

## Creeping Fat in Crohn's Disease: Intestinal Ultrasound & CT Enterography



Crohn's disease (CD) is a chronic inflammatory bowel disorder characterised by complications that significantly affect a patient's quality of life. A hallmark feature of CD is the formation of creeping fat (CF), which is the wrapping of mesenteric fat around inflamed intestinal sections. This phenomenon has been linked to strictures in CD, contributing to complications such as bowel obstruction. Detecting and characterising CF is essential for monitoring the progression of the disease and assessing treatment effectiveness. Computed tomography enterography (CTE) is an established tool for CF evaluation, but its limitations include exposure to radiation and the need for contrast agents. Intestinal ultrasound (IUS) has emerged as a non-invasive alternative for assessing CF. A recent review published in *Insights into Imaging* discusses a recent study that compares the effectiveness of IUS and CTE in evaluating CF in CD patients, providing insights into their agreement, applicability, and potential complementary use.

### Evaluating the Role of Creeping Fat in Crohn's Disease

Creeping fat plays a crucial role in the pathophysiology of Crohn's disease. The proliferation of mesenteric fat surrounding inflamed bowel segments is associated with increased inflammation, fibrosis, and stricture formation. These changes in the intestinal wall can lead to complications like obstruction and the need for surgical intervention. Understanding and quantifying CF is vital for predicting disease behaviour and guiding treatment decisions. Traditionally, CTE has been used to evaluate CF through imaging techniques that assess the wrapping of mesenteric fat around the intestine. This method has shown a good correlation between CF and histopathological findings, such as connective tissue changes and stricture formation. A standardised grading system, the Mesenteric Creeping Fat Index (MCFI), has been developed based on CTE to measure the extent of CF, providing a semi-quantitative assessment of its impact. However, the need for less invasive, radiation-free methods has led to an interest in using IUS as a tool for CF evaluation.

### Comparing CTE and IUS for CF Detection

The study compared CTE and IUS in detecting CF in CD patients, focusing on the wrapping angle of CF around the most affected bowel segment. The CF wrapping angle, defined as  $<180^\circ$  or  $\geq 180^\circ$ , served as a benchmark for evaluating the extent of fat surrounding the intestine. Ninety-six patients with CD underwent both IUS and CTE, with imaging assessments conducted independently to ensure unbiased results. The results demonstrated excellent agreement between IUS and CTE, with an 88.2% consistency in the detection of CF. The highest agreement was found in the ileocecal and colonic segments, suggesting that IUS is particularly effective in evaluating these regions. A few inconsistencies arose, primarily in the small intestine and terminal ileum, possibly due to non-transmural disease behaviour, which may affect CF extension and visibility. Overall, these findings highlight IUS as a feasible and complementary method to CTE for assessing CF, particularly in cases where CF wrapping is more pronounced.

### Interobserver Agreement and Implications for Clinical Practice

An essential aspect of this study was assessing interobserver agreement when using IUS to detect CF. The high level of agreement among IUS observers (89.6%) demonstrated the reproducibility and reliability of this imaging technique. The CF wrapping angle showed the highest consistency in ileocecal and colonic segments. This suggests that these regions are more easily evaluated through IUS due to their fixed anatomical positions and higher lesion severity. The consistency in detecting CF wrapping angles provides confidence in using IUS as a monitoring tool for CD patients. In clinical practice, IUS offers several advantages: it is a non-invasive, radiation-free, and low-cost method that can be easily repeated to monitor disease progression or response to treatment. While CTE remains valuable for comprehensive imaging and assessing complex cases, such as deep-seated fistulae or abscesses, IUS could be a primary modality for routine CF assessment, particularly in patients with terminal ileum and colon lesions.

The study suggests that intestinal ultrasound (IUS) is a valuable and reliable tool for detecting and characterising creeping fat (CF) in Crohn's disease (CD) patients. With excellent agreement compared to computed tomography enterography (CTE), particularly in the ileocecal and colonic regions, IUS presents a non-invasive, radiation-free alternative for assessing CF. Given its reproducibility and ease of use, IUS could be incorporated into routine monitoring protocols for CD patients, complementing CTE in cases requiring more detailed imaging. Future research and more extensive multicentre studies could further establish the role of IUS in evaluating CF and improving the management of CD.

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Published on : Wed, 2 Oct 2024