



Case Report

A case report of the transanal lateral lymph node dissection with a combined abdominal assisted approach for the lower rectal cancer

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ABSTRACT

Introduction: Low and mid rectal cancer cells have the tendency to spread in the lateral pelvic lymph node (LPLN). The Japanese guidelines recommend systematic lymph node dissection when a positive LPLN is suspected or in stages II–III rectal cancer. However, laparoscopic lymph node dissection is complex and challenging. We introduce transanal LPLN dissection using an abdominal approach.

Presentation of case: A 78-year-old man was diagnosed with advanced rectal cancer. Computed tomography and magnetic resonance imaging showed lower rectal wall thickening and bilateral lateral lymph node swelling. We performed laparoscopic abdominal peritoneal resection with combined bilateral LPLN dissection using abdominal and transanal approaches. He had an uneventful postoperative course with no signs of recurrence at the 5-month follow-up.

Discussion: LPLN metastases for low rectal cancer especially occur at the bottom of the deep pelvic spaces. As laparoscopic LPLND for low rectal cancer can be complicated, we adopted abdominal and transanal approaches, which provide the advantage of an anatomical view. This procedure may improve lateral pelvic anatomical structure viewing, and may offer advantages over laparoscopic abdominal approaches for visualizing and dissecting LPLNs.

Conclusion: Curative resection has become available for rectal cancer with transanal LPLN dissection. LPLN dissection with combined abdominal and transanal approaches is a feasible treatment for advanced rectal cancer.

1. Introduction

Lateral lymph node (LLN) dissection has been performed for stages II–III rectal cancers [1,2]. The incidence of lateral pelvic lymph node (LPLN) metastases ranges from 10.6 to 25.5% [3,4]. Although the prognosis of rectal cancer patients with LLN metastasis is poor, the 5-year overall survival rate of cases treated via LPLN dissection (LPLND) is reportedly 40–50% in Japan. Sugihara et al. reported that the overall survival of pT3/T4 low rectal cancer patients who underwent LPLND was significantly longer than those who did not [5].

In an analysis using propensity-score matching of pT3T4 lower rectal cancer cases, the 5-year overall survival rate of LLN dissection cases was

68.9%, while that of non-dissection cases was 62.0% [6].

Standardized laparoscopic surgery is currently performed for advanced rectal cancer. Furthermore, laparoscopic LPLND surgery is performed by several colorectal surgeons. However, LPLN metastases occur at the bottom of the lateral pelvis along the internal iliac vessels.

Laparoscopic LPLND is complex and challenging, especially in obese patients with narrow pelvises. However, transanal LPLND (Ta-LPLND) is the latest promising approach for rectal cancer, which is not reliant on a patient's shape from the in-line vantage point of transanal access.

We introduce a Ta-LPLND technique via an abdominal approach used at our institution. This case report has been reported in line with the SCARE Criteria [12].

Abbreviations: LLN, lateral lymph node; LPLN, lateral pelvic lymph node; LPLND, lateral pelvic lymph node dissection; Ta-LPLND, transanal lateral pelvic lymph node dissection; TME, tumor mesorectal excision.

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2. Presentation of Case

A 78-year-old man with a 60-year history of chronic obstructive pulmonary disease was referred to our hospital for bloody stools one month previously. At 162 cm tall and weighing 50 kg (BMI:19kg/m²), his past history included hypertension. His anamnesis also revealed no co-morbidities such as diabetes mellitus, and he was a non-smoker, didn't have drug history, including any relevant genetic information, and psychosocial history. His laboratory findings were as follows: platelets, $425 \times 10^3/\mu\text{L}$; serum aspartate aminotransferase, 14 IU/L (normal: <40 IU/L); serum alanine aminotransferase, 9 IU/L (normal: <45 IU/L); bilirubin, 0.3 mg/dL (normal: <1.2 mg/dL); albumin, 3.6 mg/dL; and prothrombin time, 72.4%. The serum carcinoembryonic antigen concentration was 44.7 ng/mL (normal: <5.0 ng/mL), and the serum carbohydrate antigen 19-9 concentration was 547 mAU/mL (normal: <37 mAU/mL). Enema showed circumferential stenosis with an apple-core interruption of the lower rectum (Fig. 1). Total colonoscopy revealed a circumferential type-2 tumor in the lower rectum approximately 2 cm from the anal verge (Fig. 2). Tumor biopsy revealed moderately differentiated adenocarcinoma, which led to the diagnosis of rectal cancer. Computed tomography and magnetic resonance imaging showed lower rectal wall thickening and bilateral LLN swelling. The patient was scheduled for laparoscopic abdominal peritoneal resection with combined bilateral LPLND via abdominal and transanal approaches.

Five ports were used for laparoscopic abdominal manipulation. The operation involved two teams operating simultaneously. Initial intra-abdominal observation was conducted. The small intestine was removed from the pelvis via abdominal and transanal approaches. After laparoscopic tumor mesorectal excision (TME), bilateral LPLND was performed. The lesion was macroscopically bulky. The left rectal wall was thick. Infiltration to the left pelvic plexus was suspected. Posterior dissection of the rectum was performed from the pelvis to the superior area of the levator ani. As the anterior side was dissected, the Denonvilliers' fascia was divided, and the prostate was completely exposed.

The obturator (#283) and internal proximal lymph nodes (#263P) were dissected from the abdominal side, while the bottom of the obturator space and distant lymph node (#263D) were dissected transanally. The operative time was 561 min, and the intraoperative bleeding was about 10 mL. Histopathology revealed atypical glandular epithelium stained with nuclear chromatin infiltrating beyond the muscle layer (Fig. 3). No metastatic findings were observed. The postoperative course was uneventful, and the patient was discharged on postoperative day 21. No adjuvant chemotherapy was administered. He remained healthy and recurrence-free after 5 months of follow-up.

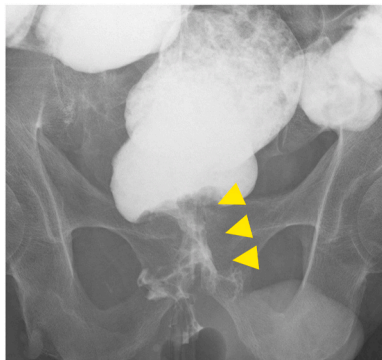


Fig. 1. Barium enema shows a circumferential lower rectal tumor (yellow arrow). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

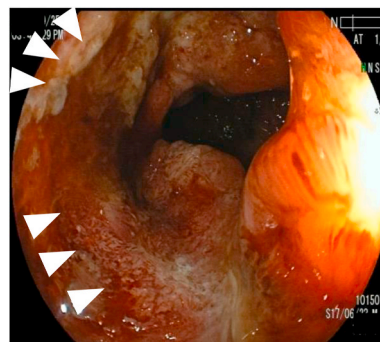


Fig. 2. Colonoscopy shows that the tumor was located 2 cm from the anal verge (white arrow). The tumor was diagnosed as a moderately differentiated adenocarcinoma by tissue biopsy.

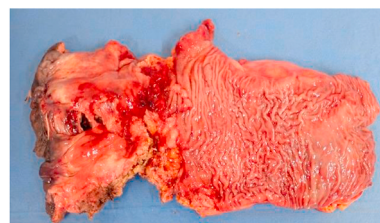


Fig. 3. The resected specimen shows a circumferential bulky tumor, with atypical glandular epithelium stained with nuclear chromatin, which infiltrated beyond the muscle layer (green arrow). (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

3. Discussion

TME is the gold standard for ensuring circumferential resection margins and reducing local recurrence rate [7,8]. It removes perirectal lymph nodes, reducing the local recurrence rate from the pre-TME rates of 14–40%–6.5% [9]. However, low and mid rectal cancer cells tend to transfer to LLNs [10]. Laparoscopic LPLND for low rectal cancer can be complicated and challenging. LPLN metastases occur at the bottom of the deep pelvis, along the internal iliac vessels, especially in patients with obesity and narrow pelvic spaces. Aiba et al. [11] reported the safety and efficacy of Ta-LPLND. Ta-LPLND was performed at their institution, but it was difficult to transanally appreciate the iliac artery, iliac vein, and obturator artery. We used both abdominal and transanal approaches. The transanal approach to the deep pelvic lymph node was relatively easy to perform [11]. However, there are no established treatment protocols for laparoscopic isolated LLN dissection for lower rectal cancer. Imaging can be used to determine the anatomy of the lateral dissection region and identify S4. Completely dissecting the internal proximal LLN (#263P) from the caudal side and the obturator nerve's ventral lateral proximal area using the abdominal approach has a learning curve. Therefore, Ta-LPLND requires two teams simultaneously operating using both approaches. The strengths of the two teams result in a reduced duration of surgery and enhanced visualization through the intra-abdominal and transanal approaches. In this case, traditional laparoscopic TME, including abdominal manipulation, was performed. The left colon was mobilized and the inferior mesenteric artery was divided at the bottom. From the abdominal side, peritoneal incision and dissection were performed along the left external iliac vein and around the iliopsoas and obturator internal muscles surrounding the obturator duct. In the transanal approach, dissection can be initiated from outside the S4 nerve, the lateral edge of the TME layer. The endopelvic fascia inside the anal levator tendon arch on the anal side of the S4 nerve can be dissected to enter the closed area. It is important to

dissect the lateral obturator muscle to the ventral temporal side. The view of the approach from the abdominal side was better for identifying and exposing the external iliac vein, internal proximal LLN (#283), ventral side to the obturator nerve, and ligation of the lateral iliac vascular branch.

Meanwhile, the surgical view around the distal internal lymph node (#263d) and the Alcock duct improved with the transanal approach. Ta-LPLND provides a horizontal and better view with “down-to-up” deep LPLN dissection via a transanal single-port platform. Ta-LPLND can confirm the area of deep LPLNs with better specimen quality. Dissection with Ta-LPLND was appropriate for the bottom LLNs and the internal lymph node (#263d).

4. Conclusion

Ta-LPLND combined with abdominal dissection is feasible and effective for rectal cancer. This was considered a valid use of Ta-LPLND.

Ethical approval

The relevant documents were approved by the Medical Ethical Committee of the Division of Surgery Gastroenterological Center, Medico Shunju Shiroyama Hospital.

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Author contribution

MI drafted the manuscript and provided the original pictures. TN, JK, RI, YU, SS, AM, TI, JO, collected the clinical, radiological data and helped to draft the manuscript. All authors read and approved the final manuscript.

Registration of research studies

Not applicable.

Guarantor

All the authors of this paper accept full responsibility for the work and the conduct of the study had access to the data, and controlled the decision to publish.

Consent

Patient informed written consent was obtained and all identifying information is omitted. We got the Ethical approval for this study was obtained from ETHICS COMMITTEE. Medico Shunju Shiroyama Hospital. (APPROVAL NUMBER/ID) SH 2018-034 by way of precaution.

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Conflicts of interest

The authors declare no conflicts of interest regarding the present manuscript.

All authors are in agreement with the content of this manuscript.

Declaration of interest statement

The authors declare no conflict of interest.

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Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2021.103173>.

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