Short-term and oncological outcomes after TaTME based on embryology for rectal cancer.

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INTRODUCTION

Four surgical approaches are available for rectal cancer surgery: open, laparoscopic, transanal, and robotic-assisted TME. When performed by skilled surgeons, laparoscopic TME results in better short-term and similar long-term outcomes compared with open surgery in selected patients with rectal cancer. However, among patients with T1–T3 rectal tumors, the noninferiority of laparoscopic surgery compared with open surgery for successful resection has not been established; therefore, sufficient evidence for the routine use of laparoscopic surgery has not been accumulated. Although the improved pelvic visualization provided by laparoscopy would lead to more effective TME, technical difficulties associated with laparoscopic rectal surgery are still encountered because of poor visualization of the deep prostate or vaginal plane and difficult introduction of the instruments because of lack of space, especially in patients with obesity, a narrow pelvis, low rectal cancer, or bulky tumors. Surgical treatment for rectal cancer has dramatically evolved during the last decade.

Recently, transanal TME (TaTME) was successfully applied in rectal cancer surgery following laboratory-based experience with this technique in swine and cadavers. This new technique for rectal cancer potentially leads to acquisition of intact specimens, low rates of CRM involvement, and a higher rate of sphincter-saving rectal resection. However, anatomical guidelines, including those for autonomic nerve-sparing techniques, neurovascular bundle (NVB)-sparing techniques, and dissection of the rectourethral muscle, have not yet been well described. Among 1594 patients treated by TaTME from the International TaTME Registry, the rate of intraoperative adverse events without technical problems during the transanal phase and the rate of postoperative complications were 13.4% and 35.4%, respectively.

We herein present a TaTME technique based on embryology along the fascia for treatment of rectal cancer. Using this technique, the mobility between tissues of different embryological origins can be recognized through enhanced transanal visualization of the surgical plane, resulting in good short-term and oncological outcomes.

OBJECTIVE

The aim of this study was to evaluate the short-term and oncological outcomes of patients who underwent TaTME based on embryology for rectal cancer.

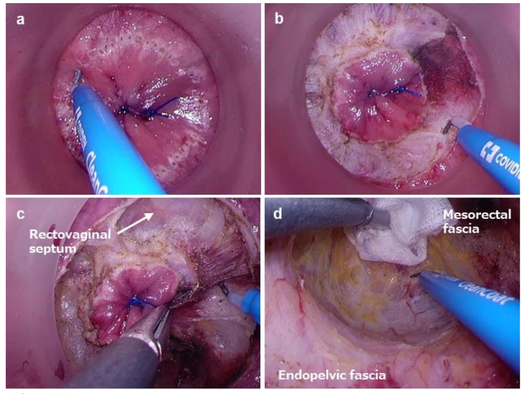


Figure1

Table 1. Patients Demographics

Age, years	65.0
BMI, kg/m^2	23.2
Sex	
Male	113
Female	41
cStage IV	27 (17.5%)
Neoadjuvant therapy	
Yes	85 (55.2%)
LLND	23 (14.9%)
Visceral resection	14 (9.1%)

Table 2. Operative Details and Intraoperative Outcomes

Type of procedure	
Low anterior resection	56
Partial ISR	48
APR/Hartmann	27/23
Operation time, min	429
Bleeding, ml	260
Intraoperative adverse events	9 (5.8%)
Rectal tube injury (APR: 4, ISR: 1)	5
Vaginal injury (ISR)	1
CO2 embolization	2
Bleeding	1

METHODS

We evaluated prospectively collected data of 154 consecutive patients (mean age, 65.0 years; mean body mass index, 23.2 kg/m2) with rectal cancer who underwent TaTME based on embryology from November 2014 to June 2021 (Table 1). Intraoperative complications, blood loss, postoperative complications, length of hospital stay, pathological findings, and oncological outcomes were assessed.

Surgical procedure (Figure1): A double purse-string suture was applied in a clockwise manner using 0-0 polypropylene with a 26-mm rounded needle to tightly occlude the rectum with a 3-cm margin distal to the tumor, thus avoiding contamination by tumor cells and facilitating rectal transection. After irrigation with saline and marking of the dissection line by tattooing the rectal mucosa distal to the mucosal folds, mucosal dissection of the rectum was initiated. Full-thickness rectal transection was performed circumferentially. Dissection performed between endopelvic fascia and mesorectal fascia for posteriol wall; Denonvillier fascia and mesorectal fascia for anterior wall; the pelvic nerve and mesorectal fascia for both side wall with recognition of mobility between tissues of different embryological origins. The dissection proceeded toward the peritoneal reflex along the mesorectal fascia in a circumferential manner until connect to abdominal phase.

RESULTS

Table 2 shows the operative details and intraoperative outcomes. A total of 56, 48, 27 and 23 patients underwent simultaneous open, laparoscopic or robotic low anterior resection, partial intersphincteric resection, abdominoperineal resection (APR) and Hartmann operation, respectively, including pelvic exenteration and lateral lymph nodes dissection. Intraoperative complications occurred in 12 patients. The mean operative time and amount of blood loss were 429 min and 260 g, respectively. Table 3 shows the postoperative outcomes. Postoperative complications occurred in 52 patients., including 5 patients with Clavien Dindo classification grade IIIb. The mean length of hospital stay was 14 days. Table 4 shows the pathological findings. The mean number of retrieved lymph nodes was 16.4. The mean distal margin was 2.4 cm. Seven patients had radial margin positive. After a median follow-up of 36 months (4–82), local recurrence was identified in 5 (3.2%) patients, including 1 of multifocal recurrences (Figure 2).

CONCLUSIONS

TaTME based on embryology for rectal cancer was technically feasible and oncologically safe for patients with rectal cancer.

Table 3. Postoperative Outcomes

Postoperative complications	51 (33.1%)
Clavien–Dindo grade II	39 (25.3%)
Ileus / Outlet obstruction	14 / 2
Chylous ascites	6
Pelvic infection	6
Urinary retention	3
anastomotic bleeding	2
Others	6
Clavien–Dindo grade IIIa	7 (4.5%)
Anastomotic leakage	4
Ileus	3
Clavien–Dindo grade IIIb	5 (3.2%)
Outlet obstruction / Ileus	2 / 1
Anastomotic leakage	1
Necrosis of the stoma	1
Readmission within 30 days	1

Table 4. Pathological Findings

Quality of TME specimen	
Complete	143 (92.9%)
Near-complete	5
incomplete (pISR 1, APR 3, Hartmann 3)	6
Mean tumor size, cm	3.9
Mean retrieved nodes	16.4
T-stage	
T0 / Tis / T1 / T2 / T3	6 / 1 / 30 / 31 / 76
T4a / T4b	1 / 7
N-stage	
N0 / N1-N3	103 / 51
TNM classification (Stage)	
0 / I / II / III / IV	70 / 50 / 38 / 34 / 23
Distal margin, cm	2.3
RM positive (APR 4, pISR 2, Hartmann 1)	7 (4.5%)

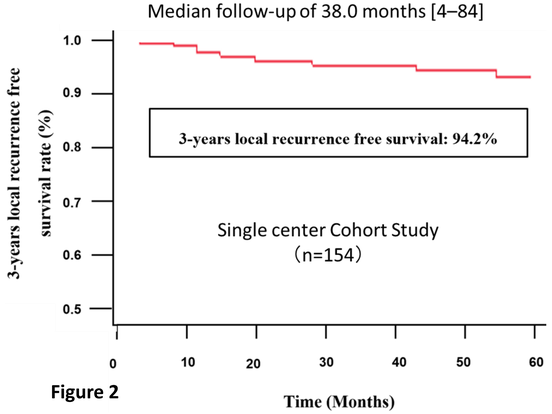


Figure 2