international bowel ULTRASOUND GROUP

KUWAIT GASTROENTEROLOGY ASSOCIATION
رابطة الجهاز الهضمي والكبد الكويتية

Standardizing documentation and optimized reporting

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Intended Learning Outcome

By the end of this session, the learner will be able to:

1. Recall the standard terminology and abbreviations used in documenting intestinal ultrasound (IUS) findings and construct a well-structured, standardized IUS report that clearly communicates relevant observations, measurements, and clinical impressions.

Three Pillars

Why Standardization

Consistency & Reproducibility	Quality Assurance & Auditability	Communication ,Training & Research
Uniform technique and measurements	Mandatory parameters documented	Shared reporting language Clear & consistent terminology
Reliable longitudinal comparison	Archivable images for verification and audit	Cohesive multidisciplinary practice and education .

Speaking the Same IUS Language

- IUS use in IBD is growing rapidly, but variability remains
- Over 20 indices reported; few are well validated
- Unified terminology improves consistency and research quality
- Core terms: BWT, BWS, i-fat, CDS, MUC
- Based on IBUS consensus language (Goodsall 2020; Novak 2021)

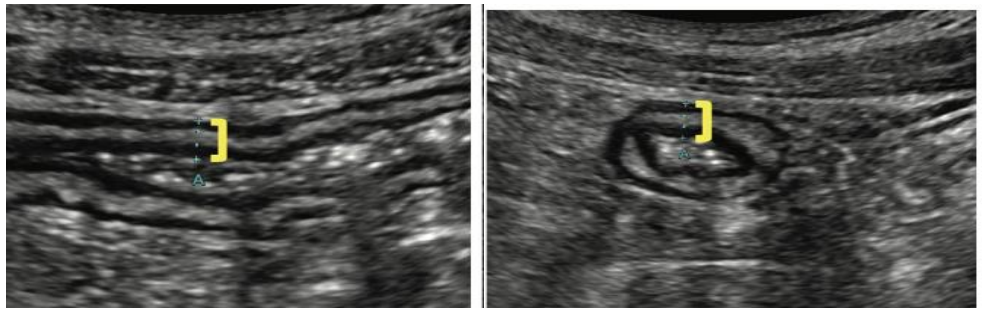
IUS Parameter Reliability

- K. Novak .et al JCC 2021

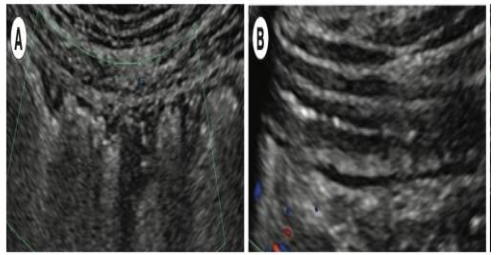
Parameter	Coefficient Value	Agreement Level (Landis & Koch)
Bowel Wall Thickness (BWT)	ICC = 0.96	Almost Perfect
Colour Doppler Signal (CDS)	κ = 0.60	Moderate Agreement
Inflammatory Fat (i-fat)	κ = 0.51	Moderate Agreement
Bowel Wall Stratification (BWS)	κ = 0.39	Fair Agreement

MEASUREMENT & SCALING INFLAMMATORY PARAMENTERS

BWT

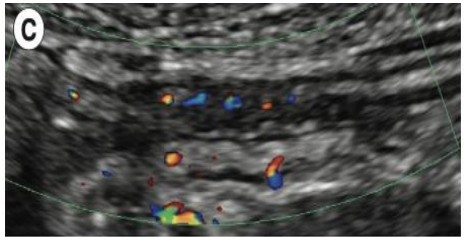


CDS

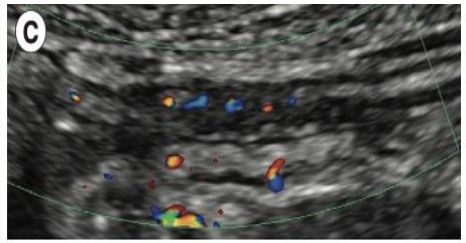


Modified Limberg score 0
IBUS-SAS score 0

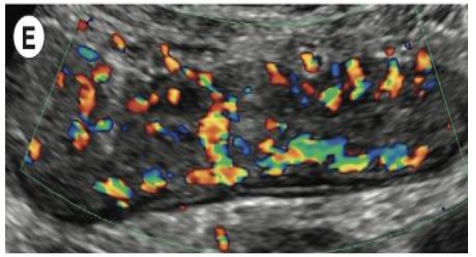
Modified Limberg score 1
IBUS-SAS score 0



Modified Limberg score 2
IBUS-SAS score 1



Modified Limberg score 2
IBUS-SAS score 1



Modified Limberg score 4
IBUS-SAS score 3

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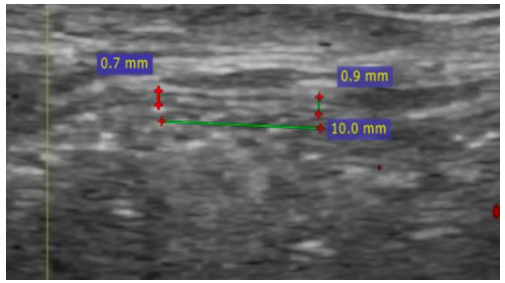
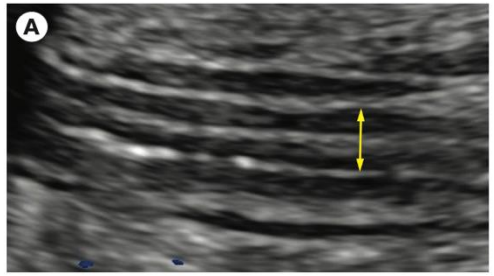
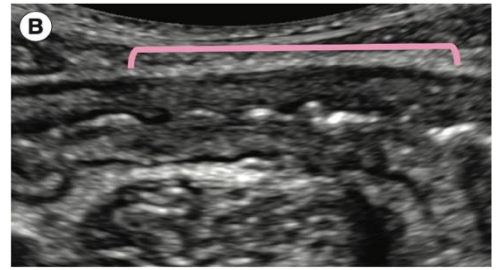
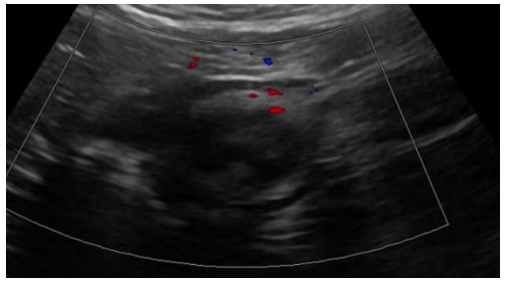
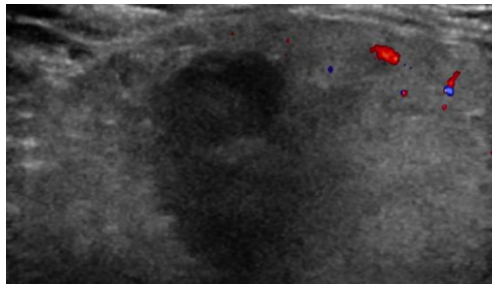
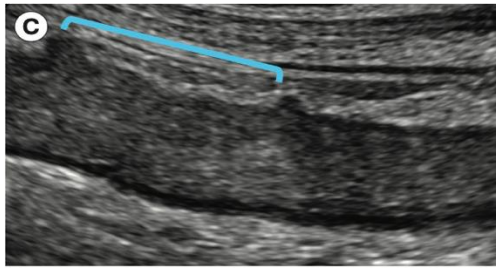
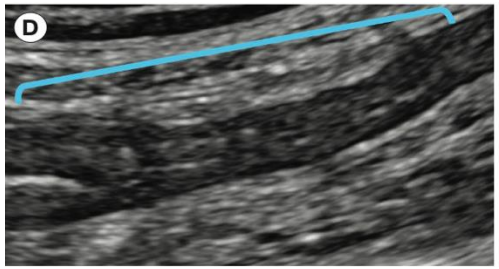
SCALING INFLAMMATORY PARAMENTERS

	i.Fat	BWS
Absent		 Stratification: normal IBUS-SAS score 0  Stratification: uncertain IBUS-SAS score 1
Indeterminant		
Present		 Loss of stratification IBUS-SAS score 2 (focal)  Loss of stratification IBUS-SAS score 3 (extensive)

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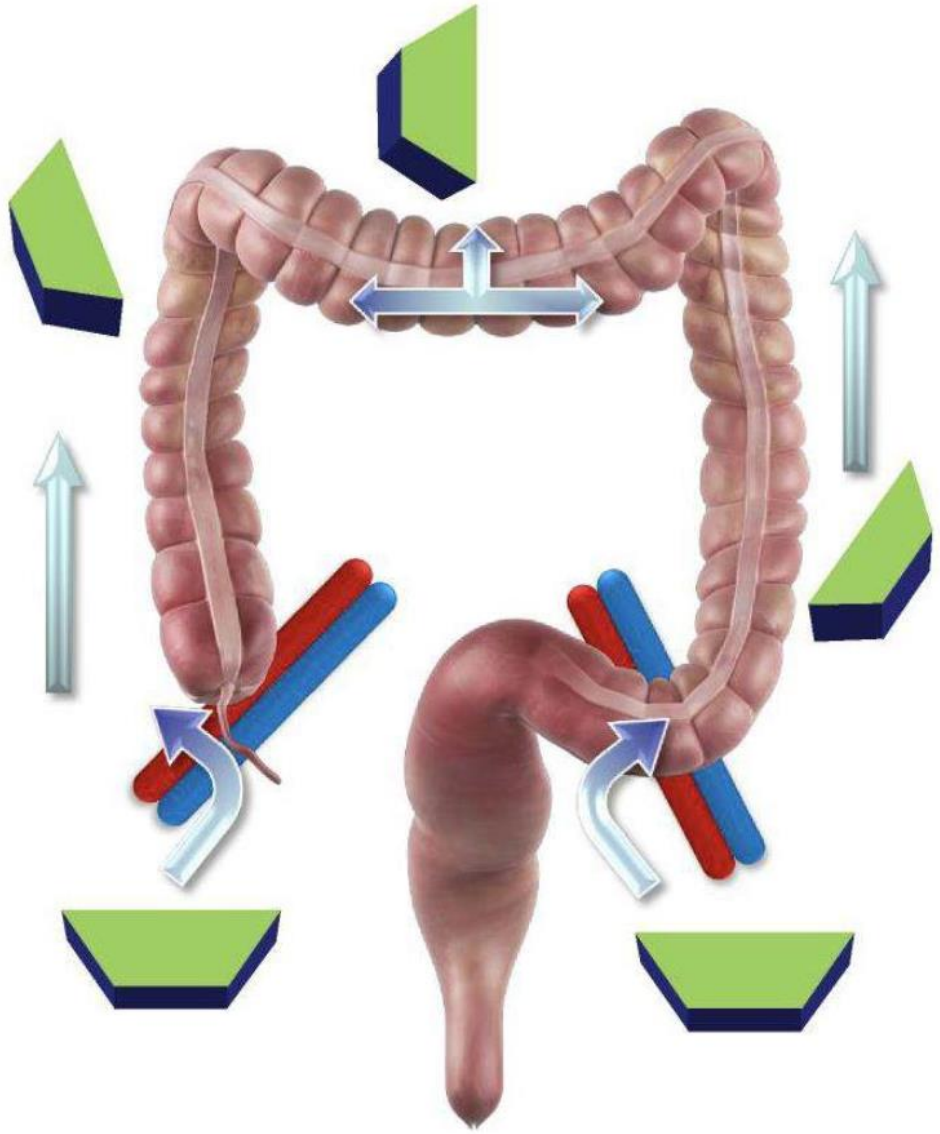
Equipment & Systematic Optimization

Equipment & Optimization

- High frequency probes (≥ 5 MHz).
- Optimize **depth, gain, and focus**
- **CDS velocity ± 5–7 cm/s** to detect low-velocity mural flow.

Systematic Technique

- Begin at the **terminal ileum**; progress systematically through bowel segments
- Scan in **parallel overlapping lanes** (“mowing the lawn”)
- Measure **Bowel Wall Thickness (BWT) perpendicular to the wall** (serosa–muscle to mucosa–lumen).



Cine Loop Capture

- **Three loops per segment** (3–10 seconds each).
- **Each bowel segment should include:**

  Longitudinal view: Layer definition and mural pattern.

  Cross-sectional view: Symmetry, wall thickness, and

  .

  Colour Doppler (CDS): Vascularity graded (Limberg 0–3).
- Assessed The site of greatest BWT
- Cine-loop sweeps that include the whole pathology originating at non-pathological margins

Annotation Standards:

- Segment name and view orientation.
- CDS status, Limberg grade, BWT marker.
- Operator ID, date, and time stamp.

Image Storage & Common Challenges

- Store all intestinal ultrasound (IUS) images and cine loops in secure, HIPAA-compliant formats for at least **5 years** (per CMS/local rules).
- Prefer **PACS** linkage for easy access through electronic medical records (EMR).
- **Alternative Storage:** If PACS is unavailable, use **secure institutional servers** that meet compliance standards.

Challenges:

- Limited PACS or secure storage in ICU/outpatient units.
- Risk of **cine loop loss** when using screenshots only.
- Inconsistent **retention policies** between institutions.

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Optimizing IUS Report

ECCO Topical Review

ECCO-ESGAR Topical Review on Optimizing Reporting for Cross-Sectional Imaging in Inflammatory Bowel Disease

Torsten Kucharzik[a,*], Jeroen Tielbeek[b,*], Dan Carter[c], Stuart A. Taylor[d], Damian Tolan[e], Rune Wilkens[f], Robert V. Bryant[g], Christine Hoeffel[h], Isabelle De Kock[i], Christian Maaser[j], Giovanni Maconi[k], Kerri Novak[l], Søren R. Rafaelsen[m], Martina Scharitzer[n], Antonino Spinelli[o,†], Jordi Rimola[p,†]

Leitlinie

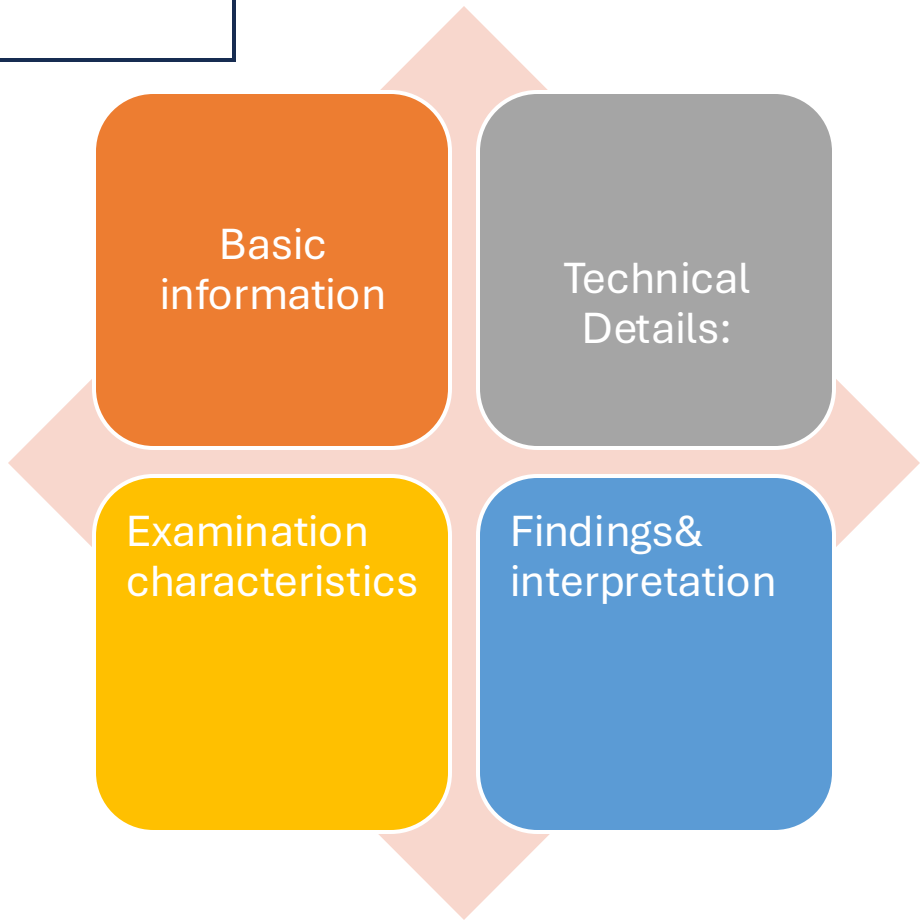
Thieme

Positionspapier zur Befunderhebung von Darmultraschallbefunden bei chronisch entzündlichen Darmerkrankungen

Position paper on reporting of intestinal ultrasound findings in patients with inflammatory bowel disease

Autoren
Torsten Kucharzik[1], Raja Atreya[2], Oliver Bachmann[3], Daniel C. Baumgart[4], Jan Daebritz[5], Ulf Helwig[6,7], Johannes Janschek[8], Peter Kienle[9], Jost Langhorst[10], Jonas Mudter[11], Carsten Schmidt[12], Andreas G. Schreyer[13], Michael Vieth[14], Johannes Wessling[15], Christian Maaser[16]

Components of optimal IUS report



Basic information

Patient Identity

- Name
- Age
- MRN

Disease information

- Disease extent
- Presence and type of bowel surgery
- Referral question

The scope of the examination

- Symptom-oriented OR complete

Technical Details

Machine & Probes

- Ultrasound device
  Probes used & frequency

Technical Limitations

- Obesity
- Excessive bowel gas.
- Pregnancy

The quality of the imaging

- excellent/good/acceptable/bad.

Findings

Terminal Ileum

- **Bowel wall thickness (BWT) measures ---------- mm.**
- **Doppler ; Performed/ not performed (mLimberg 0/1/2/3).**
- **Bowel wall stratification: normal/uncertain/focal (≤3cm)/extensive (≥3cm)**

Inflammatory Fat wrapping: yes/no/uncertain

Lymph nodes: yes/no

Complications:

Colon segments

- **Sigmoid, Descending colon, Transverse colon, Ascending colon (each separately)**
- **Bowel wall thickness (BWT) measures ----------mm.**

Doppler was not performed/performed (mLimberg 0/1/2/3).

Bowel wall stratification: normal/uncertain/focal (≤3cm)/extensive (3cm)

Haustrations: preserved/not preserved

Inflammatory Fat wrapping: yes/no/uncertain

Lymph nodes: yes/no

Complications

Reporting complications

Stricture

Location, lengths, **number**

Pre-stenotic dilatation(>30mm)

BWT & other parameters of inflammation in the stenotic segment .

Motility

Associated fistulas or neoplasia.

Fistulae

Simple VS and **complex**

Origin & termination

Relation to inflammation or stenosis

Reporting of complications

Abscess

Abcess Vs Inflammatory mass (gas and CDS)
Size, location, relation to bowel or organs

Follow-Up Assessment Report (IUS) in CD

- Category Definition
- ---------- ----------
- Transmural remission Normalization of all previously abnormal parameters
- Transmural response ≥25% reduction in bowel wall thickness or Doppler grade
- Stable disease No significant interval change
- Progression Worsening of inflammatory parameters, new involved segments, or Crohn-related extramural complications

- **Reporting standards**:
- - Compare directly with the prior study using standardized terminology.
- - Describe interval change in BWT, vascularity (CDS), wall stratification, and mesenteric fat reaction.
- - Emphasize transmural remission as the preferred therapeutic endpoint and strongest prognostic indicator.

Scoring Disease Activity

SCORE & DISEASE	KEY US PARAMETERS	EVIDENCE OF PERFORMANCE
IBUS-SAS(Crohn's Disease)	BWT, i-FAT, CDS, BWS	100% Specificity for detecting severe endoscopic activity (SES-CD ≥9 or Rutgeert i4) in a prospective cohort study. Supported by three prospective validation studies.
MUC(Ulcerative Colitis)	BWT + Colour Doppler Signals (CDS)	A score > 6.2 indicates endoscopic activity with high (100%) specificity. Diagnostic and prognostic value validated.

24 years old male diagnosed with CD A2L1B1 started on INF before 1 year seen with abdominal pain diarrhea

HOW I APPROACH IT

Point of Care Intestinal Ultrasound Procedure Note

Indication: Crohn's Disease (K50.90)

Operator: Michael Dolinger, MD, MBA (IBUS-certified)

Technique: Greyscale/color Doppler graded compression ultrasound evaluation of the 4 abdominal quadrants was done. Static images and AVI clips of the 4 abdominal quadrants was saved. Visualization of the colon began in the left lower quadrant of the abdomen after identification of the iliac vessels and the psoas muscle. The bowel segments visualized, and their subsequent findings are documented below.

Findings:

Bowel segment(s) visualized:

Bowel wall thickened (Y/N):

Maximum Bowel wall thickness (mm):

Submucosal Layer Thickness (mm):

Bowel Wall Perfusion (Normal/Enhanced):

Hyperemia by Color Doppler Signal if enhanced (Modified IBUS 0-III):

Hyperemia by Color Doppler Signal if enhanced (Limberg 0-IV):

Loss of bowel wall stratification (Y/N):

Presence of inflammatory mesenteric fat (Y/N):

Lymphadenopathy (Y/N):

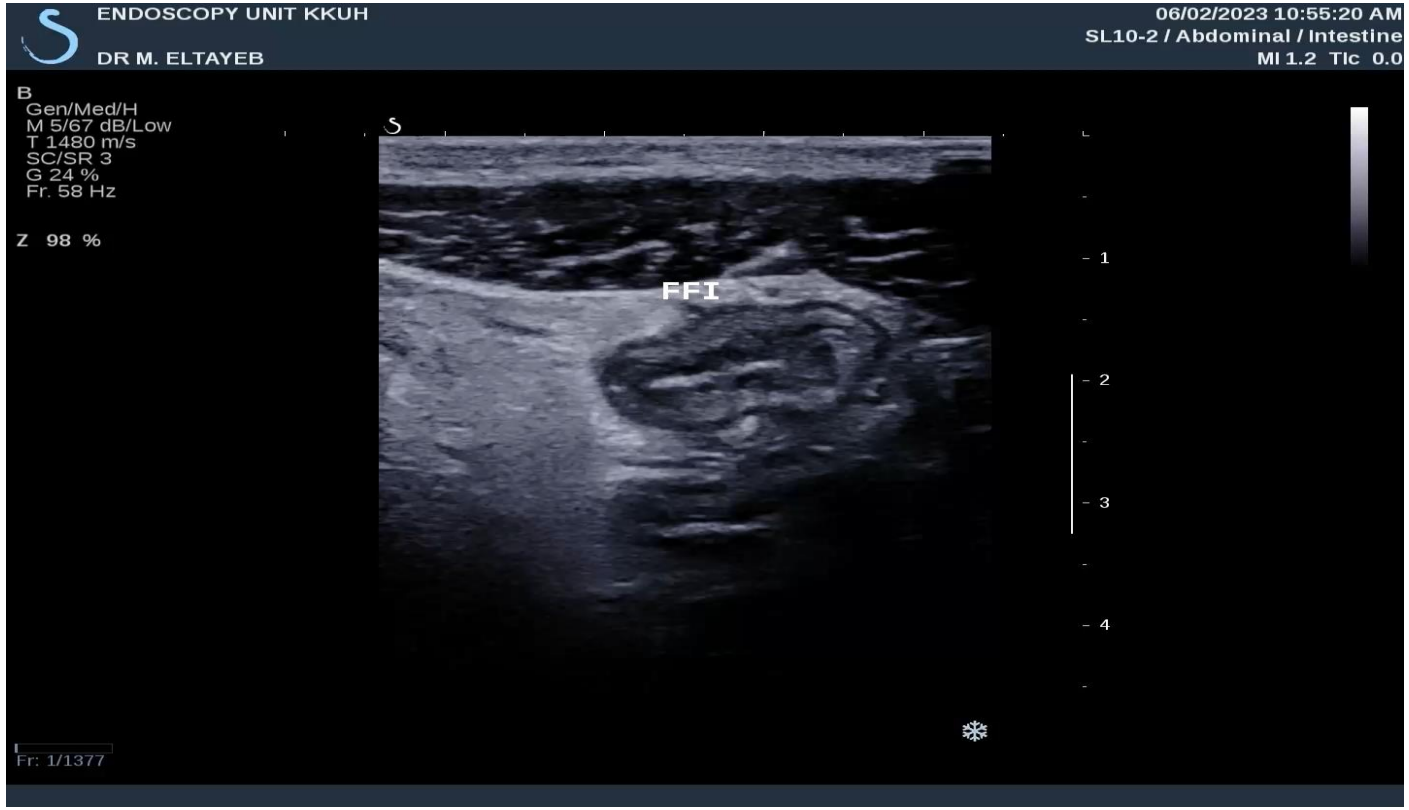
Complications (Abscess/Stricture/Fistula):

Free fluid (Y/N):

Procedure length of time (minutes):

Previous POCIUS (Y/N):

Impression:



Dolinger et.al amjgastroro 2025

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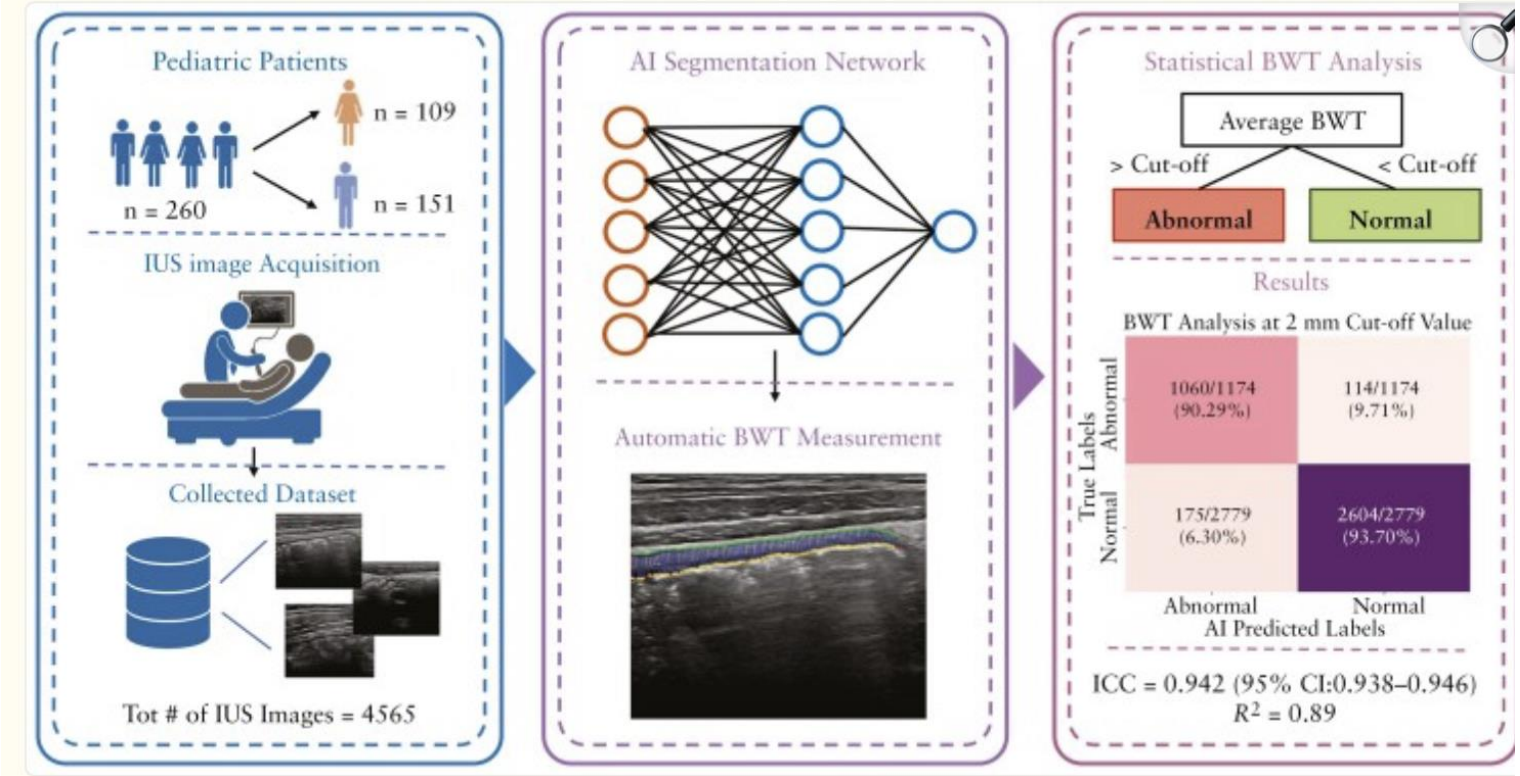
Previous POCIUS (Y/N):

Impression:

24 years old male diagnosed with CD A2L1B3 failed anti- TNF started on Risankizumab 4month seen with abdominal pain diarrhea & fatiguability

AI for Standardization in IUS

Logiraj Kumaralingam etal JCC2025



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Key Message

- **Ideal acquisition:** Capture three cine loops per segment—*longitudinal, cross-sectional, and CDS*—each clearly annotated.
- **Standardized reporting:** Ensures objective assessment of disease activity and reliable comparison across follow-up studies.
- **Consistency:** Using uniform terminology and structured documentation improves accuracy, reproducibility, and clarity in clinical decision-making.

THANK YOU