



SCIENTIFIC LETTER

Role of high resolution manometry in the diagnostic and therapeutic approach of post fundoplication dysphagia



Papel de la manometría de alta resolución en el abordaje diagnóstico y terapéutico de la disfagia posterior a la fundoplicatura

Antireflux surgery is a potentially effective alternative in the treatment of gastroesophageal reflux disease (GERD) in situations where an optimal dose of proton pump inhibitors does not allow satisfactory symptom control, when patients refuse to take them, or when contraindications impair their use.¹ Laparoscopic Nissen fundoplication is the standard technique for the surgical treatment of GERD. However, 5–25% of patients report persistent postoperative dysphagia.^{2,3} High-resolution esophageal manometry (HRM) is the gold standard method for the detection of esophageal motility disorders and may therefore provide a better characterization of esophageal motility and esophagogastric junction function in patients referred for antireflux surgery.⁴ In fact, preoperative manometry is essential for detecting contraindications to antireflux surgery (e.g., achalasia) in up to 7% of cases.⁵ In addition, manometry may be useful to explain the mechanism of postoperative complications, namely the onset of dysphagia, an issue still controversial with no consensus yet defined, notably in the Chicago classification.

With the aim of evaluating the findings in HRM in patients with post fundoplication persistent dysphagia, and their impact on the subsequent approach, we performed a retrospective, unicentric study evaluating patients with GERD who developed dysphagia up to five years after fundoplication. Demographic, clinical, and high resolution esophageal manometry data were evaluated in the pre- (if available) and postoperative period. HRM studies were performed using the Medical Measurement Systems (MMS) "SolarGIHRM" system, with a 36-channel water perfusion probe. The results were read using the "QuickView" analysis program of MMS. Where applicable, the interpretation of the results was performed according to version 3.0 of the Chicago Classification for primary motor disorders of the esophagus.

During the study period, 27 patients were included, 63% female, with a median age of 58 years (range: 46–44). Nissen fundoplication was the most frequently performed surgical procedure, counting for 85% of cases ($n=23$). The development of dysphagia occurred after a median period of 7 months (range: 1–43 months), namely dysphagia for solid food in 59% and dysphagia for liquids and solids in 41%. Twelve patients (44%) had preoperative HRM, with abnormal findings in 50% of them: ineffective motility ($n=4$) and hypercontractile esophagus ($n=2$).

All patients underwent endoscopy after the development of dysphagia. In only one case there was resistance to passage through the esophageal-gastric junction related to a patient with ineffective motility in preoperative manometry and who developed a pattern compatible with esophageal-gastric outflow obstruction. For associated vomiting, a patient underwent CT scanning for a herniation of the fundoplication, which was corrected surgically.

In high-resolution manometry due to postoperative dysphagia, significant changes were observed in 59% of the cases ($n=16$): esophagogastric junction outflow obstruction ($n=9$), absence of contractility ($n=3$), ineffective esophageal motility ($n=2$), hypercontractile esophagus ($n=1$), and achalasia phenotype ($n=1$). Compared with the preoperative period, there was a significant increase in the resting pressure of the lower esophageal sphincter (median 8.1 mmHg vs. 20 mmHg, $p=0.043$), with no significant differences in the integrated relaxation pressure ($p=0.686$) and in the distal contraction integral ($p=0.109$).

In patients with pre- and postoperative HRM, the manometric diagnosis was altered in 83% (10/12) of the cases. At follow-up, 15% ($n=4$) of the patients underwent endoscopic dilation and 41% of revision surgery of the fundoplication. Three of the cases submitted to dilation had episodes of food impaction. Therefore, due to the greater urgency of symptom relief, we opted for dilatation instead of revision surgery. The clinical response was 25% to and 75%, respectively.

HRM in post-fundoplication dysphagia translates into relevant motor changes in a considerable percentage of patients, allowing a better definition of the best therapeutic approach. Despite the limited number of patients, the increase in baseline esophageal sphincter pressure seems to be the strongest predictor of postoperative dysphagia, rather than inadequate relaxation, as previously described.¹

While it is true that a significant percentage of patients showed an increase in the IRP, the magnitude of this increase was not enough to have statistical significance, although it allowed to presume a new diagnosis by adapting the Chicago classification. In addition, the absence of previous IRP values in other patients, in particular because they were evaluated by conventional manometry, influenced the statistical strength of the analysis.

Our data reinforces the need for additional metrics to better identify patients at higher risk of post-fundoplication dysphagia and potentially benefiting from an alternative therapeutic strategy to manage the symptoms and complications of GERD, including data from contractile reserve tests (e.g., multiple swallowing test) and impedance measurements.

Nowadays, all patients who exhibit major esophageal motility disorders according to the Chicago classification are excluded from the antireflux surgery. In cases where a minor disorder is identified, in particular ineffective motility and fragmented motility, the decision is based on the response to the multiple swallow test to assess the clearance ability under liquid overload. If the response is significant, we send the patients to surgery, since in these cases it is suggested that the risk of developing dysphagia is low, which has recently been reinforced in the Lyon consensus.⁶

References

1. Marjoux S, Roman S, Juget-Pietu F, Robert M, Poncet G, Boulez J, et al. Impaired postoperative EGJ relaxation as a determinant of post laparoscopic fundoplication dysphagia: a study with high-resolution manometry before and after surgery. *Surg Endosc.* 2012;26:3642–9.
2. Wileman SM, McCann S, Grant AM, Krukowski ZH, Bruce J. Medical versus surgical management for gastro-oesophageal reflux disease (GORD) in adults. *Cochrane Database Syst Rev.* 2010. CD003243.
3. Tosato F, Monsellato I, Marano S, Leonardo G, Portale G, Bezzi M. Functional evaluation at 1-year follow-up of laparoscopic Nissen-Rossetti fundoplication. *J Laparoendosc Adv Surg Tech A.* 2009;19:351–4.
4. Rerych K, Kurek J, Klimacka-Nawrot E, Błońska-Fajfrowska B, Stadnicki A. High-resolution manometry in patients with gastroesophageal reflux disease before and after fundoplication. *J Neurogastroenterol Motil.* 2017;23:55–63.
5. Chan WW, Haroian LR, Gyawali CP. Value of preoperative esophageal function studies before laparoscopic antireflux surgery. *Surg Endosc.* 2011;25:2943–9.
6. Gyawali CP, Kahrilas PJ, Savarino E, Zerbib F, Mion F, Smout AJPM, et al. Modern diagnosis of GERD: the Lyon Consensus. *Gut.* 2018;67:1351–62.

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