

Comparing diagnostic accuracy of transperineal ultrasound using microconvex probe versus conventional linear probe to predict rectal histoendoscopic activity in ulcerative colitis: a paired prospective, head-to-head comparative study

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INTRODUCTION

Prior studies using have reported variable diagnostic accuracy of transperineal ultrasound (TPUS) in ulcerative colitis (UC) using linear and/or microconvex probes.

AIM

This study directly compared these probes for predicting rectal histoendoscopic activity

METHOD

- Adults with UC prospectively underwent transabdominal ultrasound (TAS) with TPUS using linear followed by microconvex probes by blinded operators.
- Rectal total wall thickness (TWT), vascularity (Modified Limberg score [MLS]), and Milan ultrasound criteria (MUC) were recorded.
- Receiver operating characteristic analysis determined area under the curve (AUC) for endoscopic (Ulcerative Colitis Endoscopic Index of Severity >1) and histologic (Nancy Index >1) activity, with paired AUC comparisons.

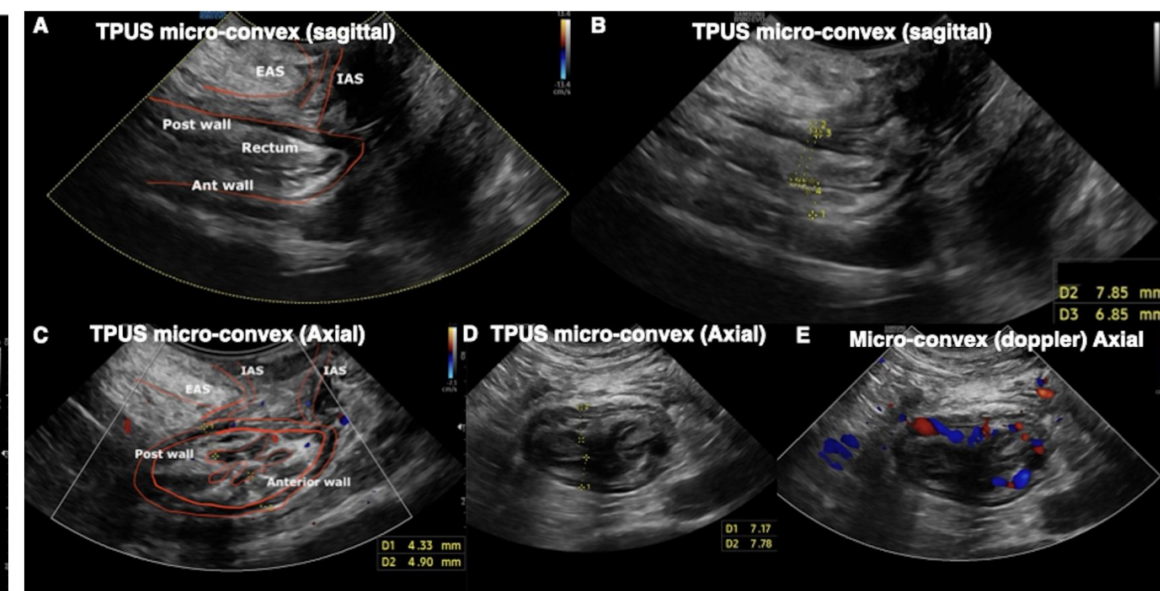
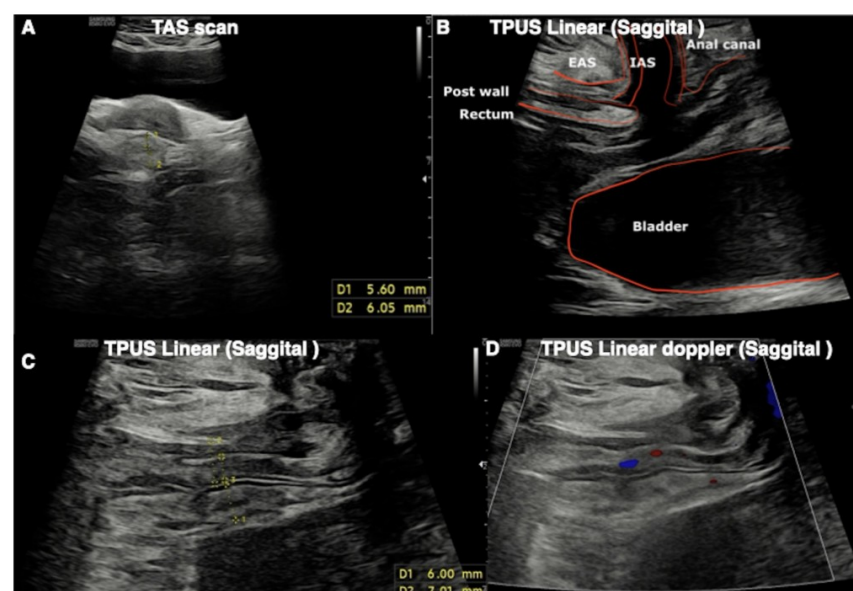
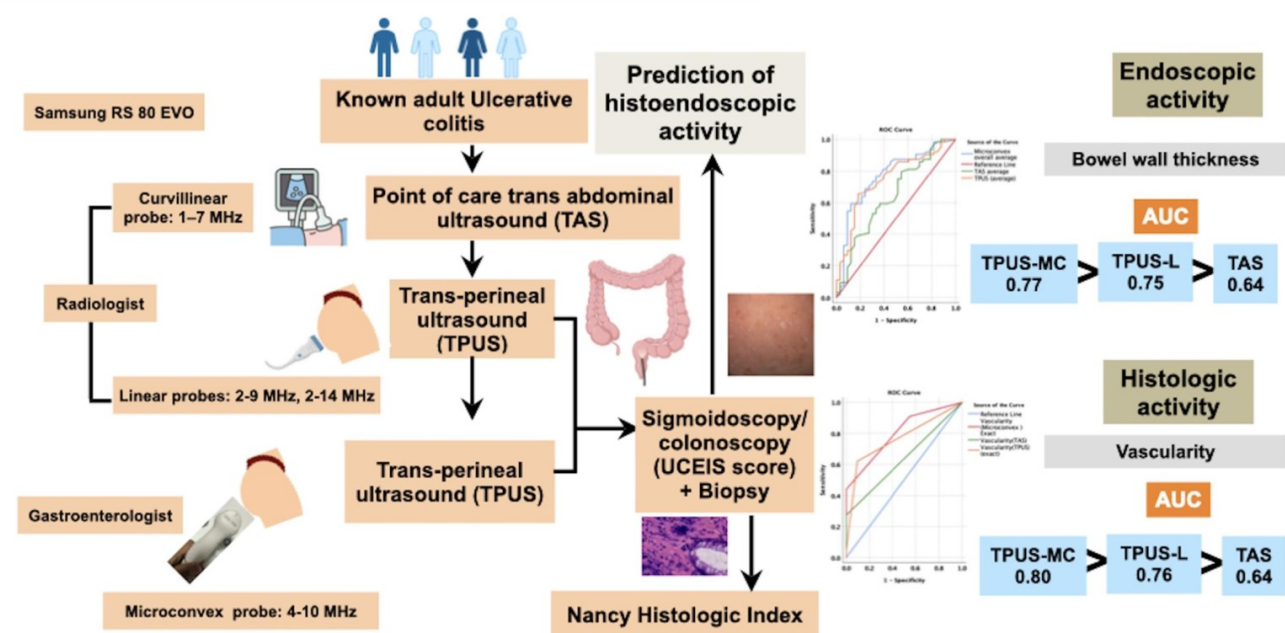
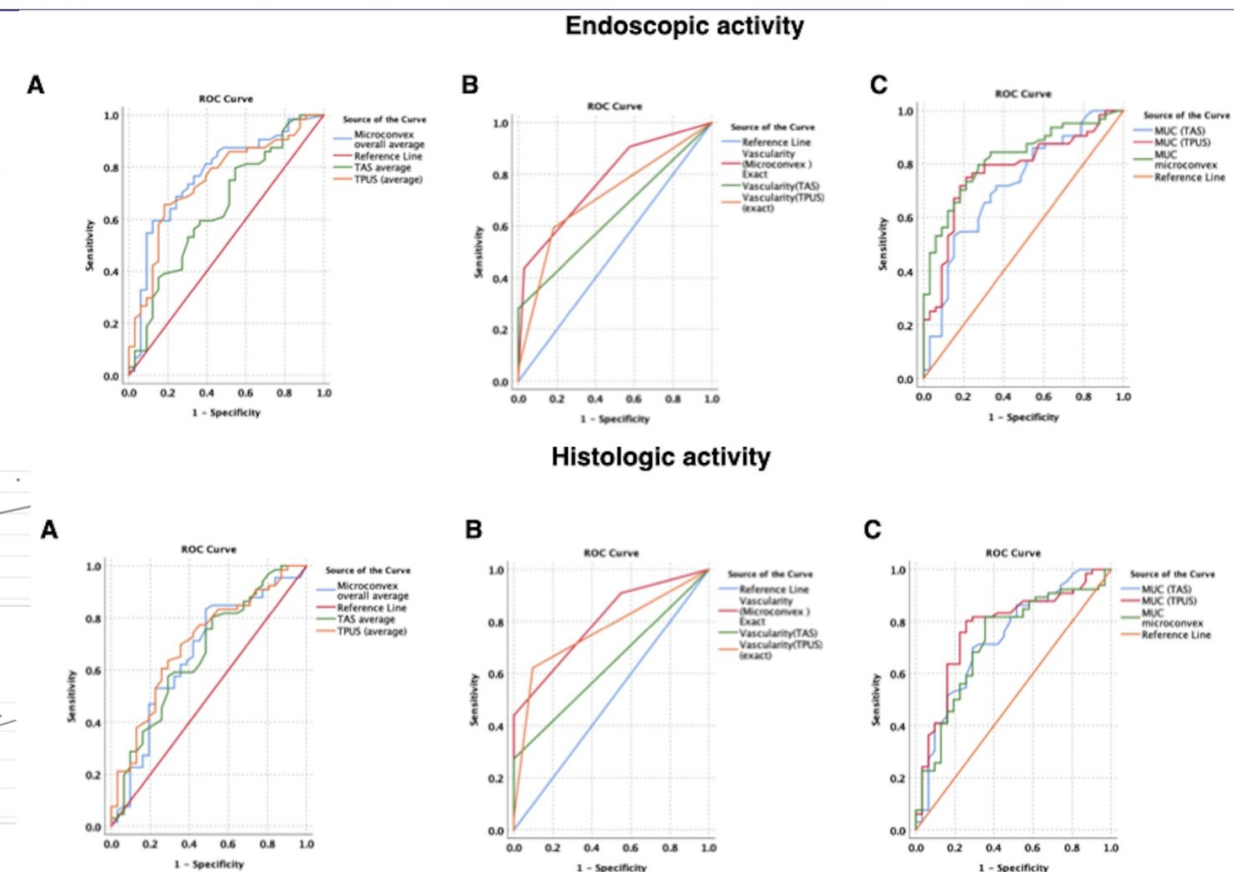
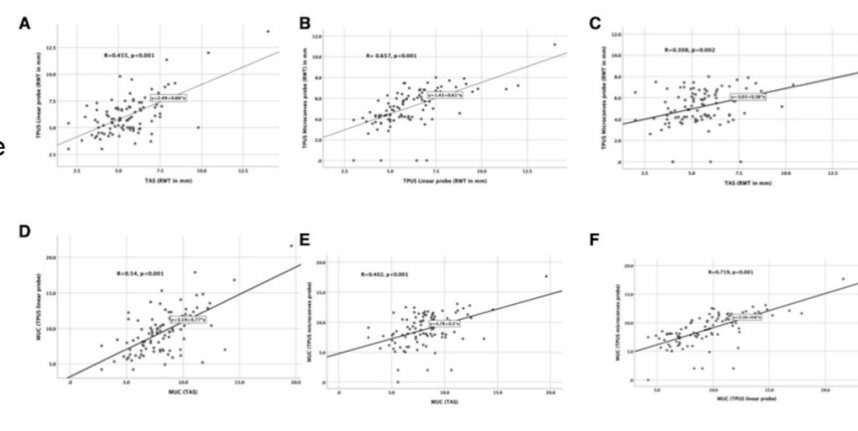
RESULTS

Ninety-seven patients (32% female; age 18–70 years) were included.

For endoscopic activity, TPUS outperformed TAS. Microconvex TPUS showed numerically higher AUCs for selected parameters (TWT: 0.77; vascularity: 0.78; MUC: 0.81) compared with linear TPUS (TWT: 0.75; vascularity: 0.71; MUC: 0.77), although head-to-head differences were not consistently statistically significant.

For histologic activity, microconvex and linear TPUS demonstrated comparable performance (AUC range 0.66–0.80). Axial-plane posterior wall thickness assessment with the microconvex probe showed favorable trends over longitudinal measurements (endoscopic: Δ AUC -0.071, $P = .074$; histologic: Δ AUC 0.081, $P = .08$).

Vascularity-based metrics were consistently superior on TPUS compared with TAS, irrespective of probe type.



CONCLUSIONS

Highlight TPUS provides clinically relevant, noninvasive assessment of rectal inflammation in UC.

While microconvex TPUS offers technical advantages—particularly axial-plane assessment of posterior wall thickness with favorable diagnostic trends—no single probe demonstrated uniform superiority.

These findings highlight the complementary roles of linear and microconvex probes and support ongoing standardization of TPUS

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