

Editorial

Capsule Endoscopy and Crohn's Disease: a Progressive and Irreversible Link

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Until the advent of capsule endoscopy in 2001, the small bowel was traditionally considered a hard-to-reach territory, particularly for GI endoscopists. Indeed, with the available conventional radiological methods, a great proportion of small bowel lesions remained difficult to diagnose, mainly if those lesions were superficial, as in the case of mucosal edema, aphthous erosions or ulcers, typical of early Crohn's Disease. The sharp and progressive evolution of capsule endoscopy revolutionised the way to explore the small bowel and made it possible that, on a surprisingly simple manner, today it is possible to visualize and follow in real time the acquisition of high definition endoscopic images of the small bowel in a data recorder held on patients' waist, while the procedure is being performed.

The evaluation of patients with suspected or known Crohn's Disease is among the well established clinical indications for capsule endoscopy [1]. However, it should only be performed in the absence of suspected stenoses or obstructive symptoms [2], due to an increased risk of capsule retention, which has been estimated around 13% in patients with known Crohn's Disease, being substantially lower (1,6%) in the setting of suspected Crohn's Disease [3]. The risk of capsule retention can be further reduced by the use of a patency capsule to rule out stenoses prior to capsule endoscopy [4]. Some other limitations of capsule endoscopy include the unspecificity of endoscopic findings, the inability to obtain biopsies and to accurately determine the topographic location of lesions within the small bowel. The initial limitation with the relatively high proportion of incomplete enteroscopies has been largely overcome, currently corresponding to fewer than 4% of examinations [5].

The small bowel is involved in 80% of patients with Crohn's Disease, and it is the only affected segment of the digestive tract in about one third of cases. Several studies have consistently demonstrated that capsule endoscopy is the most sensitive diagnostic modality to evaluate small bowel mucosa, being superior to all other imaging modalities, particularly when lesions are mild or located in the proximal small bowel [6,7]. The European Crohn's and Colitis Organisation (ECCO) recently published evidence based consensus for endoscopy in inflammatory bowel disease, supporting and recommending the use of capsule endoscopy for the evaluation of

patients with suspected or established Crohn's Disease [1].

In order to increase objectivity and inter observer agreement in the evaluation of small bowel inflammatory activity, the use of standardized endoscopic scoring systems has been advocated [1]. The most widely used is currently the Lewis Score [8], which evaluate villous edema, ulcers and stenoses. Based on the extension and number of lesions, the Lewis Score classifies the inflammatory activity as insignificant, mild or moderate to severe; this classification has been proven useful in a practical clinical setting [9], and it has been incorporated in the Given Imaging[®] software as an intuitive user-friendly application.

Small bowel capsule endoscopy has a high negative predictive value for the diagnosis of active small bowel Crohn's Disease. This is clinically relevant, being useful either to exclude the diagnosis in patients with suspected Crohn's Disease, as well as to rule out active disease in patients with known Crohn's Disease presenting with symptoms such as abdominal pain or diarrhea that may be due to other causes, such as irritable bowel syndrome or bacterial overgrowth, which may directly influence therapeutic decisions. Furthermore, by evaluating the extension, severity, location of the disease and diagnosis of previous undiagnosed lesions, capsule enteroscopy contributes for an accurate planning of the therapeutic approach, which may include changes in previously prescribed medication, such as the introduction of immunosuppressant's and/or immunomodulators in patients with moderate to severe inflammatory activity and involvement of the proximal small bowel [10]. It is also possible to anticipate that capsule endoscopy would further be able to influence the therapeutic management of patients with Crohn's Disease based on the evaluation of mucosal healing, which has consistently been associated with sustained corticosteroid-free clinical remission, improved prognosis and reduction in the number of hospitalizations and surgeries. In certain clinical settings, it may also be reasonable to consider the use of capsule endoscopy in patients with Crohn's Disease submitted to surgery to evaluate post-surgical recurrence.

From another perspective, capsule endoscopy may be a valuable diagnostic instrument to evaluate patients with inflammatory bowel disease-type unclassified limited to the colon, by looking for the existence of small bowel mucosal lesions that may be consistent with the diagnosis of Crohn's Disease.

The availability of the colon capsule, which has two cameras, one at each side, and a wide field of view, has further expanded the scope of capsule endoscopy in Crohn's Disease, making it possible to perform a complete examination of the whole GI tract (panendoscopy) with a single non-invasive procedure.

In the future, the perspective of incorporating new features into capsule technology, such as the ability to sample luminal fluids and

mucosal tissue or the possibility to remotely control the movements of the capsule, targeting lesions or other areas of interest and performing therapeutic procedures is currently an evolving challenge for investigators. Meanwhile, capsule endoscopy has already settled as a pivotal instrument for the approach of patients with Crohn's Disease. In the short term, it will continue to be developed and enhanced with new exciting applications and potentialities, looking forward towards a continuous improvement in the diagnostic and therapeutic management of Crohn's Disease, engaged with the compromise of less invasiveness and convenience for patients.

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