

# **Title: Influence of Intestinal Ultrasound Versus CT enterography on Surgical Strategy Planning of Crohn's Disease in urgent setting**

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## **BACKGROUND/AIMS**

Intestinal ultrasound(IUS) and CT-enterography(CTE)are accurate diagnostic modalities in Crohn's disease (CD) patients,but their role in surgical planning for complicated cases in urgent settings has not been fully established.This study aims to evaluate the diagnostic accuracy of IUS and CTE and their impact on surgical planning in patients with complicated CD requiring urgent intervention.

## **METHODS**

We conducted a prospective study including CDpatients urgently hospitalized between 2022 and2025 who underwent surgery due to bowel complications. Each patient underwent both IUS/CTE within 3 days,with surgical intervention within 1month.We evaluated CD-related complications using IUS-CTE, based on established criteria.Diagnostic accuracy was assessed by comparing imaging findings with intraoperative observations, considered as the reference standard.Surgeons were asked to define their intended surgical approach based on both IUS-CTE findings.The concordance between IUS- and CTE-guided strategies was assessed using Cohen's kappa( $\kappa$ )coefficient.The differential impact on surgical decision-making was quantified using the Number Needed to Diagnose ratio.Statistical analyses were performed using SPSSsoftware, with p-values<0.05 considered statistically significant.

## **RESULTS**

A total of 51 cases were enrolled(behavior phenotypes B1–B2–B3:3–31–17;location:L1–L2–L3–L4:14–1–36–0; prior surgery:25 cases).All patients underwent bowel resection. Stricturoplasty was performed in 4 cases(8%), and a temporary stoma was required in 4(8%).For the detection of strictures,IUS demonstrated a sensitivity of 78%,specificity of 100%,positive predictive value(PPV) of 100%,negative predictive value(NPV) of 55%,with an overall diagnostic accuracy of 82%. CTE yielded a sensitivity of 100%,specificity of 90%,PPV of 97%,NPV of 100%,an overall accuracy of 98%.About abscess detection, IUS achieved 100%sensitivity and specificity, whereas CTE demonstrated 100% sensitivity, 95%specificity,67% PPV,100% NPV,an overall accuracy of 96%.For the detection of fistulas, IUS had a sensitivity of 78%,specificity of 100%,PPV of 100%, and NPV of 92%. CTE showed a sensitivity of 72%, specificity of 96%,PPV of 92%,NPV of 86%, and a diagnostic accuracy of 88%.In terms of surgical planning,IUS influenced the strategy in 64%of cases,compared with76% for CTE(NNDRatio:19%),with agreement between the imaging modalities( $\kappa$ =0.72;p<0.01).The discrepancies were observed in defining the extent of resection, particularly among patients with extensive-multifocal involvement. Surgeons considered the 19% NNDRatio and 28% disagreement rate between IUS- and CTE-guided surgical strategies as clinically significant for operative decision-making.

## **CONCLUSIONS**

IUS and CTE are accurate imaging modalities for detecting complications in CD.CTE provides a significant advantage over IUS in guiding surgical planning during the preoperative diagnostic work-up of patients urgently admitted with complicated CD.

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