

Past, present and future management of low-lying rectal cancers

In recent decades, great strides have been made in the management of the hardest to treat rectal cancers. If diagnosed with a low rectal cancer in the 1970s or 1980s, it was likely that after surgery the patient would have a giant scar on his or her midsection and, due to a radical surgery known as the abdominal perineal resection (APR) that eliminates sphincter function, a permanent colostomy. If these issues weren't enough, there was still a 20-40% chance that the cancer would recur due to it not being completely removed after surgery. These facts were unacceptable to oncologists and surgeons, so they took this problem as a call to arms to improve patient outcomes.



Fig. 1. An overview of the beginning of the TATA procedure. By starting from below, low-lying rectal cancers that cannot be reached with the standard approach can be successfully removed. Sometimes, this surgery can be done in a "scarless" fashion that requires no abdominal incisions.

In the 1980s, there were many improvements in rectal cancer management. The emergence of preoperative radiation therapy helped shrink tumors and allow for more successful operations. Dr. Bill Heald's focus on the proper surgical removal of rectal cancer through the total mesorectal excision (TME) helped decrease the rates of cancer recurrence by more completely removing tumor cells. In 1984, Dr. Gerald Marks developed the Transanal Abdominal TransAnal proctosigmoidectomy with colonanal anastomosis (TATA). This new surgical technique allowed the removal of even the most hard to reach tumors, those closest to the anus, which before would have required an APR and permanent colostomy. In 1996, Dr. John Marks began performing this surgery through tiny incisions in the belly, thus avoiding a large cut on the belly, in a procedure called the laparoscopic TATA. These four advances tremendously improved patient survival and quality of life while ushering in the next era of rectal cancer treatment.

One of the major criticisms of the TATA procedure was that it required the surgical team to move

back and forth between transanal and abdominal surgery. This prevented its widespread adoption, even though it was very successful at completely removing the cancer and scarcely required a permanent colostomy. Around this time, another type of surgery was gaining traction: natural orifice transluminal endoscopic surgery or NOTES. Instead of making incisions through the skin, damaging healthy tissue, and creating scars, NOTES surgery for rectal cancer is performed through the natural opening provided by the anus. An example of this surgery is transanal endoscopic microsurgery (TEM), which allows small rectal tumors to be completely removed without a single incision in the skin, greatly speeding recovery and improving cosmetic outcomes.

By mating NOTES and TATA, the transanal total mesorectal excision (taTME) was born. This surgery answered the major criticism surgeons had of the TATA, the nuisance of moving back and forth between transanal and abdominal surgery, by allowing the entire TME to be performed transanally. This method completely eliminated the concept of a cancer being “hard to reach” because, if a cancer was hard to reach from above, it naturally was easy to reach from below. Since its adaptation, the taTME has been shown to have similar oncologic outcomes as TME carried out through the abdomen. While the taTME is not a true NOTES procedure, as it requires some of the surgery to be done abdominally, it is a stepping-stone towards the ideal true NOTES procedure.

What does the future hold for rectal cancer surgery? Widespread adoption of the taTME and further research will allow this technique and all its advantages to become available to more people with rectal cancer. taTME is still in its early phases of adoption but is quickly catching on in the surgical community. Thus, it will continually improve through refinement of the technique and better training, which leaves the future looking bright for the taTME and, consequently, patients with rectal cancer.

Andrew R. Helber and John H. Marks

Department of Colorectal Surgery at Lankenau Medical Center, Wynnewood, PA, USA

Publication

[From TATA to NOTES, how taTME fits into the evolutionary surgical tree.](#)

Marks JH, Salem JF

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