



Sponge Single-port Laparoscopy-assisted Transanal Total Mesorectal Excision for Low Rectal Cancer: a Technical Report

Alt Rektum Kanserinde Sünger Tek-port Laparoskopik Yardımlı Transanal Total Mezorektal Eksizyon: Teknik Rapor

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ABSTRACT

Laparoscopic colorectal surgery is a surgical technique as safe as open surgery. Transanal total mesorectal excision (TaTME), which is a new approach in rectum surgery, is the resection of the rectum with the perianal approach with the help of endoscopic instruments. Although there are specially designed tools for this approach, it can also be done with the help of other options. Our patient, who we prepared for the operation with the diagnosis of rectal cancer, was operated with a standard technique using a manually prepared sponge-port during the Coronavirus disease-19 pandemic period. After resection, the specimen was taken out transrectally, coloanal anastomosis was performed with 2/0 vicryl one by one, and the operation was completed with a protective ileostomy. Operation time was 245 minutes. The patient who did not develop postoperative complications was discharged on the 5th day. The wide series results should be followed in order to compare the oncological and clinical results of TaTME with open and standard laparoscopic TME results, which allows to perform the tumor surgical margin macroscopically with the dissection.

Keywords: Laparoscopic surgery, rectal cancer, single-port, sponge port, transanal total mesorectal excision

ÖZ

Laparoskopik kolorektal cerrahi açok cerrahiye güvenli bir alternatif haline gelmiştir. Rektum cerrahisinde yeni bir yaklaşım olan transanal mezorektal eksizyon (TaTME), rektumun perianal yaklaşımla endoskopik aletler yardımıyla serbestlenmesidir. Bu yaklaşım için özel tasarlanmış aletler olmakla birlikte, başka seçenekler yardımıyla da yapılabilir. Rektum kanseri tanısıyla hastamız Koronavirüs hastalığı-19 pandemi dönemi malzeme alım kısıtlaması olduğu için manuel hazırlanan sünger-port kullanılarak opere edildi.

Endoskopik diseksiyon tekniği ile rektumun tümü transanal yolla diseke edilebilir. Hastamızın spesmeninde histopatolojik olarak cerrahi sınırın temiz ve mezorektal fasiyanın intakt olduğu teyit edildi. Rezeksiyon sonrası spesmen transrektal yolla dışarı alınırken elle koloanal anastomoz yapıldı ve koruyucu ileostomi ile operasyon tamamlanırken, operasyon 245 dk sürdü. Postoperatif komplikasyon gelişmeyen hasta 5. gün taburcu edildi. Rektum kanserinde alttan yukarı doğru diseksiyon prensibiyle, tümör cerrahi sınırı makroskobik olarak izlenerek yapılabilmeye olanak sağlayan transanal TaTME, onkolojik ve klinik sonuçları ile açık ve standart laparoskopik TME sonuçları ile mukayese edilmesi için geniş seri sonuçları takip edilmelidir.

Anahtar Kelimeler: Laparoskopik cerrahi, rektal kanser, tek-port, sünger port, transanal total mezorektal eksizyon

Introduction

Recent developments aim at reducing surgical trauma without compromising oncological principles. The most logical way to do this is to use natural openings.

Surgery performed through natural orifices by avoiding abdominal incisions [natural orifice transluminal endoscopic surgery (NOTES)] may theoretically have some advantages over open and standard laparoscopic surgery. Compared



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to traditional laparoscopic surgery, NOTES offers many potential advantages for selected patients with rectal cancer, such as avoiding transabdominal incisions and their associated complications. Transanal total mesorectal excision (TaTME) is also a technique that has been developed in recent years. The technical difficulties of this surgery are; the increase in morbidity and conversion to open surgery in cases such as narrow pelvis, large tumor size, and distal rectal tumor in male patients.^{1,2}

In rectum cancer surgery, in the abdominal approach, starting from the proximal rectum, TME is completed from superior to inferior. In the transanal TME technique, mobilization of the rectum is performed with the help of endoscopic instruments and with a specially made single port, transanally. In this technique, dissection is made from the inferior to the superior and is an important technique in determining the distal surgical margin.³

In our article, we presented a patients in whom a tumor was detected 3 cm away from the anal verge in rectum and TaTME was performed with the help of conventional endoscopic instruments.

Case Report

A 56-year-old male patient was admitted to the general surgery outpatient clinic with the complaint of rectal bleeding. In the physical examination, the mass was palpated at 3 cm on the rectal examination. Rectal cancer was diagnosed as a result of the pathological examination of the biopsy material obtained with the colonoscopy. He was evaluated preoperatively by magnetic resonance imaging (MRI) for local staging and by computed tomography for distant metastasis. MRI report was as follows: "A mass lesion narrowing the lumen from the anterior wall along the approximately 3.5 cm segment in the distal part of the rectum is observed. The planes between the tumor and the prostate are preserved". It was determined that the mass was approximately 3 cm away from the anal verge. After the preoperative bowel preparation, he was operated in lithotomy position. After the distal rectum was washed with povidone iodine, the rectum wall was fully opened over the dentate line, and the proximal rectal stump was closed by a purse string suture with no 0 prolene (Figure 1). The sponge-port prepared was placed in the anus without dilatation after the rectum was again washed with povidone iodine (Figure 2). The place where the rectum would be excised was determined with a 30-degree-angled endoscope accompanied by a low pressure (10 mmHg) pneumoperirectum, just distal to the purse string and marked with a monopolar hook. With atraumatic grasper and hook cautery, first posterior, then anterior and finally lateral dissections were completed and it was proceeded

towards proximal (Figure 3). Mucosa and submucosa were dissected circularly. The rectum muscles were cut from the same plane and the areolar area was entered. Dissection of the rectourethral area was continued up to the peritoneum and all circular areas were dissected in the same way. In posterior dissection, the rectococcygeal ligament was cut and the endopelvic fascia was opened and the presacral area was entered. Hypogastric nerve fascia was preserved during the procedures. Finally, lateral dissection was performed preserving the iliac vessels. The smoke generated by cautery during the operation was evacuated to the outside with the feeding-aspirator system placed manually at the trochar air



Figure 1. Closing the proximal rectal stump by crossing the purse string suture with number 0 prolene



Figure 2. Sponge single-port

outlets in a way that would not decrease the inside pressure. In this way, the field of view was clearly preserved. While performing this dissection, the descending colon, splenic flexure and sigmoid colon were freed laparoscopically with a standard approach. Connection was established with the transanal excision site by opening peritoneal reflection. The sigmoid column was separated with a 60-mm laparoscopic linear cutter stapler and the specimen was removed transanally. Coloanal anastomosis was performed with 2/0 Vicryl sutures one by one sutures without tension in the proximal part of the colon. The operation was completed by opening a protective loop ileostomy for the safety of the anastomosis.

The patient started to be fed orally at the 4th hour postoperatively, and the patient, who was followed up for anastomosis follow-up, was discharged on the 5th postoperative day without any problem. As a result of the pathology, the radial and distal surgical margins were clean and the mesorectal fascia was confirmed to be intact. Pathological TNM staging was reported as pT2N0M0. No complications or recurrence were detected in the 7-month outpatient clinic follow-up. During this period, the patient did not have any complaints about sexual and anorectal functions. During this period, protective loop ileostomy was closed under general anesthesia 3 months after the first operation. There were no postoperative complications or dysfunction.

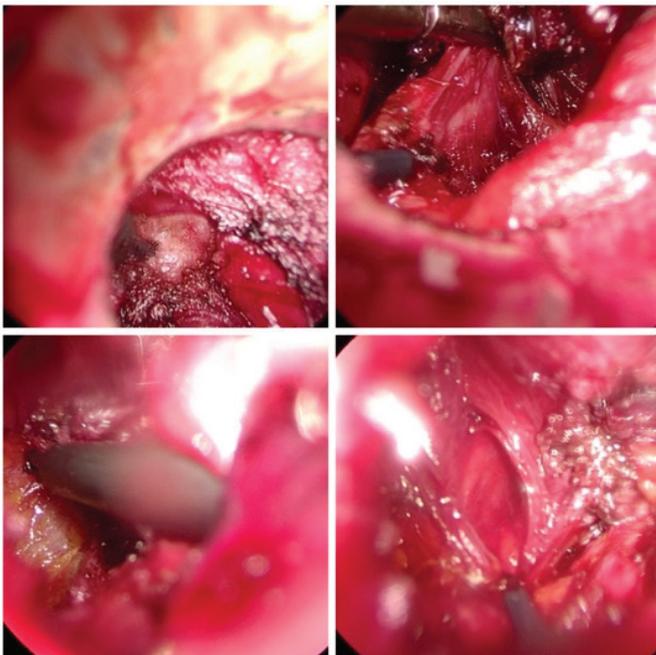


Figure 3. Dissection plan starting just distal to the purse string by entering with a 30 degree angled endoscope accompanied by a low pressure (10 mmHg) pneumoperirectum

Discussion

With the development of surgical techniques, much better results are obtained, especially in colorectal surgery. First laparoscopic surgery, then single port surgery and then surgical techniques made from natural orifices are used to increase patient comfort without compromising oncological principles.

Especially in male narrow pelvis, in low rectal cancers that form a large mass, there may be a transition from laparoscopy to open surgery due to some technical reasons. Another important problem is to provide an acceptable clean distal surgical margin for mid-to-low rectal tumors. After inserting a distal stapler, it may be difficult to determine the distance from the tumor and to control the adequate surgical-oncologic distance.⁴

TaTME or TEM imaging is an alternative safe and feasible technique, which is thought to provide potential solutions to many technical difficulties of laparoscopic rectal surgery such as distal rectum dissection, oncological surgical margin determination, low-level distal anastomosis and avoiding larger abdominal incisions.⁵

Transanal dissection with TEM proctoscope was described in 2010. In this technique, the lower end of the rectum was closed with a purse-string suture and the rectum was dissected with the help of TEM instruments and harmonic scalpel all around.^{6,7,8}

In classical laparoscopic colorectal surgery, the rectum is dissected transabdominally from top to bottom. However, the surgery to be performed from the bottom up with the dissection starting from the bottom of the tumor may theoretically overcome some difficulties. With this prediction, the perirectal NOTES approach was described. While using a colonoscope in one of these approaches, standard laparoscopic instruments with a transanal SILS port were used in the other.³

The cost of these operations is high due to the use of special materials. For this reason, a single-sponge-port, which was prepared manually in terms of a cost-effective approach, was described during the Coronavirus disease-19 pandemic period. The same approach was used as the technique used in the classical TaTME operation, and the second surgical team started the operation at the same time.

In this transanal surgery, the bacterial load of the rectum should be removed and followed closely to prevent postoperative anastomotic leakage from pelvic infection. As a matter of fact, in our patient, washing with povidone iodide was performed both before and after separating the distal rectum.

There are studies showing that TaTME has a significant effect in selected patients with low-grade rectal cancer. Although

the results show that the short-term results of this new technique are satisfactory, prospective randomized studies with higher number of patients and long-term follow-up are needed to validate this technique, especially in terms of oncological and functional results.^{9,10}

In conclusion, TaTME may contribute reduction in the rate of inadequate oncologic surgery and in the rate of transition to open surgery by allowing macroscopic evaluation of the distal surgical margin with the distal to proximal dissection principle. TaTME, which has potential advantages in patients with low rectal cancer, can be performed with the help of standard laparoscopic instruments.

Ethics

Informed Consent: Obtained.

Peer-review: Externally and internally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: M.Z.S., İ.Z., İ.S., G.Ç., B.T., S.A., **Concept:** M.Z.S., İ.Z., İ.S., G.Ç., B.T., S.A., **Design:** M.Z.S., İ.Z., İ.S., G.Ç., B.T., S.A., **Data Collection or Processing:** M.Z.S., B.T., S.A., **Analysis or Interpretation:** M.Z.S., İ.S., B.T., S.A., **Literature Search:** M.Z.S., B.T., S.A., **Writing:** M.Z.S., İ.S., B.T., S.A.

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