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IUS 2026 – What's New in IUS in Ulcerative Colitis?

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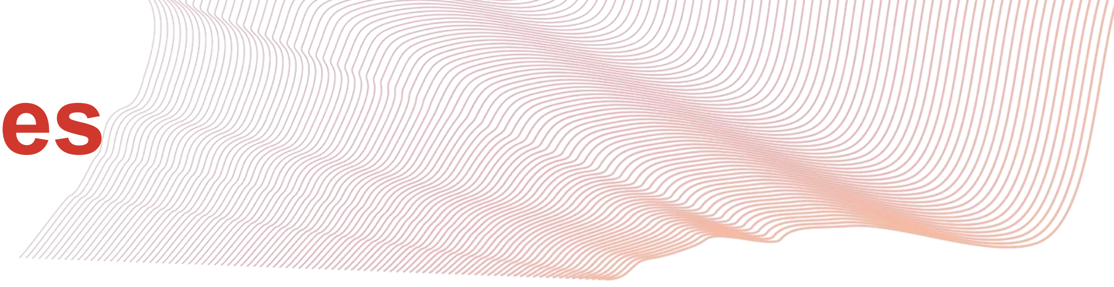
IBUS Advanced Ultrasound Workshop – Module 3
DDW, Chicago, IL, May 4th, 2026

Workshop organized in collaboration with
iUSCAN Intestinal Ultrasound Group of the United States and Canada



Disclosures

Consultant/Advisor	NeuroLogica (a subsidiary of Samsung Electronics), Johnson & Johnson Pharmaceuticals, GE Healthcare, Abbvie, and Sanofi
Board of Directors	iUSCAN

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2025 Clinical Guideline Updates

OXFORD

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], et al.

"IUS with BWT as the single most important parameter is highly accurate in patients with ***moderate-to-severe UC for the detection of treatment response within 2–6 weeks after treatment initiation.***

IUS improvement at week 12… predicts long-term endoscopic response.

In the setting of acute severe UC, [IUS] assessment 48 hours after rescue therapy may identify patients with an increased risk of short- or long-term colectomy."

ACG Clinical Guideline Update: Ulcerative Colitis in Adults

Rubin, David T. MD, FACG[1]; Ananthakrishnan, Ashwin N. MBBS, MPH, et al.

"Disease assessment and monitoring in response to therapy and during maintenance and periods of suspected relapse may be performed with FC, CRP, endoscopic assessment or IUS"

Kucharzik T, et al. *J Crohns Colitis*. 2025 Jul 3;19(7):jjaf106.
Rubin DT, et al. *Am J Gastroenterol*. 2025 Jun 3;120(6):1187-1224.

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Timing of Therapeutic Response Assessment

Therapy	N	UC or ASUC	Time to Assessment of Response by IUS	Percent of Patients with IUS Response	Assessment of Clinical Response	Percent of Patients with Clinical Response	Endoscopic Remission	Percent of Patients in Endoscopic Remission
IV Corticosteroids[1]	56	ASUC	48 ± 24 h	66.1%	6 ± 1 day			
★ IV Cyclosporine[2]	9	ASUC	72 h		3 day	44.4%		
Anti-TNF[3]	36	UC	6 weeks	47.7%	6 weeks	61.5%		
★ Updadacitinib[4,5]	36	UC	8 weeks	64% (Transmural Remission)	8 weeks	79%		
Tofacitinib[6]	30	UC	8 weeks	18.2%	8 weeks	40%	8 weeks	33.3%
★ Guselkumab*	10	UC	12 weeks	66%	12 weeks	100%		
Vedolizumab[7]	7	UC	14 weeks	57%				

1. Ilvemark F et al. *J Crohns Colitis.* 2022;16:1725-34.
2. Miyatani Y, et al. *Crohns and Colitis 360.* In press.
3. Maaser C, et wl. *J Crohns Colitis.* 2019;13:S063–4.
4. Gilmore et al. *Intest Res.* 2025;23(3):347-357.
5. Wu H, et al. *Biomedicines.* 2025;13(1):190.
6. Ollech J. et al. *Ann Med.* 2024;56(1):2358183.
7. Goertz et al. *Acta Radiol.* 2018;59(10):1149-1156.

* Not yet published

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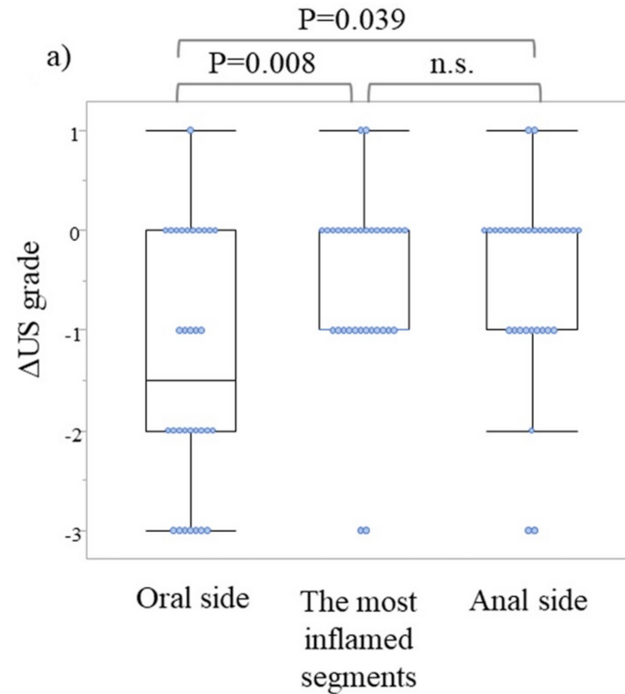
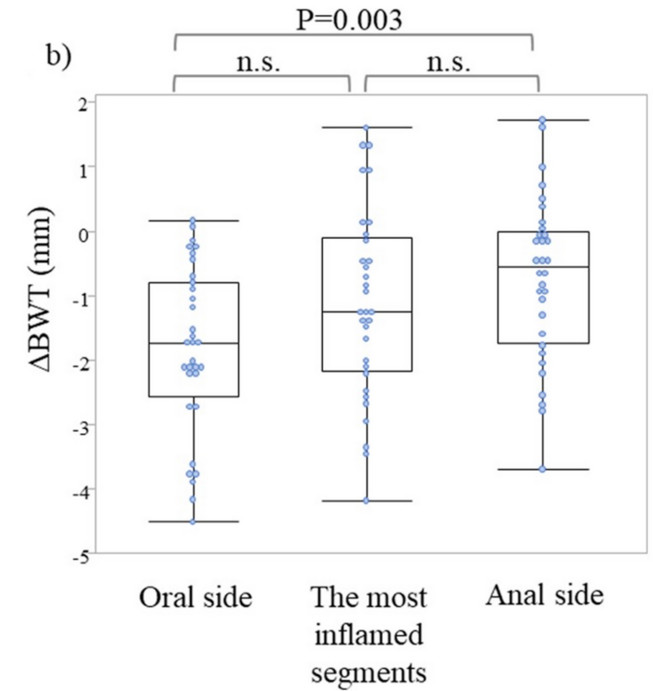
Segmental Assessment of Response – Greater Change in the Proximal Colon

- 32 patients hospitalized for UC disease relapse
- Baseline and follow-up colonoscopy and IUS
- Mean clinical improvement at 1 week
- Greater change in US score and BWT proximally





Izumikawa K et al. *J Med Ultrason (2001)*. 2025;52(4):387-394.

Composite IUS Parameters Superior to Bowel Wall Thickness Alone

- 49 UC patients MES > 0 starting new biologic therapy
- Baseline colonoscopy and IUS
- **IBUS-SAS score <25.5 at 4-6 months was the only independent predictor of endoscopic remission at 12-30 months**
- IBUS-SAS score <38.0 at 4-6 months was the only independent predictor of endoscopic improvement at 12-30 months (OR: 5.8)

	p	*p*	Endoscopic remission (MES = 0)				Endoscopic improvement (MES ≤1)			
			AUC	Cutoff value	Sensitivity, %	Specificity, %	AUC	Cutoff value	Sensitivity, %	Specificity, %
BWT (mm)	0.54	<0.001	0.862	4.4	89.5	66.7	0.759	4.4	92.6	52.9
MUC	0.55	<0.001	0.881	8.7	81.6	88.9	0.755	8.7	83.8	64.7
IBUS-SAS	0.69	<0.001	0.909	25.5	85.5	88.9	0.856	29.0	77.8	76.5

Milan Ultrasound Criteria (MUC) = 1.4 × BWT + 2 × CDS
International Bowel Ultrasound Segmental Activity Score (IBUS-SAS) = 4 × BWT + 15 × i-fat + 7 × CDS + 4 × BWS
BWT = bowel wall thickness, CDS = color Doppler signal, i-fat = inflammatory mesenteric fat, BWS = bowel wall stratification

Ma Li, et al. *Ther Adv Gastroenterol*. 2025;18:17562848251375374.

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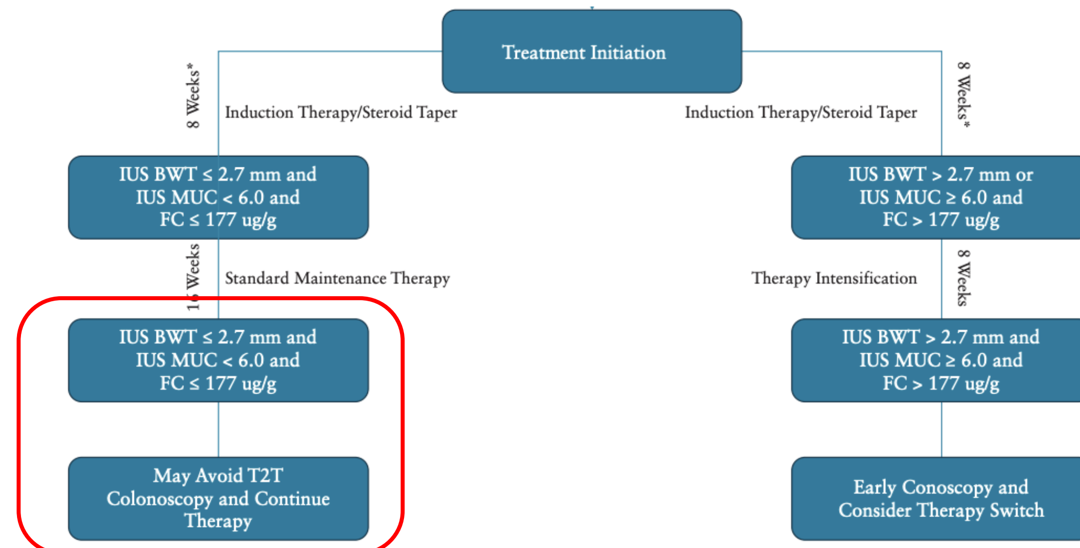
Composite of IUS with FCP Better Predicts Endoscopic Activity

Adults

- N= 171 UC patients (MES≥2), starting advanced treatment
- Assessed diagnostic performance for MES≥2
- All four models of FCP + IUS had higher discriminatory power (AUC: 0.747-0.876) vs. FCP alone (AUC: 0.649-0.857)

Pediatrics

- N= 42 children with UC (MES≥2), starting advanced treatment
- Parameters associated with endoscopic remission at Week 8:
  - BWT ≤ 2.7 mm, FCP ≤ 177, MUC < 6.0, IBUS SAS ≤ 37.4, CUCI decrease ≥25% from baseline
- BWT ≤ 2.7 mm + MUC < 6.0 + FCP ≤ 177 µg/g does not necessitate endoscopic evaluation



Milan Ultrasound Criteria (MUC) = 1.4 × Bowel Wall Thickness (mm) + 2 × Bowel Wall Flow

Tang X, et al. ECCO 2026.
Dolinger MT, et al. *J Crohns Colitis.* 2025;19(5):jjaf075.

IUS in Acute Severe UC

Adult ASUC

- N=9 pts receiving rescue therapy with IV cyclosporine, retrospective study
- 67% failed ≥2 advanced therapies
- All on IV steroids and IV cyclosporine 2-4 mg/kg per day, goal concentration 300-400 ng/mL
- Median time to clinical response was 2.5 days

Responder (n=4)	Non-Responder (n=5)
Baseline BWT	
5.2mm	5.2mm
BWT Reduction (day 3)	
↓31.8%	↓7.2%
Modified Limberg Reduction (day 3)	
↓1-Grade	→No Change
Outcome	
All Discharged	4 Colectomy 1 Switched Rx

Pediatric ASUC

- N=60 bio-naïve children, prospective, multicenter study
- IUS within 48 hours, and Day 5-7 of IV corticosteroids

Results:

- Baseline BWT of 6 mm (vs 4.2) in steroid nonresponders
- At the second IUS, BWT >4.8 mm and MUC >8.7 in LLQ associated with medical therapy failure to infliximab

Miyatani Y, et al. *Crohns and Colitis 360*. In press.
Scarallo L, et al. *Gastroenterology*. Published online March 16, 2026.

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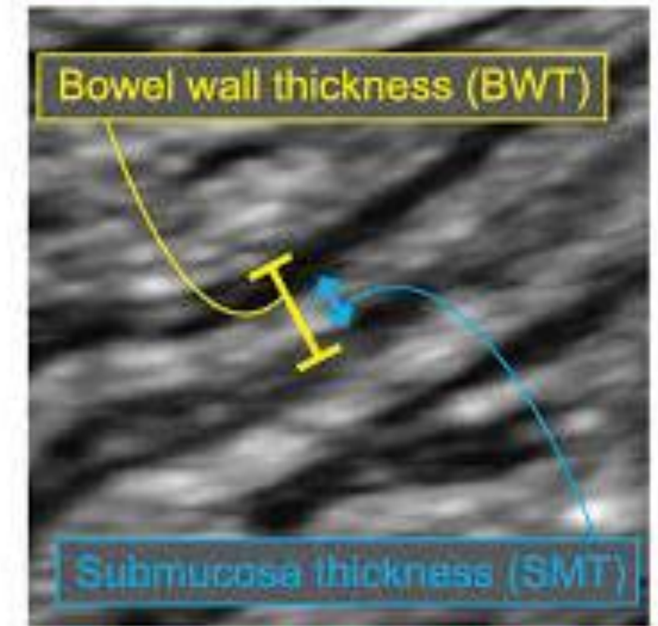
Diving Deeper – The Submucosa

$$\text{Submucosa Index (SMI)} = 100 \times \frac{\text{Submucosa thickness}}{\text{Bowel wall thickness}}$$

- 32 test pairs of IUS and colonoscopy examinations in a total of 74 colonic segments were analyzed
- BWT < 3.75 mm + SMI of < 49.7% was predictive of endoscopic remission (sensitivity 70.0%; specificity 97.7%; PPV 95.5%; NPV 82.7%[1]
- Kyorin Ultrasound Criterion for UC (KUC-UC) = BWT < 3.8 mm and SMI < 50%[2]
    - PPV = 94.6%, NPV = 80.0% for MES ≤ 1

****higher PPV to both MUC and BWT alone in predicting endoscopic remission (MES ≤1)**



Miyoshi J, et al. *J Gastroenterol.* 2022;57(2):82-89.
Komatsu H, et al. *J Gastroenterol.* 2024;59(3):209-215.

Diving Deeper – The Submucosa

Role of Submucosal Hyper-echogenicity in Treatment Response

Submucosal Hyper-echogenicity On Intestinal Ultrasound Is Associated With Fat Deposition And Predicts Treatment Non-response In Patients With Ulcerative Colitis

METHODS

Cohort I
UC colectomy patients

Cohort II
UC prospective cohort starting on anti-inflammatory treatments. Endoscopic response was defined as a ≥1 point decrease in endoscopic Mayo score after 8-26 weeks

COHORT I – HISTOPATHOLOGICAL CHARACTERIZATION AND QUANTIFICATION

0 – No submucosal fat
1 – >1 fat cell present per HPF
2 – Up to 50% of the submucosa is replaced by fat cells
3 – >50% of the submucosa is replaced by fat cells

ρ=0.79, p<0.001*

Relative Submucosal Echogenicity (RSE)

Grayscale values 0-255

COHORT II - VALIDATION
Baseline sigmoid RSE

p=0.003*

R NR

RSE >108 grayscale values
OR 0.07 (95% CI 0.01-0.44), p=0.004 for endoscopic response

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0-255
Grayscale values

Relative Submucosal Echogenicity*

Colonic submucosal hyper-echogenicity on IUS indicates fat deposition (p = 0.79 (0.51–0.92), *p* < .001) and predicts non-response in UC[1]

Submucosal hyper-echogenicity in the appendix predicts non-response and appendectomy[2]

1. Pruijt MJ, et al. *J Crohns Colitis.* 2025;19(10):jjaf158.
2. Prujit M, et al. ECCO 2026.

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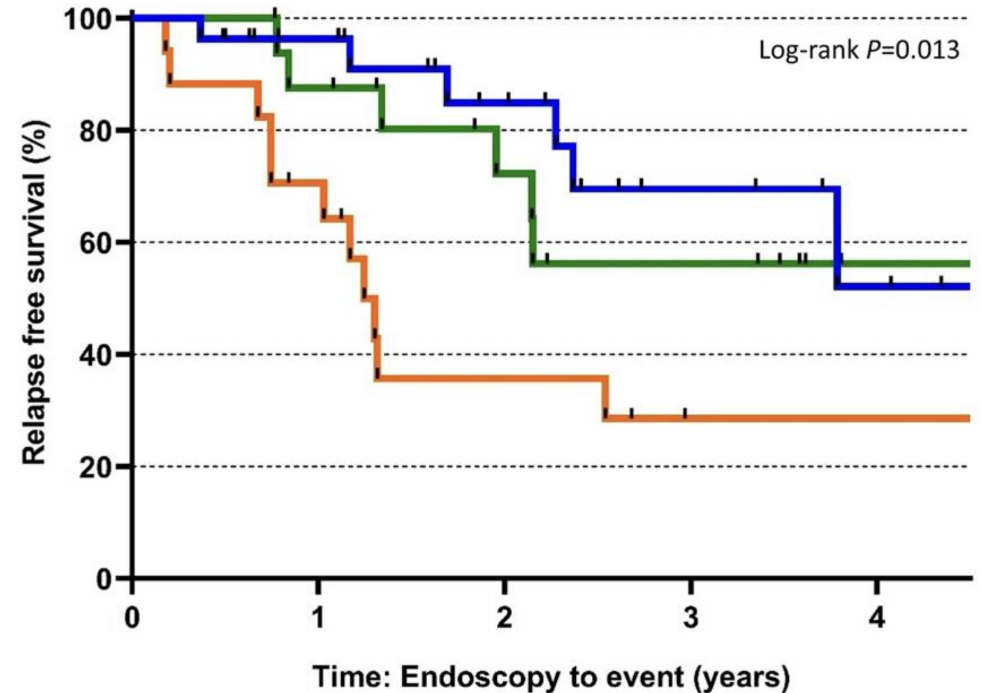
The Role of Transmural Healing in Ulcerative Colitis

- N=61, retrospective study of UC patients MES < 2
- 20 months follow-up
- Relapse defined as: SCCAI ≥5 or physician's global assessment of relapse, FCP≥250 µg/g and/or MES of ≥2 on any bowel segment
- First-year relapse risk:
  - TH: 7.5% vs no TH: 29.4%, P = .004
  - MES 0: 3.7% vs MES 1: 20.8%, P = .059
- **In multivariate Cox regression, non-TH (HR: 3.99) was associated with relapse, while MES < 2 was not (HR, 1.06)**



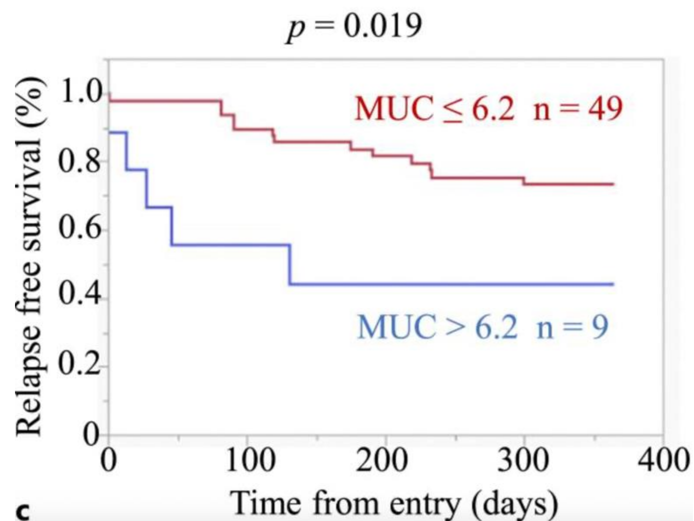
	0	1	2	3	4
MES 0 with TH	27	22	14	7	4
MES 1 with TH	17	15	10	7	2
MES 1 without TH	17	12	6	3	3

Chong-Teik L, et al. *J Crohns Colitis*. 2025;19(9), jjaf149.

IUS is Predictive of Disease Relapse in Asymptomatic Patients with IBD

Milan Ultrasound Criteria Predict Relapse of Ulcerative Colitis in Remission

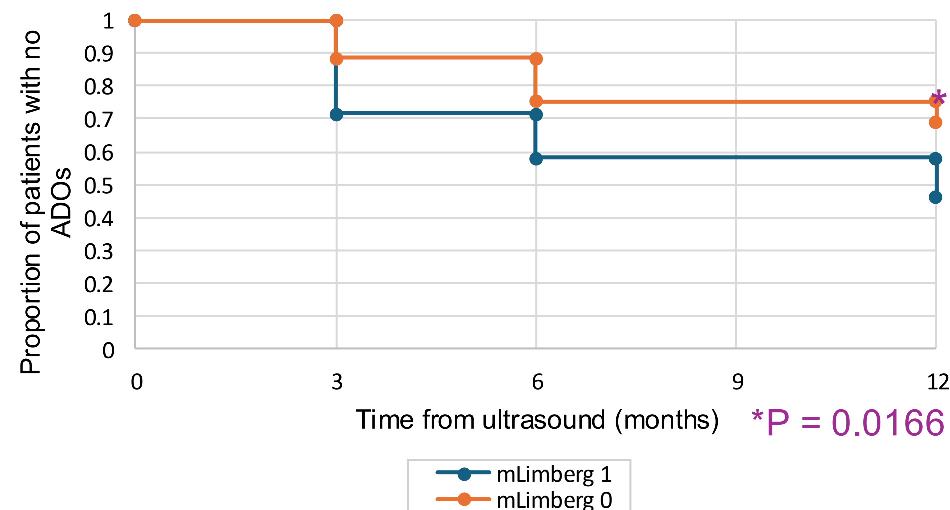
- PRO-2 ≤1 and no rectal bleeding
- 31% of the patients relapsed within 1 year
- MUC >6.2 predicted relapse (hazard ratio 3.22)



Milan Ultrasound Criteria (MUC) =
1.4 × Bowel Wall Thickness (mm) + 2 × Bowel Wall Flow

Mild Hyperemia is Associated with Adverse Disease Outcomes (ADO)

- Normal BWT (≤ 3.0 mm) + mild hyperemia (mLim 1) or no hyperemia (mLim 0)
- 53.7% (mLim 1) vs 31.1% (mLim 0) had an ADO within 12 months (p=0.0166)



Maeda M. *Inflamm Intest Dis.* 2023;8(3):95-104.
Krugliak Cleveland N, et al. DDW 2025.

Intestinal Ultrasound Activity Persists Despite Endoscopic Remission in UC Patients

- N=70 UC patients MES <2
- **~30% of patients had IUS activity**
- Factors seen more frequently in patients with IUS activity:
    - Longer disease duration
    - Biologic therapy
    - Longer biologic therapy duration

	Mayo endoscopic score 0 (n=23)	Mayo endoscopic score 1 (n=12)	Mayo endoscopic score 0 and 1 (n=35)
IBUS-SAS ≥ 15.9, n (%)	6 (26)	5 (41.6)	11 (31.4)
MUC ≥ 6.2, n (%)	1 (4.3)	0	1 (2.9)
UC-IUS ≥ 3.3, n (%)	4 (17.3)	2 (16.6)	6 (17.1)
BWT ≥ 3, n (%)	5 (21.7)	3 (25)	8 (22.8)

Eskazan T, et al. ECCO 2026.

Q&A