The potential spectrum of gastrointestinal motility disorders is daunting and extends all the way from syndromes where dysmotility is suspected but far from proven, such as irritable bowel syndrome, to severely disabling and potentially life threatening diseases where gross motor dysfunction is obvious, such as severe gastroparesis, established chronic intestinal pseudo-obstruction and megacolon. Few would suggest a role for invasive tests of motor function in the former, few would deem them necessary to make the diagnosis in the latter. It is in the parts of the spectrum that lie between these extremes, a terra incognita that clinicians dread and fear to enter, that recourse to invasive motility testing may be entertained. Can these tests actually help the perplexed clinician?

Let us first examine the clinical context where this question may present itself. The typical scenario features a patient with an unexplained gastrointestinal symptom(s), such as pain, vomiting, bloating or constipation for which there is no obvious “organic” cause but in which, for one reason or another, the possibility of a primary or secondary motor disorder arises. In their paper in this issue of the journal, Ghoshal and colleagues provide typical examples of such clinical conundrums: recurrent nausea and vomiting, abdominal pain and distension, refractory non-responsive gastroparesis and severe constipation. Their test was antroduodenal manometry and their results suggest a role for this approach in aiding the management of these patients by leading to new diagnoses, altering medical treatment, or guiding surgical management. These findings are consistent with those of prior authors: in selected patients antro-duodenal manometry can provide valuable diagnostic and therapeutic information.

This is not a procedure for the faint hearted. It is invasive, requiring nasal intubation, may require considerable maneuvering to get the recording assembly into place and usually involves some degree of radiation exposure as fluoroscopic guidance is used to guide the stubborn catheter through the non-cooperating pylorus. To provide an adequate study, motility must first be studied for a prolonged period while the subject remains fasted (at least 120 minutes in this instance) in order to record features of the migrating motor complex and then have the fed response assessed following the administration of a standardized meal which is adequate in size and content to stimulate the post-prandial response. Then comes the most difficult part; the interpretation of the record which requires considerable experience and is subject to both over- and mis-interpretation. There are many contentious and, to the uninvolved, rather esoteric methodological issues relating to the performance and interpretation of antroduodenal and small intestinal manometry which deserve some mention. These include:

1. **Antro-duodenal vs small intestinal recordings.** A major limitation to antroduodenal recordings relates to the challenges presented by obtaining reliable and consistent recordings of contractile activity from the antrum. Following food ingestion it becomes particularly difficult to maintain recording sites in contact with the antrum; as the stomach expands, the catheter tends to fall back into the capacious body and fundus and will falsely record “antral” hypomotility. For this reason, some workers advocate the performance of small intestinal recordings alone given the likelihood of maintaining relatively stable catheter position throughout the study. However, reliable antral recordings can be obtained by the use of specially designed catheter assemblies which incorporate additional sensors to document positioning in relation to the pylorus, multiple closely spaced sensors to optimize contact with the antrum and even sleeve systems to traverse the pylorus. These highly specialized assemblies are not available to most investigators.

2. **Perfused vs solid state.** Catheter assemblies incorporating solid state sensors permit ambulatory and, therefore, much more prolonged recordings which allow the recording to take place in the patient’s more normal environment and also do not require the use of a hospital bed for the duration of the study. Solid state recordings, by permitting more prolonged recordings, have also been advocated as providing more data to interpret the motor function of the small intestine. Up until recently, however, technical limitations precluded reliable antral recordings, under any circumstances, with solid-state assemblies; cost is also a major issue.

3. **Recording protocol.** Issues relating to protocol have been alluded to earlier; suffice to say, that debate continues with regard to the optimal duration of fasting and post-prandial periods of an individual study. How long should one record before one can say with confidence that there is a pathological absence of the migrating motor complex? How long should the post-prandial recording period last? What is the optimal meal? The protocol employed by Das and colleagues is in accordance with widely used protocols in this field.

While these methodological issues deserve careful attention, the most critical questions, for most clinicians,
are the following: when should this test be considered and what information should one hope to gain from its performance? This issue has been the subject of prior reviews but there have been few attempts to assess clinical impact; thus the importance of the study by Ghoshal and colleagues. They confirm the clinical value of the technique. However, their findings must be interpreted with great caution. Firstly, this report emanates from a tertiary referral center with a track record of research in this area; secondly, these patients must have been highly selected if only 33 patients were studied over a 6-year period; thirdly, these patients had been extensively investigated prior to manometry and, finally, therapeutic options for these patients are limited. This study confirms the value of manometry in re-assuring the surgeon of the normality of foregut function prior to colectomy for constipation but, in the opinion of this author, the most valuable finding, in a manometric study such as this, is a normal study. While arguments will continue with regard to the precise interpretation of various abnormal contractile patterns, an unequivocally normal study provides substantial assurance to the clinician that the cause of the patient’s symptoms lies not in disordered motility and should be sought elsewhere. In Ghoshal et al’s study, for example, in two patients, cyclic vomiting syndrome could be confirmed and appropriate management instituted.

The current study by Ghoshal and colleagues confirms the utility of antro-duodenal manometry but makes it abundantly clear that this test should only be considered in highly selected patients where a distinct possibility of neuromuscular dysfunction exists or where it needs to be definitively excluded. Its use should be restricted to referral centers where expertise can be accumulated over time and useful interpretations provided. Future developments, such as high resolution manometry, as well as clarification of relationships between manometry and other parameters of motor function, such as gastric emptying scintigraphy, may facilitate interpretation and refine its indications further.

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References


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