



REVIEW ARTICLE

Endoscopic Scores for Evaluation of Crohn's Disease Activity at Small Bowel Capsule Endoscopy: General Principles and Current Applications



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Abstract The small bowel is affected in the vast majority of patients with Crohn's Disease (CD). Small bowel capsule endoscopy (SBCE) has a very high sensitivity for the detection of CD-related pathology, including early mucosal lesions and/or those located in the proximal segments of the small bowel, which is a major advantage when compared with other small bowel imaging modalities. The recent guidelines of European Society of Gastrointestinal Endoscopy (ESGE) and European Crohn's and Colitis Organisation (ECCO) advocate the use of validated endoscopic scoring indices for the classification of inflammatory activity in patients with CD undergoing SBCE, such as the Lewis Score or the Capsule Endoscopy Crohn's Disease Activity Index (CECDI). These scores aim to standardize the description of lesions and capsule endoscopy reports, contributing to increase inter-observer agreement and enabling a stratification of the severity of the disease. On behalf of the *Grupo de Estudos Português do Intestino Delgado* (GEPID) – Portuguese Small Bowel Study Group, we aimed to summarize the general principles and clinical applications of current endoscopic scoring systems for SBCE in the setting of CD, covering the

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topic of suspected CD as well as the evaluation of disease extent (with potential prognostic and therapeutic impact), evaluation of mucosal healing in response to treatment and evaluation of post-surgical recurrence in patients with previously established diagnosis of CD.

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PALAVRAS-CHAVE

Enteroscopia por Cápsula;
Doença de Crohn;
Índice de Gravidade de Doença;
Intestino Delgado

Scores Endoscópicos na Avaliação da Actividade da Doença de Crohn em Enteroscopia por Cápsula: Princípios e Aplicações Actuais

Resumo O intestino delgado encontra-se envolvido pela doença na maioria dos pacientes com Doença de Crohn (DC). A enteroscopia por cápsula (EC) apresenta uma elevada sensibilidade na detecção de lesões relacionadas com a DC, incluindo as lesões superficiais mais precoces e/ou localizadas no segmentos proximais do intestino delgado, o que representa uma clara mais-valia comparativamente com os demais exames imagiológicos do intestino delgado. As recentes recomendações da ESGE (European Society of Gastrointestinal Endoscopy) e da ECCO (European Crohn's and Colitis Organisation) recomendam a utilização dos *scores* endoscópicos validados para a classificação da actividade inflamatória em doentes com DC submetidos a EC, nomeadamente o *Score* de Lewis ou o CECDAL (Capsule Endoscopy Crohn's Disease Activity Index). Estes *scores* permitem uniformizar a descrição das lesões e os relatórios em EC, contribuindo para uma melhoria da concordância entre observadores e possibilitando a estratificação da gravidade da doença. Em nome do GEPID (Grupo de Estudos Português do Intestino Delgado - Portuguese Small Bowel Study Group), os autores pretendem sumarizar neste documento os princípios gerais e as aplicações clínicas actuais dos *scores* endoscópicos em EC no contexto da DC, incluindo quer a suspeita de DC, quer a avaliação da extensão da doença (com potencial impacto prognóstico e na decisão terapêutica), avaliação da cicatrização da mucosa em resposta ao tratamento e avaliação da recorrência pós-cirúrgica em doentes com um diagnóstico prévio de DC.

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1. Introduction

The small bowel is affected in up to 80% of patients with Crohn's Disease (CD).¹ Small bowel capsule endoscopy (SBCE) may contribute to establish the diagnosis in patients with suspected CD, often being the next step after an initial non-diagnostic ileocolonoscopy, if the patient has no history of occlusive symptoms, suspected stricturing or penetrating disease. The very high sensitivity of SBCE, inclusively for the detection of early superficial lesions and/or those located in the proximal segments of the small bowel, is a major advantage in the diagnostic evaluation of patients with suspected CD, when compared with other small bowel imaging modalities.^{2,3}

The recent guidelines of ESGE⁴ and ECCO¹ recommend the use of validated endoscopic scoring indices for the classification of inflammatory activity in patients with CD undergoing SBCE, such as the Lewis Score⁵ or the Capsule Endoscopy Crohn's Disease Activity Index (CECDAL).⁶ These scores aim to standardize the description of lesions and capsule endoscopy reports, based on a structured terminology,⁷ thus providing a reproducible methodology for interpretation and estimation of endoscopic activity, while contributing for a higher inter-observer agreement. Moreover, these scores quantify objectively the inflammatory

activity and enable a stratification of the severity of the disease. On behalf of the *Grupo de Estudos Português do Intestino Delgado* (GEPID) – Portuguese Small Bowel Study Group, this manuscript aims to summarize the general principles and current applications of the available endoscopic scoring systems for SBCE in the setting of CD.

2. Lewis Score

To calculate the Lewis Score, the small bowel is first divided into three equal parts (tertiles) based on capsule transit time from the first duodenal image to the first cecal image. For each tertile, a subscore is determined based on the extension and distribution of oedema (Fig. 1), as well as the number, size and distribution of ulcers (Fig. 2). The Lewis Score results of the sum of the worst affected tertile *plus* the score of stenosis (Fig. 3); stenoses are evaluated considering the entire length of the small bowel, independently of the division in tertiles – Table 1.

The Lewis Score has been recently validated for use in clinical practice.⁸ Although its calculation seems unpractical, a software has been developed to enable its automatic calculation, which has been incorporated into the RAPID READER[®] workstation of PillCam[®] capsules. Cut-off values have been devised to grade and classify small

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