



international bowel
ULTRASOUND GROUP

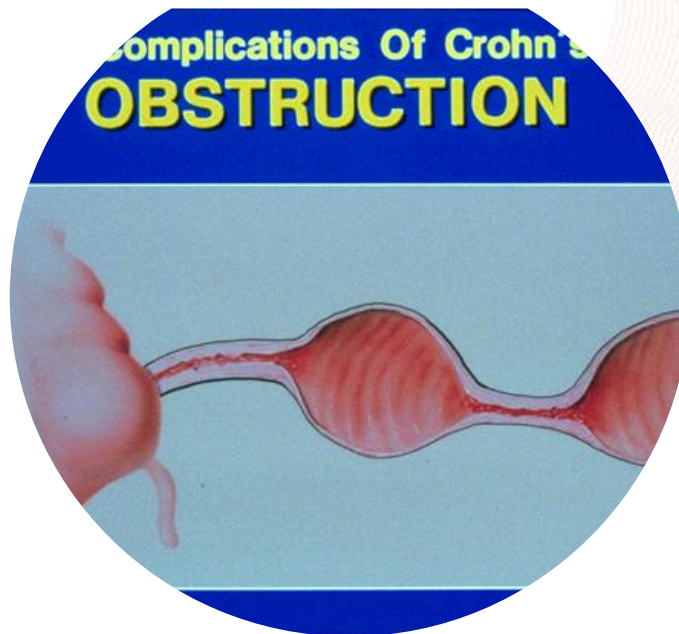
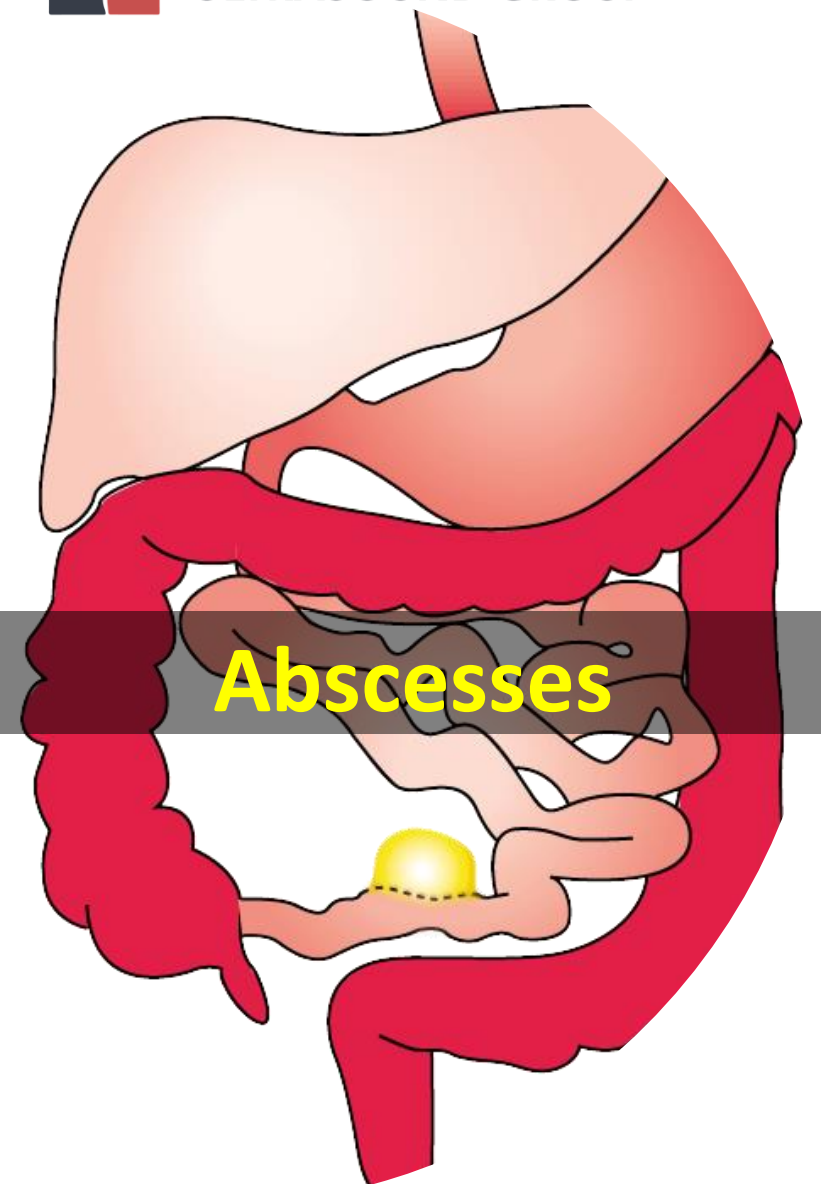
Complications

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Gastroenterology and Endoscopy
Milan, Italy



Panama City, Panama, August 18th – 19th, 2026



Which complications?

Complications in Crohn's disease

The main abdominal complications of CD are stenoses, fistulae and abscesses. These are the main indications for surgical intervention. Surgery is a frequent treatment in the natural history of CD patients [101, 102].

Crohn's disease is a chronic progressive disease

The natural history of Crohn's disease

306 Olmsted County residents
diagnosed with Crohn's disease
between 1970 and 2004.

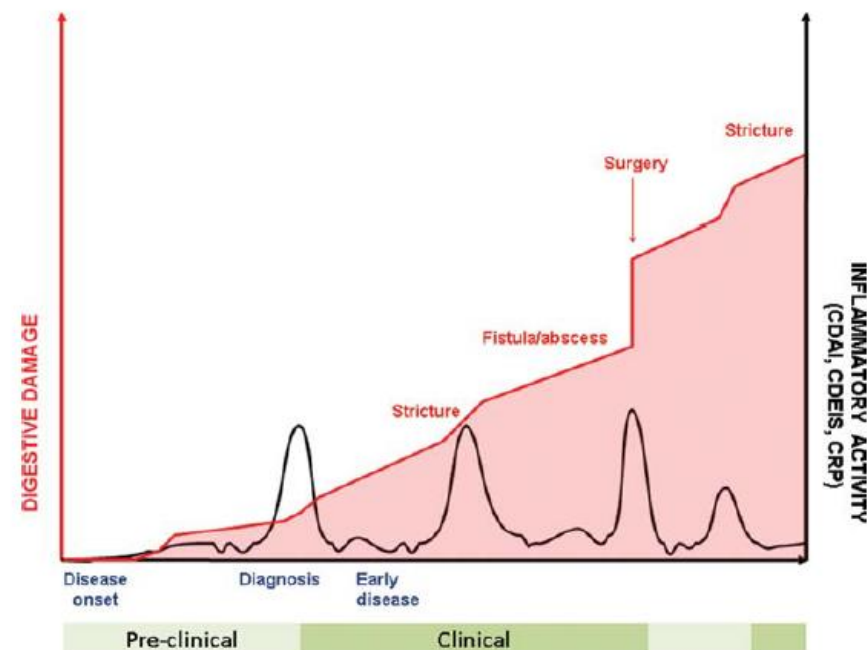
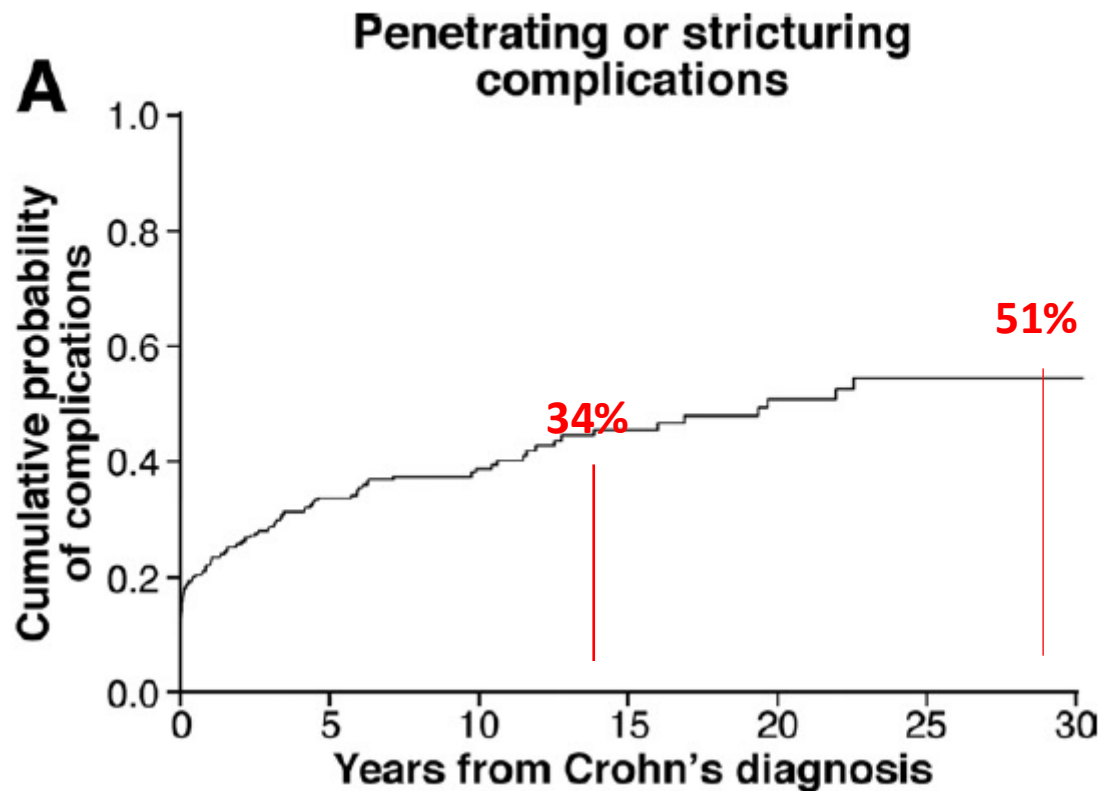


FIGURE 1. Progression of digestive damage and inflammatory activity in a theoretical patient with CD.

• Strictures

Recommendation 20 We recommend cross-sectional imaging (MRE, IUS, or both) to detect small-bowel strictures (EL1). Active inflammation within strictures should be assessed using MRE, IUS, or both (EL2). Currently, no imaging technique is sufficiently accurate to quantify fibrosis (EL3). Cross-sectional imaging criteria have low sensitivity for detecting small-bowel cancer complicating CD (EL3). (97% agreement)

2025

Statement 3.1.1. ECCO-ESGAR Diagnostics GL [2018]

Cross-sectional imaging should be used to detect small bowel strictures [EL2]. Due to radiation exposure with CT, the preferred methods are MRI and/or intestinal ultrasound [IUS]. No imaging technique is currently able to determine the degree of fibrosis [EL3]

Guidelines and Recommendations

EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases

RECOMMENDATIONS

16. Stenoses can be visualized by GIUS as segments of bowel wall thickening with luminal narrowing and pre-stenotic dilatation [EL 2a, GoR A].
Consensus levels of agreement: A+ 16/17; I 1/17

IUS can detect CD complications

• Abdominal Fistulas

Recommendation 21 We recommend cross-sectional imaging (MRE, MRI, IUS, or combinations thereof) to detect penetrating disease and intra-abdominal abscesses in CD (EL1). If the first test is inconclusive in the presence of high clinical suspicion, we suggest performing additional cross-sectional imaging (MRI, CT, IUS, or combinations thereof) (EL4). (97% agreement)

2025

Statement 2.1.7. ECCO-ESGAR Diagnostics GL [2018]

Extramural complications in CD [such as fistulae and abscesses] should be monitored by cross-sectional imaging, including intestinal ultrasound [IUS] [EL2] or MRI [EL2] [or both] in combination with clinical and laboratory parameters [EL5]

Guidelines and Recommendations

EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases

RECOMMENDATIONS

20. Fistulae in Crohn's disease can be identified by GIUS as hypoechoic tracts with or without air bubbles [LoE 2b, GoR A]
Consensus levels of agreement: A+ 17/17
21. GIUS can be applied with high sensitivity and specificity, comparable to CT or MRI, for the detection of CD fistulas [LoE 1; GoR A]
Consensus levels of agreement: A+ 14/17; A- 3/17

• Abscesses/Inflammatory Masses

Statement 3.2.1. ECCO-ESGAR Diagnostics GL [2018]

Cross-sectional imaging [IUS, MRI, and CT] can detect internal penetrating disease and intra-abdominal abscesses with varying accuracy [EL1]. MRI is preferable to ultrasound for deep-seated fistulae or abscesses or pelvic fistulae [EL4]

Guidelines and Recommendations

EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases

RECOMMENDATIONS

22. Abscesses can be detected using GIUS as organized fluid collections that may contain bubbles of gas [LoE 2a, GoR B]
Consensus levels of agreement: A+ 17/17
23. CEUS is useful for distinguishing between phlegmons and abscesses [LoE 2a, GoR B]
Consensus levels of agreement: A+ 17/17
24. GIUS may be applied with high sensitivity and specificity to detect Crohn's abscesses [LoE 2, GoR B]
Consensus levels of agreement: A+ 17/17

- Kucharzik T et al. ECCO-ESGAR-ESP-IBUS Guideline 2025
- C. Maaser et al. ECCO-ESGAR guideline, 2019
- Maconi G et al. EFSUMB Recommendations in Med 2018

Systematic review: the use of ultrasonography, computed tomography and magnetic resonance imaging for the diagnosis, assessment of activity and abdominal complications of Crohn's disease

J. Panés^{*,†}, R. Bouzas[‡], M. Chaparro^{†,§}, V. García-Sánchez[¶], J. P. Gisbert^{†,§}, B. Martínez de Guereñu^{**}, J. L. Mendoza^{††}, J. M. Paredes^{‡‡}, S. Quiroga^{§§}, T. Ripollés^{‡‡} & J. Rimola^{*}

Systematic review:
68 studies, prospective
studies, with reference
standard, n≥15 patients

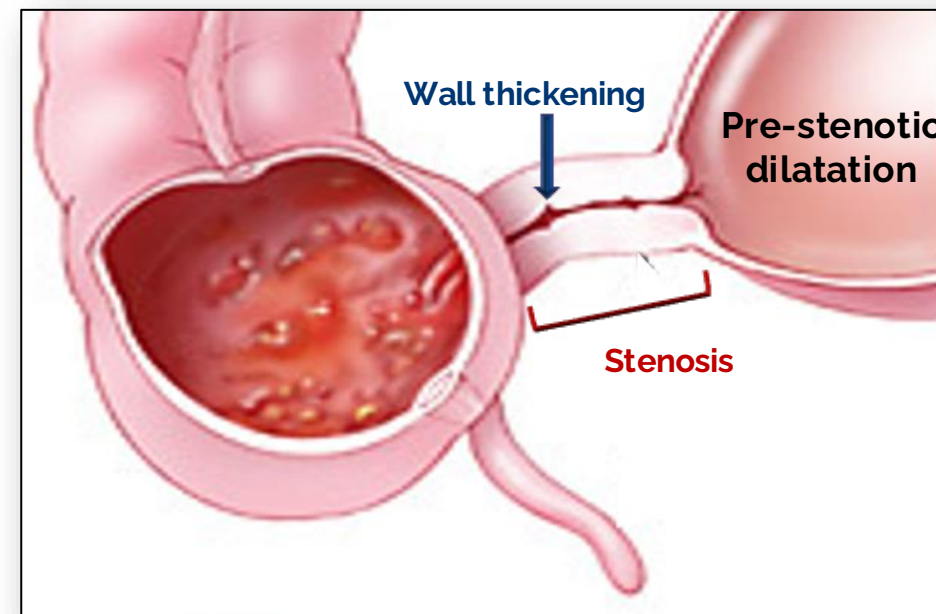
Aliment Pharmacol Ther 2011; 34: 125-145

Diagnostic Accuracy of Intestinal Ultrasound in the Detection of Intra-Abdominal Complications in Crohn's Disease: A Systematic Review and Meta-Analysis

Maarten J. Pruijt,^{a, } Floris A.E. de Voogd,^{a, } Nahid S.M. Montazeri,^a
Faridi S. van Etten-Jamaludin,^b Geert R. D'Haens,^a Krisztina B. Gecse^a

Strictures

- > 50% of patients with CD develop strictures over their lifetime. The terminal ileum is the most common stricture location.
- Strictures develop >30-35 % of patients in the first decade of a diagnosis of CD.
- Strictures are characterized by different degrees of inflammation & fibrosis.
- Identification of these two components can improve the quality of IBD management.



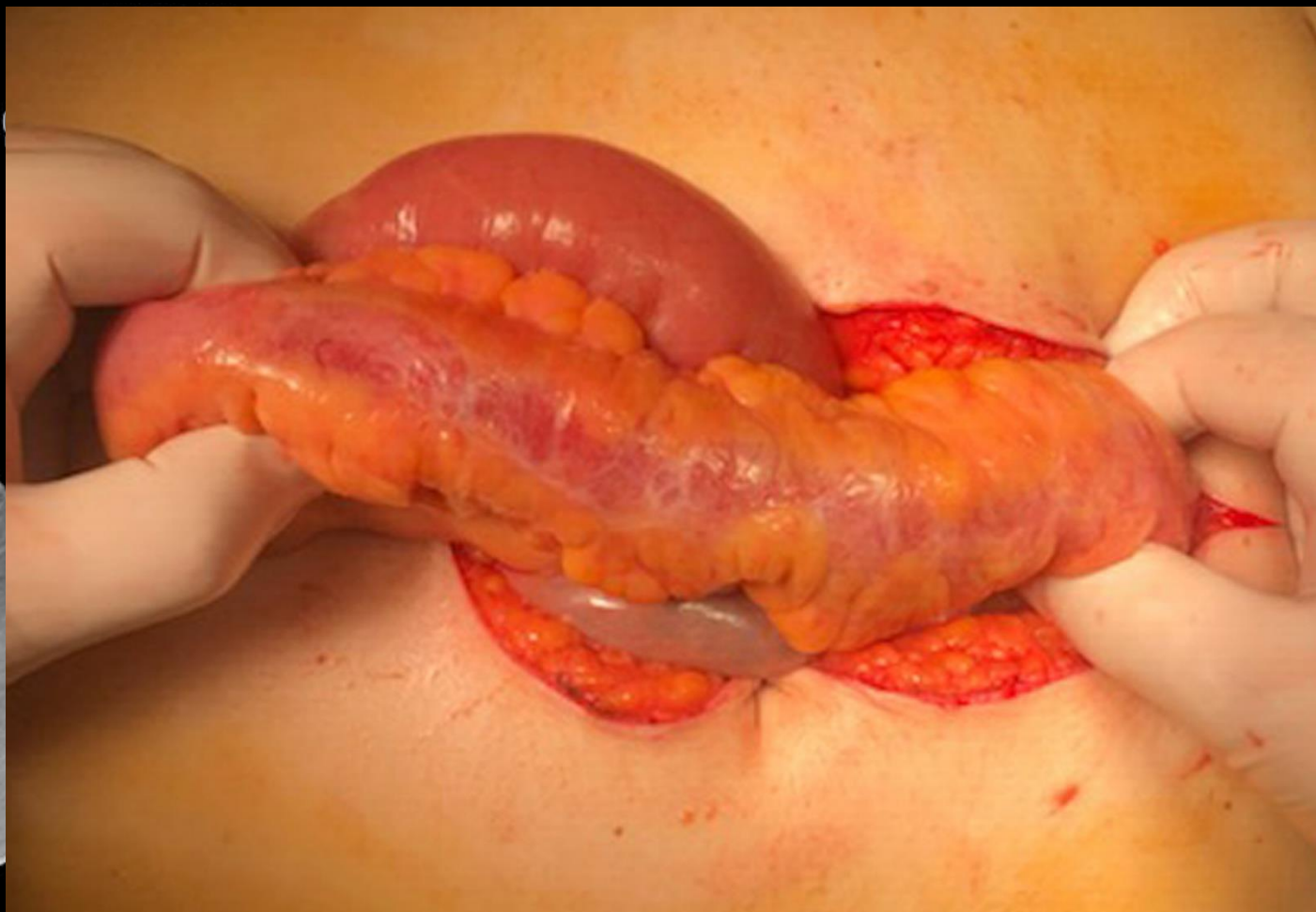
EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases

Definitions:

➤ Strictures:

- Thickened and stiff bowel wall
- Narrowing of the lumen (diameter less than 1 cm)
- Proximal dilatation (> 25 – 30 mm)
- Hyperperistalsis of the prestenotic gut





B

Pen/H
M 5/55 dB/Mod
T 1540 m/s
SC/SR 5
G 36 %
Fr. 54 Hz

Z 130 %

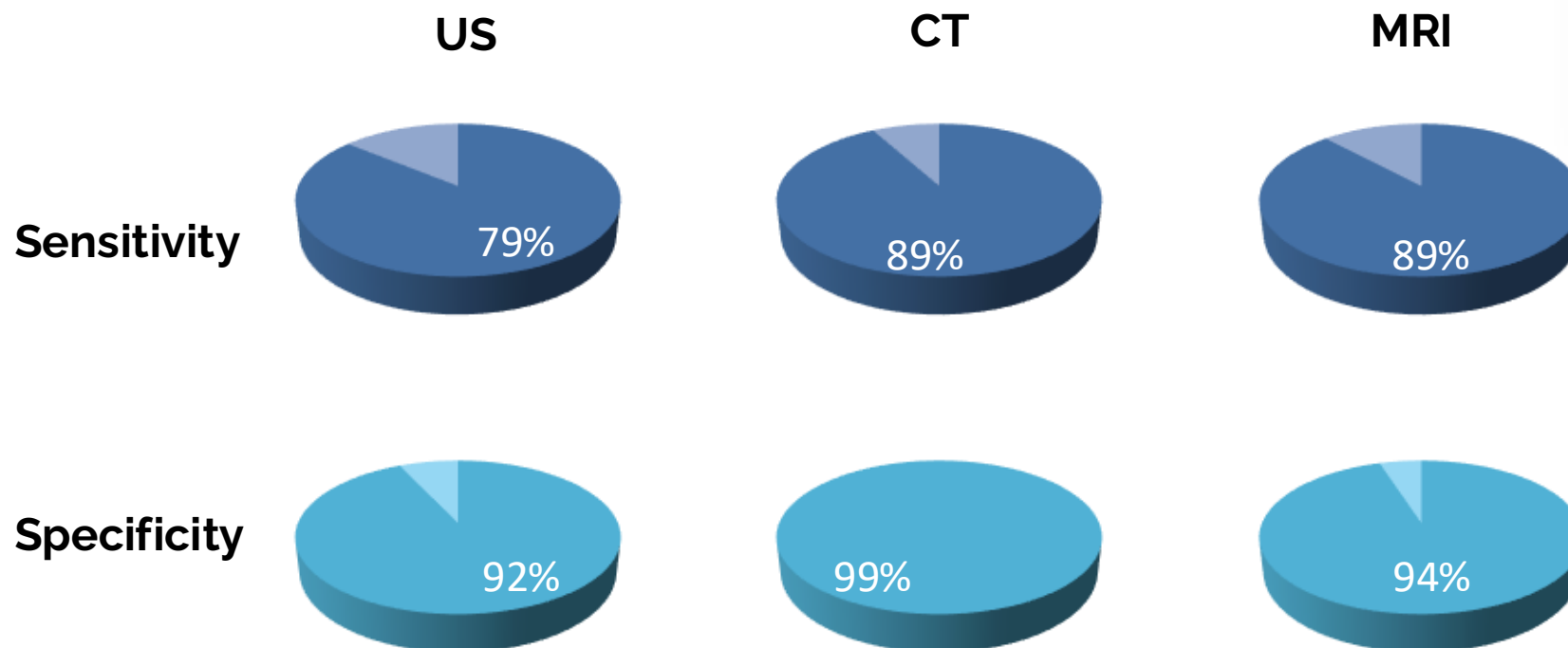
S

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- 7.0

Fr: 1093/1093



Accuracy of cross-sectional imaging for diagnosis of stenosis

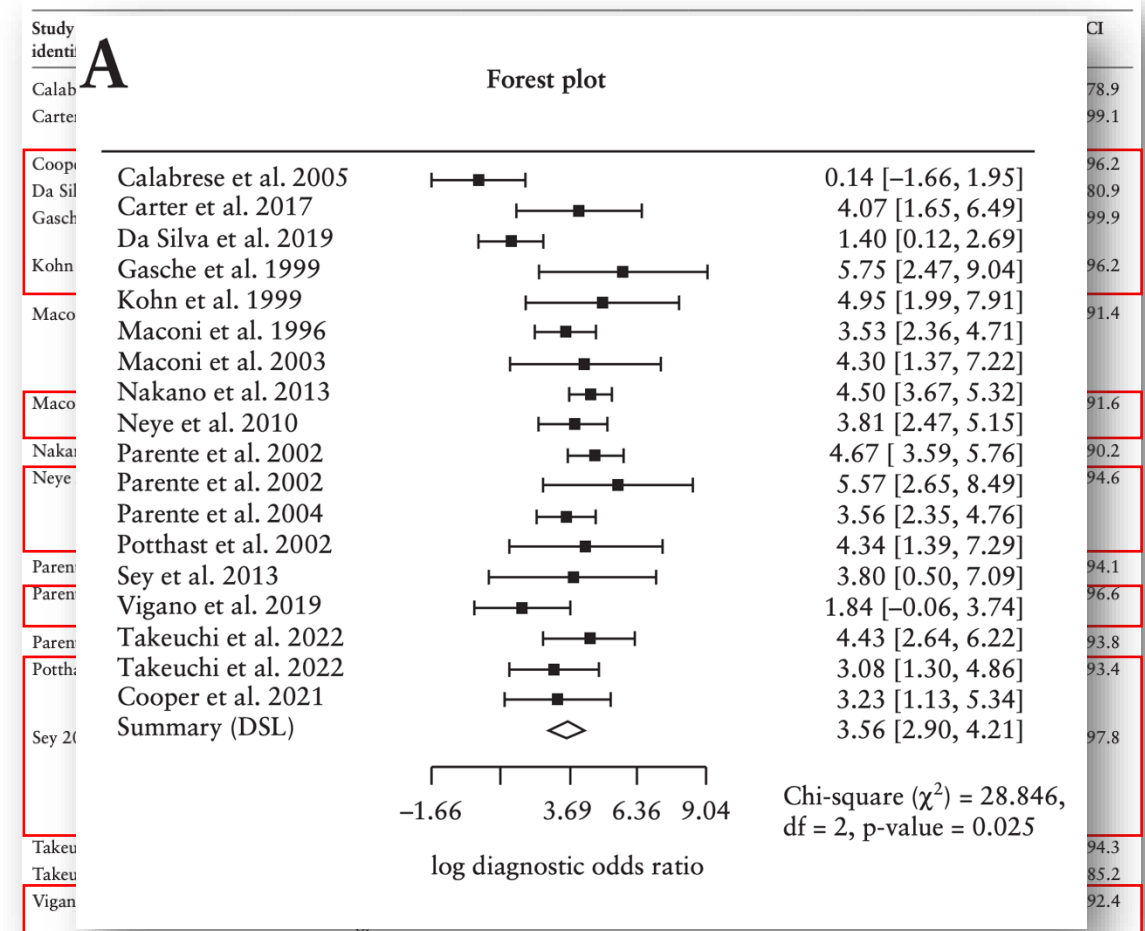


Diagnostic accuracy of B-mode IUS for strictures

- Systemic review
- 45 of 56 studies reported on the diagnostic accuracy of IUS in small bowel CD based on a gold standard; *(Histopathology, endoscopy and CT/MRI images as reference)*.
- Estimates for stricture diagnosis in IUS using the various 'gold standards':
 - The pooled sensitivity → 68% to 100%.
 - The Pooled specificity → 86% to 100%.

Diagnostic accuracy of B-mode IUS for strictures

- Meta- analysis: 16 studies reported. N= 2002 patients.
- Eight had surgery/pathology as reference standards.
- Pooled sensitivity $\rightarrow 0.81$ [95% CI, 0.78–0.84]
- Pooled specificity $\rightarrow 0.90$ [95% CI, 0.89–0.92]
- Heterogeneity of studies was significant for both sensitivity [$I^2 = 75.3\%$, $\chi^2 = 68.74$; $p < 0.0001$] and specificity [$I^2 = 82.9\%$, $\chi^2 = 99.56$; $p < 0.0001$].
- The pooled overall log diagnostic odds ratio 3.56





IUS to detect CD complications (stricture)

Case

- Mr. E is a 31 years old gentleman, smoker, was diagnosed as a case of Terminal ileal Crohn's disease for > 3 years.
- On ustekinumab.
- Presented to clinic with recurrent symptoms of lower abdominal pain, bloating & mild abdominal distention.



- Long segment of stenosis 11 cm.
- Thickened bowel wall > 10 mm.
- Pre-stenotic dilatation.
- Abnormal Peristalsis.

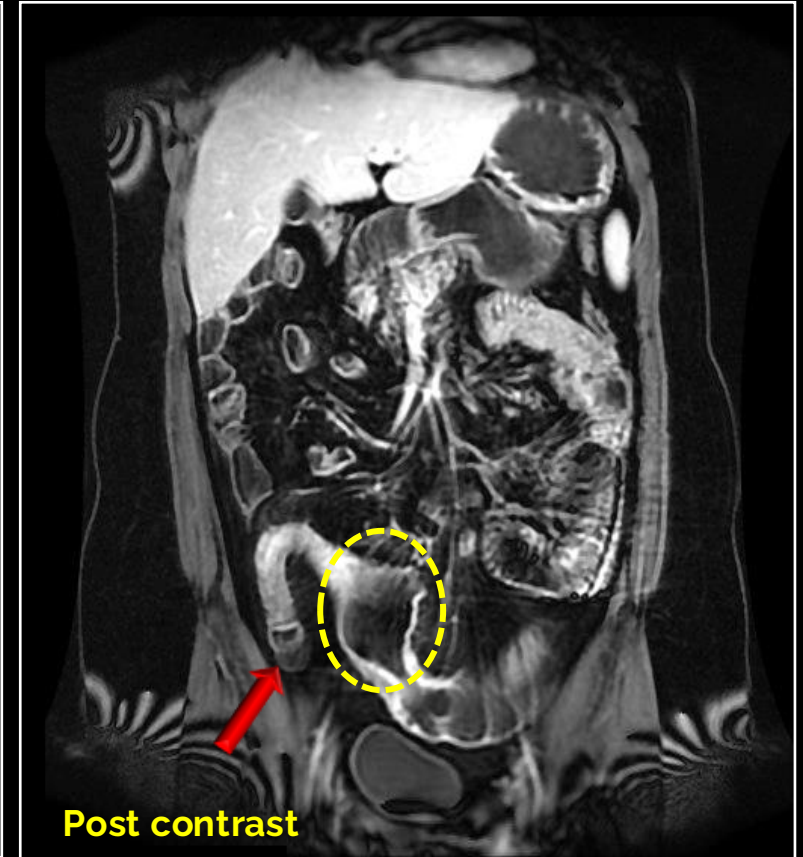
IUS to detect CD complications (stricture)



- Long segment of stenosis 11 cm.
- Thickened bowel wall > 10 mm.
- Pre-stenotic dilatation.
- Abnormal Peristalsis.



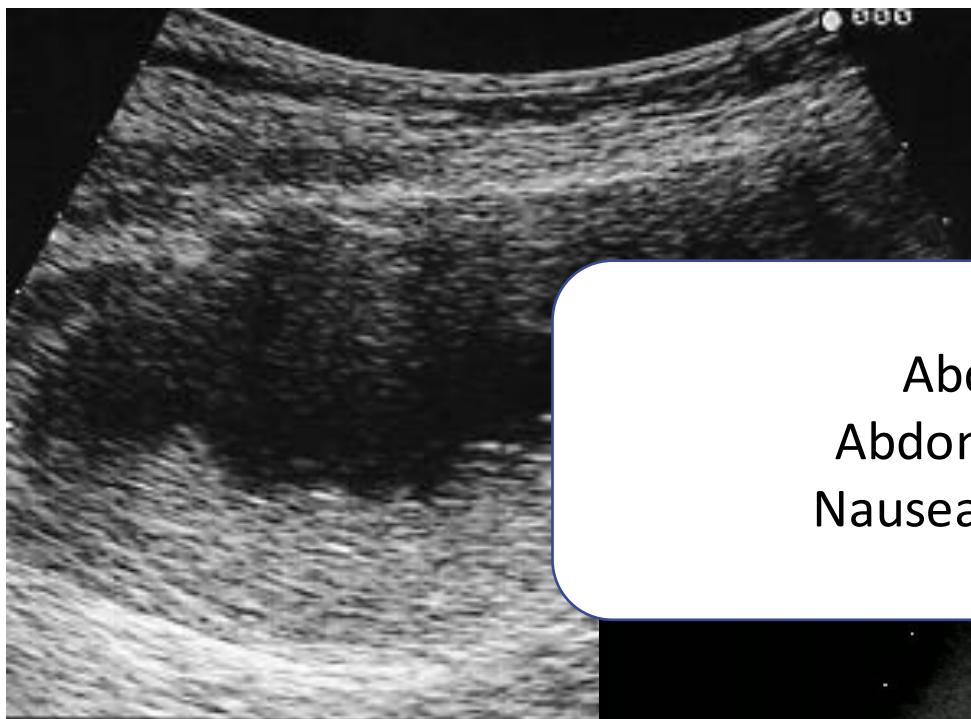
Pre contrast



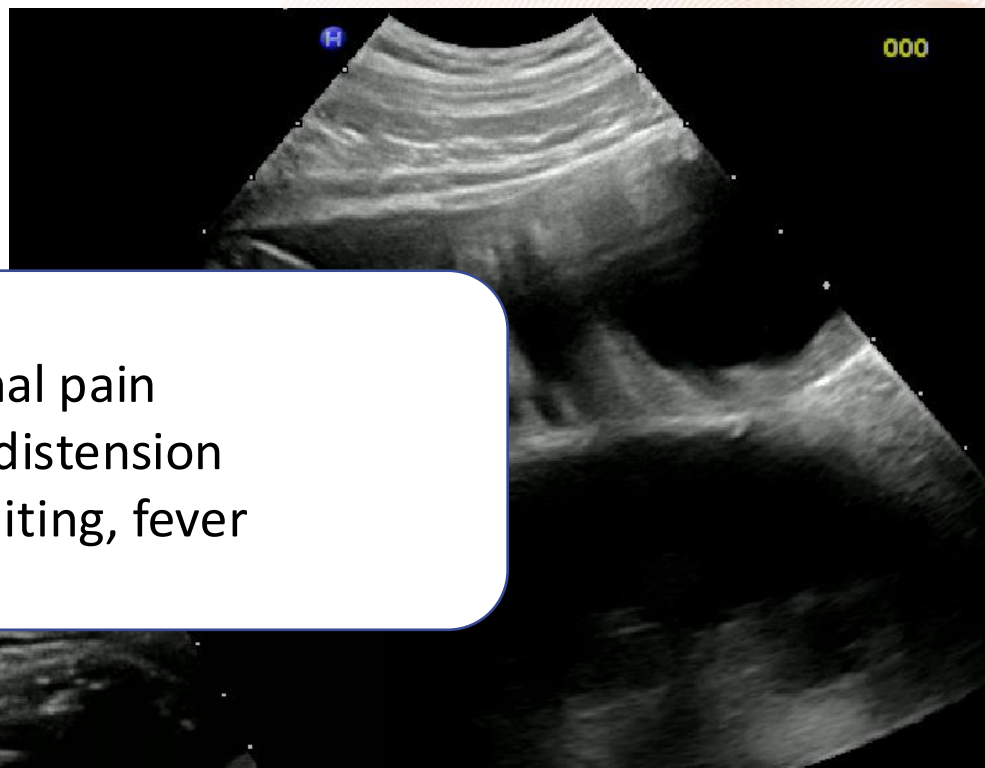
Post contrast

11 cm long Segment of ileal loop stricture fibrotic with localized up stream focal pouch like dilatation with retained content

INTESTINAL OBSTRUCTION



Chronic

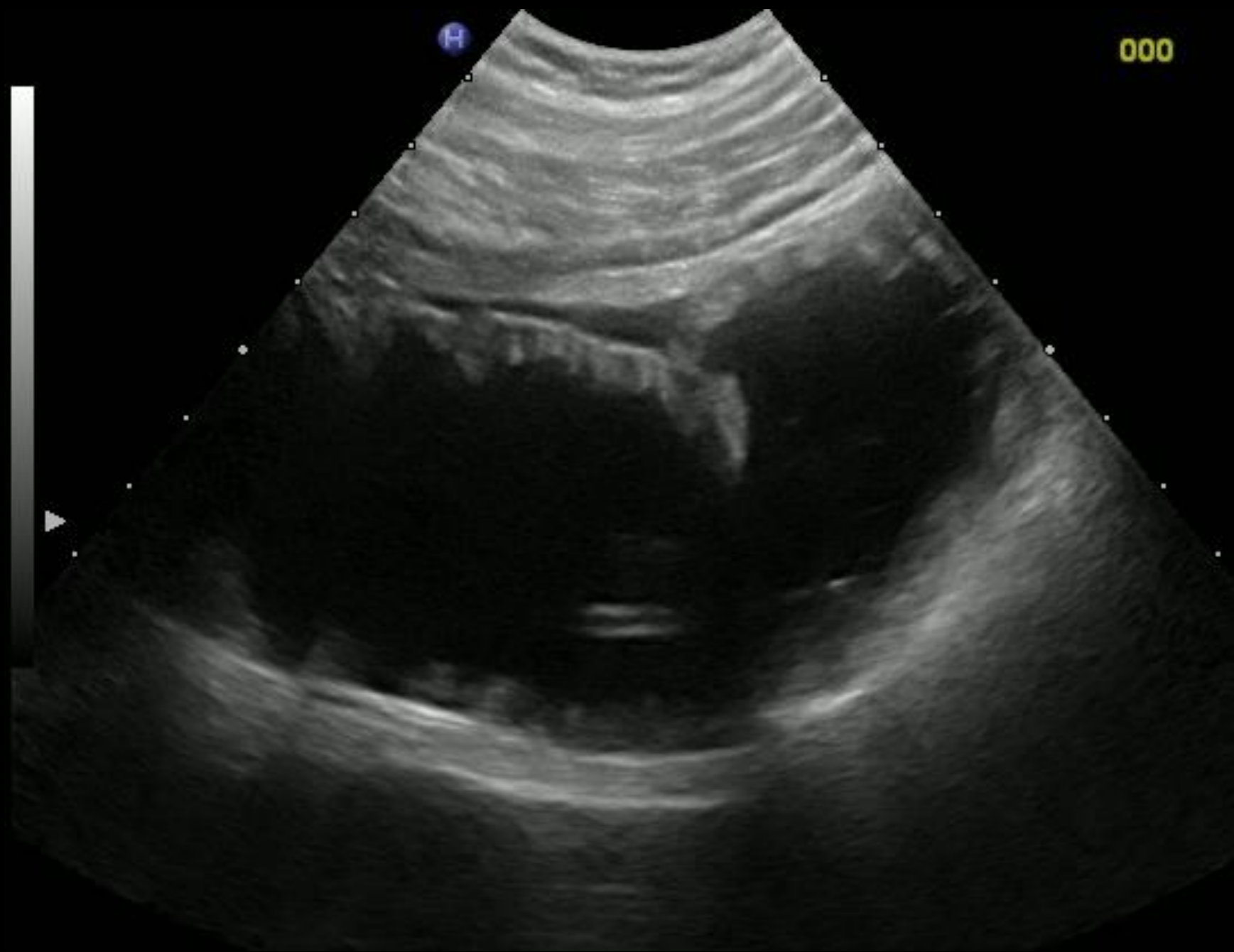


Acute



Stomach

Abdominal pain
Abdominal distension
Nausea, vomiting, fever



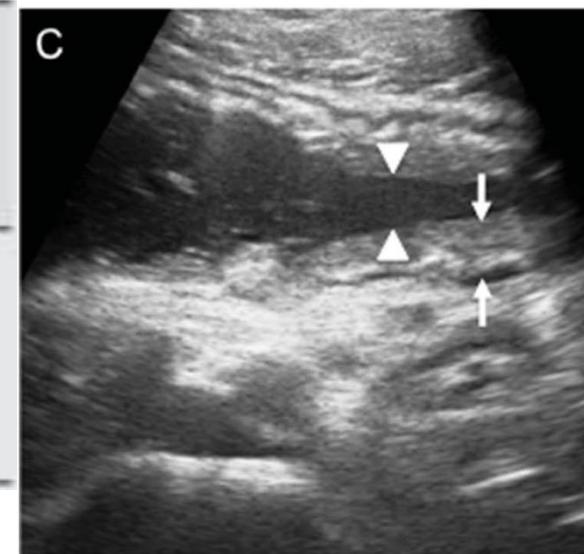
STENOSES: THE SICUS ROLE

SMALL INTESTINE CONTRAST ULTRASONOGRAPHY

Table 2 Sensitivity at segment-by-segment analysis of conventional and contrast enhanced bowel US in the detection of small bowel CD lesions documented at x ray/endoscopy

Site of lesion ascertained at x ray/endoscopy	Conventional US Sensitivity (95% CI)	Contrast enhanced US Sensitivity (95% CI)
Jejunum (n = 5)	80.0% (78.0–82.0)	100%
Ileum (n = 98)	92.0% (89.7–94.3)	98.5% (96.2–100)
Proximal ileum (n = 16)	93.7% (91.3–96.0)	93.7% (91.3–96.0)
Distal ileum (n = 82)	96.3% (93.9–98.7)	98.7% (96.2–100)

Calabrese et al, Inflamm Bowel Dis Volume 22, Number 5, May 2016



For suspected stenoses

Table 3. Pooled sensitivity, specificity. and accuracy for surgery [and pathology] as reference standard only.



Complication	Exam type	Included studies [n]	Patients [n]	Sens	95% CI	I ² [%]	χ ²	Spec	95% CI	I ² [%]	χ ²	Acc
Stricture	B-mode	6	281	0.905	0.857–0.941	62.5	13.34*	0.786	0.671–0.875	64.1	13.92*	0.846
Stricture	SICUS	2	75	0.959	0.860–0.995	7.4	1.08	0.923	0.759–0.991	44.0	1.79	0.941
Inflammatory mass	B-mode	3	107	0.867	0.693–0.962	52.0	4.17	0.922	0.838–0.971	0.0	1.12	0.895
Inflammatory mass	SICUS	2	74	1.000	0.768–1.000	0.0	0.0	0.950	0.861–0.990	0.0	0.0	0.975
Fistulas	B-mode	4	173	0.700	0.579–0.804	58.5	7.22	0.971	0.917–0.994	0.0	2.69	0.836
Fistulas	SICUS	2	75	0.944	0.813–0.993	0.0	0.79	0.923	0.719–0.984	0.0	0.22	0.934

B-mode: conventional ultrasound, SICUS: small intestine contrast ultrasound, Sens: sensitivity, Spec: specificity, CI: confidence interval, Acc: accuracy.

**p* < 0.05.

Diagnostic accuracy of
intestinal ultrasound and its
advanced modalities in the
detection of intra-abdominal
complications in Crohn's
disease



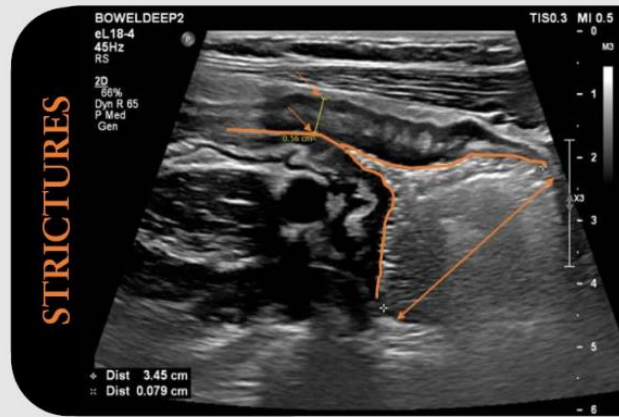
1498 studies screened



68 studies included in this review
23 studies in the meta-analysis



3863 patients



STRICTURES

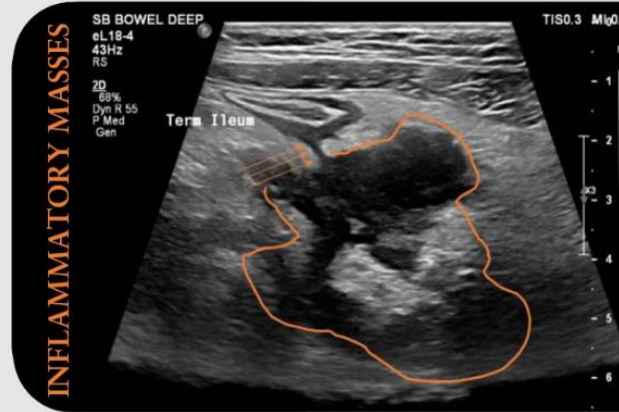
Sensitivity
Specificity
Accuracy

B-mode

81%
90%
86%

SICUS

94%
95%
94%



INFLAMMATORY MASSES

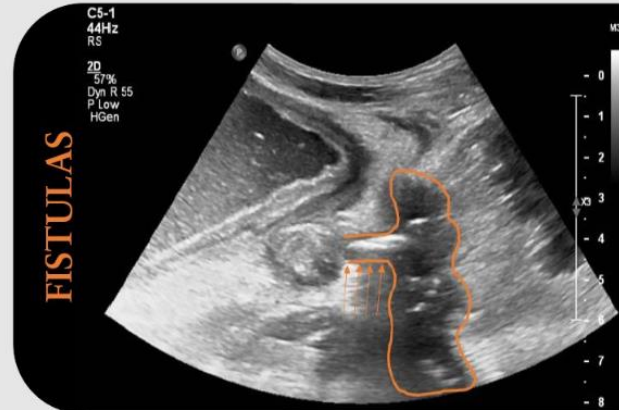
Sensitivity
Specificity
Accuracy

B-mode

87%
95%
91%

SICUS

91%
97%
94%



FISTULAS

Sensitivity
Specificity
Accuracy

B-mode

67%
97%
82%

SICUS

90%
94%
92%

MI 0.8 TIS<0.4 AP:100% 28 FPS 1



HdT-4.0P R:7.00 BG:61 BD:76

*Abdo C42 GB Probe:C42

S
30

INST CLIN FUNDENI

MADAM ION DANIEL

24/04/2025 11:59:59

MI 1.3 Tis 0.0

ID: PID_cO6PZi5UwuEECu0

MC12-3 / Pediatric / INTESTIN 3

B

Pen/H

M 9/65 dB/med

T 1540 m/s

SC/SR 4

G 43 %

Fr. 39 Hz

Z 130 %

S

- 0.0

- 1.0

- 2.0

- 3.0

- 4.0

- 5.0

- 6.0

Prospective capture : 61s

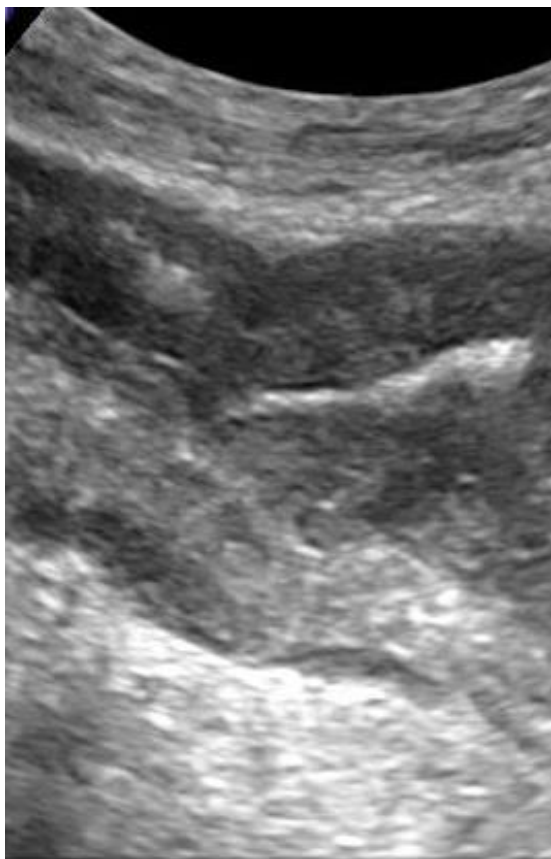
M 12/67 dB/Low
T 1540 m/s
SC/SR 4
G 50 %
Fr. 30 Hz

Z 120 %

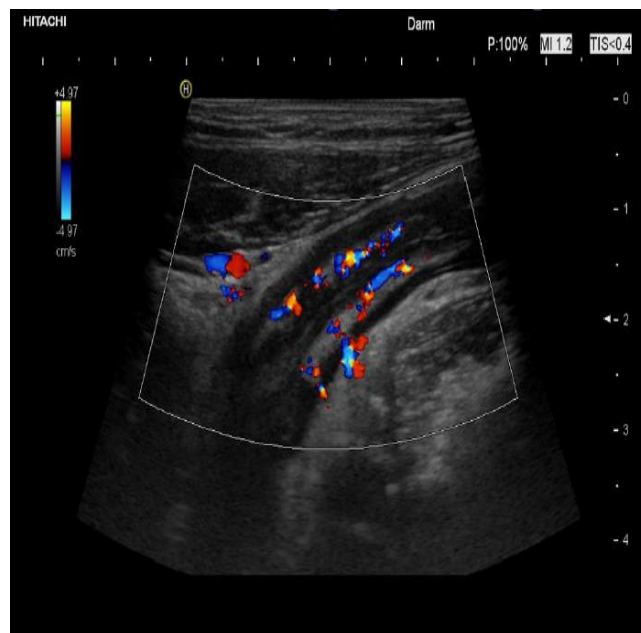


STENOSIS

FIBROTIC OR INFLAMMATORY?



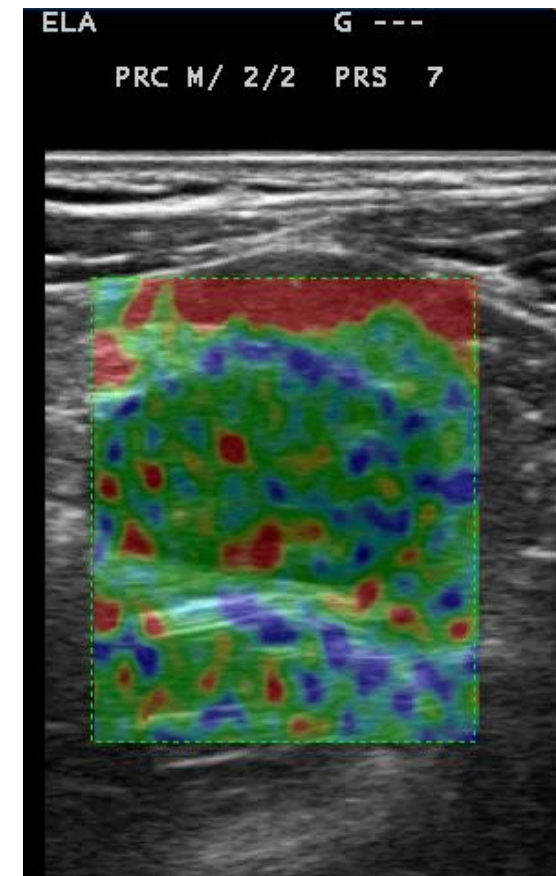
Echopattern
Ipoechoic vs normal
stratification



Color Doppler



CEUS
vascularization



Elastography

Inflammatory vs fibrotic

B

Pen/H

M 9/65 dB/Med

T 1540 m/s

SC/SR 4

G 47 %

Fr. 29 Hz

Z 130 %



30

ID: PID_AXSotUBZPKDGo7F

MC12-3 / Pediatric / INTESTIN 3

B

Pen/H
M 9/65 dB/Med
T 1540 m/s
SC/SR 4
G 47 %
Fr. 34 Hz

Z 130 %

S

- 0.0

- 1.0

- 2.0

- 3.0

- 4.0

- 5.0

- 6.0

- 7.0

Prospective capture : 60s

30

ID: PID_je9LqwgCErhV4E5

MI 1.0 Tlc 0.2
MC12-3 / General / General

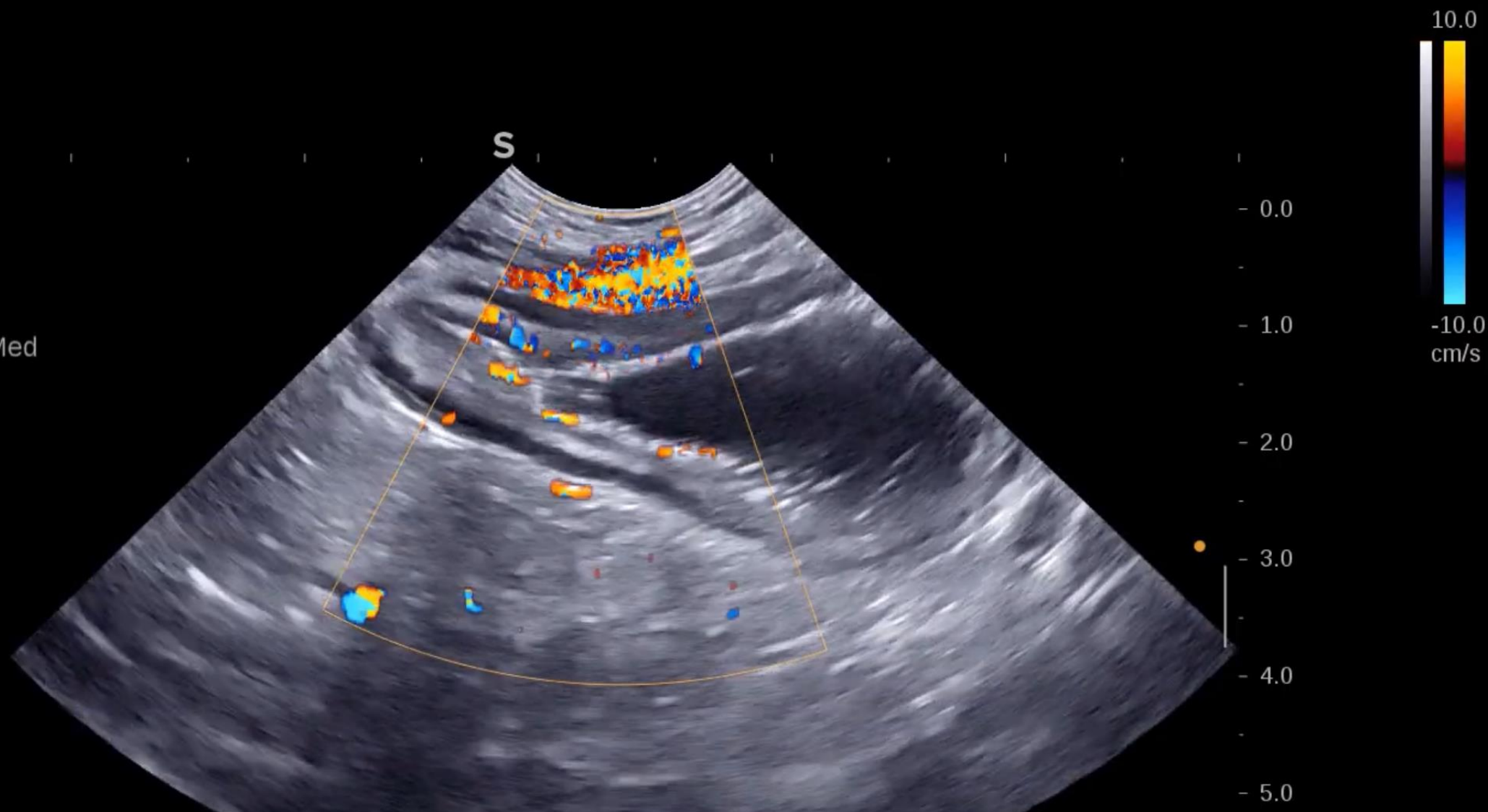
B

Gen/H
M 6/60 dB/Low
T 1540 m/s
SC/SR 3
G 49 %
Fr. 19 Hz

CFI

Gen/Med
Med Flow/WF Med
M 10/P. Med
Scale 10 cm/s
S 2
G 70 %

Z 130 %





Ultrasound Elastography

- Shear wave elastography (SWE)
- Strain elastography (SE)
- Point-SWE
- 2D-SWE

Meta-Analysis > J Crohns Colitis. 2022 Sep 8;16(9):1493-1504. doi: 10.1093/ecco-jcc/jjac052.

Intestinal Ultrasound for Differentiating Fibrotic or Inflammatory Stenosis in Crohn's Disease: A Systematic Review and Meta-analysis

Chenjing Xu ¹, Wenyu Jiang ¹, Lu Wang ¹, Xiqiong Mao ¹, Ziping Ye ¹, Hongjie Zhang ¹

Affiliations + expand

PMID: 35390137 DOI: 10.1093/ecco-jcc/jjac052

Abstract

Background and aims: Intestinal ultrasound [IUS] has been increasingly reported to distinguish inflammatory or fibrotic intestinal stenosis in Crohn's disease [CD] patients. However, the diagnostic value is unclear. This systematic review and meta-analysis aimed to assess the diagnostic role of different modes of IUS parameters.

Methods: We searched PubMed, Embase, Web of Science, and Cochrane Library from inception to August 2021. Regarding effect sizes, weighted mean differences [WMDs] or standardised mean differences [SMDs] were used. We pooled data using a random-effects or fixed-effects model according to heterogeneity. The diagnostic accuracy of IUS for distinguishing fibrosis was pooled.

Results: A total of 19 studies were retained for qualitative analysis, and 14 were included in the meta-analysis [with 511 total subjects and 635 bowel segments]. In patients with fibrotic stenosis, the pooled WMDs for bowel wall thickness were 1.30 mm (95% confidence interval [CI]: 0.69-1.91) thicker than in patients with inflammatory stenosis, and the pooled SMDs for strain value and strain ratio were 0.80 [95% CI: 0.41-1.20] and 1.08 [95% CI: 0.55-1.60] higher than in patients with inflammatory stenosis, respectively. The percentage of maximal enhancement of fibrotic stenosis

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Publication types

MeSH terms

Pen/H
M 9/65 dB/Med
T 1540 m/s
SC/SR 4
G 48 %
Fr. 9 Hz

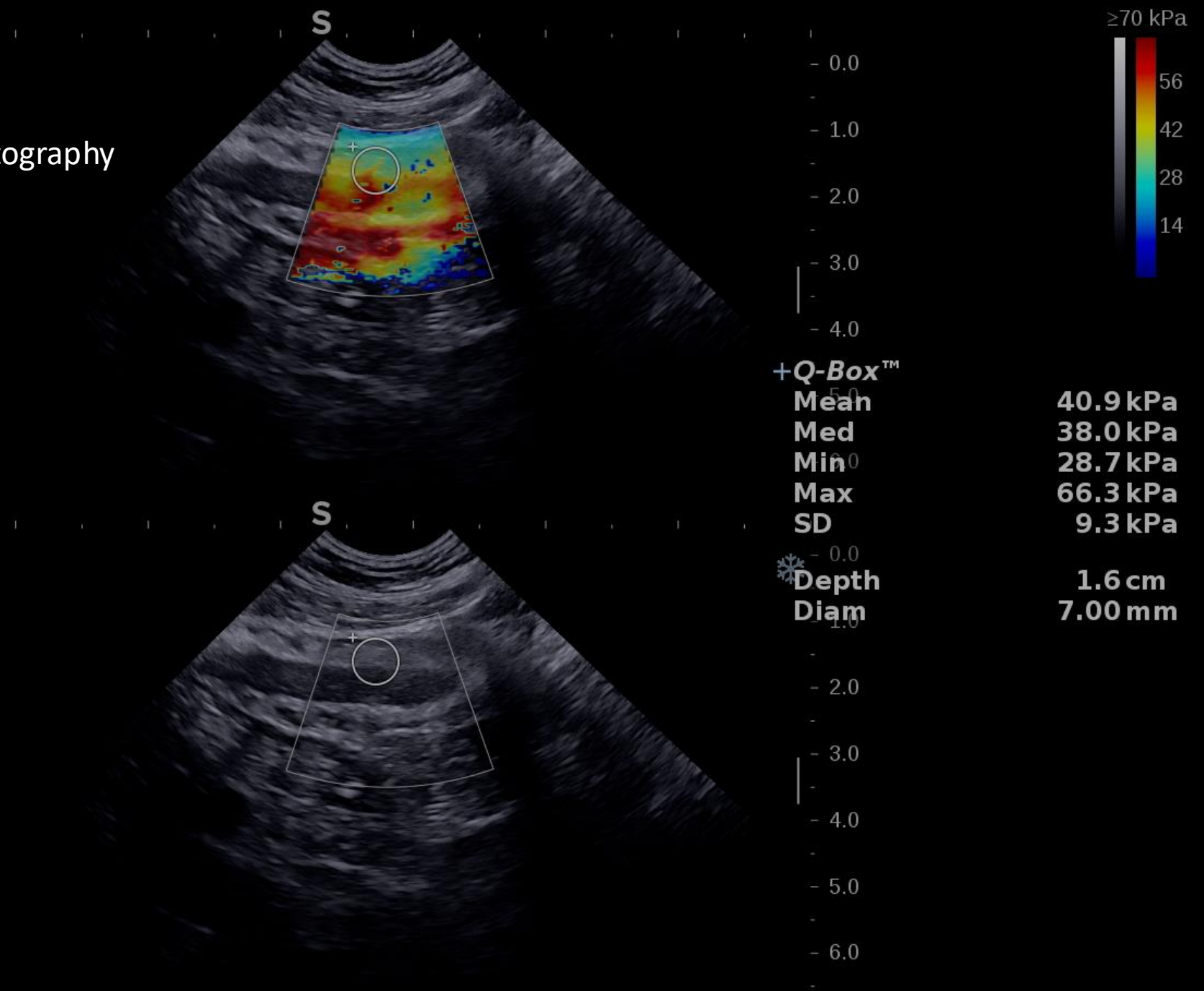
Strain elastography

SWE

Std/1.0 Hz
M 1/Med
S 5/O 50 %/G 100 %

Z 130 %

Shear wave





- CEUS parameters correlate with inflammation



Intestinal Ultrasound and Its Advanced Modalities in Characterizing Strictures in Crohn's Disease

F. de Voogd^{1,6}, K.J. Beek^{2,6}, M. Pruijt^{1,6}, K. van Rijn^{2,6}, J. van der Bilt^{3,6},
C. Buskens^{3,6}, W. Bemelman^{3,6}, A. Neefjes-Borst^{4,6}, A. Mookhoek⁵,
G. D'Haens^{1,6}, J. Stoker^{2,6}, K.B. Gecse^{1,6}

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<https://doi.org/10.1016/j.cgh.2025.05.013>

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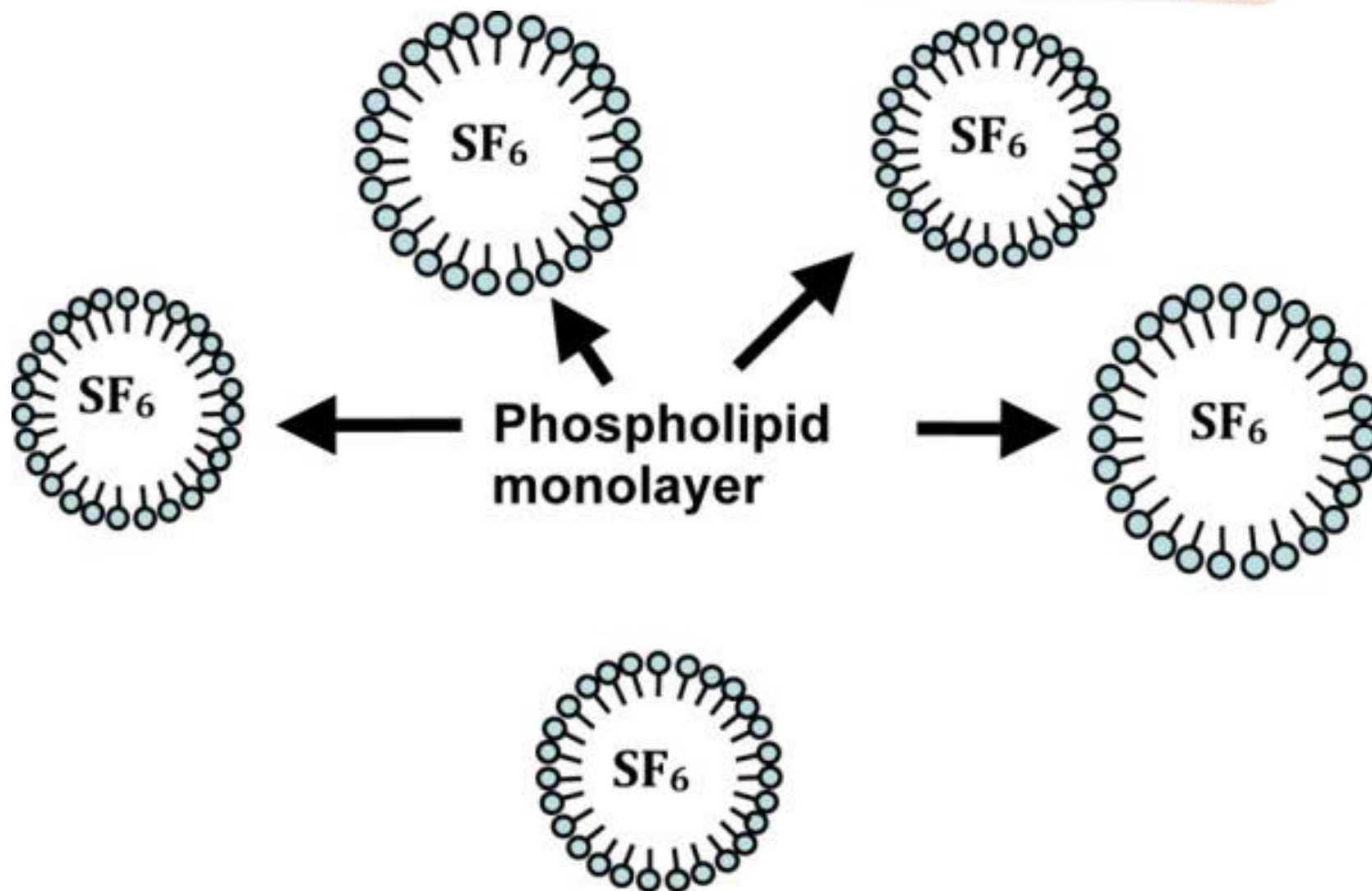
Abstract

Background and aims

Crohn's disease (CD) strictures exhibit varying levels of inflammation and chronicity. We evaluate whether intestinal ultrasound (IUS) is

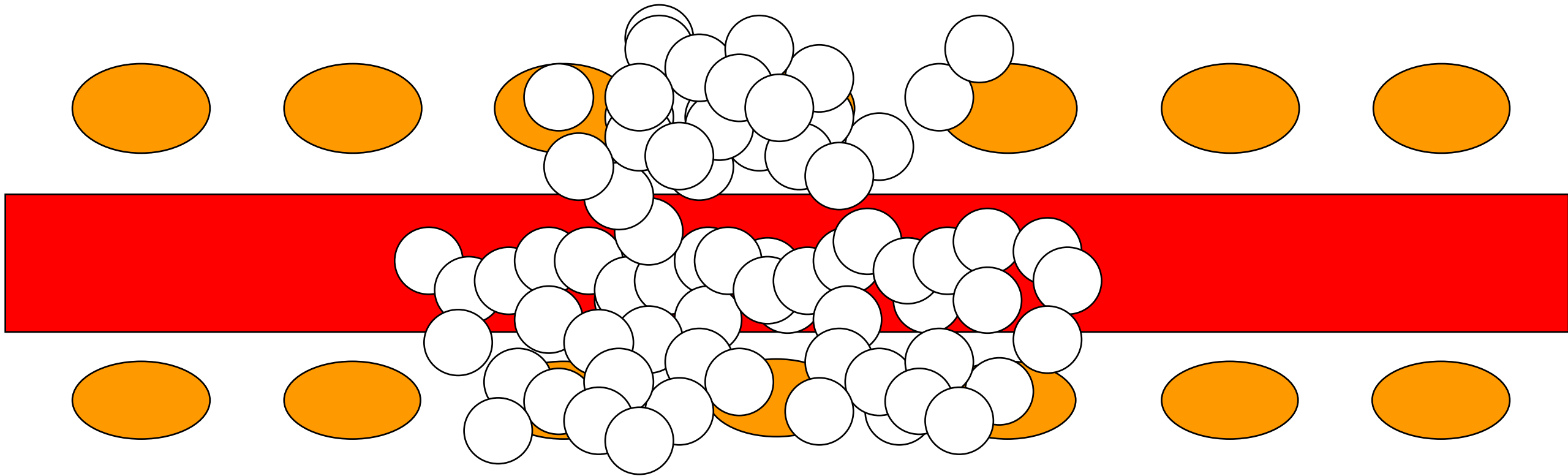


CONTRAST ENHANCEMENT ULTRASOUND CEUS





The difference between contrast for X-rays and MRI and contrast for ultrasound, consists in the fact that the microbubbles ($\varnothing$: 1-7 μ) do not diffuse through the endothelium



There is no interstitial enhancement phase

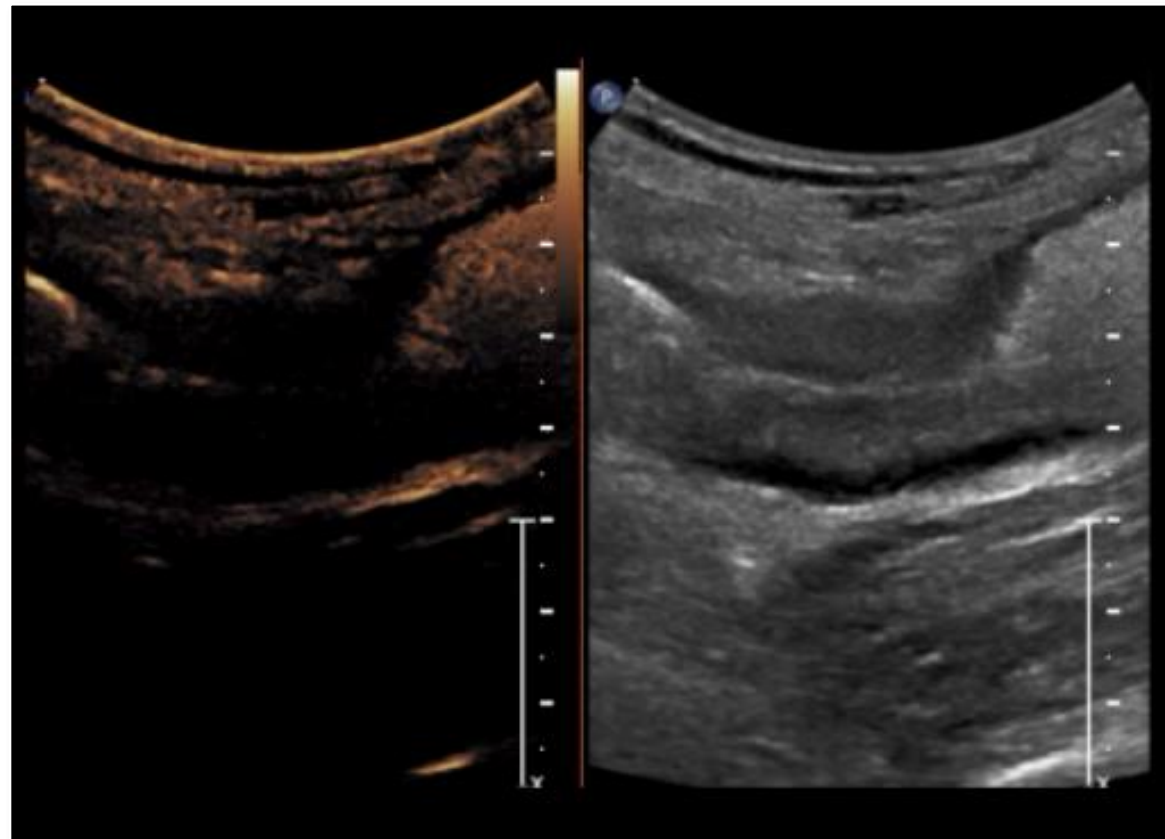
Contrast-enhanced ultrasound (CEUS)

Usage in CD complications:

- Provide bowel wall & mesentery enhancement parameters that reflect inflammation & assess disease activity.
- Help in differentiation between of inflammatory vs fibrotic intestinal strictures.
- Rule in the differentiation of inflammatory masses as either phlegmon or abscess

• How is CEUS Performed?

- Gas-filled microbubbles with a phospholipid shell.
- Microbubbles remain within capillaries & oscillate in the bloodstream in response to application of an ultrasound field, producing non-linear harmonic frequencies that are detected at CEUS.
- 2 Minutes video file. Followed by Quantification with raw linearized data



- Maconi G et al. EFSUMB Recommendations 2018
- Nylund K et al. EFSUMB Recommendations 2017
- Medellin et al. Abdom Radiol 2018.
- C. Maaser et al. UEG J, Feb 2022

EFSUMB Recommendations and Clinical Guidelines for Intestinal Ultrasound (GIUS) in Inflammatory Bowel Diseases

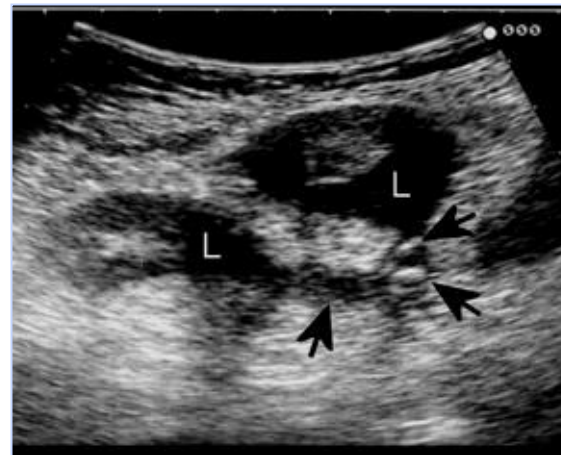
Definitions:

➤ Sinus tracts and fistulae:

- Hypoechoic areas or tracts between ileal loops with or without internal gaseous artifacts
- Hypoechoic periintestinal tracts with or without gas within
- Hypoechoic peri-intestinal areas with a diameter < 2 cm



Calabrese et al, Inflamm Bowel Dis Volume 22, Number 5, May 2016



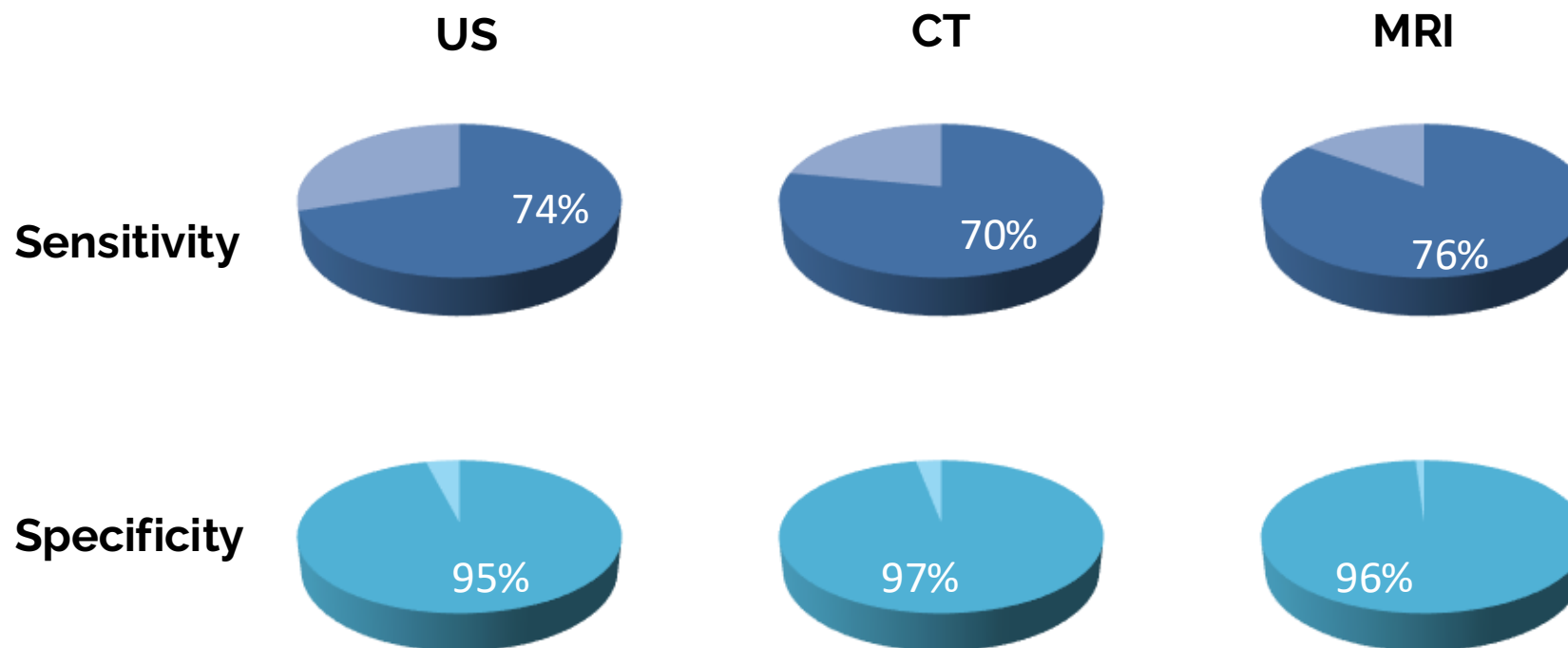
Maconi et al. 1996; Gasche et al. 1999



Fistulae

- Internal Fistulae
 - Entero-enteric
 - Entero-mesenteric
 - Entero-vesical
 - Entero-vaginal
- External fistulae
 - Entero-cutaneous

Accuracy of cross-sectional imaging for extramural complications: fistula



FISTULAE ENTERO-MESENTERIC



FISTULAE

ENTERO-ENTERIC



B

Pen/H

M 5/55 dB/Med

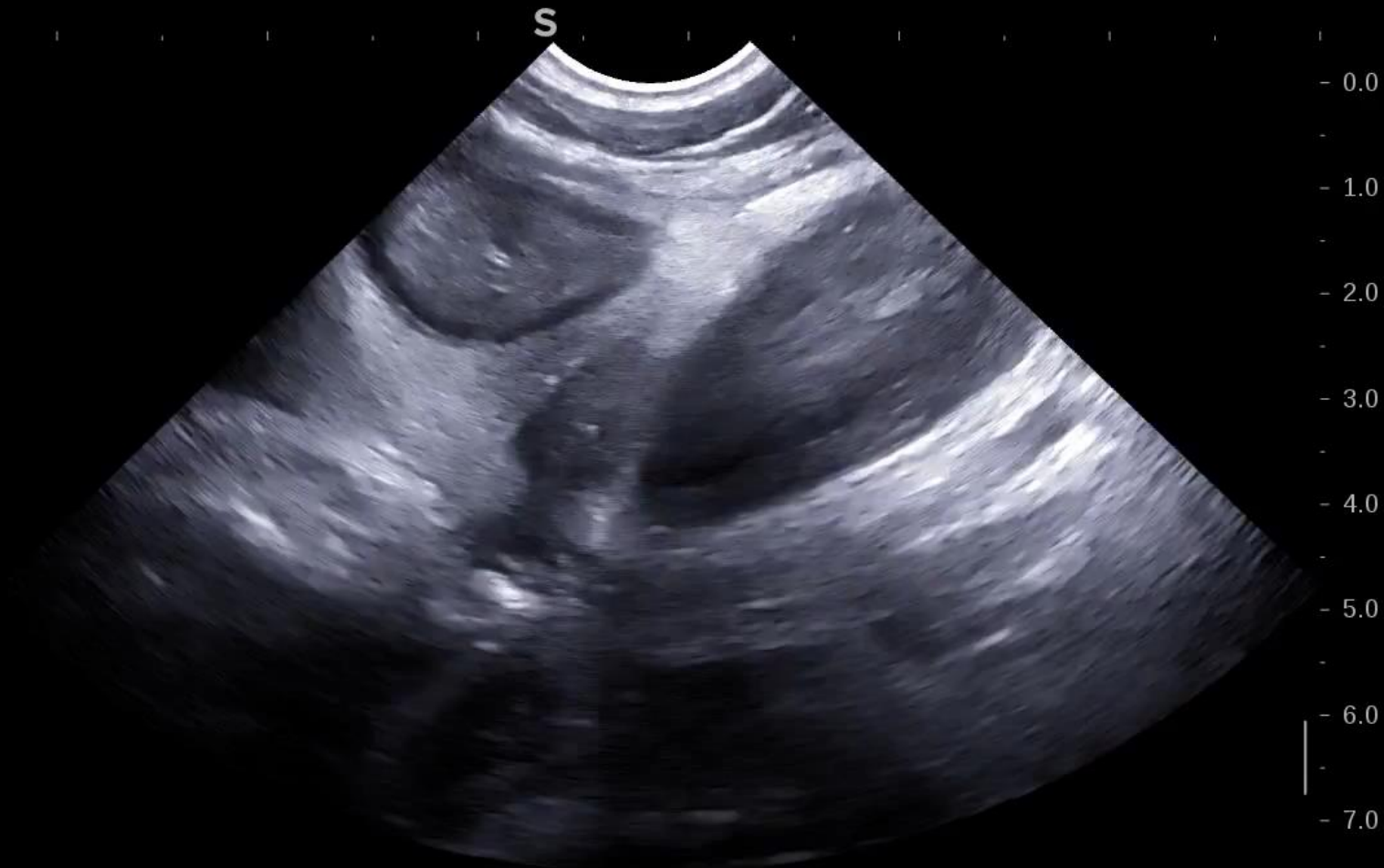
T 1540 m/s

SC/SR 5

G 45 %

Fr. 35 Hz

Z 130 %



MI 0.85 TIS<0.4 AP:100% .43 FPS 1

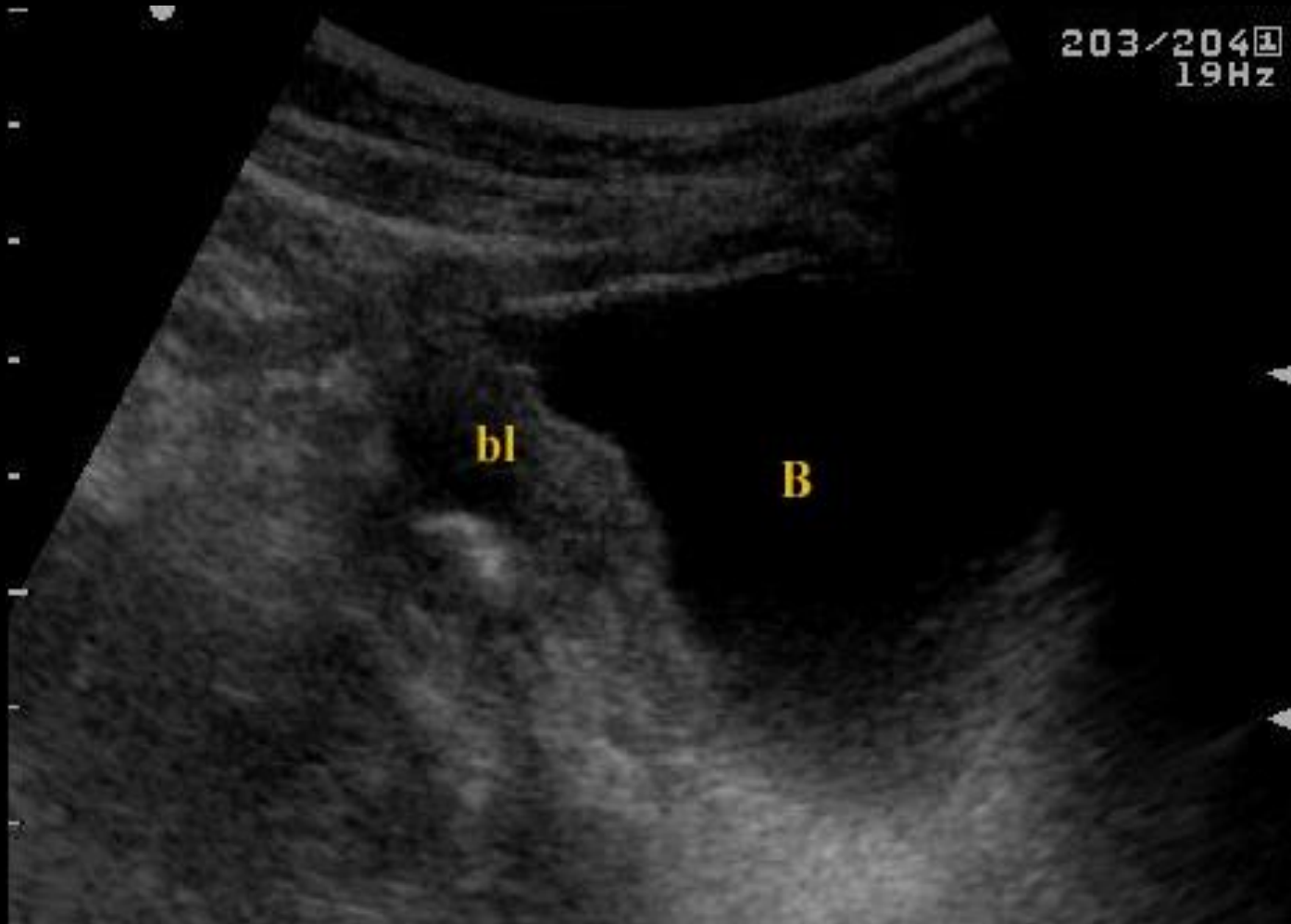


C42
HdT-7.4Rx R:5.00 BG:68 BD:89

ANSE Micro.

FISTULAE

ENTERO-VESICAL



Clinic is important

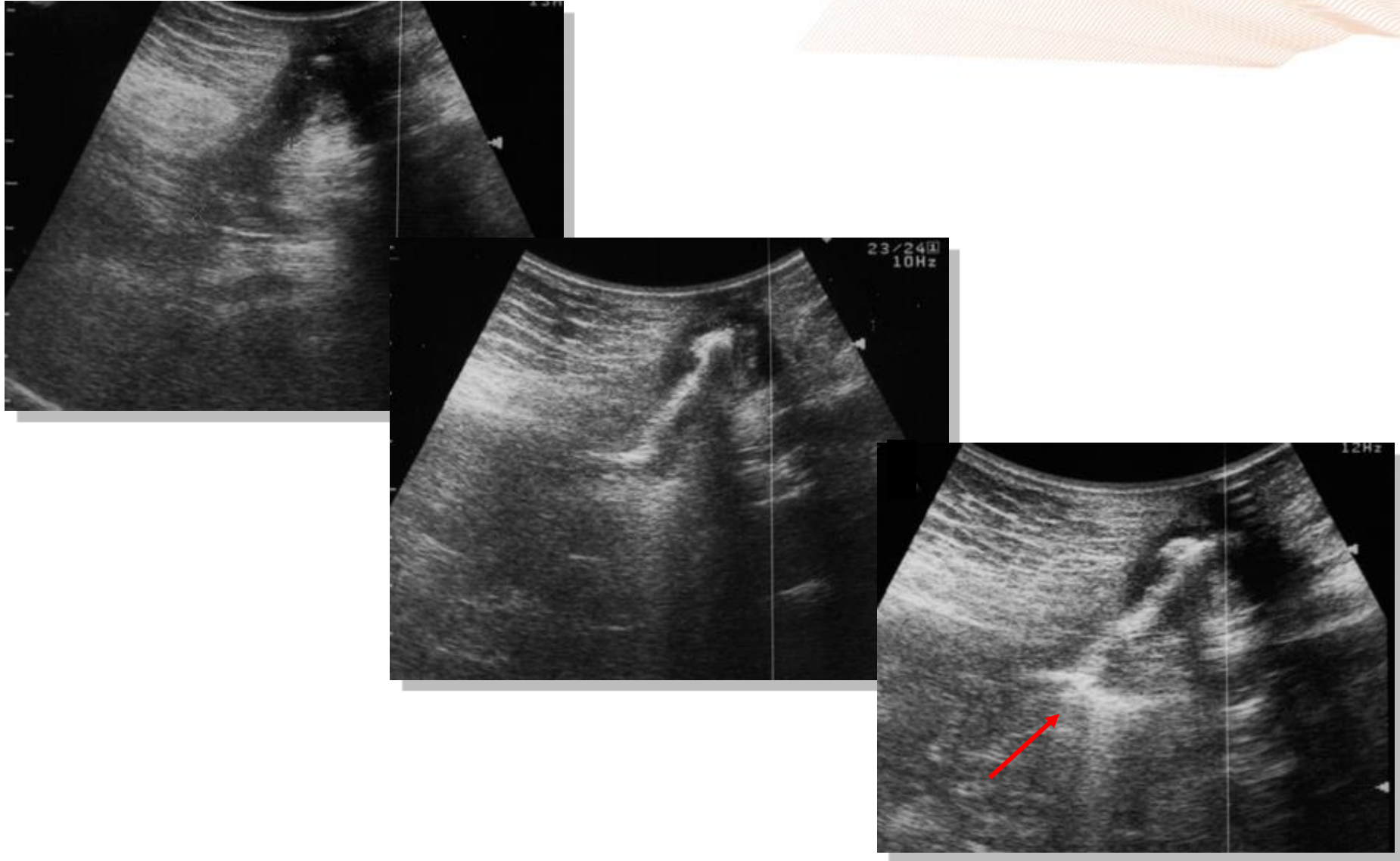
Entero-vesical

Anastomotic cutaneous fistula



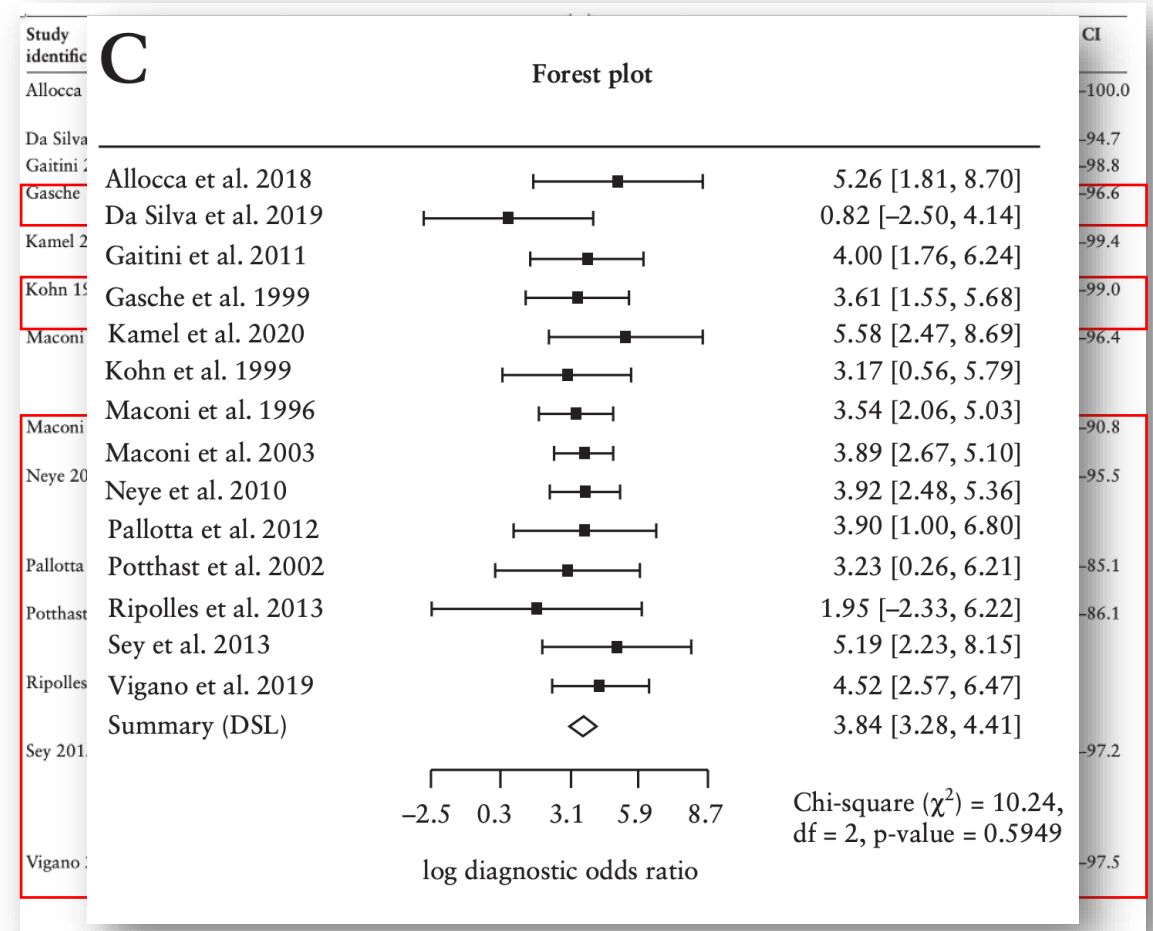


FISTULAE ENTERO-CUTANEOUS



Diagnostic accuracy of B-mode IUS for fistula

- Fourteen studies reported data on the accuracy of B-mode IUS in detecting fistula. N= 828 patients.
- Eight of these studies had surgery or pathology as reference standards.
- Pooled sensitivity → 0.67 [95% CI, 0.60–0.73]
- Pooled specificity → 0.97 [95% CI, 0.96–0.99]
- Significant heterogeneity among studies for sensitivity [$I^2 = 65.6\%$, $\chi^2 = 34.91$; $p < 0.0001$], but not for specificity [$I^2 = 11.0\%$, $\chi^2 = 13.48$; $p = 0.335$]
- The pooled overall log diagnostic odds ratio for fistulas was 3.84 [95% CI, 3.28–4.41].





SYSTEMATIC REVIEW
& META-ANALYSIS

Diagnostic accuracy of
intestinal ultrasound and its
advanced modalities in the
detection of intra-abdominal
complications in Crohn's
disease



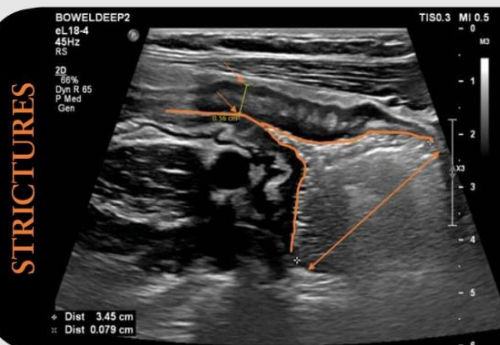
1498 studies screened



68 studies included in this review
23 studies in the meta-analysis



3863 patients



STRICTURES

Sensitivity
Specificity
Accuracy

B-mode

81%
90%
86%

SICUS

94%
95%
94%



INFLAMMATORY MASSES

Sensitivity
Specificity
Accuracy

B-mode

87%
95%
91%

SICUS

91%
97%
94%



FISTULAS

Sensitivity
Specificity
Accuracy

B-mode

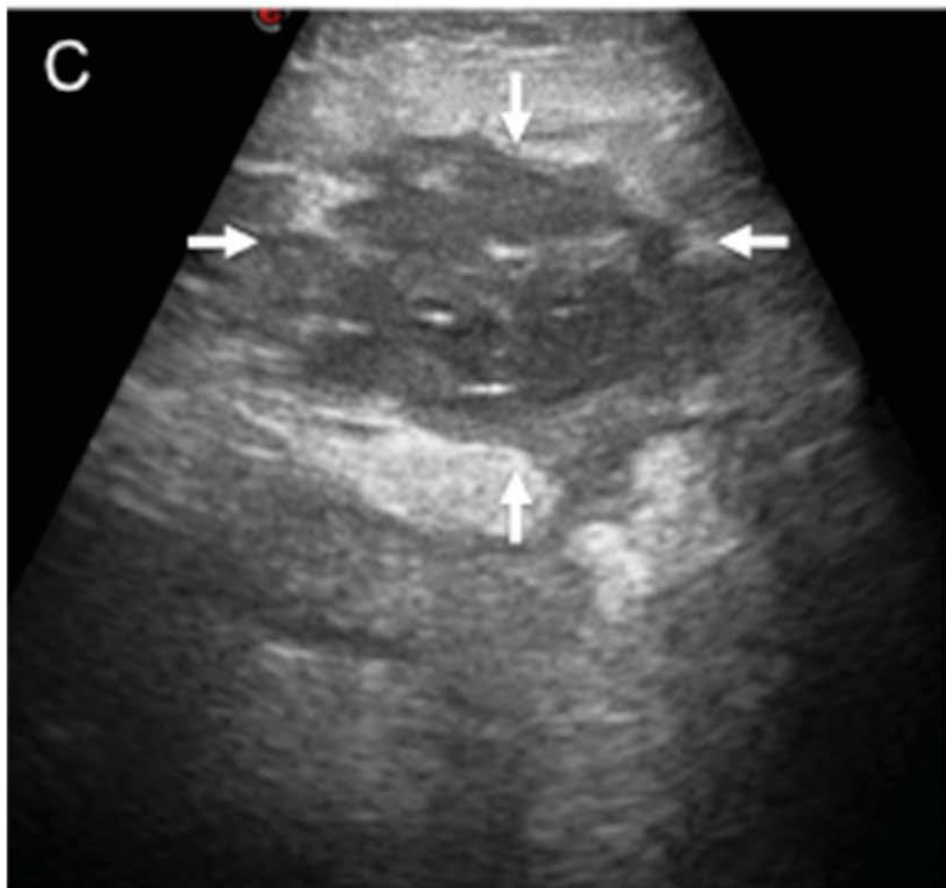
67%
97%
82%

SICUS

90%
94%
92%



Abscesses



Abdominal abscesses:

- Hypo-anechoic lesions containing fluid and gaseous artifacts
- Posterior enhancement
- Irregular margins sometimes within hypertrophic mesentery

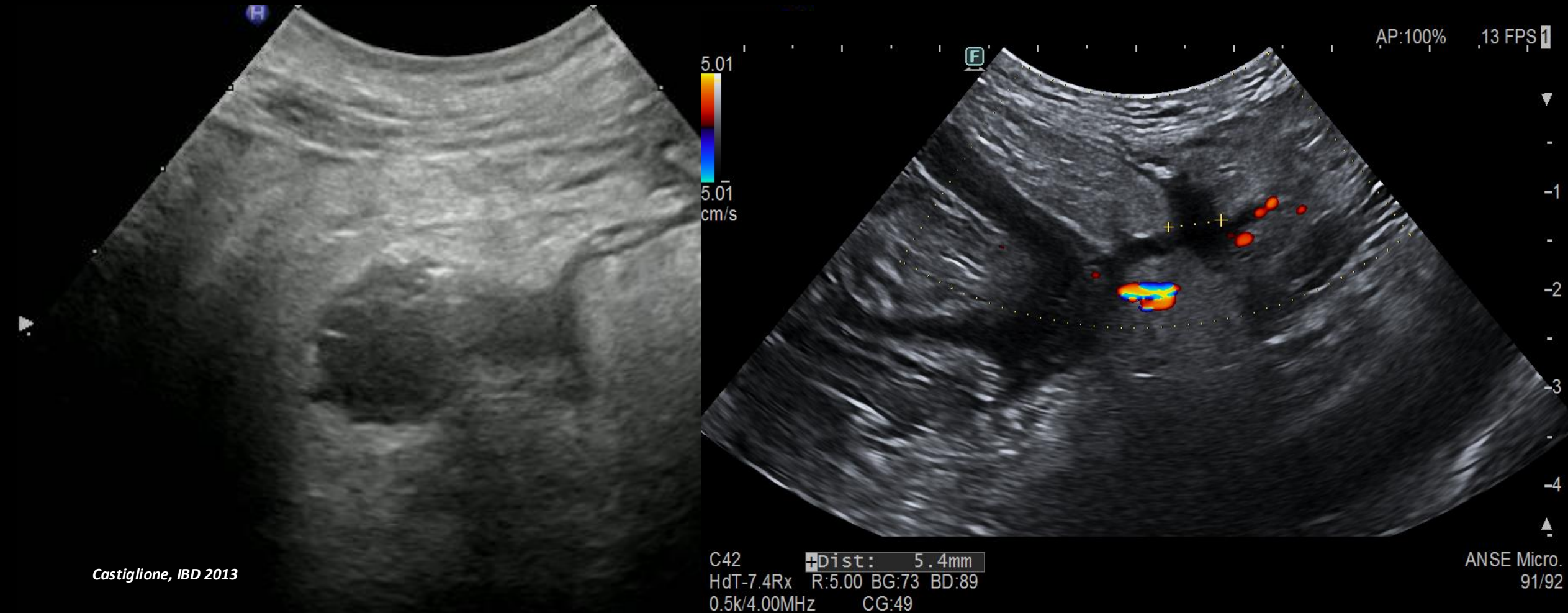


ABDOMINAL ABSCESSES

Hypo- anechoic areas containig fluid and gaseus artifacts

Irregular margins

Hypertrophic mesentery





H

- 0

-

- 2



- 4

-

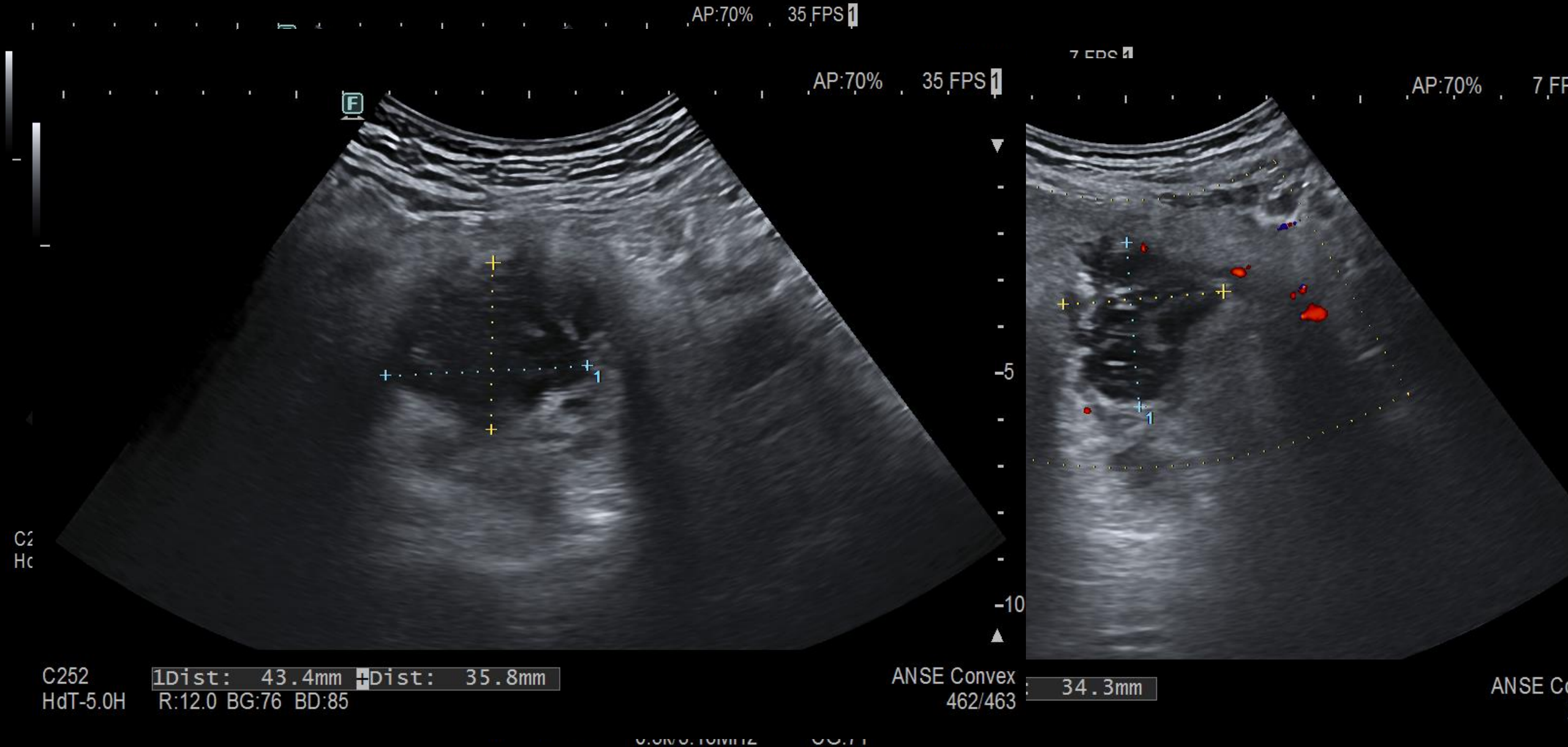
- 6

-

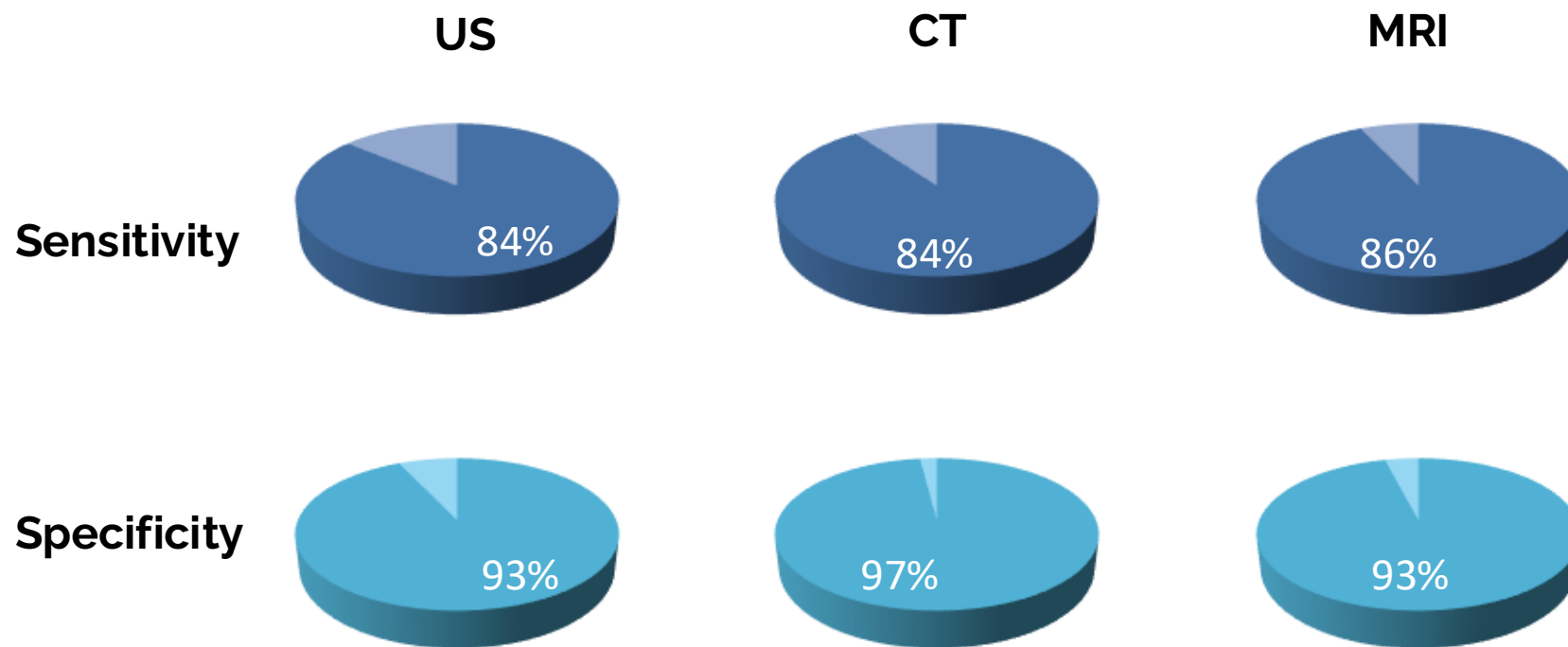
- 8



Post-surgical abscess after colectomy in UC

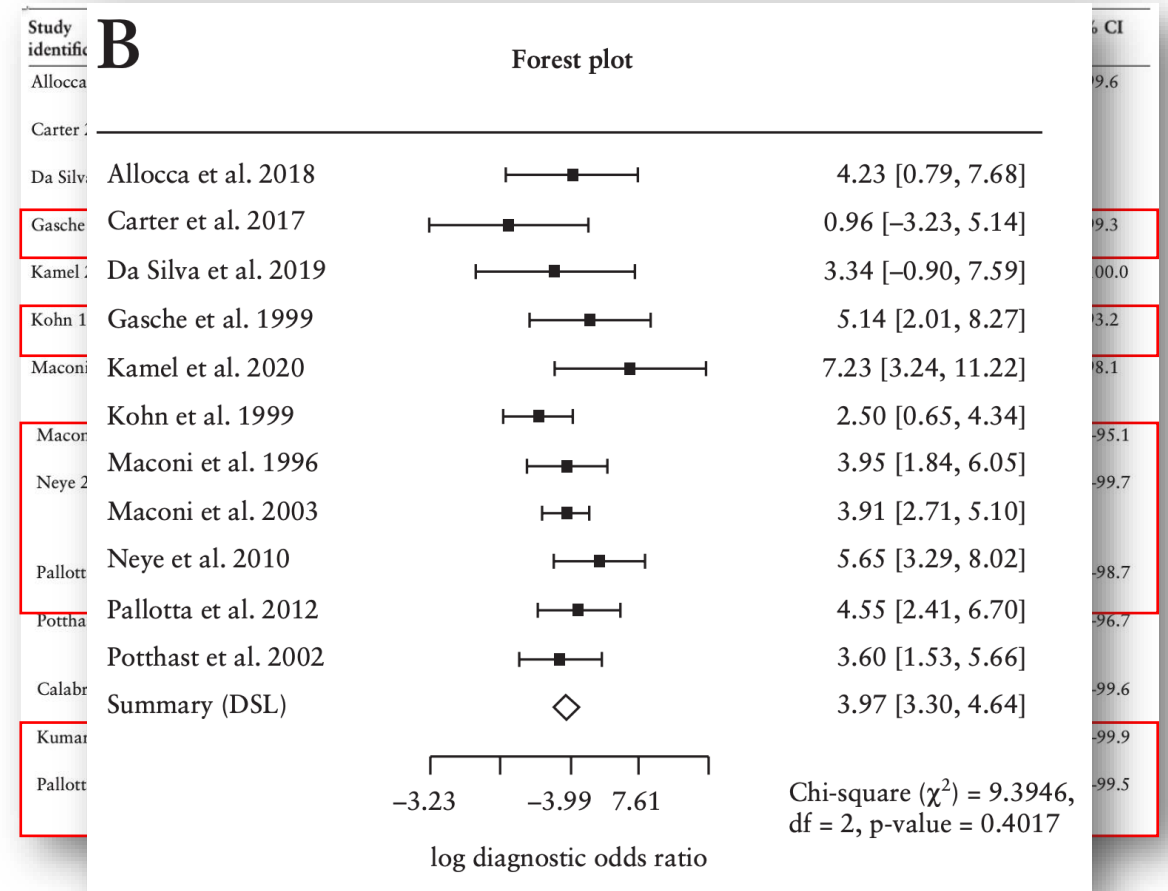


Accuracy of cross-sectional imaging for extramural complications: abscesses

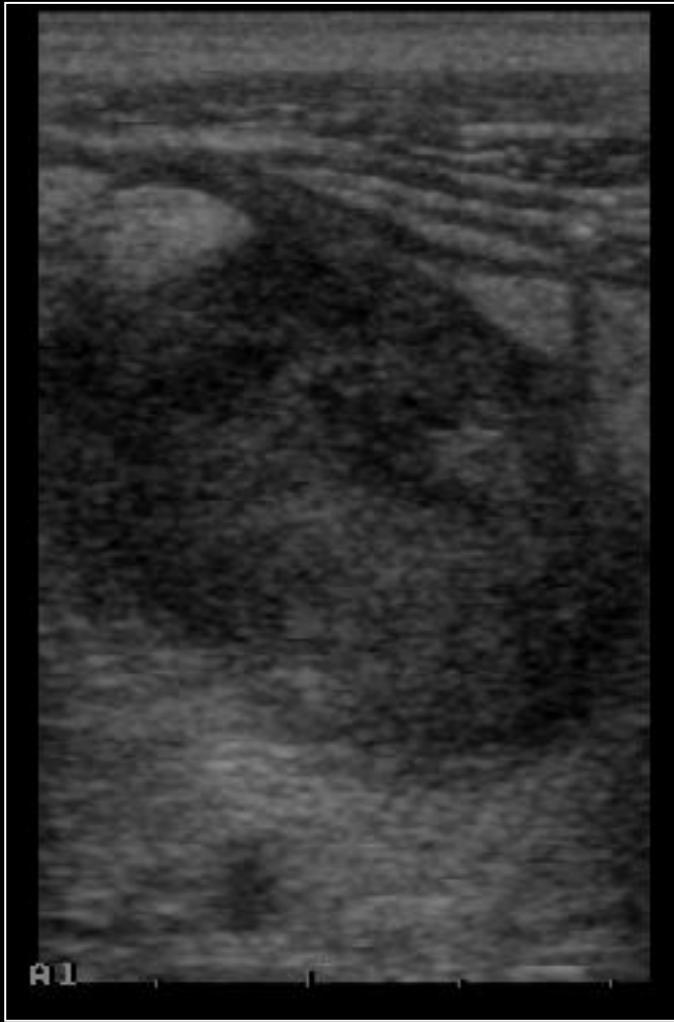


Diagnostic accuracy of B-mode IUS for masses

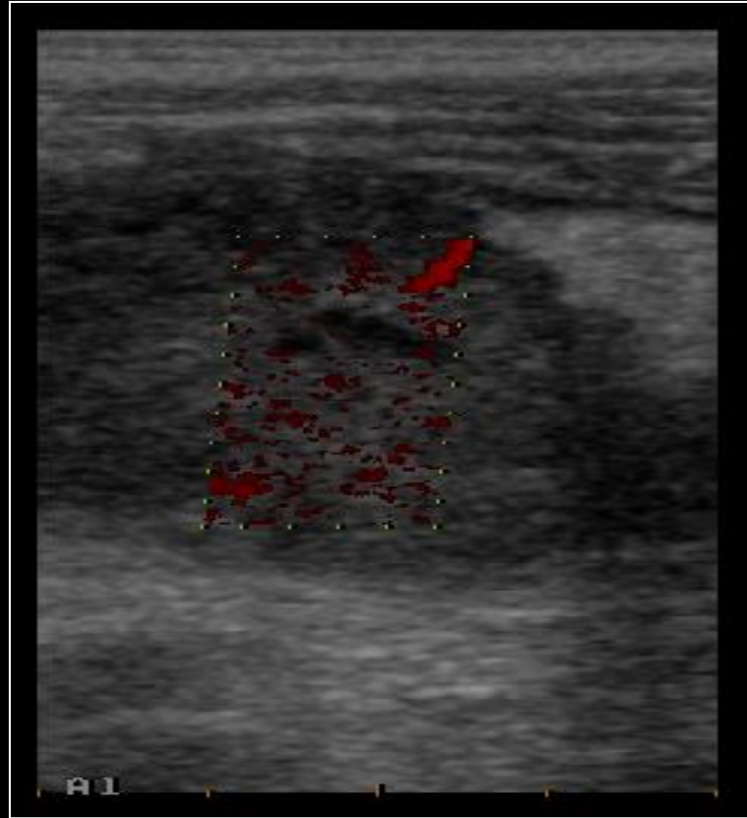
- Eleven studies reported data on accuracy of B-mode IUS in detecting masses. N= 697 patients.
- Five of these studies had surgery or pathology as reference standards.
- Pooled sensitivity $\rightarrow 0.87$ [95% CI, 0.78–0.93]
- Pooled specificity $\rightarrow 0.95$ [95% CI, 0.92–0.97],
- There was no significant heterogeneity among studies for both sensitivity [$I^2 = 0.0\%$, $\chi^2 = 7.65$; $p = 0.469$] and specificity [$I^2 = 31.6\%$, $\chi^2 = 11.69$; $p = 0.166$].
- Pooled overall log diagnostic odds ratio for inflammatory masses by B-mode IUS was 3.97 [95% CI, 3.30–4.64]



Mass



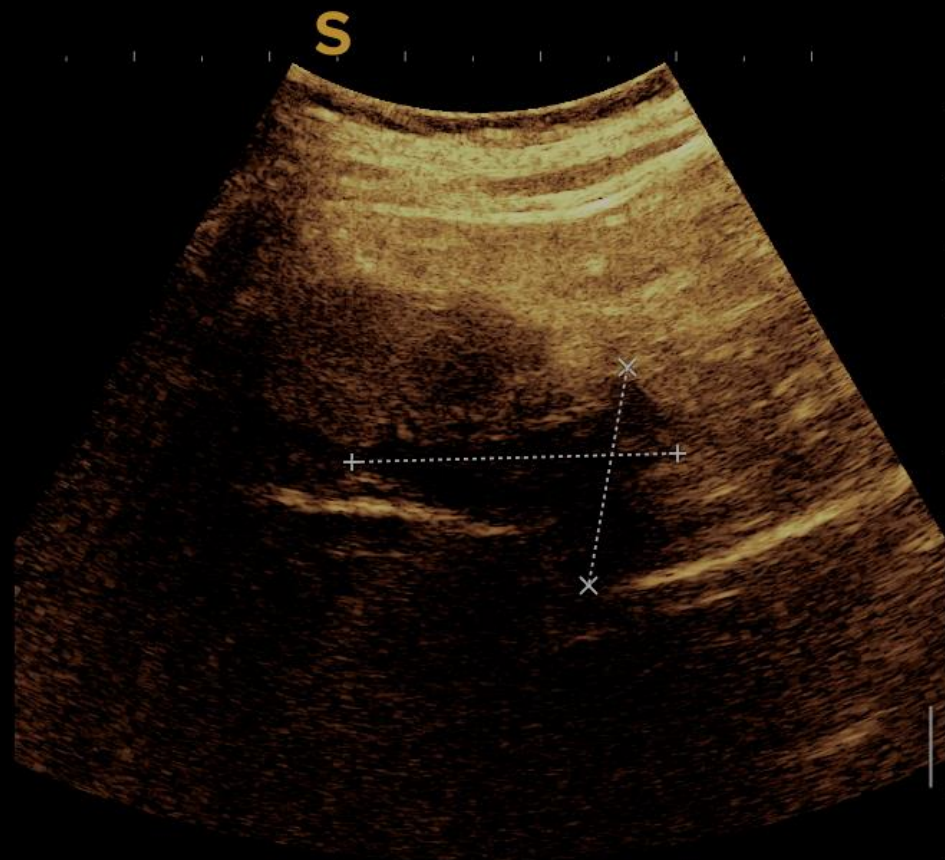
B-MODE



POWER DOPPLER



CONTRAST AGENT



4.80 cm

3.28 cm

11.0



CEUS

Optim 1

Res/Med/H

M 7/52 dB/Low/SR 1

G 50 %/Fr. 14 Hz

Z 120 %

B

Gen

M 9/66 dB/Low

T 1540 m/s/SR 5

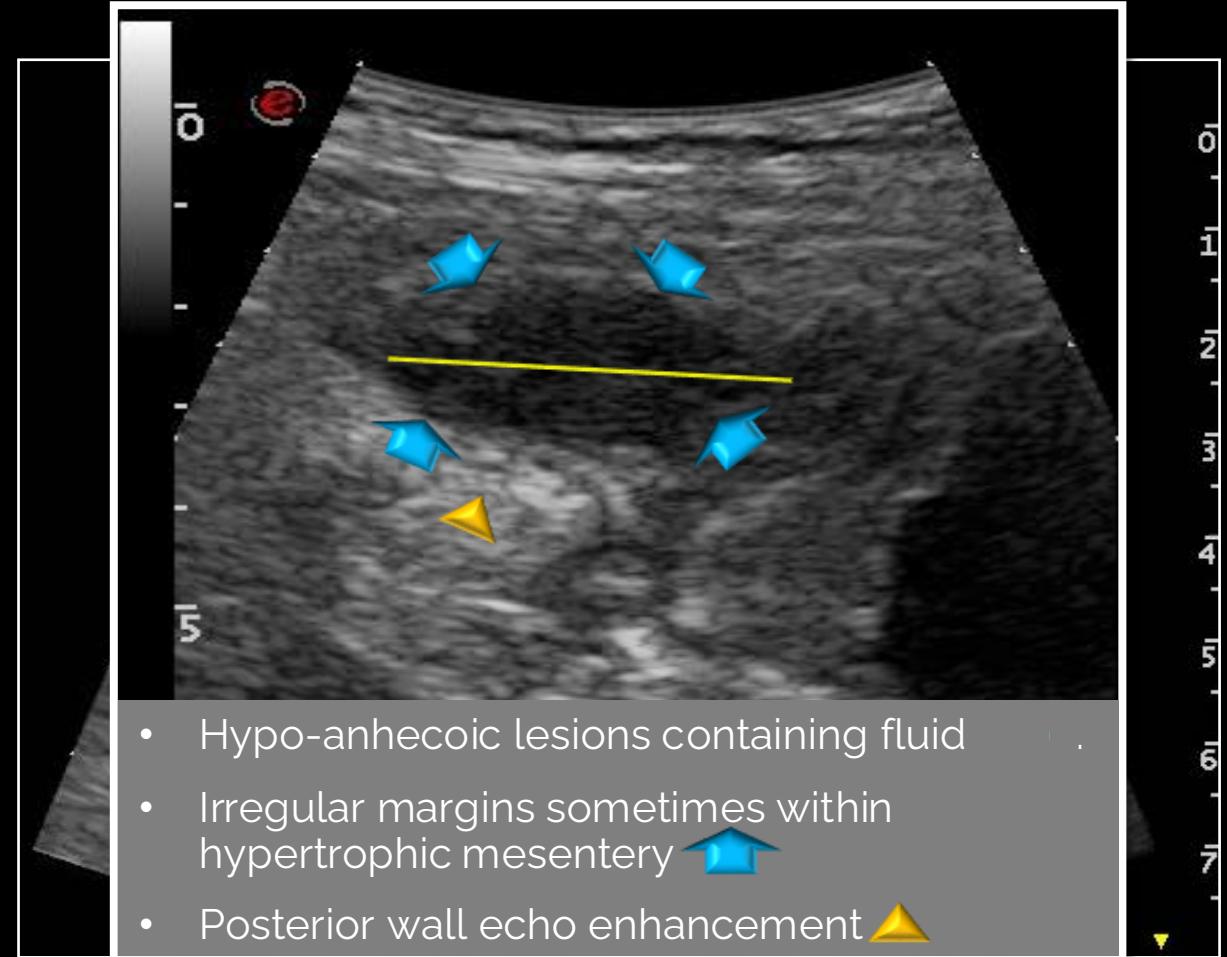
G 50 %/Fr. 14 Hz

Fr: 2609/2609

Use of CEUS with masses

Case

- Mrs. K is a 26 years old was diagnosed as a case of Terminal ileal Crohn's disease for > 5 years.
- She was refusing to start biological agent & non complaint to her immunomodulator therapy (Azathioprine).
- She received many steroid doses during the disease flares.
- Presented to hospital complaining of lower abdominal pain & fever.

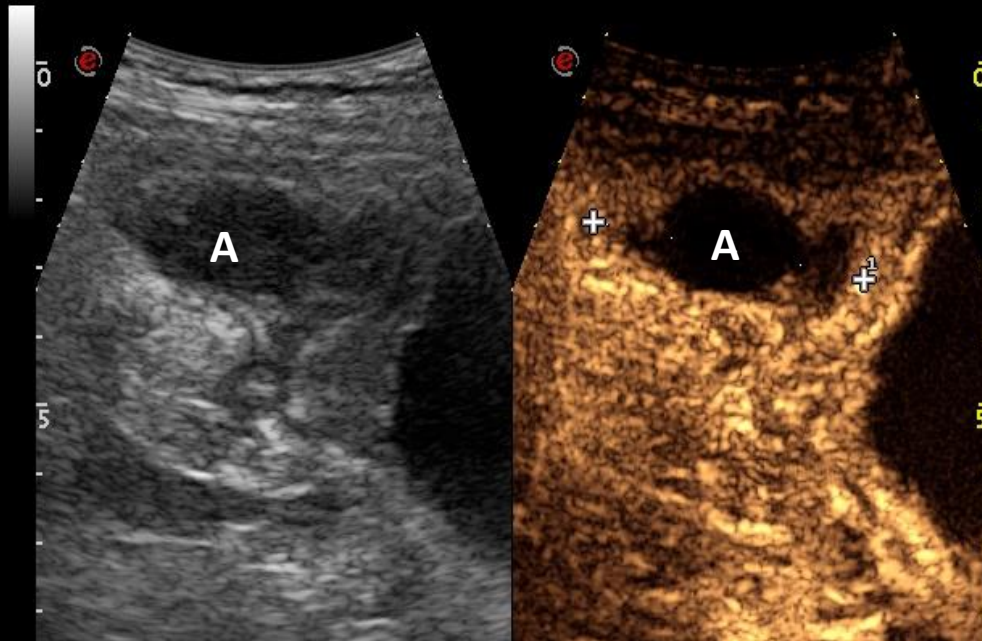


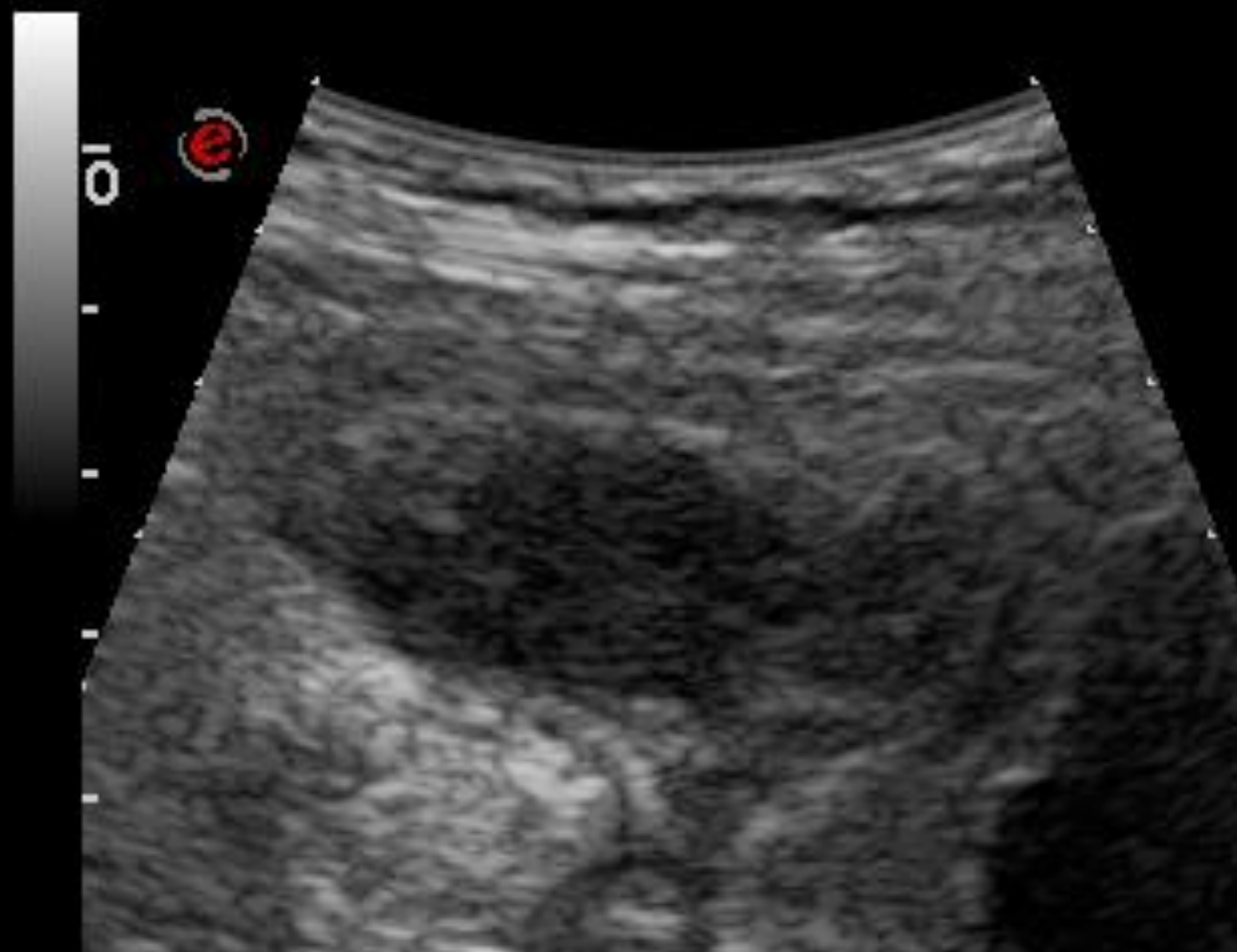


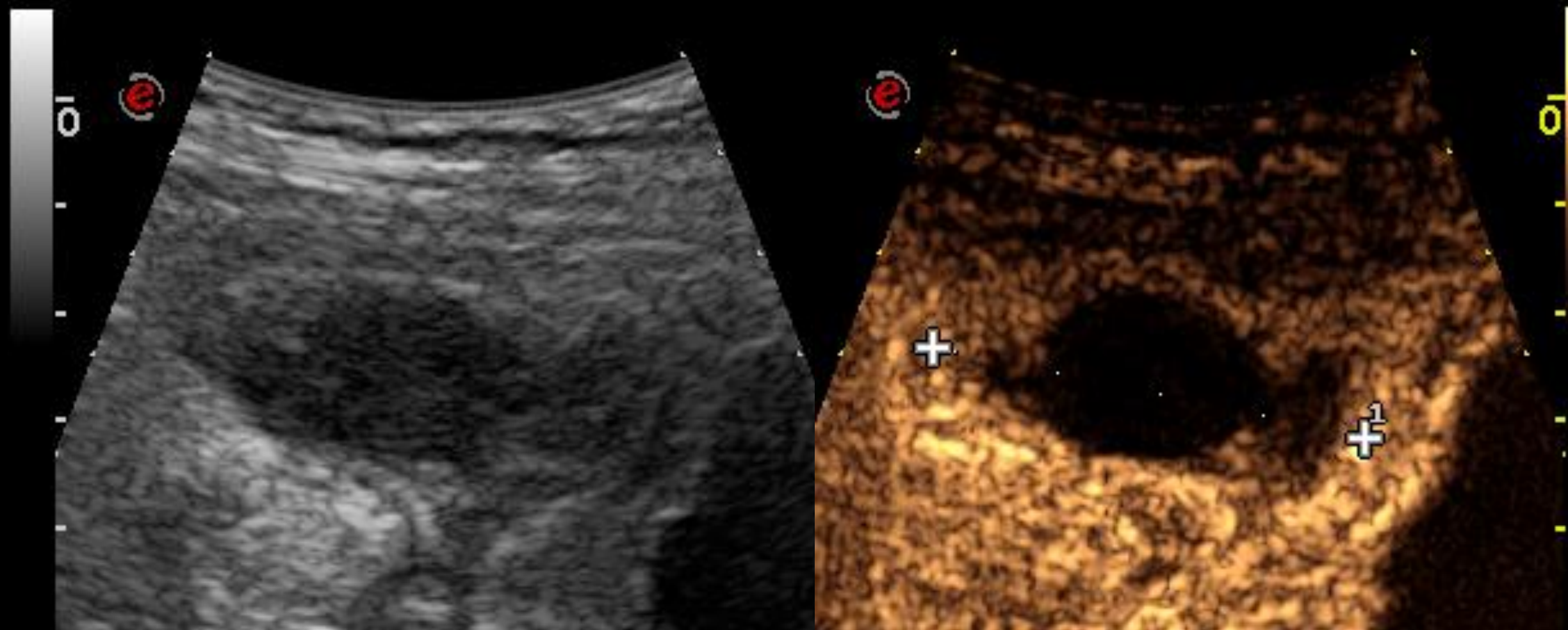
Use of CEUS with masses

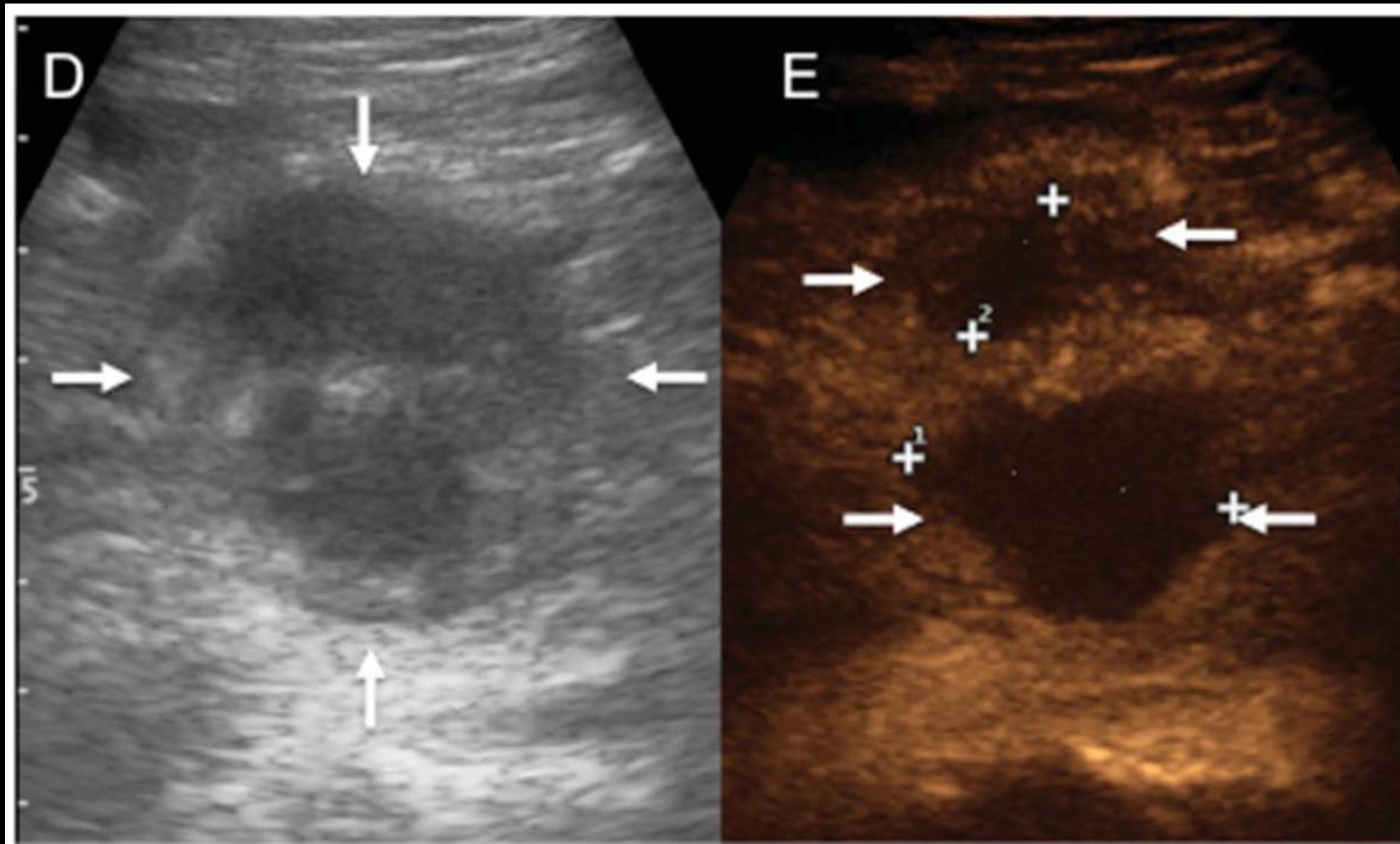
Case

- **Abscess:**
 - Avascular mass with peripheral areas of enhancement.



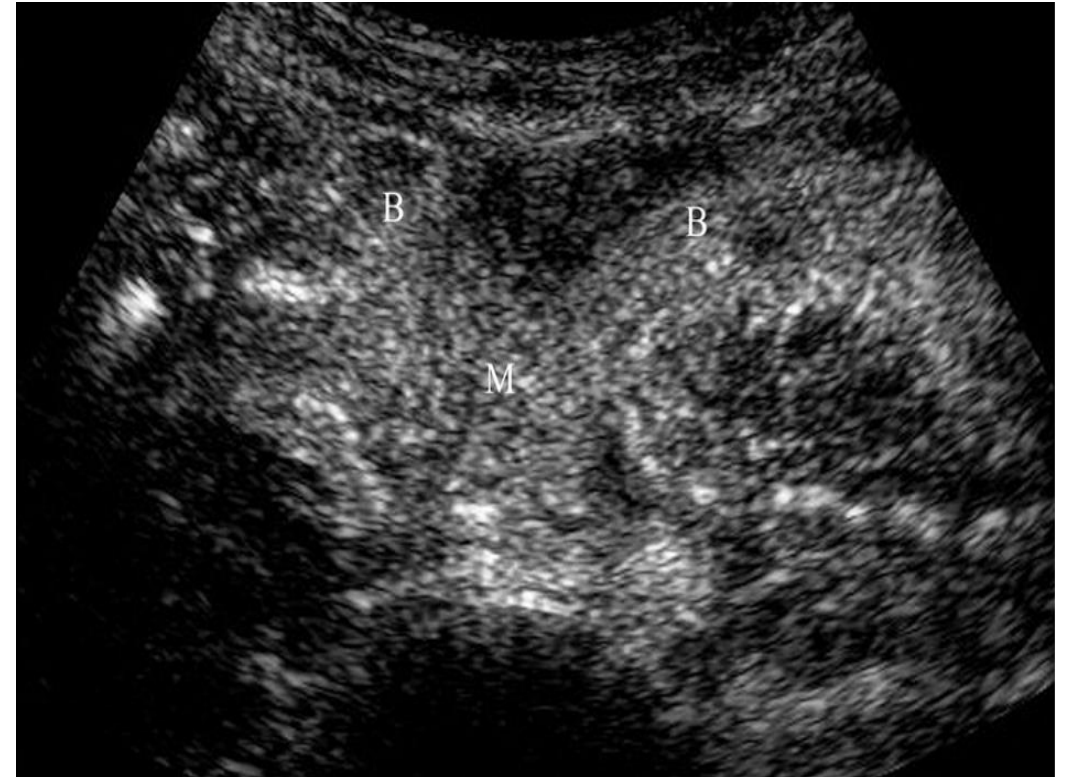
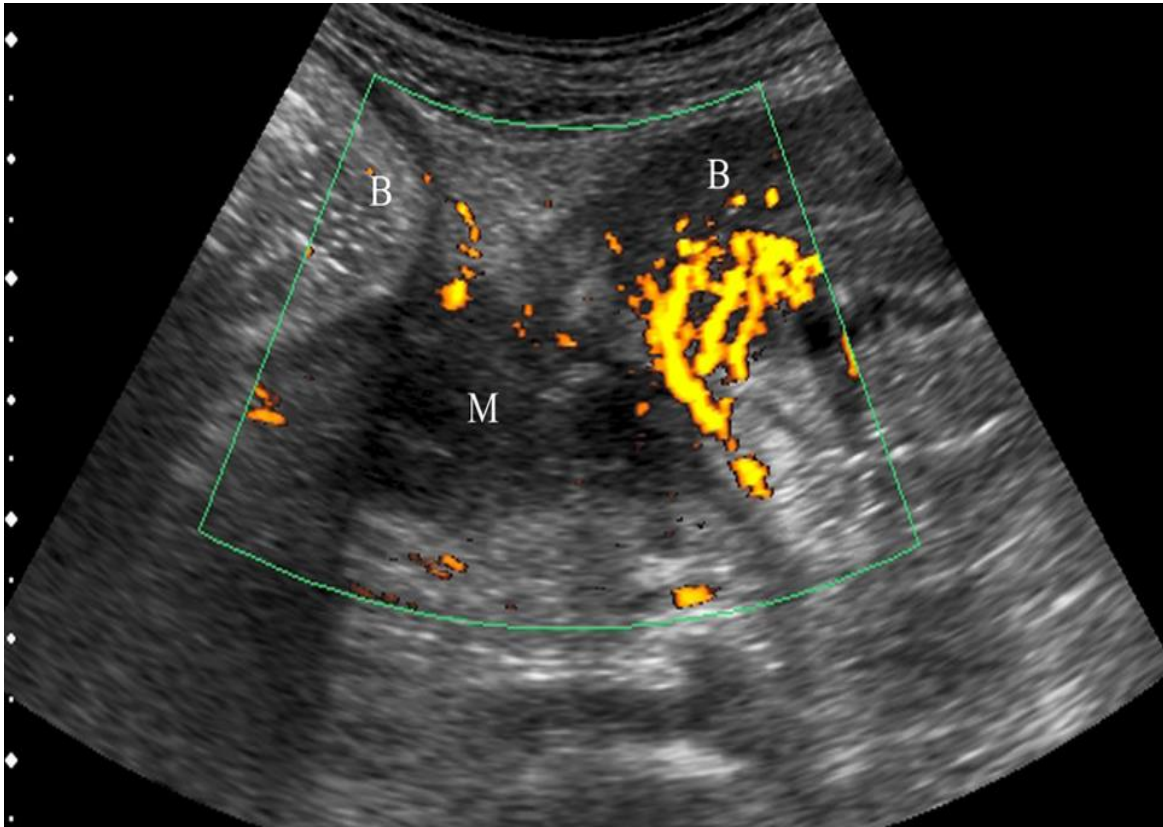






Contrast-enhanced ultrasound in the differentiation between phlegmon and abscess in Crohn's disease and other abdominal conditions

- 71 inflammatory masses were confirmed by other imaging techniques, percutaneous drainage or surgery.
- CEUS specificity for the diagnosis of abscess was 100%.



Kappa coefficient = 0.972 CEUS and other techniques in the diagnosis of phlegmon or abscess

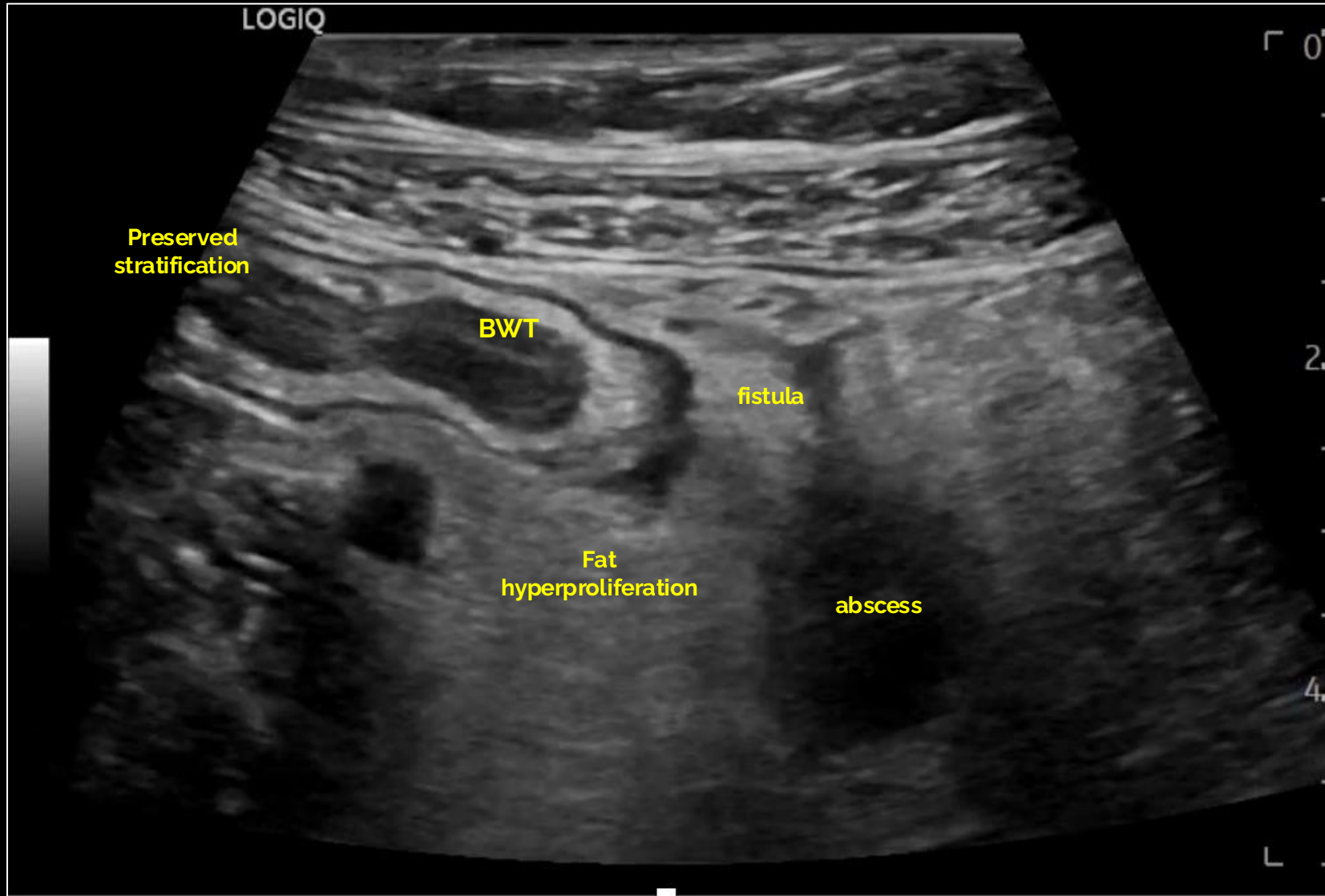
IUS to detect CD complications (Masses)

Case

- Ms A is a 28 years old lady, was diagnosed on 2015 as a case of inflammatory terminal ileal CD. Non responder to Infliximab and Adalimumab.
- Started on Ustekinumab.
- No improvement in her symptoms.



IUS to detect CD complications (Masses)



**Three Crohn's
disease
complications
in one case**



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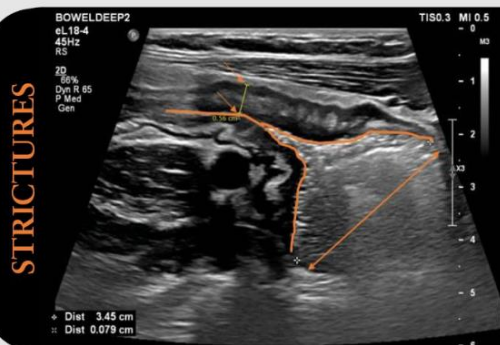
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90%
94%
92%



TAKE HOME MESSAGES

Intestinal US is useful in diagnosis of stenosis, fistulas and abscesses in CD

SICUS may increase IUS accuracy in diagnosis of CD complications

CEUS may increase IUS accuracy in diagnosis of abscesses