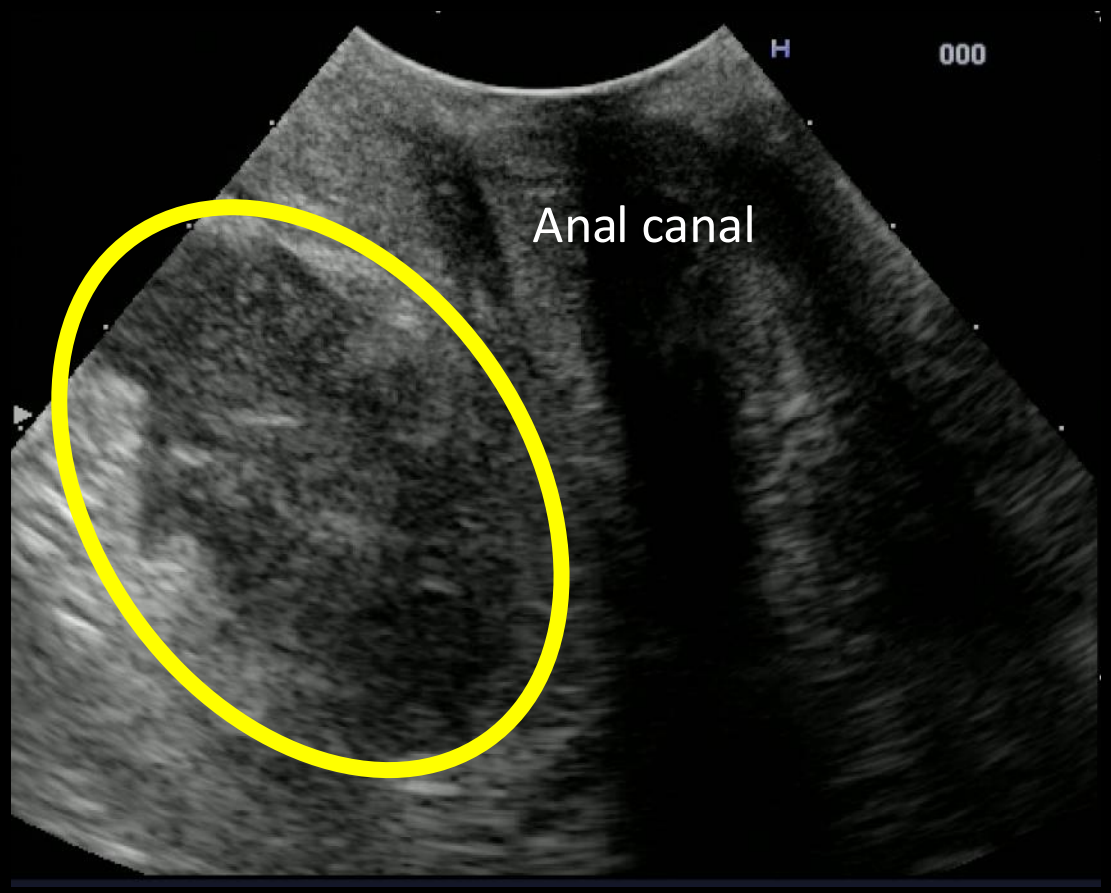


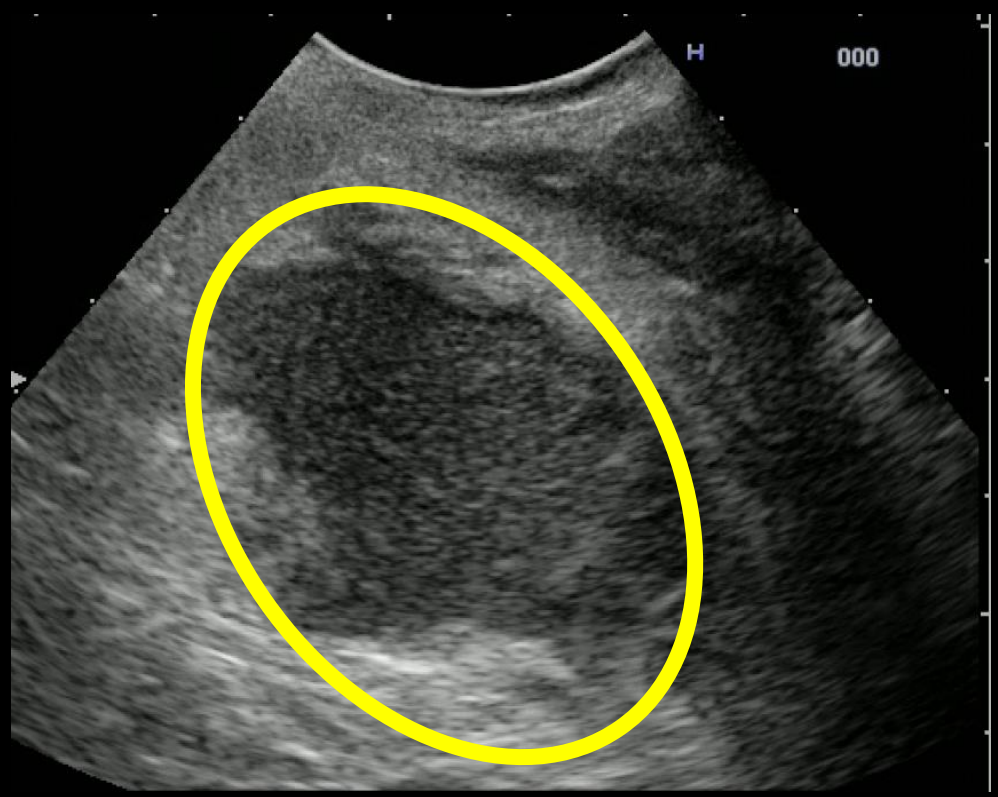
Ischiorectal inflammatory mass





Ischiorectal inflammatory mass





Systematic review and meta-analysis: Diagnostic accuracy (sensitivity) of TPUS

Fistula detection

- 98% (95% CI 96-100%)

Fistula classification

- 92% (95% CI 85-97)

Abscess detection

- 86% (95% CI 67-99%)

Maconi et al. Ultraschall in Med 2017

Active perianal Crohn's disease

Baseline pelvic MRI (alternatively EAUS or TPUS) plus Recto-Sigmoidoscopy

MRI plus Recto-Sigmoidoscopy to determine treatment response after 6-12 months (alternatively EAUS or TPUS)

Role of Noninvasive Imaging in the Diagnosis and Management of Patients With Suspected and Established Inflammatory Bowel Disease. Torsten Kucharzik, Mariangela Allocca, Joana Torres, and Stuart A. Taylor. Gastroenterology 2025; 1-18

ECCO-ESGAR-ESP-IBUS Guideline on Diagnostics and Monitoring of Patients with Inflammatory Bowel Disease: Part 1

Part 1: initial diagnosis, monitoring of known inflammatory bowel disease, detection of complications

Torsten Kucharzik[1,*], Stuart Taylor[2], Mariangela Allocca[3], Johan Burisch[4,5,6], Pierre Ellul[7], Marietta Iacucci[8], Christian Maaser[9], Pamela Baldin[10], Gauraang Bhatnagar[11], Shomron Ben-Horin[12], Dominik Bettenworth[13], Mallory Chavannes[14], Ann Driessen[15], Emma Flanagan[16], Frederica Furfaro[17], Giovanni Maconi[18], Konstaninos Karmiris[19], Amelia Kellar[20,21], Isabelle De Kock[22], Konstantinos Katsanos[23], Uri Kopylov[24], Cathy Lu[25], Olga Maria Nardone[26], Nurulamin M Noor[27], Kerri Novak[28], Paula Borralho Nunes[29], Patrick van Rheenen[30], Jordi Rimola[31], Francesca Rosini[32], David Rubin[33], Martina Scharitzer[34], Jaap Stoker[35,36], Mathieu Uzzan[37], Stephan Vavricka[38], Bram Verstockt[39], Rune Wilkens[40], Nina Zidar[41], Alessandra Zilli[42], Henit Yanai[43,44], Roger Feakins[45,46]; on behalf of the European Crohn's and Colitis Organisation (ECCO), the European Society of Gastrointestinal and Abdominal Radiology (ESGAR), the European Society of Pathology (ESP), and the International Bowel Ultrasonography Group (IBUS)

Recommendation 22 Patients with IBD and suspected perianal disease should undergo a clinical and endoscopic examination, including digital rectal exam to assess for anal stricture, in addition to pelvic MRI or TRUS and an examination under anesthesia if indicated (EL1). TPUS could be used alternatively (EL3). (91% agreement)

Recommendation 17 For monitoring purposes, perianal CD should be reassessed by clinical evaluation in combination with endoscopic examination of the rectum plus MRI (EL1). Transrectal ultrasonography in the absence of anal stenosis (EL1) or transperineal ultrasonography (EL3) might be used if MRI is not available. We suggest imaging reassessment within 6 months after change of treatment (EL5). (100% agreement)

- *JCC 2025*

international bowel
ULTRASOUND GROUP

IBUS HYBRID module 1

7-8TH NOVEMBER, 2025
MILAN, ITALY

Thank you