TRANSANAL TOTAL MESORECTAL EXCISION FOR PATIENTS WITH MIDDLE AND LOW RECTAL CANCER WHO HAVE UNDERGONE PREOPERATIVE RADIOTHERAPY OR CHEMORADIOTHERAPY: SAFE AND EFFICACIOUS?

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ABSTRACT

Introduction: *It was found that patients with moderate and low rectal cancers after chemoradiotherapy had many difficulties in performing laparoscopic total mesorectal excision (TME), especially in those with narrow pelvis. We conducted the study of transanal TME (Ta TME) for patients with middle to low rectal cancer receiving chemoradiotherapy before surgery to evaluate the offectiveness and safety of this technique.*

Material and method*: Patients with middle or low rectal cancer who have received radiotherapy or chemoradiotherapy before surgery. The diagnosis was based on MRI, abdominal CT scan, rectal endoscopic ultrasonography and clinical examination. All underwent operation following Ta TME technique at Hue central Hospital in Vietnam. Hospital ethics committee approval was obtained for this cohort study.*

Results: *10 patients underwent elective surgery for middle-low rectal cancer by TaTME from March 2015 to March 2018, there were. Male/female ratio was 7/3. Mean age was 54.8 ± 15.9 and BMI was 21.4 ± 1.1 kg/m^2.*

There were 7 middle and 3 low rectal tumors. Clinical TNM stage:T2N1: 2 patients, T3N0: 4 patients,T3N1: 2 patients and T4N1: 2 patients.

Mean operation duration was 190 ± 38 minutes (150-260). Two patients were exteriorized specimen through abdominal incision in right lower quadrant and 8 via anus. Anastomoses were performed by mechanic procedure in 1 and by hands in 9 patients.

Complication included: 1 left uretetal burning and postoperative difficulty in voiding, 1 presacral abscess and totally necrosis of the anastomose. Good Quick' assessment in 10/10 patients. The distance from lower pole of tumor to distal resection margins (DRM) was 19 ± 5 mm. Distal resection margins (DRM) were negative in 10/10 patients and circumferential resection margins (CRM) were positive in 1/10 patients.The hospital stay was 6 days (5-8).

Median follow-up time was 14 months. One patient had local recurrence and invaded to urinary bladder and left ureter at 18 months and was managed by transversal colostomy and left ureterostomy.

Conclusion: *Transanal total mesorectal excision for patients with middle and low rectal cancer who have undergone preoperative radiotherapy or chemo-radiotherapy is safe and efficacious.*

Key words: *transanal total mesorectal, rectal cencer.*

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I. INTRODUCTION

Total mesorectal excision (TME) is the gold-standard approach to mid-low rectal cancers with 65% rates of 5 years survival and 6–10% rates of local recurrence [1,2]. Laparoscopic TME was proven to be safe with short and long-term results comparable to open TME [3,4].

However, in patients with middle or low rectal cancer receiving preoperative chemoradiotherapy, laparoscopic TME is still considered a challenge. Several studies reported that macroscopic quality of TME specimen assessed completely was only 72.4% [5], the rate of APR was 11.2 % [5] and the rate of conversion to open procedure was 28% [6].

The National Comprehensive Cancer Network recommends that resectable cT3N0 or any cTN1–2 lesions should be initially treated with preoperative chemoradiation [7]. With the increasing use of NCCN guidelines, the number of patients with middle-low rectal cancer treated with neoadjuvant therapy is increasing, requiring a new strategy to minimize the shortcomings of laparoscopic TME.

Transanal TME (TaTME) "open" was reported by Bannon et al in 1995 [8] and in 2010, Sylla P. reported the first case of Transanal TME "laparoscopy" [9]. Since then, transanal TME has become increasingly accepted.

It was found that patients with moderate and low rectal cancers after chemoradiotherapy had many difficulties in performing laparoscopic TME, especially in those with narrow pelvis. We conducted the study of transanal TME for patients with middle to low rectal cancer receiving chemoradiotherapy before surgery to evaluate the safety and efficacity of this technique.

II. MATERIAL AND METHOD

2.1 Patient' selection

Selected patients with rectal cancer who gave informed consent for rectal resection via transanal total mesorectal excision technique were included. All underwent operation at Hue central Hospital in Vietnam. Hospital ethics committee approval was obtained for this cohort study.

Patient selection criteria included: Patients with middle or low rectal cancer (lower: 3-6 cm from anal verge, middle: more than 6 to 9 cm), who have received radiotherapy or chemoradiotherapy before surgery. Patients with tumor T3, having a clear margin of circumferential resection margin (CRM) on MRI, received short-course radiation therapy, surgery after one week. Patients with tumor ≥ T3 or positive nodes, long-course chemoradiotherapy, surgery after 6-8 weeks. The diagnosis was based on MRI, abdominal CT scan, rectal endoscopic ultrasonography and clinical examination. Patients with no distant metastasis, ASA ≤3, have no history of colonic surgery as well as prostatic surgery.

Exclusion criteria included a synchronous distant metastasis, another malignancy, severe cardiac or pulmonary disease, pregnancy, severe medical disease, and intestinal obstruction or perforation.

2.2. Technique

Place 10 mm trocar in the umbilicus to observe the peritoneum. In the absence of peritoneal and hepatic metastases we started firstly TME by transanal approach.

After placing the lone star® retractor (Cooper surgical, Trumbull, Connecticut, USA) and then a Covidien hemorrhoidectomy anal dilator was placed, the rectum was sterilized with 10% Betadine solution. A purse-string suture closing rectal lumen was performed one centimeter below the inferior border of tumor with prolene® (Ethicon, Cornelia, Georgia, USA) 2.0. This thread was also used to pull out. Full thickness of the rectal wall was resected another 1 cm from the suture, starting at 6 o'clock, then go around the rectum. Attention was paid when dissection from 11 to 01 o'clock position in men because of urethral injury risk. With open technique it was easy to perform the mesorectal excision beyond the upper margin of the tumor.

In these cases, we went a few centimeters away until the ability to observe by "open" surgery was limited, we stopped and moved to the abdomen stage.

In cases where the tumor has not passed through but the ability to observe by "open" surgery is limited, we place the SILS port multiple access port (Covidien Minneapolis) and proceeded the TME until the peritoneal fold.

The specimens were taken out through the anus or taken through a skin incision in the lower right quadrant under a wound protector bag where the protective ileostomy was planned to be placed and the anastomoses were made by hand or by mechanic.

Intestinal continuity was re-established after 4-6 weeks or after completion of postoperative adjuvant therapy.

2.3. Postoperative assessment and analysis

Patient' demography including age, BMI, tumor position, preoperative clinical TNM, type of neoadjuvant therapy was noted.

Rate of conversion, duration of operation, intraoperative events and post-operative complications, anastomotic procedure, procedure of specimen extraction, Quick' assessment, circumferential resection margin (CRM) assessment, distal resection margin (DRM) assessment, pTNM, hospital stay were recorded.

Follow-up included clinical examination, carcino-embryonic antigen measurement, colonoscopy and abdominal CT scan.

Patient data are shown as meaṇ (s.d) unless indicated otherwise.

III. RESULTS

Between March 2015 and March 2018, there were 10 patients underwent elective surgery for middle-low rectal cancer by transanal total mesorectal excision. Male/female ratio was 7/3. Mean age was 54.8 ± 15.9 and BMI was 21.4 ± 1.1 kg/m^2.

There were 7 middle and 3 low rectal tumors. Clinical TNM stage were detailed in Table 1: clinical stage

Clinical TNM stage	T2N1	T3N0	T3N1	T4N1
n	2	4	2	2
Short course	✓	✓		
Long course			✓	✓

Mean operation duration was 190 ± 38 minutes (150-260), in which mean anal stage duration was 60 ± 12 minutes (40- 75).

Two patients were exteriorized specimen through abdominal incision in right lower quadrant and 8 via anus.

Anastomoses were performed by mechanic procedure in 1 and by hands in 9 patients.

All patients had protective ileostomy in right lower quadrant.

There was one patient having 1/3 superior left ureter intraoperative burn which was managed with JJ catheter placement. This patient then suffered the difficulty in voiding but resolved after 1 month with conservative treatment.

Postoperative complications included 1 presacral abscess which was managed by transanal drainage and the anastomotic open was sutured after 2 weeks. The other was totally necrosis of the anastomose. The patient was operated by abdominal approach descending the colon in order to redo the anastomose.

The hospital stay was 6 days (5-8).

Anatomo-pathology assessment showed good Quick' assessment in 10/10 patients. The distance from lower pole of tumor to distal resection margins (DRM) was 19 ± 5 mm. Distal resection margins (DRM) were negative in 10/10 patients and circumferential resection margins (CRM) were positive in 1/10 patients.

Median follow-up time was 14 months. One patient had local recurrence and invaded to urinary bladder and left ureter at 18 months and was managed by transversal colostomy and left ureterostomy. Just to now the patient was alive.

IV. DISCUSSION

With the results of 10 successful cases of TaTME surgery without the need for open surgery or abdominal-perineal resection surgery, we found that TaTME technique was efficacious for middle-low rectal cancer in patients receiving preoperative radiation or chemo-radiotherapy.

Some studies have shown the high conversion rate in patients with mid-low rectal cancer received preoperative radiation therapy [6,10,11,12]. This study, although with a small number of patients, showed the effect of this method with the conversion rate of 0%. In the other hand, operative duration in this study was 190 ± 38 minutes, but it ranges from 267-284 minutes in other studies [6,10,11,12]

As we know performing TME in patients with middle-low rectal cancer was always difficult, especially in male patients often having narrow pelvis or obese patients. The difficulty become more severe in patients receiving chemoradiotherapy due to unclear dissection plan. Besides, after radiotherapy, the rectal wall near the tumor became harder making it difficult to identify the lower border of the tumor and TME by laparoscopy was almost impossible in some cases. In these cases, if the attempt to do so would break the tumor or lead to APR. We did not have difficulty in performing TME from the anus. Several authors reported that the dissection plan was relatively clear by transanal approach [13,14,15].

In term of technique, in the first eight cases we pulled the specimen through the anus. In cases of large tumor, we met the difficult in exteriorization the specimen and we suspected it was the cause of one of the complications in our study. So, in the last two cases, the tumors were quite large. We removed the tumor through an incision the right lower quadrant where the protective ileostomy was planned. This did not increase the incision in the abdomen because all patients were performed protective ileostomy.

Ureteral burning patients quite unrelated to TME technique. Difficulty in voiding in low anterior resection was also met with a rate and was mostly restored with conservative treatment.

Presacral abscesses also occur in the TME technique at a rate of 5% and are usually well resolved by transanal approach.

Distal part necrosis of the colon that came down for the anastomose in this study was serious. We suspected vascular lesions in the process of pulling the specimen out through the anus. As such, in the last two cases, a large tumor evaluation may be difficult to pull out through the anus, we have removed the tumor through the incision in right lower quadrant.

In term of oncologic safety, this study showed 100% good in Quick'assessment. Mean distal margin in this study was 19 ± 5 mm, but other three studies, the distal margin ranges from 24-26 mm. This shows TaTME in preoperative patients always having enough distal margin.

DRM was negative in 100% cases and there was one positive in CRM. Comparison with TaTME in patients without preoperative chemo-radiotherapy, these results were similar (table 2). Performing TME by transanal, we could correctly determine the lower margin of the tumor, the resection line, better view the dissection plan that led the better of TME quality.

Table 2: Positive rate of DRM and CRM

Study (year)	**n**	**DRM (+)**	**CRM (+)**
Denost (2014)	50	2%	4%
Marks (2013)	106	1%	3.8%
Tuech (2015)	56	NR	5.4%
Kanso (2015)	51	8%	10%
Muratore (2016)	43	0%	2.4%

V. CONCLUSION

Transanal total mesorectal excision for patients with middle and low rectal cancer who have undergone preoperative radiotherapy or chemo-radiotherapy is safe and efficacious. However, a study with larger number of patients are needed to evaluate accurately.

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