



Case report

Lateral pelvic node dissection after neoadjuvant chemoradiation in rectal cancer with right internal iliac node metastasis but without regional node metastasis: A case report

Mary Anne Carol A. Cueto^{*}, Carlo Angelo C. Cajucom

Jose R. Reyes Memorial Medical Center, Section of Colorectal Surgery, Department of Surgery, Manila, Philippines

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ABSTRACT

Introduction and importance: Total mesorectal excision (TME) with lateral pelvic node dissection was routinely done in low clinical T3 rectal tumors below the peritoneal reflection as stated in the Japanese guidelines for colorectal cancer. Our institution follows the same practice in selected patients. This is our first reported case wherein a patient with rectal cancer underwent total mesorectal excision with lateral lymphadenectomy after neoadjuvant treatment with a positive lateral node on histopathology.

Case presentation: A 49 year old female had rectal adenocarcinoma 4 cm FAV. Pelvic MRI revealed a low rectal tumor abutting the mesorectal fascia anteriorly, anal sphincters not involved, and confluent enlarged right iliac nodes. After neoadjuvant treatment, interval decrease in size of the rectal lesion and the right iliac nodes were noted. Patient underwent partial intersphincteric resection, lateral pelvic node dissection and protective loop ileostomy.

Clinical discussion: Histopathology revealed a rectal adenocarcinoma with one right internal iliac lymph node was positive for tumor involvement. Circumferential resection margin was 4.0 mm. Patient is currently on 4th cycle of adjuvant chemotherapy. Preoperative chemoradiation could not completely eradicate lateral pelvic node metastasis. Therefore, lateral pelvic node dissection should be considered if lateral pelvic lymph node metastasis is suspected even after neoadjuvant therapy.

Conclusion: Unlike TME, performance of a routine lateral lymphadenectomy in rectal cancer surgery varies by geographic location. Reports from Asian countries and our practice in our institution shows that it can be performed safely. This could improve the oncologic outcomes of patients especially if combined with neoadjuvant chemoradiotherapy.

1. Introduction

The presence of lateral pelvic lymph node metastasis in rectal cancer was initially reported by Sauer and Bacon in 1951 [1]. However, its clinical significance and management remain controversial. Lateral pelvic node dissection is not routinely done in Western countries because the standard of care for advanced rectal cancer is neoadjuvant chemoradiation followed by total mesorectal excision. In contrast, lateral pelvic node dissection for low clinical T3 rectal cancers below the peritoneal reflection is a standard treatment procedure in Japan. Results of a nationwide multi-institutional study in Japan showed that lymph node metastasis in the internal and external iliac was present in 14.6% of patients with T3 or T4 tumors who underwent lateral pelvic node

dissection [2]. The survival of patients with lymph node metastasis beyond the internal iliac region is comparable with that of N2b and better than that of Stage IV patients who underwent curative resection. Hence, these data supported the idea that lateral pelvic lymph node metastasis could be considered as regional lymph node spread than systemic metastasis and can be treated with lateral pelvic node dissection.

Our institution follows the same practice as we perform total mesorectal excision with lateral pelvic node dissection in selected patients when the lower border of the tumor is located at or below the peritoneal reflection and the tumor has invaded beyond the muscularis propria on preoperative pelvic MRI or endorectal ultrasound, as indicated in the Japanese Society for Cancer of the Colon and Rectum (JSCCR)

^{*} Corresponding author at: 16H Glenhaven Tower 3, California Garden Square, Mandaluyong City 1550, Philippines.

E-mail address: maccueto@gmail.com (M.A.C.A. Cueto).

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guidelines for the treatment of colorectal cancer [3]. This is our first reported case wherein a patient underwent lateral pelvic node dissection with TME after neoadjuvant treatment and subsequently revealed a positive lateral node on histopathology.

This case is being presented for the rarity in presentation and also for the complex multidisciplinary management it required. This is being reported in line with the SCARE 2020 guidelines [4].

2. Case discussion

We report a case of a 49 year old female from Manila who initially presented with blood-streaked stools. She had no comorbidities and had no previous surgeries. She had no history of cancer in the family. The rest of the past medical history, family and social history were unremarkable.

Patient is ECOG 0 with BMI of 24.7 kg/m². Abdomen exam was unremarkable. Digital rectal exam revealed good sphincteric tone, anterior fungating mass at 4 cm from anal verge. The cervix and anal sphincters were free from the tumor. Internal exam was unremarkable.

Colonoscopy revealed a semicircumferential friable mass 4 cm from anal verge. Biopsy revealed adenocarcinoma. CEA was 4.54 ng/ml. Whole abdominal CT scan revealed a nodular wall thickening in mid to low rectum, with enlarged iliac nodes bilaterally. No liver metastasis was noted. Pelvic MRI revealed a circumferential intermediate signal intensity mid to low rectum on T2W abutting the mesorectal fascia anteriorly with no involvement of anal sphincters nor adjacent structures (Fig. 1). There was a confluent enlarged right external iliac, internal iliac and common iliac nodes largest 4.5 × 2.5 × 5.6 cm, and prominent left internal iliac node measuring 0.7 × 0.9 cm (Fig. 2). Chest CT scan revealed no metastasis.

After discussing the case in the hospital multidisciplinary tumor boards, the patient underwent neoadjuvant treatment with short course radiotherapy (5Gy in 5 fractions) and consolidation chemotherapy of Capecitabine and Oxaliplatin for 3 cycles.

After neoadjuvant therapy, pelvic MRI revealed a decrease in size of the rectal lesion with clear cleavage plane to cervix and vagina (Fig. 1). Anal sphincters were not involved. There was a decrease in the size of the confluent right lateral lymph nodes now measuring 1.3 × 0.9 cm (Fig. 2). No liver and lung metastasis noted on metastatic workup.

Patient was prepared for surgery. Partial intersphincteric resection, total mesorectal excision with side-to-end anastomosis, bilateral lateral pelvic node dissection with protective loop ileostomy was done on the

15th week from the last day of radiation therapy.

Under general anesthesia, patient was placed on modified lithotomy position with both arms alongside the body. Midline laparotomy incision was done. After lateral-to-medial mobilization of the left colon and sigmoid colon, total mesorectal excision is then carried out by mobilization of the rectum (Fig. 3). Sharp dissection was done circumferentially around the mesorectum in an avascular areolar plane between the visceral and parietal layers of the endopelvic fascia down to the levator ani muscle.

The dissection of lateral nodes commenced after the completion of TME and transection of the distal rectum (Figs. 3 and 4). The medial border of the dissection was the hypogastric nerve. Dorsally, the sacral periosteum was exposed. Dissection was proceeded down along to the iliac vessels. The distal end of the dissection was around the first branch of the inferior vesical vessel. The obturator space was then dissected. Lymph node dissection is proceeded down along to the obturator internus muscle. Caudally, the lymphatic vessels were divided where they continue further to the inguinal canal at the ventral side of the pectineal ligament. Fat tissue of the obturator space was lifted up and dissected from the bottom, until it was completely removed.

After the completion of the lateral pelvic node dissection, a coloanal side-to-end anastomosis was done using synthetic absorbable interrupted sutures (Fig. 5). A protective loop ileostomy was done prior to abdominal wound closure.

Total operative time was 330 min. Lateral pelvic node dissection was done bilaterally in a total of 88 min. Estimated blood loss was 350 ml. No intra-operative complications were noted.

The surgery was performed in a tertiary government hospital in the Philippines – Jose R. Reyes Memorial Medical Center in Manila. The operating team was composed of a colorectal surgery fellow-in-training, who was the primary surgeon of this case, assisted and supervised by her colorectal surgery consultant. She was also assisted by a 5th year general surgery resident.

Patient had an uneventful postoperative course and was discharged on the fourth postoperative day. Histopathology revealed a rectal adenocarcinoma, well differentiated with invasion up to the muscularis propria, positive for lymphovascular space invasion. One right internal iliac lymph node was positive for tumor involvement. The remaining 13 lateral nodes and 9 mesorectal nodes were negative. Circumferential resection margin was 4.0 mm.

The patient had no subjective complaints on her 7th day and 30th day outpatient follow-up. She is currently on 4th cycle of adjuvant

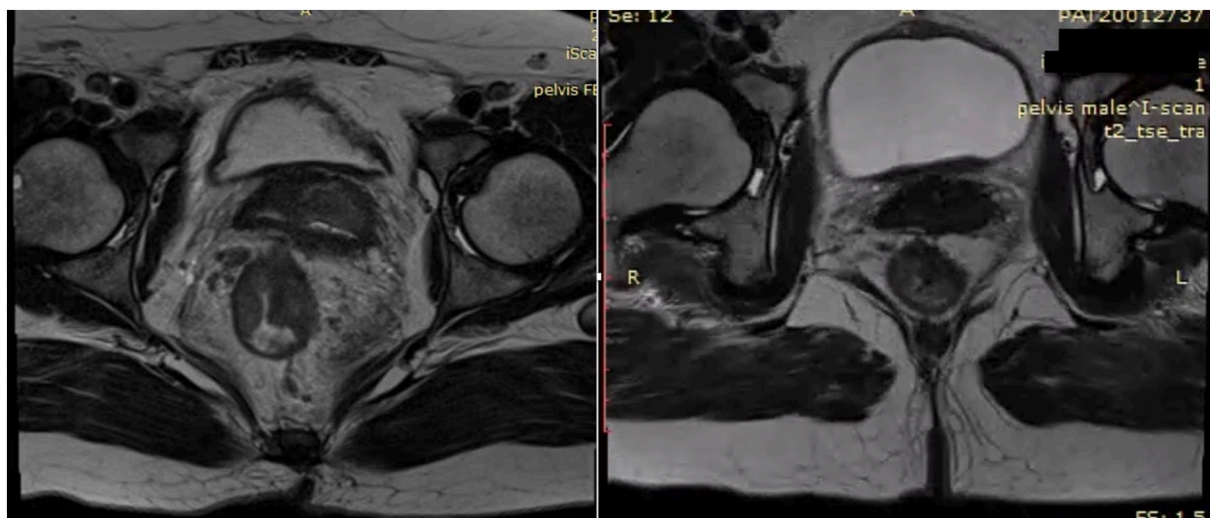


Fig. 1. Magnetic resonance imaging of the pelvis with rectal protocol done pre-neoadjuvant and post-neoadjuvant therapy. (a) A circumferential intermediate signal intensity mid to low rectum on T2W abutting the mesorectal fascia anteriorly with no involvement of anal sphincters nor adjacent structures noted prior to neoadjuvant therapy. (b) Interval decrease in the size of tumor in the mid to low rectum with plane of cleavage to adjacent structures noted after neoadjuvant treatment.

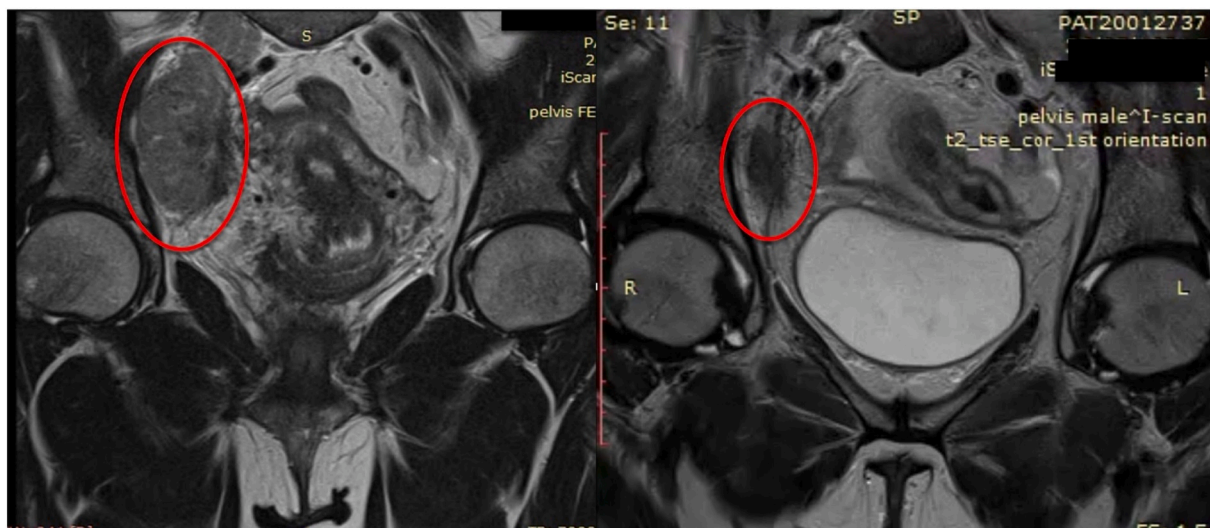


Fig. 2. Magnetic resonance imaging showing the right iliac node before and after neoadjuvant treatment. (a) A confluent enlarged right external iliac, internal iliac and common iliac nodes largest $4.5 \times 2.5 \times 5.6$ cm pre-neoadjuvant treatment. (b) A decrease in size of the confluent right lateral lymph nodes now measuring 1.3×0.9 cm after neoadjuvant treatment.

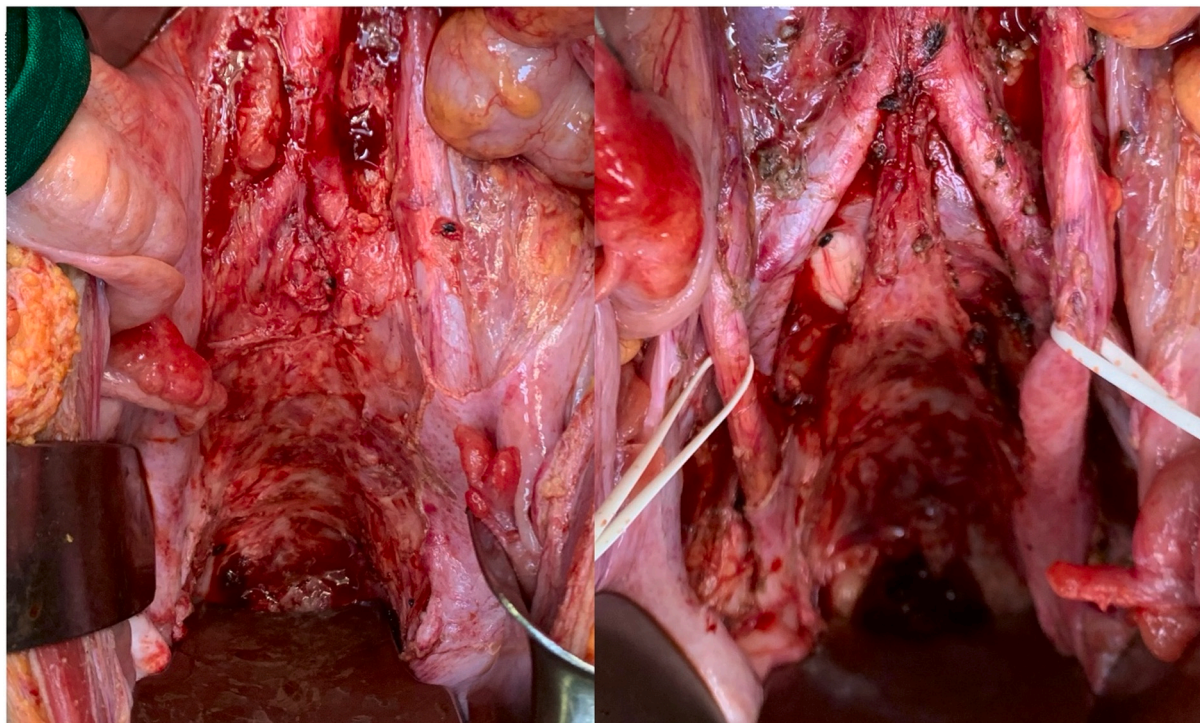


Fig. 3. Intraoperatively, (a) post-resection field after performing total mesorectal excision and (b) post-resection field after performing bilateral lateral pelvic lymph node dissection.

chemotherapy. Patient has good sphincteric tone on DRE with anastomotic line 1 cm FAV. She will be scheduled for closure of ileostomy once surveillance imaging and colonoscopy are unremarkable. The patients and her family expressed gratitude for the care she received from the multidisciplinary team.

3. Discussion

In 2013, Rullier devised a surgical classification for low rectal cancer less than 6 cm from the anal verge into four groups according to the location of the tumor from the anal sphincter to standardize surgery for

low rectal cancer [5]. This assesses the relationship between the tumor and the intersphincteric plane, sphincter complex and pelvic floor to guide whether intersphincteric resection or abdominoperineal resection is feasible. The tumor in this case was located 4 cm from anal verge and 1 cm above the anorectal ring. Hence, this was classified as Rullier Type II (Juxta-anal tumor), and consequently, partial intersphincteric resection is the procedure of choice.

Intersphincteric resection (ISR) is a surgical procedure for low rectal cancer located near the anal verge with no infiltration to the external anal sphincter or levator ani muscles, to ensure an adequate distal margin by total or partial removal of the internal anal sphincter to avoid



Fig. 4. Post-resection field after performing bilateral lateral pelvic lymph node dissection revealing the (a) right, and the (b) left pelvic sidewalls.



Fig. 5. Rectal specimen after performing partial intersphincteric resection, total mesorectal excision. (a) Anterior view, (b) posterior view, (c) right lateral view, (d) left lateral view.

a permanent stoma [3]. It is not recommended for poorly differentiated cancer and for cases wherein the anal sphincter tone is decreased. Rullier et al. reported a local recurrence of 2% in a series of 92 patients undergoing ISR [6]. The overall 5-year survival rate was 81%, with a 5-year disease-free survival of 70%. Most patients (78%) in the series had T3 lesions and 88% underwent long-course neoadjuvant chemoradiotherapy. Since anal dysfunction is one of the serious potential problems after ISR, anorectal manometric examination may be useful for an objective assessment of anal function prior to closure of ileostomy.

Lateral pelvic lymph node dissection is a controversial operation that is mainly performed in the East, while in the West, the standard treatment is neoadjuvant chemoradiation in combination with standard total mesorectal excision (TME). According to the ASCRS Clinical Practice Guidelines for the management of rectal cancer, routine lateral pelvic lymph node dissection is not typically required in the absence of a clinically positive lymph node in the lateral pelvic compartment [7]. The NCCN guidelines do not recommend extension of nodal dissection into the distribution of iliac lymph nodes unless these nodes are clinically suspicious. The Japanese Society for Cancer of the Colon and Rectum (JSCCR) recommends routine lateral pelvic node metastasis whenever the lower border of the tumor is located distal to the peritoneal reflection and whose tumor has invaded beyond the muscularis propria (T3). The rate of lateral lymph node metastasis in patients who underwent

lateral lymph node dissection was 20.1%. After performing lateral lymph node dissection for the above mentioned indication, the risk of intrapelvic recurrence decreases by 50% and 5-year survival rate improves by 8 to 9% [3].

Preoperative chemoradiation could not completely eradicate lateral pelvic node metastasis. Approximately 30 to 40% of patients with clinically suspicious lateral pelvic lymph node metastasis who underwent neoadjuvant chemoradiation and lateral lymph node dissection developed pathological lymph node metastasis [9]. Therefore, lateral pelvic node dissection should be considered if lateral pelvic lymph node metastasis is suspected even after neoadjuvant therapy. Disadvantages of this procedure include long operative time, large blood loss and sexual dysfunction. However, performing lateral pelvic node dissection should be considered since lateral pelvic lymph node metastasis is a major cause of local recurrence in patients with rectal cancer treated with neoadjuvant chemoradiation and TME alone. Lateral pelvic node metastasis was significantly higher in patients with lateral pelvic lymph nodes with a short-axis diameter ≥ 8 mm before chemoradiation and in lateral pelvic lymph nodes with short-axis diameter > 5 mm after chemoradiation [9].

Lateral pelvic node dissection is challenging due to its unfamiliar territory for most surgeons and also due to its variable vascular anatomy. To make this surgical procedure less complicated, it is very

important to understand the pelvic anatomy, and to use specific anatomic landmarks during dissection and systematic dissection based on planes and boundaries to simplify the complicated procedure into several simple procedures. This could lead to standardization of the surgical technique to minimize complications and to improve outcome.

4. Conclusions

Optimal rectal cancer management requires multidisciplinary approach to improve patient outcome. Unlike total mesorectal excision which is a standard of care in rectal cancer surgery, performance of a routine lateral pelvic node dissection in rectal cancer surgery varies by geographic location. Reports from Asian countries and our practice in our institution shows that it can be performed safely. This could improve the oncologic outcomes of patients especially if combined with neoadjuvant chemoradiotherapy. It remains unclear whether enlarged lymph nodes in the lateral compartment are better addressed by more aggressive radiation treatment or by surgical removal due to paucity of studies. Until a consensus is reached, surgeons should follow protocols of their local institution as neoadjuvant therapy for low rectal tumors varies significantly between geographic locations.

5. Patient perspective

“Natutuwa po ako sa ginawang operasyon sa akin. Nagpapasalamat ako sa mga doktor na nag-opera sa akin at nagbigay ng chemotherapy at radiation. Nawa’y magtuloy-tuloy na ang aking mabuting kondisyon. Sana po ay maibalik din ang aking nakalabas na bituka kapag natapos ang aking chemotherapy”

(I am now happy because of the operation that was performed on me. I am very grateful for my doctors who did the surgery and who gave the chemotherapy and radiation. I am praying for my continued good health condition. I am hoping I can have my ileostomy closure after my adjuvant chemotherapy.)

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Ethical approval

Ethics approval was obtained from the Institutional Review Board of Jose R. Reyes Memorial Medical Center.

Consent

Written informed consent was obtained from the patient for

publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Mary Anne Carol A. Cueto, MD: Primary surgeon of the case, study concept, review of literature, writing the paper, final draft.

Carlo Angelo C. Cajucom, MD: First assist of the case, supervision, review of literature, manuscript editing, final draft.

Registration of research studies

Not applicable.

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Declaration of competing interest

The authors have no conflicts of interest to declare.

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