

NOTES/NOSE/NOSCAR/LATAS: What does it all mean?

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For 15 years colorectal surgeons seemed immune to the contagious excitement which surrounded the development of laparoscopic surgery in the late 1980s and early 1990s. The unique patient benefits were ignored and even refuted as some general surgeons referred to laparoscopy as a “virus” [1]. This “virus” was proven to actually be the most important advance in surgery since Ravitch and Steichen popularized surgical stapling [2–5]. As the enthusiasm transcended platforms from cholecystectomy to hernia and appendectomy and from gastroesophageal reflux treatment to solid organ surgery, entire surgical specialties were born and reborn. As an example, morbid obesity surgery was suddenly transformed into a very popular field which has recently morphed into metabolic surgery. However, colorectal surgery lagged behind [6].

The unique challenges of working in multiple quadrants with the need for extensive vascular control within an often thick friable mesentery, the requirement for anastomosis, and the surgical indications such as inflammatory bowel disease and neoplasia, dampened enthusiasm [7, 8]. Reports of port site metastases further decelerated the adoption of the techniques and the penetration of the procedures [9, 10]. Finally after the COST trial was present-

ed at the May 2004 meeting of the American Society of Colon and Rectal Surgeons (ASCRS) and simultaneously published in the *New England Journal of Medicine* [11] acceptance accelerated. Patients, surgeons, and our partners in industry began the quest for the next paradigm shift. Several contenders have emerged including robotic surgery [12], single port access or single incision access surgery [13, 14], and natural orifice transluminal endoscopic surgery (NOTES) [15].

This latter group of techniques was best evaluated under the direction of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) and the American Society of Gastrointestinal Endoscopic Surgeons (ASGE) through the joint Natural Orifice Surgery Consortium for Advancement and Research (NOSCAR) [16]. Interestingly, NOTES was already familiar to all colorectal surgeons thanks to the indefatigable efforts of Professor Gerhard Buess from Tübingen, Germany, who pioneered and disseminated to the world transanal endoscopic microsurgery (TEM) [17]. TEM was clearly a direct ancestor in the lineage to NOTES; in recent years the synergy from minimally invasive surgery has given TEM a huge boost.

Many more centres now have TEM surgery available and the results of Buess have been reproduced throughout the world [18–20]. Colorectal surgeons should have a second natural advantage relative to NOTES – since NOTES demands flexible endoscopic skills, and colorectal surgeons have always included therapeutic colonoscopy as a core competency, the requisite technical abilities should already have been acquired. Recognizing the need for these skills, the American Board of Surgery recently adopted a required minimum number of flexible endoscopic procedures for all general surgery residents [21, 22].

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The outcome of the convergence of slow adoption of laparoscopy with excellent flexible endoscopic skills and familiarity with TEM has led to an interesting development – transanal specimen extraction and anastomosis. Numerous surgeons have described and demonstrated both the technical aspects and the results [23–25]. As early as the early 1990s Morris Franklin from San Antonio, Texas awed us with magnificent videos of transanal specimen removal. There certainly remain many questions – what is the effect, if any, on faecal continence and on oncological outcomes? Moreover the technique is very demanding. Despite these potential obstacles and unanswered questions the technique has been described in many ways. In 2005 we presented at SAGES our method of totally laparoscopic low anterior resection with a transperineal hand-sewn colonic J pouch anal anastomosis for low rectal cancer. The technique was subsequently published in *Surgical Endoscopy* [26] and released in video form online [27]. John Marks from Lankenau Hospital in Pennsylvania has adopted the transabdominal transanal (TATA) techniques of his father, Gerald Marks, into the realm of laparoscopy [28, 29] and others have shown similar enthusiasm [30].

This issue of *Techniques in Coloproctology* contains two more variations on the theme [31, 32]. The common thread is that many of us are striving for a way to minimize or avoid incisions and to optimize outcomes. However, not everyone has either the time or interest to conquer the challenges. While Leroy and Marescaux in Strasbourg, France, and Swanstrom and Whiteford in Portland, Oregon, have routinely pushed the NOTES applications in colorectal surgery [15, 33], the rest of the world has largely watched with mixed emotion. Both of the currently published articles are indicative of the desire to advance the borders of NOTES within colorectal surgery; they also show that many different methods may be applied towards the same end. We congratulate both sets of authors for trying to give patients the best possible outcome with the least possible coetaneous trauma. We also encourage other surgeons who feel capable of handling the challenges to try to employ these techniques in a monitored setting. However, realistically we do not imagine that we will have a large database or the answers to the many outstanding uncertainties in the near future.

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