IUS in UC – State of Evidence in 2025

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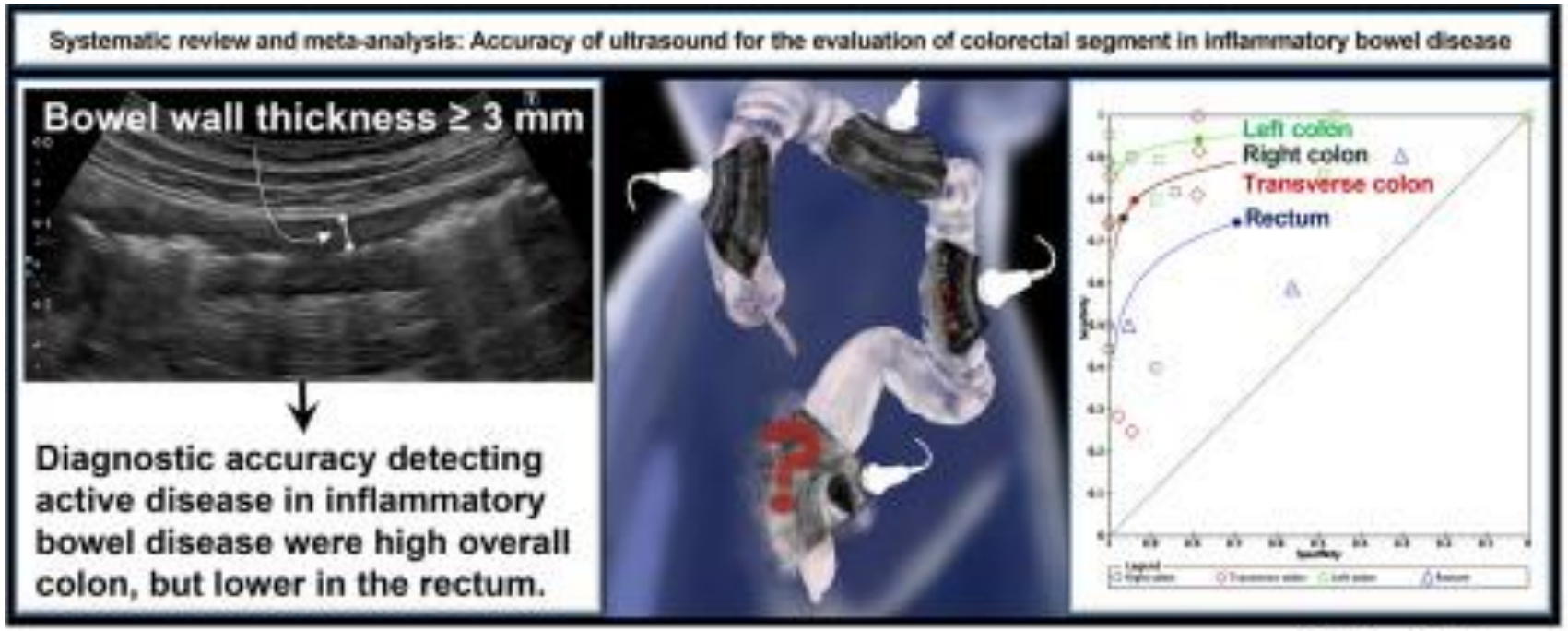
IUS is Accurate to Detect Endoscopic Activity in UC

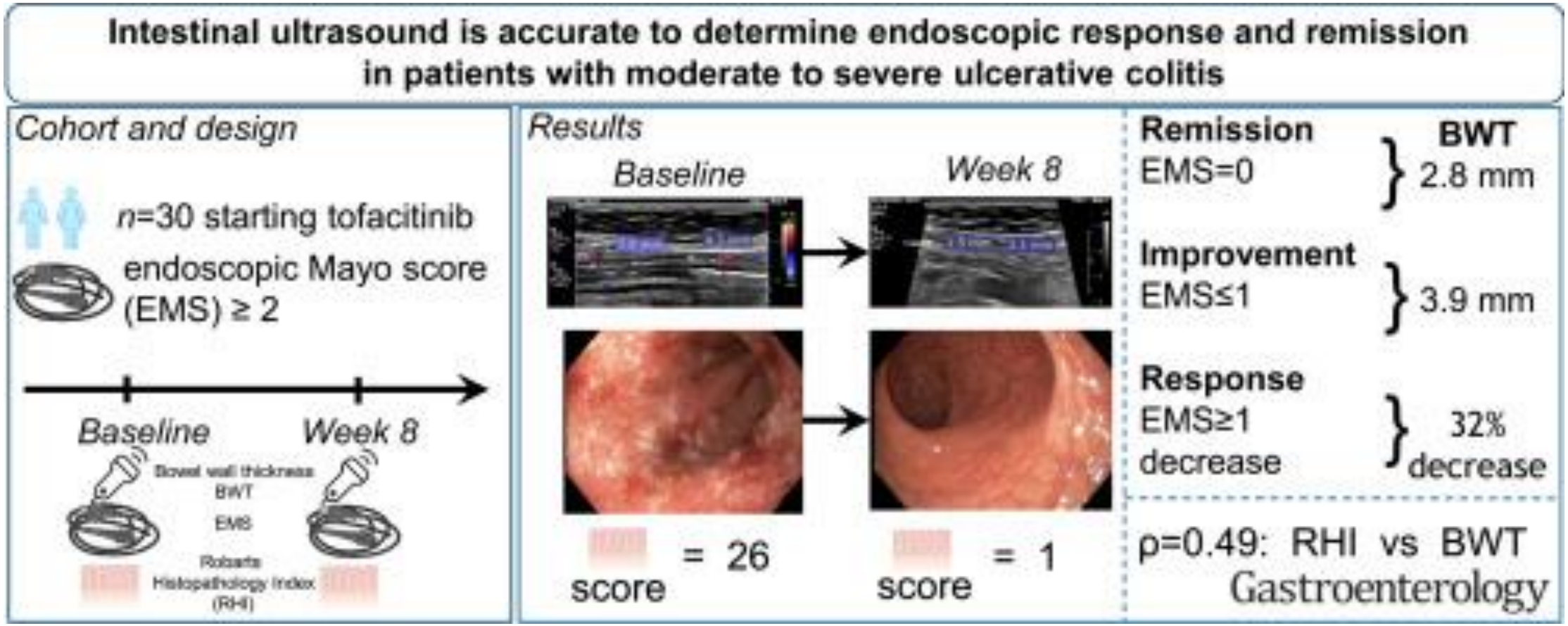
Meta-analysis
detection of inflammation per segment against colonoscopy (504 patients, 420 with UC)

- **BWT ≥ 3 mm** identified colorectal segments with inflammation with
- **86.4% pooled sensitivity**
  88.3% pooled specificity
- In the rectum, BWT ≥ 3 mm identified inflammation with 74.5% sensitivity and 69.5% specificity only

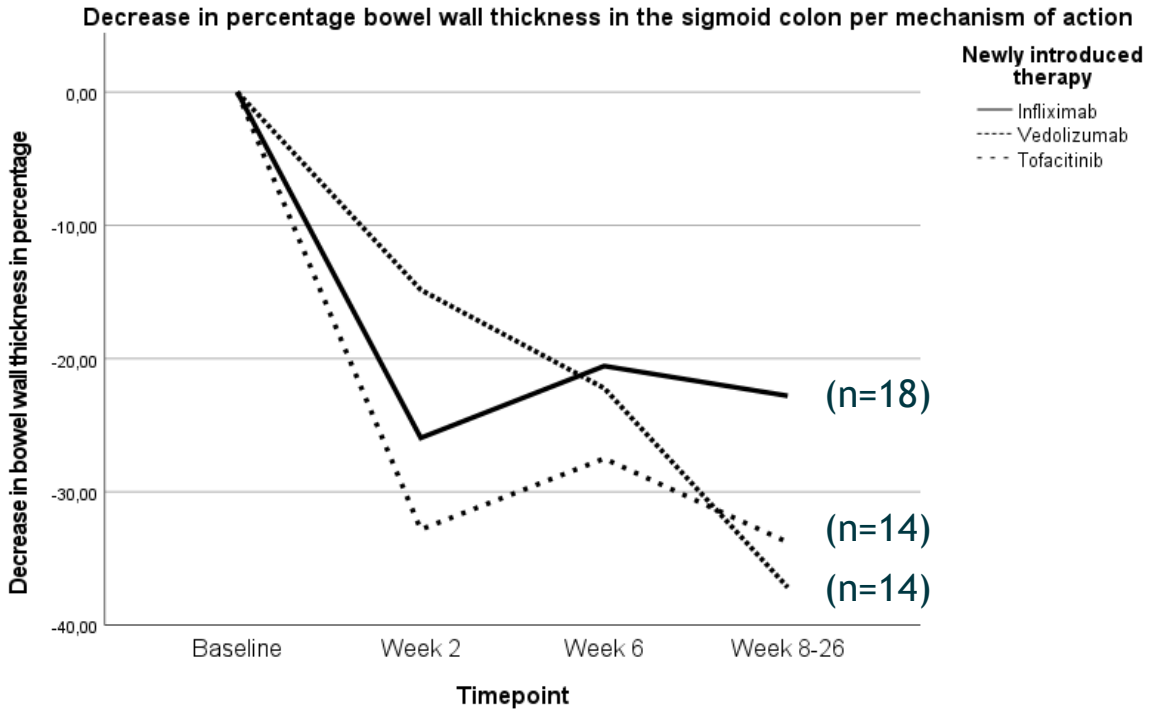


Sagami S *et al. Clin Gastroenterol Hepatol* 2021

IUS can Define Endoscopic Response and Remission in UC



Early Prediction of Endoscopic Response: DIRECT-UC study

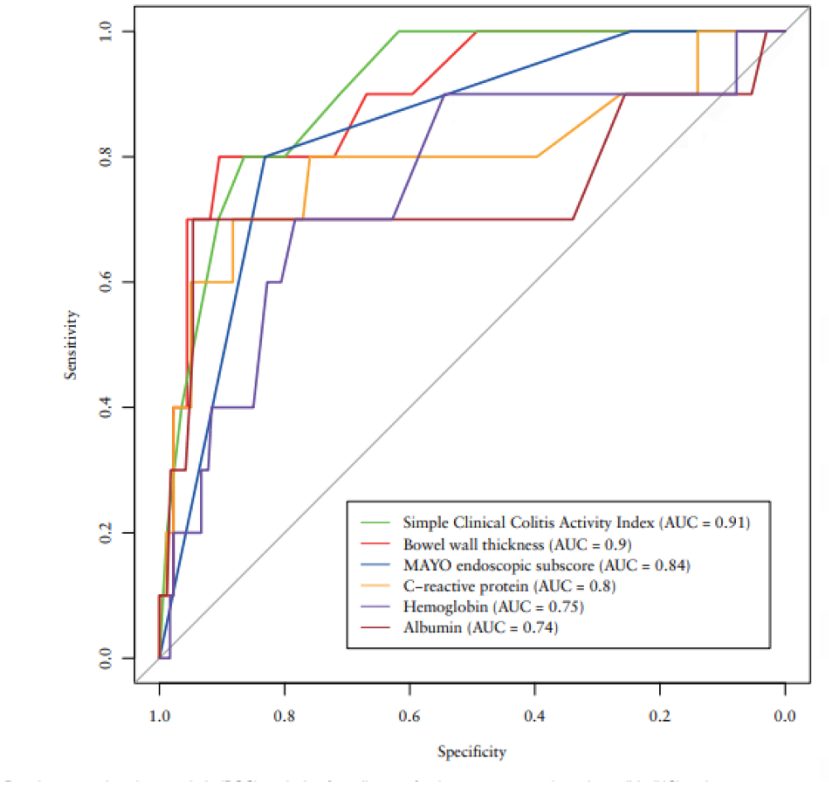


- At W6, **BWT≤3.0 mm** predicted endoscopic remission
- **Submucosal thickness** at W6 predicted endoscopic remission (OR: 0.09, 95%CI: 0.01-0.65, p=0.018) and improvement (OR: 0.14, 95%CI: 0.03-0.75, p=0.02) and was most sensitive to change
- IUS response was drug specific

De Voogd F *et al. Inflamm Bowel Dis 2023*

Predictive Value of IUS in Early UC

Prospective population-based cohort of newly diagnosed E2/E3 UC patients to asses the prognostic role of IUS during the first year: 193 patients were followed up with symptoms, biochemical parameters, IUS (baseline, 3M and 12M) and endoscopy.



IUS was a predictor of colectomy within the first 3M with **BWT >6 mm** as the optimal cut-off (OR 38, 95% CI 8-270, P < .0001)

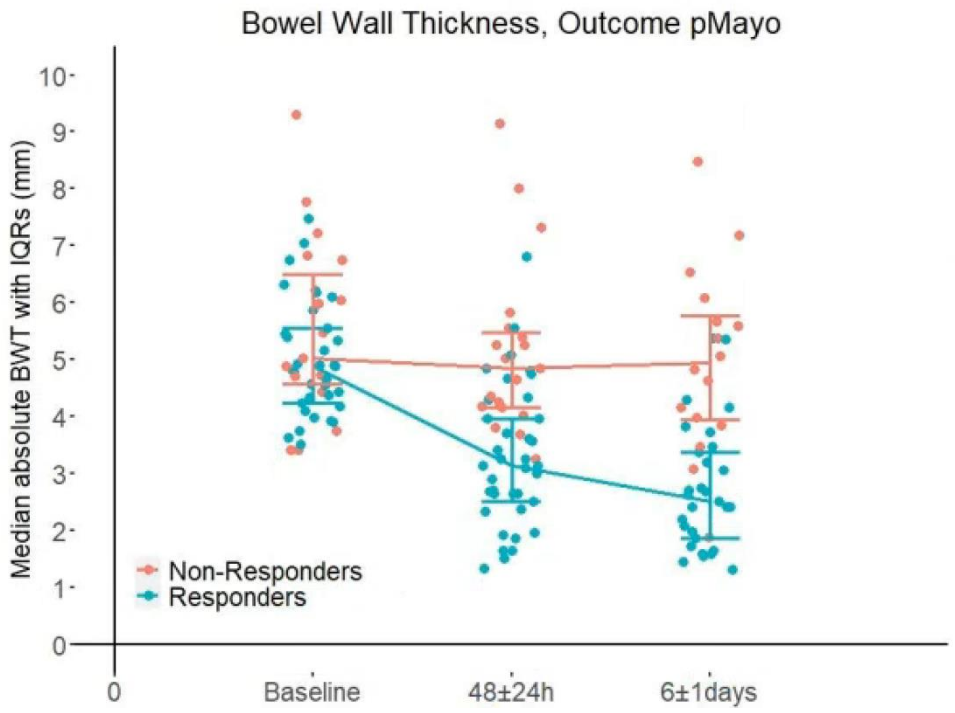
At **3M, 59% of patients achieved TMR:**
TMR was associated with:

- higher rates of steroid-free clinical remission in all subsequent follow-ups
- reduced need for steroids during follow-up (6% vs. 19%, P=0.036).

Madsen GR *et al. J Crohn Colitis 2025*

Early IUS Predicts Steroid Response in ASUC

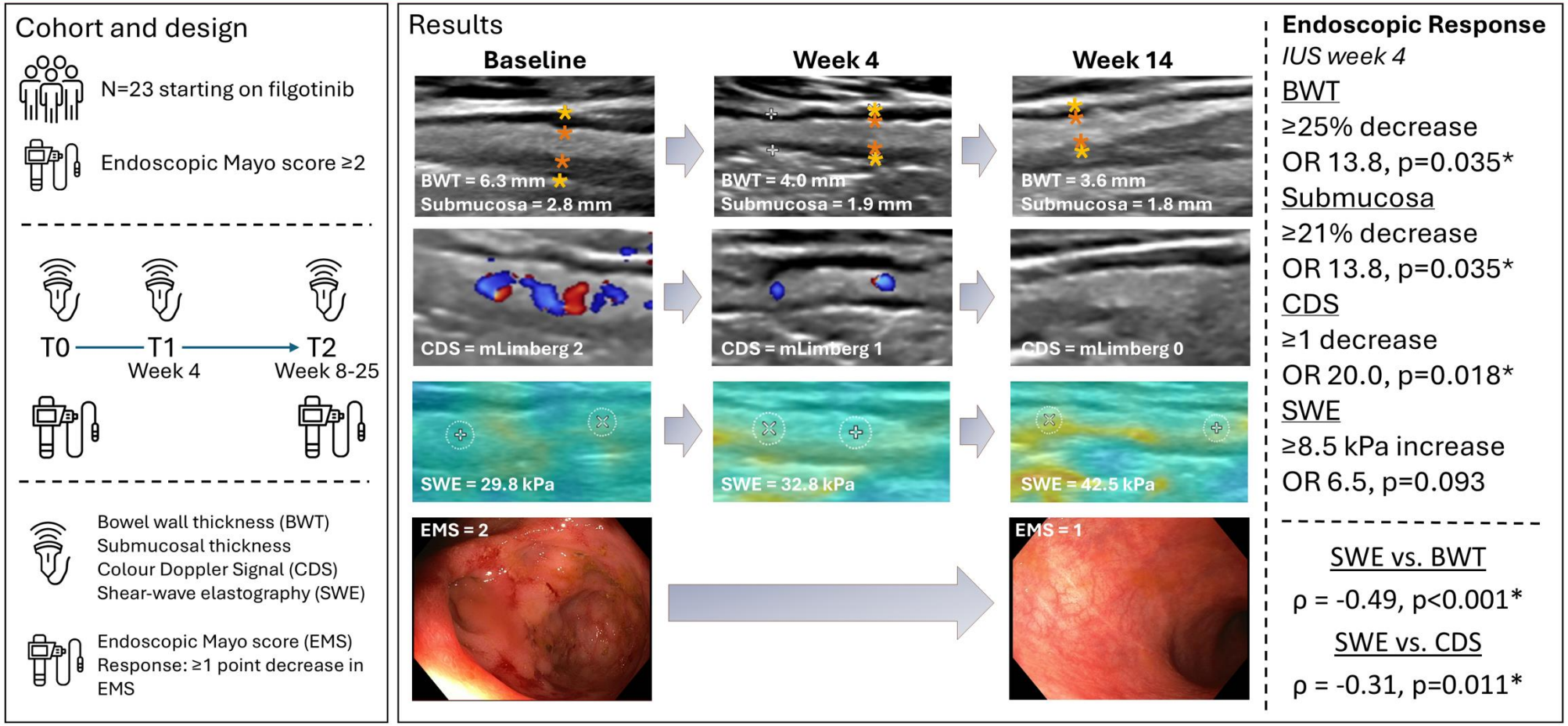
Prospective, multicentric cohort of 56 ASUC patients starting on iv CS, IUS at baseline, 48h (+/-24h) and 6 days



- **No difference at baseline bw respoonders and non-responders**
- **Significant difference bw responders and non-responders at day 2 (**median BWT 3.1mm vs 4.9mm; p<0.0001)
- **≤20% reduction** had a sensitivity of 84.2% (95%CI 60.4, 96.6%) and a specificity of 78.4% (61.8, 90.2%) for determining non-response (AUC 0.85)

Ilvemark F *et al. J Crohn Colitis 2022*

Early IUS and SWE: Early Surrogate Marker for Treatment Response in UC: the STEER study



Pruijt M *et al. accepted in JCC.*

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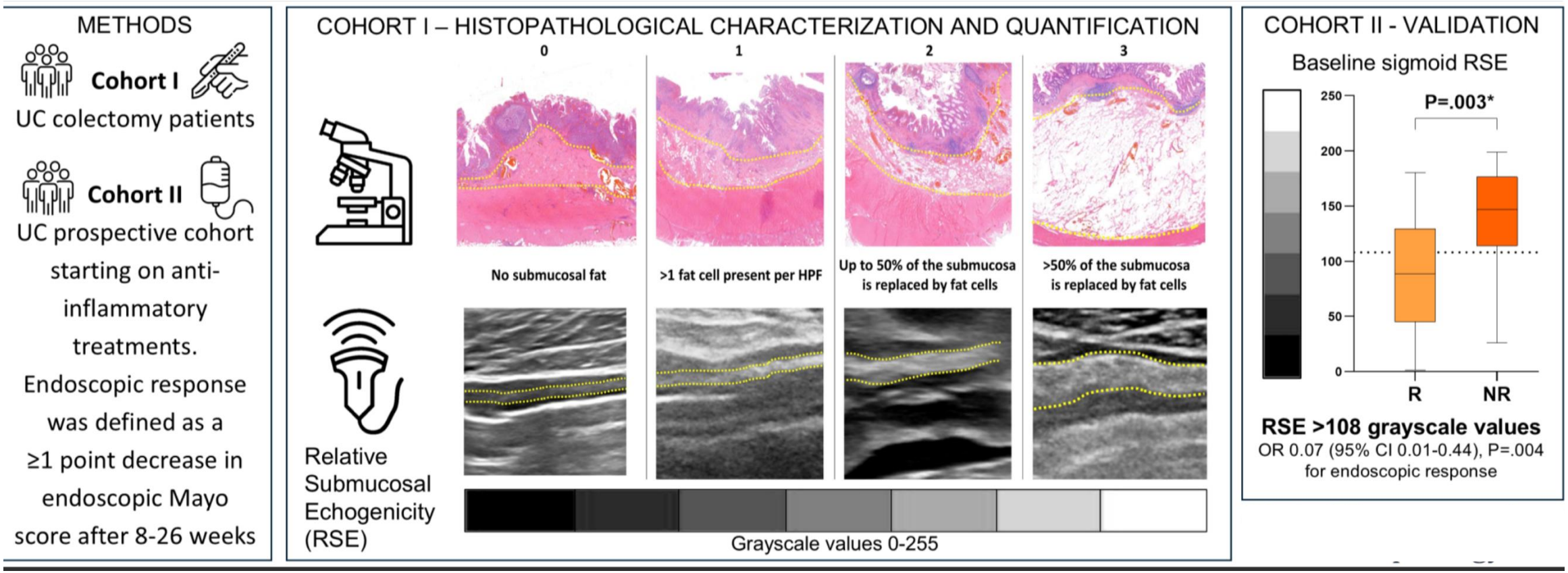
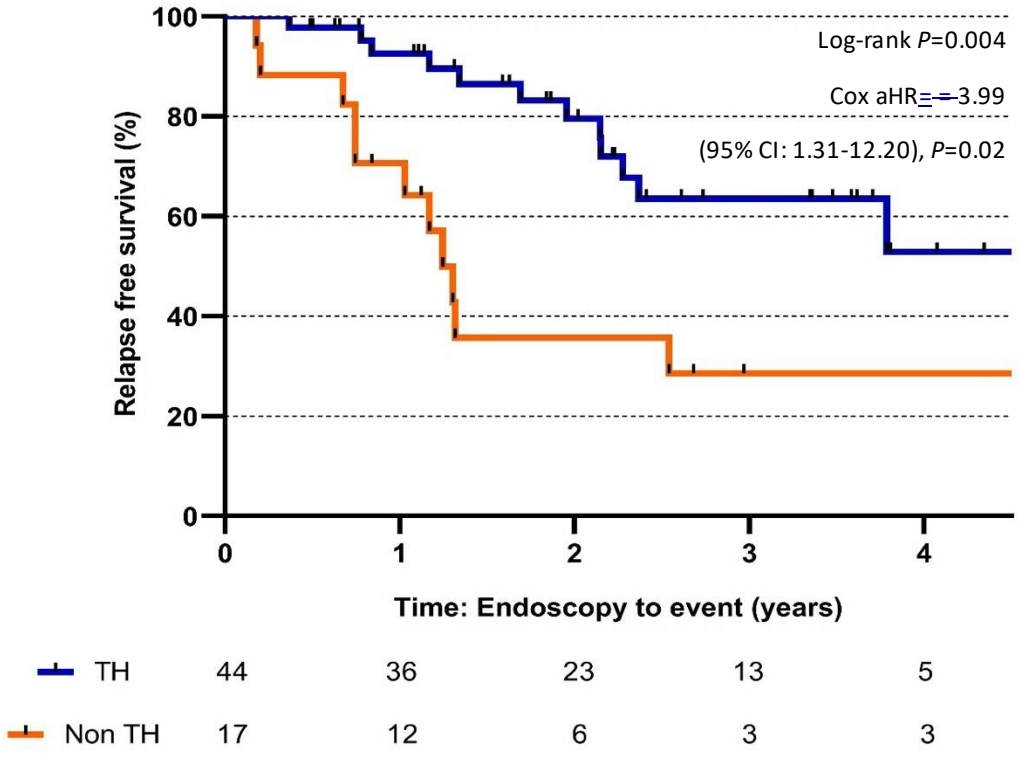
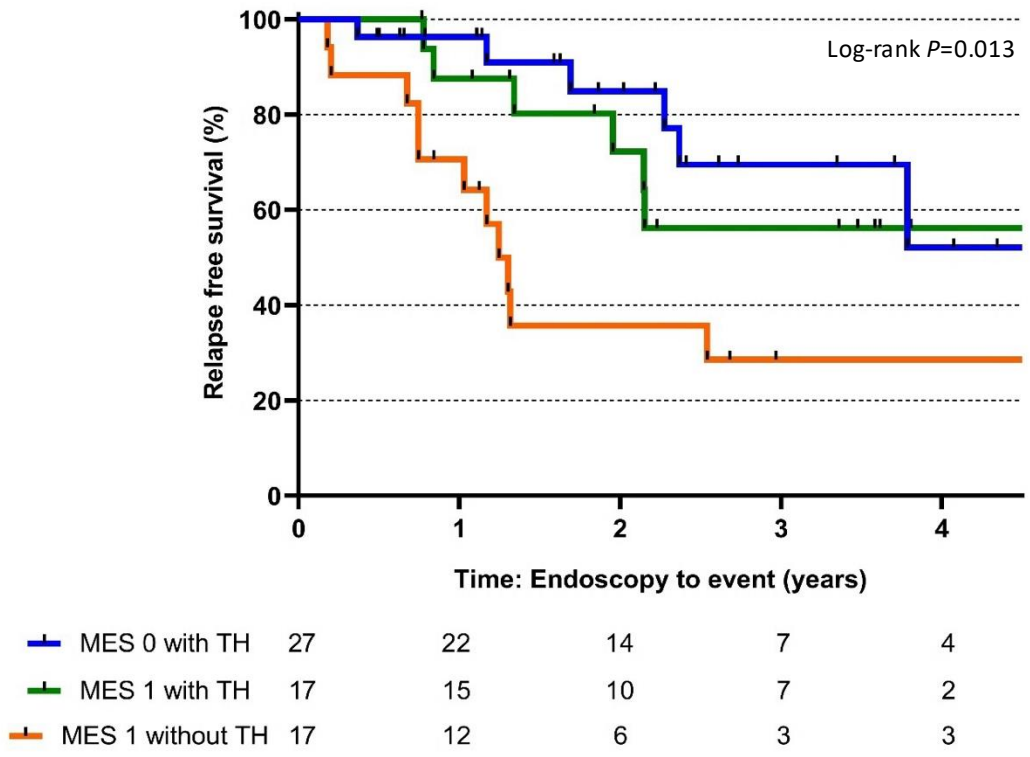
Submucosal Echogenicity is a Predictor of Non-response in UC



Pruijt *et al. J Crohns Colitis 2025*

Transmural Healing Improves Long-term Outcomes Compared to Mucosal Healing Alone: the CENTRAL Study





Chong-Teik L *et al. J Crohns Colitis 2025*

Is the Appendix the Key in UC: The PASSION Study

Original Article

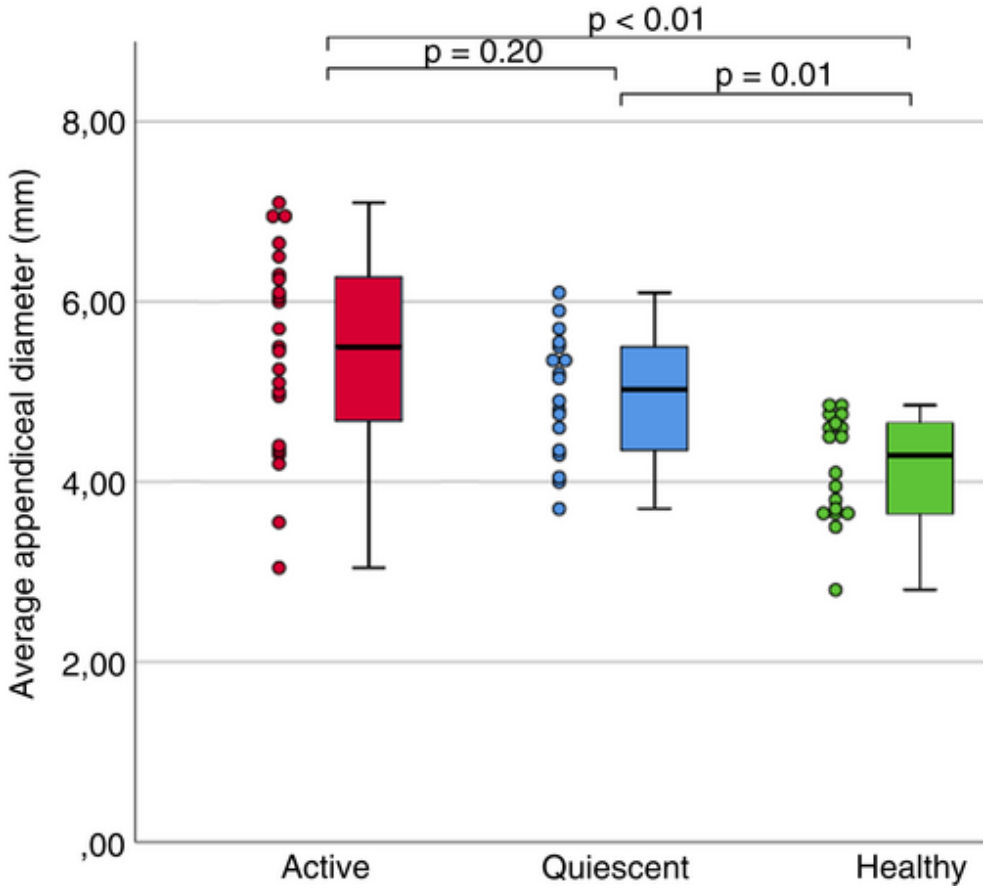
Appendectomy for Therapy-Refractory Ulcerative Colitis Results in Pathological Improvement of Colonic Inflammation: Short-Term Results of the PASSION Study

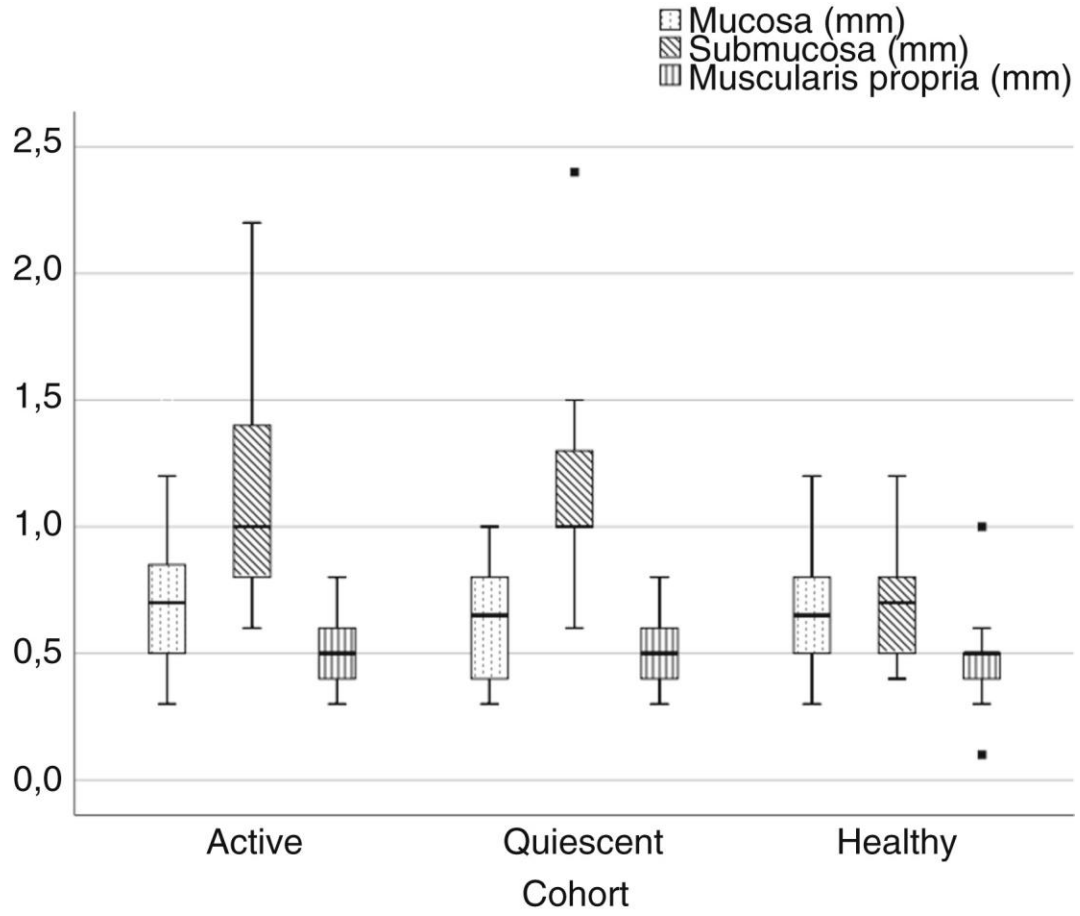
S. Sahami[a,b,*], M. E. Wildenberg[b,c], L. Koens[d], G. Doherty[e], S. Martin[e], G. R. A. M. D'Haens[b], G. Cullen[e], W. A. Bemelman[a], D. Winter[f], C. J. Buskens[a]

Conclusions: Appendectomy was effective in one-third of therapy-refractory UC patients, with a substantial proportion of patients demonstrating complete endoscopic remission after 1 year. Pathological response was seen in almost 50% of patients and was related to active inflammation in the appendix, limited disease, and shorter disease duration. These early results suggest that there is a UC patient group that may benefit from appendectomy.

Sahami S. et al. *J Crohns Colitis 2019*

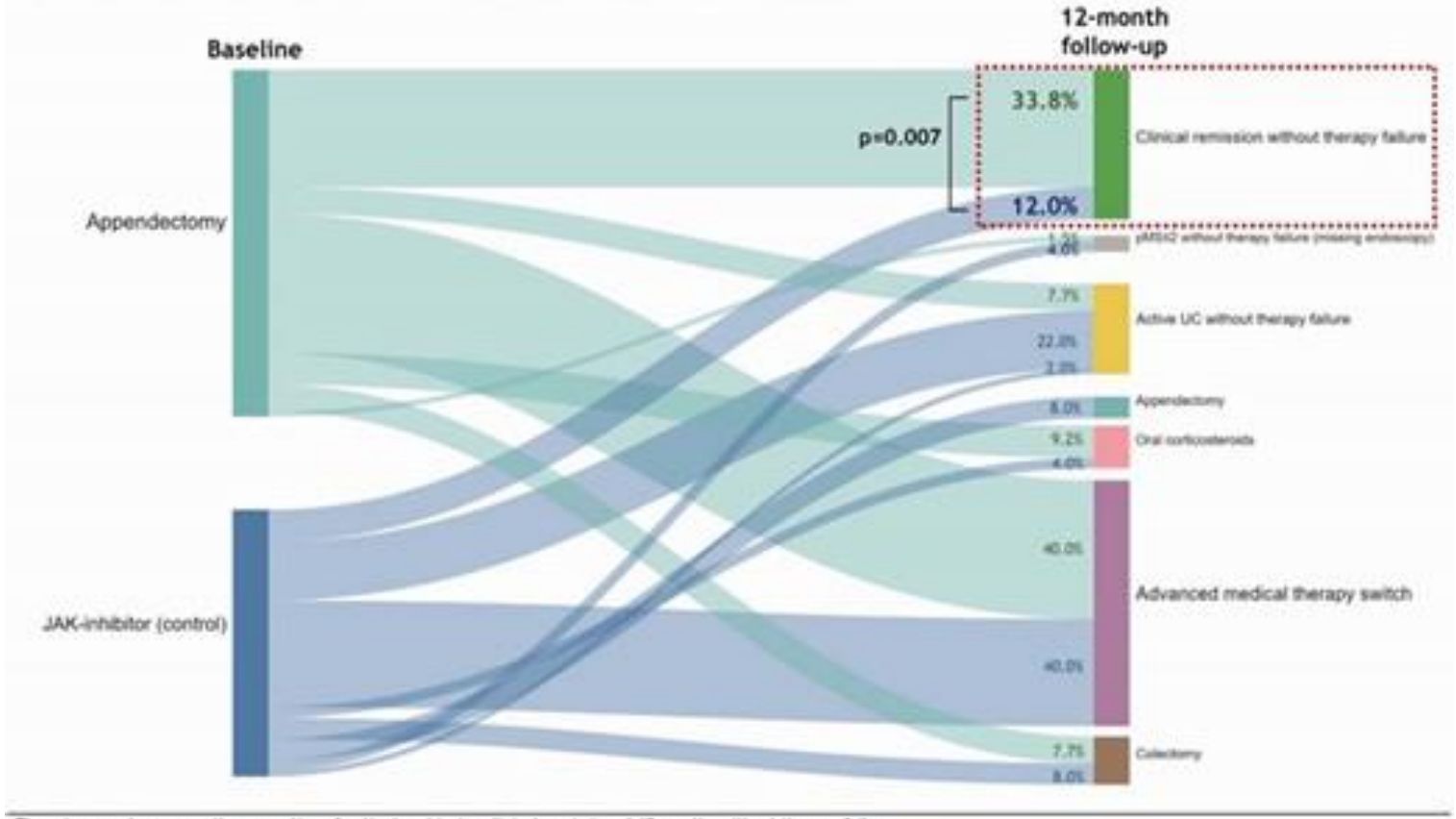
IUS Detects Appendiceal Inflammation in UC





Appendectomy in Therapy-refractory UC: the COSTA Study

Figure 1. Primary outcome at 12 months and therapy failure types within 12-month follow-up



The primary outcome was the proportion of patients achieving clinical remission at 12 months without therapy failure.
Clinical remission was defined as total Mayo score ≤2 with no subscore >1.
Therapy failure was defined as (re)start of oral corticosteroids, switch of biologic/small molecule therapy, start trial medication or proctocolectomy within 12 months after baseline.
Total Mayo score is a 12-point score of four categories (stool frequency, rectal bleeding, physician global assessment and endoscopic appearance).
The partial Mayo Score (pMS) is a non-invasive 9-point score which comprises three components of the total Mayo Score (stool frequency, rectal bleeding and Physician's global assessment).
Abbreviations: pMS: partial Mayo score.

Visser E et al. DOP053 ECCO 2025, accepted in Lancet Gastroenetrol Hepatol 2025

IUS Guides Patient Selection for Appendectomy

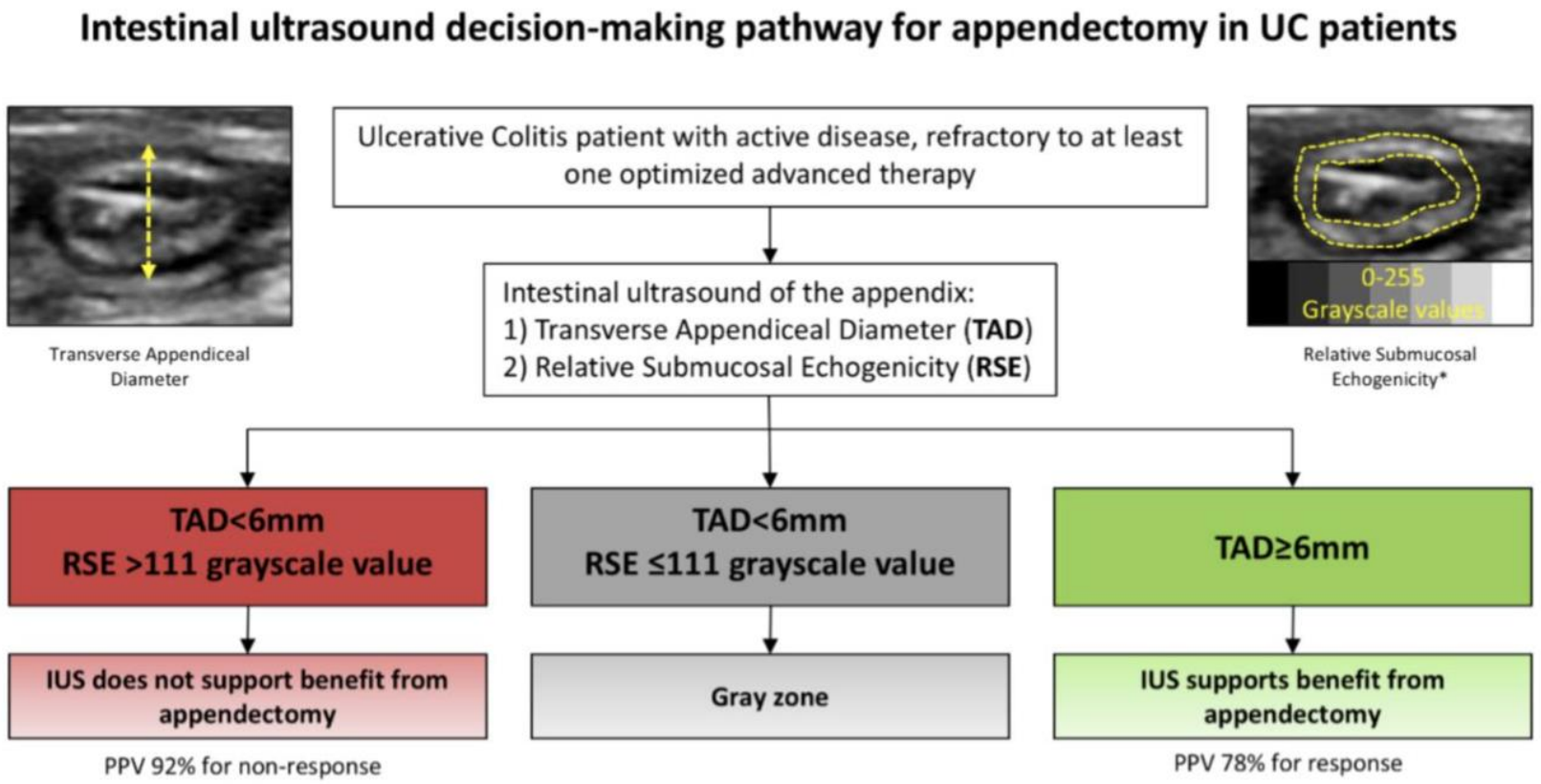


Figure – Intestinal ultrasound decision-making pathway for appendectomy in therapy-refractory UC patients
*RSE is the difference in areal grayscale values (0-255) between the submucosa and muscularis propria.

Pruijt M. *et al. submitted.*

Transperineal US is Accurate to Detect Proctitis

Single-center cross-sectional cohort: 53 consecutive patients with UC going through colonoscopy, TPUS and biopsy sampling

BWT ≤4 mm identified endoscopic (MES≤1) and histological healing (Geboes <2.1, Robarts histopathology index ≤6, and Nancy index ≤1) healing AUC=0.90 and AUC = 0.87-0.89, respectively

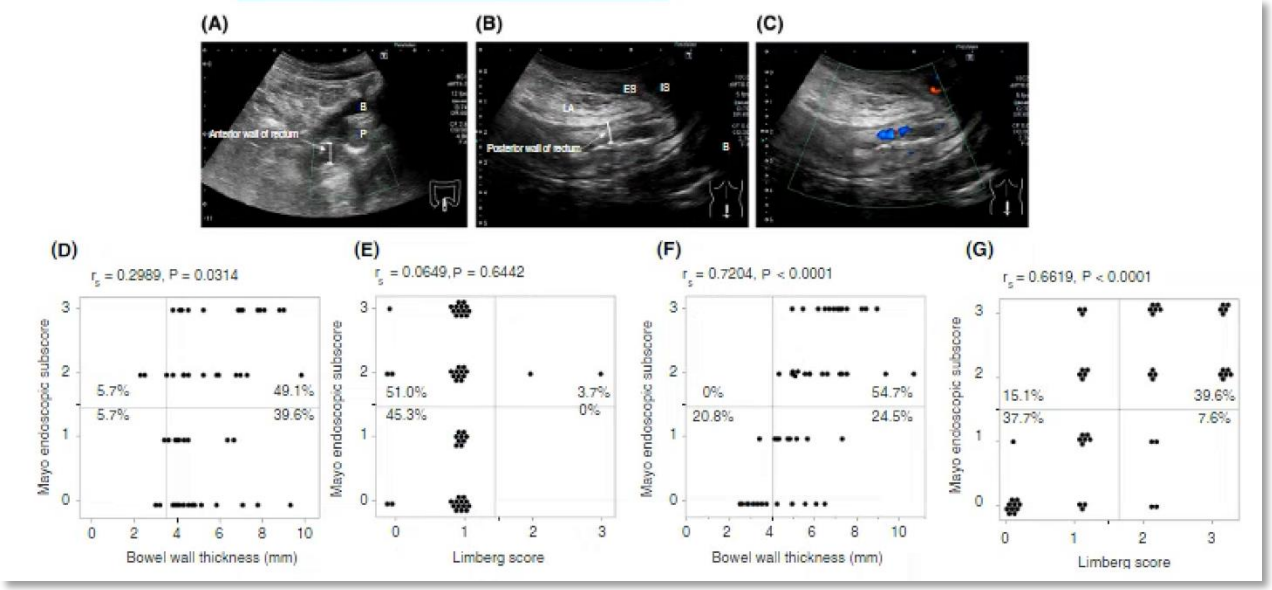


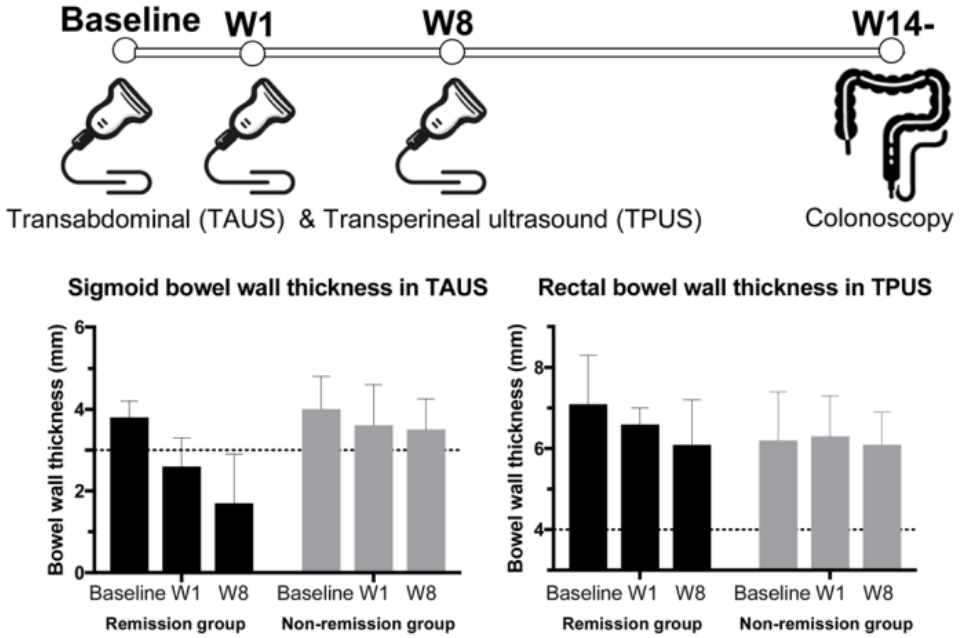
TABLE 3 Logistic regression analysis for predicting rectal endoscopic activity (Mayo endoscopic subscore in rectum >1; n = 53)

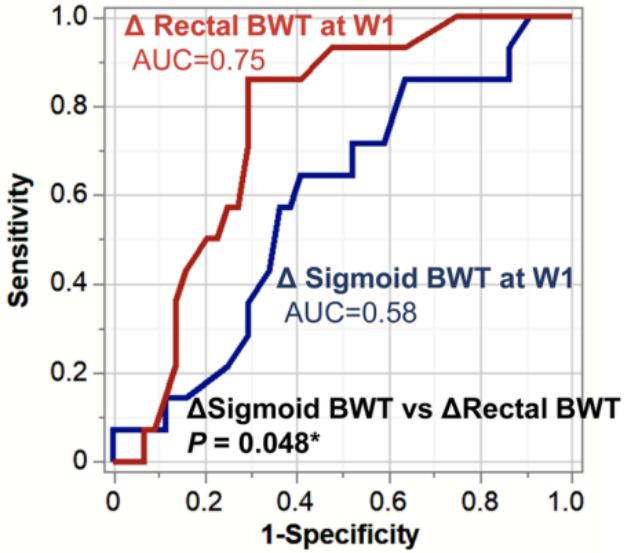
		Univariate			Multivariable		
	Variable	OR	95% CI	P value	Adjusted OR	95% CI	P value
TPUS	Bowel wall thickness (mm)	4.21[a]	2.00-8.84[a]	0.0002*	3.18[a]	1.43-7.06[a]	0.0003*
	Bowel wall flow[c] (LS 0-1 vs 2-3)	13.78	3.59-52.84	0.0001*	4.07	0.79-23.1	0.1044
Faecal calprotectin		1.41[b]	0.94-2.12[b]	0.0993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

Sagami S *et al. Aliment Pharmacol Ther* 2020

Early Reduction of Rectal Wall Thickness by Transperineal US Predicts Mucosal Healing

Post-hoc analysis of a prospective single-center study: 69 patients with UC starting on advanced treatments



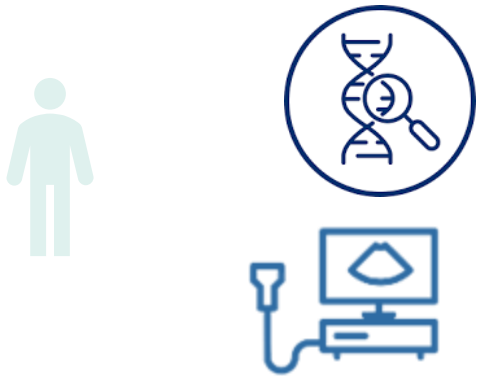


Reduction in rectal bowel wall thickness (BWT) by week 1 in response to advanced therapy predicts clinical-endoscopic remission and histo-endoscopic mucosal improvement.

Sagami S *et al. J Crohns Colitis* 2025

How is IUS going to Change Patient Pathways?

Pre-diagnosis: risk stratification for expedited investigations



- Less diagnostic delay

Diagnosis: as additional modality

- Using it as baseline evaluation

Follow-up: monitoring

- Early objective response to treatment
- Suspicion of flare – early access to diagnostics
- Treatment de-escalation
- Special populations (pregnancy, ASUC)
- Personalize treatment