Once Widely Shunned, Transanal Endoscopic Microsurgery Experiencing a Healthy Revival

WYNNEWOOD, PA.—A minimally invasive procedure that was considered unconventional for 20 years is now popular in colorectal surgery.

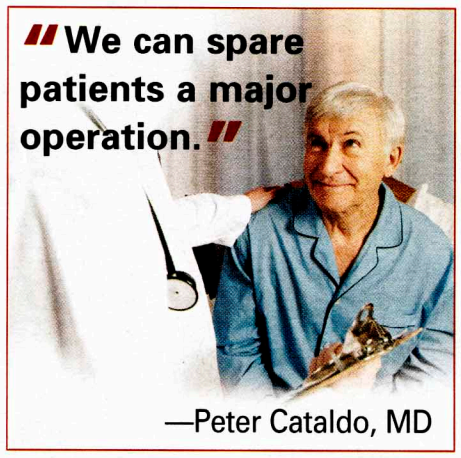
"There has clearly been a burst in interest in TEM [transanal endoscopic microsurgery] in the last 24 months," said John H. Marks, chief of colorectal surgery, Lankenau Hospital and Lankenau Institute for Medical Research, Wynnewood, Pa.

Today, field leaders estimate that surgeons at fewer than 25 centers in the country—perhaps even fewer than 15—perform TEM with any regularity, but that number is changing. As many as 10 hospitals in the United States have purchased the necessary equipment over the past two years. Surgeons at some of the most respected colorectal surgery institutions in the country, such as the Lahey Clinic, Burlington, Mass., and the Cleveland Clinic Florida, Weston and Naples, are training in TEM. For the first time, the American College of Colon and Rectal Surgeons is offering a course in TEM at its 2005 annual meeting. Smaller courses held throughout the year are now filled with attendees, whereas a few years ago, organizers found few takers, according to Dr. Marks.

TEM is nothing new. Pioneered in 1983 by German surgeon Gerhard Buess, MD, TEM was said to have "revolutionized" the resection of rectal lesions. Performed through a microsurgical rectoscope, TEM made it possible to excise early-stage lesions high inside the rectum that previously had been accessible only through more invasive techniques.

While some European and South American surgeons adopted TEM as a standard treatment for patients with small cancers or benign lesions high in the rectum, TEM never found much of a place in the United States. Surgeons complained that the surgery was time-consuming and difficult. Hospitals were reluctant to invest in the technology—which costs upward of $60,000 in equipment alone—for a procedure appropriate for a very select patient population.

Furthermore, early clinical results from this side of the Atlantic suggested that TEM outcomes fell far short of those achieved with radical surgery. When Italian, German and British surgeons reported recurrence rates of between 0% and 15% in patients with T1 or T2 tumors (Sengupta S. *Dis Colon Rectum* 2001;44:1345-1361; Ambacher T. *Chirurg* 1999;70:1469-1474; Lezoche E. *World J Surg* 2002;26:1170-1174), researchers from the University of Minnesota estimated a five-year recurrence rate of 28% after local excision—seven times higher than that after radical surgery (Mellgren A. *Dis Colon Rectum* 2000;43:1064-1071). Moreover, the evidence indicated that patients whose cancer recurred after TEM had little chance of salvage compared with patients who underwent other procedures.



—Peter Cataldo, MD

However, interest in TEM is increasing because of better outcomes, improved staging techniques, more downstaging of cancers and a growing interest in local excision of rectal cancer. "The goal of cancer treatment should be to provide excellent control of cancer, [and to] preserve good function with minimal morbidity and mortality. Local excision after radiotherapy addresses these goals," said Dr. Marks.

At the 2005 International Rectal Cancer Consensus Conference, Dr. Marks presented a study of 83 patients (43 men) who underwent local excision after preoperative radiotherapy or chemoradiotherapy between 1984 and 2004. At a mean follow-up of 63 months, the overall five-year survival rate is 78.7%, with local recurrence in 12% of patients. Of the four local excision techniques used, TEM (n=25) was associated with the lowest recurrence rate (4%). Recurrence rates for transanal (n=35), transphincteric (n=16) and transsacral (n=7) excisions were 20%, 12% and 14%, respectively.

To date, 88% do not have a colostomy. "That's pretty important to people," Dr. Marks said.

Surgeons from across the country have also presented studies showing improved results for patients who undergo TEM. In a recent article, Theodore J. Saclarides, MD, professor of surgery at Rush University Medical College, Chicago, and one of the best-known TEM surgeons in the country, wrote that TEM "may become the technique of choice for locally excising rectal neoplasms" (*Semin Laparosc Surg* 2004;11:45-51).

"Certainly, people are more interested in it now because it's a superior technique to good old-fashioned transanal excision. We can spare patients a major operation," said Peter Cataldo, MD, associate professor of surgery, University of Vermont College of Medicine, Burlington. Dr. Cataldo trained in Germany under Dr. Buess and now performs TEM probably as frequently as any other surgeon in the country, he said. His own series, to be published this spring, shows that TEM leads to no deterioration in anorectal function despite insertion of a 4-cm–diameter operating proctoscope. "Patients are very happy. Their morbidity and mortality is less.

"I think there's been a lot of thinking on the part of surgeons that if I don't do it, [TEM] can't possibly be that good, but it's just like laparoscopic colectomy or cholecystectomy was 10 to 20 years ago. People are starting to come around, and surgeons are definitely more willing to refer patients," he said.

Preoperative radiation has played a critical role in improving results with TEM, although its optimal dosage and timing are still unknown, said Dr. Marks. In his study, the percentage of patients with T2 or larger tumors dropped from 81% to 46% after radiotherapy.

Many surgeons still consider TEM to be an "out of the box" procedure, but there is a growing acceptance that TEM with preoperative radiation has a place in the armamentarium, according to W. Robert Rout, MD, associate professor of surgery, University of Florida College of Medicine, Gainsville. "Things are changing," he said.

Patients want operations that may save them from a colostomy. "In the view of patients, abdominal perineal resection is the radical surgery, not TEM," he said.

Dr. Marks estimated that as many as 23,900 patients a year in the United States could be candidates for TEM. Researchers still have to determine which patients fare best with TEM, how to optimize radiotherapy and whether nodal status can be predicted, he added.

However, some say TEM will be restricted to certain centers and very specific patients. TEM is a safe technique in patients with benign tumors in the middle and upper rectum and in selected cases of early rectal cancer. Although some practitioners use TEM in patients with T2 tumors, most would limit its application to those with T1 tumors. Whether patients should be classified after downstaging based on their tumor stage before radiation is still unclear.

"I think that TEM is a technology looking for wider adoption, thus far with very limited success. Perhaps the enthusiasm and expertise of some of the colorectal surgeons currently using the technique will help achieve that end. If you think about it, Dr. Buess introduced this technique before any of us started doing laparoscopic colorectal surgery, yet how many people are doing TEM?" said Steven D. Wexner, MD, 21st Century Oncology Chair in Colorectal Surgery and chair of colorectal surgery, Cleveland Clinic Florida; clinical professor of surgery, University of South Florida College of Medicine, Tampa; and professor of surgery, Ohio State University College of Medicine and Public Health, Columbus. "Perhaps this newest generation of TEM surgeons will change that paradigm."

Clifford Y. Ko, MD, MS, associate professor of surgery, University of California at Los Angeles David Geffen School of Medicine, observed that few hospitals seem to be willing to invest in TEM equipment if only 15 to 25 hospitals in the country have purchased it.

"It seems that in the current healthcare climate, the economic benefit may be too small to justify the cost given the narrow patient population," he said. "More people are talking about it now with great enthusiasm, but it will be interesting to see what happens in the next several years. It may wane, similar to [what we saw] with transanal excision for rectal cancers."

—Christina Frangou

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The regional cancer institute has launched a major drive to increase screening, which is lower here than the rest of the country.

"We're still diagnosing most of our patients with regional disease with positive lymph nodes and distant metastases," said Dr. Bannon. "Even though we're doing a good job of screening, we're going to need to do more."

They are targeting primary care physicians, but surgeons are being asked to participate.

"There's clearly room to do more screening for colorectal cancer. Anything that surgeons can do to facilitate that screening would be an asset to the community," said Dr. Lesko.

Other significant findings in the study include:

- The age-adjusted mortality from colorectal cancer is nearly 25% higher than the national average.
- Incidence of colorectal cancer fell between 1985 to 1998 at a rate similar to the national average.
- Incidence of rectal cancer is 10% higher than the national average.
- A higher than expected proportion of new cancers are right-sided lesions.

The American Cancer Society's annual statistical report, released in January, showed that cancer surpassed heart disease for the first time as the No. 1 killer of Americans under age 85 in 2002. Researchers were encouraged by a rapid drop in deaths from colon and lung cancer in men, thanks to earlier detection and prevention efforts. Cancer death rates have declined about 1% annually since 1999.