EDITORIAL

Is STAT (self-approximating translumenal access technique) the first step for NOTES?

The journey of a thousand miles begins with a single step.

—Chinese proverb

There is no disagreement between surgeons and gastroenterologists interested in natural orifice translumenal endoscopy surgery (NOTES) that safe access to the peritoneal cavity and reliable closure of the GI incision are the cornerstones of successful development of NOTES. Furthermore, the Natural Orifice Surgical Consortium for Assessment and Research (NOSCAR), a joint task force designated by the American Society for Gastrointestinal Endoscopy (ASGE) and Society of American Gastrointestinal Endoscopy and Surgery (SAGES) dedicated to NOTES, has highlighted secure GI closure as paramount importance for bringing NOTES to clinical practice.[1]

In this issue of *Gastrointestinal Endoscopy*, Moyer et al[2] describe a self-approximating translumenal access technique (STAT) for potential use in NOTES. In an ex vivo model, these investigators used a Z-track type technique in a porcine esophagus, stomach, and colon and created a submucosal tunnel to anatomically separate the lumen from the peritoneum during translumenal access. After an initial creation of a saline solution cushion, they used a needle-knife to create a 1- to 1.5-cm incision into the cushion, followed by blunt and pneumatic dissection with the endoscope of the submucosal plane. The end result was an oblique tunnel measuring between 15 and 25 cm in the esophagus, stomach, and colon, respectively. Once the tunnel was created, the endoscope was passed into the peritoneal cavity and then withdrawn, and a leak test was performed. Not surprisingly, the best results were seen in the esophagus and stomach. In the colon, unintended perforations with mucosal tears occurred.

This technique is promising for 2 reasons. First, it uses techniques and tools that are familiar to gastroenterologists to create what appears to be a relatively safe passage into the peritoneal cavity. Second, removal of the endoscope allows the defect to naturally seal and immediately maintain gastric distention and insufflation in this ex vivo model. The authors also hypothesized that the additional application of a glue material or some other closure device may further secure the Z-track closure.

Let us examine the model used in these experiments: The ex vivo porcine model is a useful one for initial evaluation of devices and techniques. Advantages include ease of use and the ability to standardize the procedure without being subject to the anatomic variabilities of an in vivo model. One drawback of this approach, however, is the transferability to in vivo practice. Lack of adjacent organs, vessels, and supporting tissue certainly changes the dynamics of device-tissue interactions.

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It is somewhat disappointing that control groups were not used in this study because our group has demonstrated that, in an in vivo porcine model, spontaneous closure of a gastric access opening created by balloon dilatation may occur without the need for closure devices.[3] Also, it would have been preferable to have measured the intragastric pressures required to achieve air and liquid leakage. Measurement of these pressures would have provided objective assessments of the integrity of various approaches to gastrointestinal closure.[4]

Is STAT the first step for NOTES? I believe that in vivo studies with adequate controls must be performed to answer this question. However, STAT may have applications relevant to standard endoscopic practice by its ability to explore the submucosal space as a working space for endoscopic interventions. This is a potentially exciting area of discovery for endoscopic researchers. The Mayo Clinic group has already described the technical feasibility and the safety of submucosal endoscopy with a mucosal flap in both ex vivo and in vivo models.[5] They created a tunnel by using high-pressure carbon dioxide injection and balloon dissection. Potential applications of this technique include

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resection of Barrett's esophagus, broad-based mucosal polyps, noninvasive early cancers, and submucosal tumors and the acquisition of muscular tissue for analysis of motility disorders.[5] The quest to place a man on the moon resulted in development of multiple technologies that affected our everyday life.[6] It seems that our quest for realizing NOTES will undoubtedly benefit the entire field of GI endoscopy and beyond.

DISCLOSURE

Dr Kalloo is a consultant to Apollo Endosurgery.

[Q1]

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Abbreviations: ASGE, American Society for Gastrointestinal Endoscopy; NOSCAR, Natural Orifice Surgical Consortium for Assessment and Research; NOTES, natural orifice translumenal endoscopic surgery; SAGES, Society of American Gastrointestinal Endoscopy and Surgery; STAT, self-approximating translumenal access technique.

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