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Paediatric bowel ultrasound in inflammatory bowel disease

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Highlights

- Inflammatory bowel disease (IBD) is readily evaluated by ultrasound
- Ultrasound is non-invasive, low cost, easily accessible modality ideal for children
- Ultrasound is sensitive, cost-effective and well-tolerated for assessing children with IBD
- Ultrasound provides excellent spatial resolution and real-time dynamic assessment
- Ultrasound should be first-line when imaging IBD in children

Abstract
Ultrasound has long been favoured as first line when imaging children, primarily due to it being a non-invasive, relatively low cost, easily accessible modality. The many advantages of ultrasound evaluation in paediatric Inflammatory Bowel Disease (IBD) vastly outweighs its limitations in both initial assessment and long term follow up. High frequency ultrasound provides excellent spatial resolution, and Doppler evaluation and compression sonography aids in providing real-time dynamic assessment in IBD where other modalities cannot. This paper outlines our ultrasound technique to maximise image quality and diagnostic accuracy, describes the imaging findings in paediatric IBD, and explores the advantages and limitations that ultrasound offers. We aim to illustrate to the reader that ultrasound is an invaluable imaging tool and should be the first line modality when imaging IBD in the paediatric patient.

Keywords: Paediatric; Ultrasound; Inflammatory bowel disease; Crohn's disease; Ulcerative Colitis

1. Ultrasound imaging of the bowel in children

The peak age of inflammatory bowel disease (IBD) at diagnosis is in the second and third decades of life [1] with around 25% of patients diagnosed in the first two decades of their life [2]. This has important long-term implications, as patients presenting at a young age are considered to have a poorer prognosis [3]. The early diagnosis and accurate evaluation of disease severity and extent is paramount.

Across Europe, ultrasound has long been favoured in imaging of children, primarily due to it being a non-invasive, relatively low cost, easily accessible modality. High frequency ultrasound provides excellent spatial resolution, maximising anatomical detail. Colour Doppler evaluation and compression sonography aid in evaluation of the bowel in IBD, providing real-time dynamic assessment where