

World Journal of *Clinical Oncology*

World J Clin Oncol 2024 April 24; 15(4): 464-575



EDITORIAL

- 464 Classificatory updates in verrucous and cuniculatum carcinomas: Insights from the 5th edition of WHO-IARC head and neck tumor classification
Silveira FM, Schuch LF, Bologna-Molina R
- 468 Understanding the role of transmembrane 9 superfamily member 1 in bladder cancer pathogenesis
Gade VKV, Yadav BS
- 472 Management of lateral pelvic lymph nodes in rectal cancer: Is it time to reach an Agreement?
Romero-Zoghbi SE, López-Campos F, Couñago F
- 478 Tumor infiltrating lymphocytes in gastric cancer: Unraveling complex interactions for precision medicine
Kapoor M, Sehwat A, Karthik J, Sundriyal D

REVIEW

- 482 Focus on current and emerging treatment options for glioma: A comprehensive review
Lucke-Wold B, Rangwala BS, Shafique MA, Siddiq MA, Mustafa MS, Danish F, Nasrullah RMU, Zainab N, Haseeb A
- 496 Immune pathway through endometriosis to ovarian cancer
Calmon MS, Lemos FFB, Silva Luz M, Rocha Pinheiro SL, de Oliveira Silva LG, Correa Santos GL, Rocha GR, Freire de Melo F

MINIREVIEWS

- 523 Britanin – a beacon of hope against gastrointestinal tumors?
Kajdanek A, Kolat D, Zhao LY, Kciuk M, Pasieka Z, Kaluzińska-Kolat Ż
- 531 Molecular targets and mechanisms of different aberrant alternative splicing in metastatic liver cancer
Geng DY, Chen QS, Chen WX, Zhou LS, Han XS, Xie QH, Guo GH, Chen XF, Chen JS, Zhong XP

ORIGINAL ARTICLE

Retrospective Cohort Study

- 540 Comparative effectiveness of immunotherapy and chemotherapy in patients with metastatic colorectal cancer stratified by microsatellite instability status
Niu CG, Zhang J, Rao AV, Joshi U, Okolo P

Retrospective Study

- 548 Elevated cardiovascular risk and acute events in hospitalized colon cancer survivors: A decade-apart study of two nationwide cohorts
Desai R, Mondal A, Patel V, Singh S, Chauhan S, Jain A

Basic Study

- 554** Regulation of *TMEM100* expression by epigenetic modification, effects on proliferation and invasion of esophageal squamous carcinoma

Xu YF, Dang Y, Kong WB, Wang HL, Chen X, Yao L, Zhao Y, Zhang RQ

CASE REPORT

- 566** Low-grade myofibrosarcoma of the maxillary sinus: Two case reports

Mydlak A, Ścibik Ł, Durzynska M, Zwoliński J, Buchajska K, Lenartowicz O, Kucharz J

ABOUT COVER

Peer Reviewer of *World Journal of Clinical Oncology*, Ramiro Manuel Fernández-Placencia, FACS, MD, Professor, Surgical Oncologist, Abdominal Surgery Department, Instituto Nacional de Enfermedades Neoplásicas (INEN), Lima Lima034, Lima, Peru. ramirofp02@gmail.com

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Oncology* (WJCO, *World J Clin Oncol*) is to provide scholars and readers from various fields of oncology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJCO mainly publishes articles reporting research results and findings obtained in the field of oncology and covering a wide range of topics including art of oncology, biology of neoplasia, breast cancer, cancer prevention and control, cancer-related complications, diagnosis in oncology, gastrointestinal cancer, genetic testing for cancer, gynecologic cancer, head and neck cancer, hematologic malignancy, lung cancer, melanoma, molecular oncology, neurooncology, palliative and supportive care, pediatric oncology, surgical oncology, translational oncology, and urologic oncology.

INDEXING/ABSTRACTING

The WJCO is now abstracted and indexed in PubMed, PubMed Central, Emerging Sources Citation Index (Web of Science), Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for WJCO as 2.8; IF without journal self cites: 2.8; 5-year IF: 3.0; Journal Citation Indicator: 0.36.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Yin-Qing Zhao*; Production Department Director: *Xu Guo*; Cover Editor: *Xu Guo*.

NAME OF JOURNAL

World Journal of Clinical Oncology

ISSN

ISSN 2218-4333 (online)

LAUNCH DATE

November 10, 2010

FREQUENCY

Monthly

EDITORS-IN-CHIEF

Hiten RH Patel, Stephen Safe, Jian-Hua Mao, Ken H Young

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2218-4333/editorialboard.htm>

PUBLICATION DATE

April 24, 2024

COPYRIGHT

© 2024 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/204>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Management of lateral pelvic lymph nodes in rectal cancer: Is it time to reach an Agreement?

Sigfredo E Romero-Zoghbi, Fernando López-Campos, Felipe Couñago

Specialty type: Oncology

Provenance and peer review:

Invited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0

Grade B (Very good): B

Grade C (Good): 0

Grade D (Fair): 0

Grade E (Poor): 0

P-Reviewer: Chen N, China

Received: December 21, 2023

Peer-review started: December 21, 2023

First decision: January 25, 2024

Revised: February 1, 2024

Accepted: March 11, 2024

Article in press: March 11, 2024

Published online: April 24, 2024



Sigfredo E Romero-Zoghbi, Department of Radiation Oncology, GenesisCare, Talavera de la Reina 45600, Toledo, Spain

Fernando López-Campos, Department of Radiation Oncology, Hospital Universitario Ramón Y Cajal, Madrid 28034, Spain

Fernando López-Campos, Felipe Couñago, Department of Radiation Oncology, GenesisCare - Hospital Universitario Vithas Madrid La Milagrosa, Madrid 28010, Spain

Corresponding author: Felipe Couñago, MD, PhD, Chief Doctor, Department of Radiation Oncology, GenesisCare - Hospital Universitario Vithas Madrid La Milagrosa, Calle de Modesto Lafuente, 14, Chamberí, Madrid 28010, Spain. felipe.counago@genesiscare.es

Abstract

In this editorial, we proceed to comment on the article by Chua *et al*, addressing the management of metastatic lateral pelvic lymph nodes (mLLN) in stage II/III rectal cancer patients below the peritoneal reflection. The treatment of this nodal area sparks significant controversy due to the strategic differences followed by Eastern and Western physicians, albeit with a higher degree of convergence in recent years. The dissection of lateral pelvic lymph nodes without neoadjuvant therapy is a standard practice in Eastern countries. In contrast, in the West, preference leans towards opting for neoadjuvant therapy with chemoradiotherapy or radiotherapy, that would cover the treatment of this area without the need to add the dissection of these nodes to the total mesorectal excision. In the presence of high-risk nodal characteristics for mLLN related to radiological imaging and lack of response to neoadjuvant therapy, the risk of lateral local recurrence increases, suggesting the appropriate selection of strategies to reduce the risk of recurrence in each patient profile. Despite the heterogeneous and retrospective nature of studies addressing this area, an international consensus is necessary to approach this clinical scenario uniformly.

Key Words: Rectal cancer; Lateral pelvic lymph node metastases; Pelvic lymph node dissection; Total neoadjuvant therapy; Selective management of the lateral pelvic nodes; Prophylactic management of the lateral pelvic nodes; Chemoradiotherapy; Total mesorectal excision

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: The lack of consensus in managing metastatic lateral pelvic lymph nodes in stage II/III rectal cancer patients below the peritoneal reflection, with differing medical strategies between East and West, generates uncertainty due to limited available evidence. Characteristics such as lymph node size, neoadjuvant treatment, and selective dissection of lateral pelvic lymph nodes are part of the strategies, but the first steps toward a solid and global consensus must be taken to resolve the uncertainties present in this field.

Citation: Romero-Zoghbi SE, López-Campos F, Couñago F. Management of lateral pelvic lymph nodes in rectal cancer: Is it time to reach an Agreement? *World J Clin Oncol* 2024; 15(4): 472-477

URL: <https://www.wjgnet.com/2218-4333/full/v15/i4/472.htm>

DOI: <https://dx.doi.org/10.5306/wjco.v15.i4.472>

INTRODUCTION

Localized and locally advanced rectal adenocarcinomas below the peritoneal reflection in stages II/III present locoregional recurrence rates of approximately 6.5% following the introduction of total mesorectal excision (TME)[1], with improved outcomes seen through the introduction of multimodal treatments such as radiotherapy and chemotherapy[2-5]. However, recurrence in the lateral compartments of the pelvis is reported in 10% to 25% of patients with locally advanced rectal cancer[6,7], remaining a concern for those with rectal tumors located below the peritoneal reflection as these tend to drain along the middle and inferior rectal arteries towards the obturators, internal iliac, and external iliac, reaching the common iliac artery. These lateral nodes are precisely not encompassed in TME[8]. Some studies from Eastern countries advocate for lateral pelvic lymph node dissection (LPLND) for patients with clinical or radiological involvement and prophylactic[9-11]. Conversely, in Western countries, neoadjuvant treatment with radiotherapy (RT) with or without chemotherapy (ChT) followed by TME remains the standard treatment for these patients[2-4]. Other studies recommend selective LPLND if there are high-risk factors for nodal metastasis after neoadjuvant treatment[12-15]. In the era of total neoadjuvant therapy (TNT), a significant reduction in lateral nodal metastasis is expected, favoring selective dissection only in selected cases with limited or absent response to neoadjuvant treatment. In this sense, we discuss the article by Chua *et al*[16], evaluating the available clinical evidence from various perspectives.

DIFFERENCES IN THE MANAGEMENT OF LPLND BETWEEN EASTERN AND WESTERN VIEWS

Prophylactic management of lateral pelvic lymph nodes

The randomized controlled trial 0212 by the Japanese Clinical Oncology Group (JCOG)[9], a multicenter, non-inferiority trial, enrolled 701 patients diagnosed with lower third rectal cancer, stage II or III, without enlarged lymph nodes [short-axis diameter ≥ 10 mm on primary pelvic computed tomography (CT) or magnetic resonance imaging (MRI)]. Patients were randomized between TME with LPLND ($n = 351$) and TME alone ($n = 350$) without neoadjuvant treatment. The local recurrence rate was significantly lower in the TME plus LPLND group (7.4% vs. 12.6%; $P = 0.024$), with no significant differences in median follow-up of 7 years in relapse-free survival and overall survival curves between both groups. Subgroup analysis demonstrated improved relapse-free survival in clinically stage III patients undergoing TME with LPLND compared to TME alone[10]. These findings led the Japanese Society for Cancer of the Colon and Rectum (JSCCR) to recommend LPLND, even when lateral pelvic lymph nodes (LPLNs) with a short-axis diameter ≥ 10 mm are not detected by imaging[17]. However, the trial did not include patients with LPLNs ≥ 10 mm on initial radiological imaging, and only 7.3% of patients in the TME + LPLND group had pathological LPLNs[11]. Thus, these results indicate that prophylactic LPLND in patients without pathological LPLNs might be overtreatment for this patient subset. Additionally, this study demonstrates that the short-axis diameter (> 5 mm) of LPLNs is a predictive factor for positivity in pathological anatomy.

Regarding Western management in this disease scenario, neoadjuvant treatment includes radiotherapy in this area, which could effectively encompass the pelvic nodes. In this regard, the American Society for Radiation Oncology positioned itself in 2021, stating that in clinical stage II-III, there is strong evidence to recommend neoadjuvant radiotherapy[18]. Multiple clinical trials have shown that neoadjuvant radiotherapy decreases the risk of local recurrence, even in the era of TME[19-21], and the European Society for Medical Oncology guidelines[22] recommend neoadjuvant treatment with chemoradiotherapy (CRT) as superior to LPLND in terms of efficacy and morbidity. Lastly, the 2020 guideline by the American Society of Colon and Rectal Surgeons considers that in the absence of clinically positive lymph nodes in the lateral pelvic compartment, routine dissection of LPLNs is generally not required, with a strong recommendation based on low-quality evidence[23].

Selective management of LPLN and the role of imaging studies

Detecting suspicious lateral pelvic lymph nodes in rectal cancer patients using imaging studies such as CT, MRI, or positron emission tomography/computed tomography (PET/CT) with 18F-fluorodeoxyglucose poses a challenge given the heterogeneity of available studies and discrepancies between imaging diagnosis and pathological diagnosis[24].

Assessing not only the size of the nodes but also their morphological characteristics like shape, heterogeneous intensity, and borders is helpful in the initial diagnosis[25]. However, after neoadjuvant treatment with CRT/RT, it's advisable to evaluate node size in the short axis and their absence on MRI. A nodal size ≤ 2.5 mm in the short axis or a reduction of $\geq 70\%$ in size are predictors of a good response post-surgery[26]. Nevertheless, there's no uniform international consensus on what specific sizes of lateral pelvic lymph nodes could be considered suspicious for malignancy, both at the initial diagnosis and post-neoadjuvant treatment before surgery. The presence of metastatic lateral pelvic lymph nodes in nodes ≤ 5 mm might remain hidden in up to 20% of nodes after neoadjuvant treatment[27]. A study by Ogura *et al*[28], involving 741 rectal cancer patients, revealed that lymph node size impacts locoregional recurrence rates (LRR). Nodes > 7 mm on primary MRI showed a 17.9% LRR after treatment. At 3 years, those with nodes < 4 mm had no recurrences. On the other hand, nodes > 7 mm on primary MRI and internal iliac nodes had a 52.3% LRR, considerably higher than those of similar size in the obturator compartment (9.5%). CRT with TME and LPLND in these nodes reduced LRR to 8.7% (hazard ratio, 6.2; 95%CI: 1.4-28.5; $P = 0.007$), proving significantly more effective than CRT and TME alone treatment. In this regard, the 2023 version of The Society of Abdominal Radiology's Colorectal and Anal Cancer Disease-Focused Panel [29] updated the rectal cancer lexicon, highlighting a new suggested size threshold for lateral lymph nodes. It suggests nodes with short-axis diameter (SAD) > 7 mm at the internal iliac and obturator levels as suspicious at initial staging, while post-CRT treatment considers SAD > 4 mm for internal iliac nodes and > 6 mm for obturator nodes as suspicious. However, other features should be considered, such as heterogeneity, abnormal parenchymal signal, irregular borders, and tumor deposit, with the latter being the strongest indicator of poor prognosis in lymph node involvement. Therefore, the MERCURY study considers heterogeneity and irregular borders as suspicious features of preoperative MRI[30].

ADVANTAGES OF SURGICAL TECHNIQUES AND ASSOCIATED COMORBIDITIES

LPLND is considered a relatively complex surgery in colorectal cancer, associated with longer surgical times, more significant blood loss, and a moderate risk of sexual and urinary dysfunction, although it doesn't appear to increase these risks inherent to surgery alone[7]. Studies indicate that preserving autonomic nerves during LPLND can enhance functional outcomes, especially in reducing urinary retention[31]. Comparisons among open, laparoscopic, and robotic surgery suggest the advantages of laparoscopy and robotic surgery. Robotic surgery involves less blood loss (25 mL *vs* 637 mL; $P < 0.0001$) and fewer complications, albeit with longer operating times (455 *vs* 410 min; $P < 0.007$) compared to open surgery[32]. Robotic surgery can offer improved visualization in the deep pelvis and enhanced precision in identifying vessels and nerves[32]. Despite these advancements, oncological outcomes do not differ among surgical approaches, demonstrating that both laparoscopy and robotic surgery can be equally effective in the short term for treating colorectal cancer with LPLND[33].

CURRENT CHALLENGES AND FUTURE PERSPECTIVES

The surgical approach for advanced rectal cancer with TME and LLND is common in Eastern medical societies, while the Western focus prioritizes neoadjuvant with CRT or TNT followed by TME. A Western study compared patients treated with CRT followed by TME and LPLND with those treated only with CRT and TME, reporting a local recurrence rate of 3% with LPLND *vs* 11% without LPLND ($P = 0.13$), with similar survival figures and identifying LPLND as a significant independent factor for local recurrences in multivariable analysis ($P = 0.01$). In patients with long-duration neoadjuvant and adjuvant chemotherapy, LPLND showed a lower LRR (3% *vs* 16% without LPLND; $P = 0.04$), although disease-free survival and overall survival were similar between groups ($P = 0.10$ and $P = 0.11$, respectively)[34]. These results suggest a potential shift in the therapeutic approach, assessing the role of systemic treatment in this therapeutic strategy. Indeed, the presence of mLLN should be considered locally advanced disease and treated with CRT or TNT within the Western approach. The OPRA trial[35] evaluated 324 stage II/III rectal cancer patients. After TNT treatment, those achieving complete or near-complete clinical response could adopt a wait-and-watch protocol (W&W), while others underwent TME. At 5 years, the TME-free survival was 39% *vs* 54% ($P = 0.01$), distant metastasis-free survival was 82% *vs* 79% ($P = 0.66$), and local recurrence-free survival was 94% *vs* 90% ($P = 0.27$), respectively, with similar 5-year overall survival data. These results support the safety of the W&W strategy for patients with complete or near-complete clinical responses and the use of TNT as a treatment approach in these patients. This W&W approach has gained more acceptance due, in part, to improvements/intensification in neoadjuvant treatments, where neoadjuvant systemic treatment alongside radiotherapy contributes to optimizing outcomes in these patients. Regarding radiotherapy treatment, proper coverage of the posterior compartment volume in all high-risk patients is crucial. If there are suspicions of affected lateral lymph nodes, the upper border of the mesorectal clinical target volume should be at the S1-S2 level, raising doubts about whether the radiotherapy dose coverage is adequate in routine clinical practice. In this regard, a Dutch study analyzed the coverage of internal iliac and obturator lymph nodes in standard radiotherapy treatment for rectal cancer according to volumes set by major international clinical guidelines. They observed that out of 223 patients with nodes ≥ 5 mm, 80.7% were within the treatment area, but only 33.3% were included as macroscopic tumor volume. Despite receiving adequate doses, notable local recurrence rates at 4 years were observed, especially when nodes were outside the treatment area or received lower doses. These findings suggest the need for improved techniques to locally control affected nodes[36].

For this purpose, the predictive capability of radiomic features in pre-CRT MRI images to forecast the treatment response of lymph nodes in locally advanced rectal cancer is another area of research. In a recently published study involving 78 patients who received neoadjuvant radiotherapy, five radiomic characteristics accurately discriminated

responses in the training [area under the curve (AUC) 0.908] and validation (AUC 0.865) cohorts were identified. A nomogram combining these features and morphological aspects of lymph nodes exhibited good calibration and discrimination (AUC 0.925 in training, AUC 0.918 in validation). The authors suggest that this model could personalize treatment plans and guide W&W strategies in locally advanced rectal cancer patients, offering a promising tool to enhance care and therapeutic approach[37].

Several studies explore immunotherapies such as nivolumab or toripalimab in locally advanced rectal cancer, showing high complete responses[38,39]. KRAS mutation and circulating tumor DNA (ctDNA) are biomarkers predicting recurrence and prognosis[40,41]. The GALAXY study[42] indicates that molecular residual disease detected by ctDNA is a robust indicator of recurrence. However, prospective clinical trials evaluating molecular and radiomic determinations in predicting the recurrence of LPLN are needed.

CONCLUSION

The difficulty in achieving a global consensus on the ideal treatment of LPLN in rectal cancer due to the variability of available data requires adopting an Intermediate Agreement between Western and Eastern approaches. In a context involving CRT treatment, the selective dissection of lateral pelvic lymph nodes seems to be more beneficial as part of an optimal strategy. The size of LPLN evaluated by MRI with a SAD of ≥ 7 mm, or the presence of suspicious characteristics, could be a crucial predictor of recurrence and should be considered in selective lymph node dissection. It's noteworthy that laparoscopic and robotic surgeries entail less bleeding and reduced need for transfusions, emphasizing nerve preservation to lower dysfunction risks. CRT, TNT, and surgery with selective lymph node dissection should be considered, but establishing optimal selection criteria for each therapeutic approach is necessary.

FOOTNOTES

Author contributions: Romero-Zoghbi SE designed the overall concept, outline of the manuscript and wrote the manuscript; Lopez-Campos F contributed to the introduction and design of the manuscript; Couñago F, contributed to the writing, and editing the manuscript; All authors revised the final manuscript.

Conflict-of-interest statement: Authors declare no potential conflict of interest for this article.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: Spain

ORCID number: Sigfredo E Romero-Zoghbi 0000-0002-7303-707X; Fernando López-Campos 0000-0002-4077-0507; Felipe Couñago 0000-0001-7233-0234.

S-Editor: Liu JH

L-Editor: A

P-Editor: Zhao S

REFERENCES

- 1 Baek JY, Yu JI, Park HC, Choi DH, Yoo GS, Cho WK, Lee WY, Yun SH, Cho YB, Park YA, Kim HC. Risk factors for locoregional recurrence in patients with pathologic T3N0 rectal cancer with negative resection margin treated by surgery alone. *Radiat Oncol J* 2019; **37**: 110-116 [PMID: 31266292 DOI: 10.3857/roj.2019.00199]
- 2 Kapiteijn E, Marijnen CA, Nagtegaal ID, Putter H, Steup WH, Wiggers T, Rutten HJ, Pahlman L, Glimelius B, van Krieken JH, Leer JW, van de Velde CJ; Dutch Colorectal Cancer Group. Preoperative radiotherapy combined with total mesorectal excision for resectable rectal cancer. *N Engl J Med* 2001; **345**: 638-646 [PMID: 11547717 DOI: 10.1056/NEJMoa010580]
- 3 Sauer R, Liersch T, Merkel S, Fietkau R, Hohenberger W, Hess C, Becker H, Raab HR, Villanueva MT, Witzigmann H, Wittekind C, Beissbarth T, Rödel C. Preoperative versus postoperative chemoradiotherapy for locally advanced rectal cancer: results of the German CAO/ARO/AIO-94 randomized phase III trial after a median follow-up of 11 years. *J Clin Oncol* 2012; **30**: 1926-1933 [PMID: 22529255 DOI: 10.1200/JCO.2011.40.1836]
- 4 Bosset JF, Collette L, Calais G, Mineur L, Maingon P, Radosevic-Jelic L, Daban A, Bardet E, Beny A, Ollier JC; EORTC Radiotherapy Group Trial 22921. Chemotherapy with preoperative radiotherapy in rectal cancer. *N Engl J Med* 2006; **355**: 1114-1123 [PMID: 16971718 DOI: 10.1056/NEJMoa060829]
- 5 Gérard JP, Conroy T, Bonnetain F, Bouché O, Chapet O, Closon-Dejardin MT, Untereiner M, Leduc B, Francois E, Maurel J, Seitz JF, Buecher B, Mackiewicz R, Ducreux M, Bedenne L. Preoperative radiotherapy with or without concurrent fluorouracil and leucovorin in T3-4 rectal cancers: results of FFC0 9203. *J Clin Oncol* 2006; **24**: 4620-4625 [PMID: 17008704 DOI: 10.1200/JCO.2006.06.7629]

- 6 **Hojo K**, Koyama Y, Moriya Y. Lymphatic spread and its prognostic value in patients with rectal cancer. *Am J Surg* 1982; **144**: 350-354 [PMID: 7114377 DOI: 10.1016/0002-9610(82)90018-6]
- 7 **Morikawa E**, Yasutomi M, Shindou K, Matsuda T, Mori N, Hida J, Kubo R, Kitaoka M, Nakamura M, Fujimoto K. Distribution of metastatic lymph nodes in colorectal cancer by the modified clearing method. *Dis Colon Rectum* 1994; **37**: 219-223 [PMID: 8137667 DOI: 10.1007/BF02048158]
- 8 **Lichliter WE**. Techniques in total mesorectal excision surgery. *Clin Colon Rectal Surg* 2015; **28**: 21-27 [PMID: 25733970 DOI: 10.1055/s-0035-1545066]
- 9 **Fujita S**, Mizusawa J, Kanemitsu Y, Ito M, Kinugasa Y, Komori K, Ohue M, Ota M, Akazai Y, Shiozawa M, Yamaguchi T, Bandou H, Katsumata K, Murata K, Akagi Y, Takiguchi N, Saida Y, Nakamura K, Fukuda H, Akasu T, Moriya Y; Colorectal Cancer Study Group of Japan Clinical Oncology Group. Mesorectal Excision With or Without Lateral Lymph Node Dissection for Clinical Stage II/III Lower Rectal Cancer (JCOG0212): A Multicenter, Randomized Controlled, Noninferiority Trial. *Ann Surg* 2017; **266**: 201-207 [PMID: 28288057 DOI: 10.1097/SLA.0000000000002212]
- 10 **Tsukamoto S**, Fujita S, Ota M, Mizusawa J, Shida D, Kanemitsu Y, Ito M, Shiomi A, Komori K, Ohue M, Akazai Y, Shiozawa M, Yamaguchi T, Bando H, Tsuchida A, Okamura S, Akagi Y, Takiguchi N, Saida Y, Akasu T, Moriya Y; Colorectal Cancer Study Group of Japan Clinical Oncology Group. Long-term follow-up of the randomized trial of mesorectal excision with or without lateral lymph node dissection in rectal cancer (JCOG0212). *Br J Surg* 2020; **107**: 586-594 [PMID: 32162301 DOI: 10.1002/bjs.11513]
- 11 **Komori K**, Fujita S, Mizusawa J, Kanemitsu Y, Ito M, Shiomi A, Ohue M, Ota M, Akazai Y, Shiozawa M, Yamaguchi T, Bandou H, Katsumata K, Kinugasa Y, Takii Y, Akasu T, Moriya Y; Colorectal Cancer Study Group of Japan Clinical Oncology Group. Predictive factors of pathological lateral pelvic lymph node metastasis in patients without clinical lateral pelvic lymph node metastasis (clinical stage II/III): The analysis of data from the clinical trial (JCOG0212). *Eur J Surg Oncol* 2019; **45**: 336-340 [PMID: 30477950 DOI: 10.1016/j.ejso.2018.11.016]
- 12 **Akiyoshi T**, Ueno M, Matsueda K, Konishi T, Fujimoto Y, Nagayama S, Fukunaga Y, Unno T, Kano A, Kuroyanagi H, Oya M, Yamaguchi T, Watanabe T, Muto T. Selective lateral pelvic lymph node dissection in patients with advanced low rectal cancer treated with preoperative chemoradiotherapy based on pretreatment imaging. *Ann Surg Oncol* 2014; **21**: 189-196 [PMID: 23963871 DOI: 10.1245/s10434-013-3216-y]
- 13 **Ishihara S**, Kawai K, Tanaka T, Kiyomatsu T, Hata K, Nozawa H, Morikawa T, Watanabe T. Oncological Outcomes of Lateral Pelvic Lymph Node Metastasis in Rectal Cancer Treated With Preoperative Chemoradiotherapy. *Dis Colon Rectum* 2017; **60**: 469-476 [PMID: 28383446 DOI: 10.1097/DCR.0000000000000752]
- 14 **Ogura A**, Konishi T, Cunningham C, Garcia-Aguilar J, Iversen H, Toda S, Lee IK, Lee HX, Uehara K, Lee P, Putter H, van de Velde CJH, Beets GL, Rutten HJT, Kusters M; Lateral Node Study Consortium. Neoadjuvant (Chemo)radiotherapy With Total Mesorectal Excision Only Is Not Sufficient to Prevent Lateral Local Recurrence in Enlarged Nodes: Results of the Multicenter Lateral Node Study of Patients With Low cT3/4 Rectal Cancer. *J Clin Oncol* 2019; **37**: 33-43 [PMID: 30403572 DOI: 10.1200/JCO.18.00032]
- 15 **Law BZY**, Yusuf Z, Ng YE, Aly EH. Does adding lateral pelvic lymph node dissection to neoadjuvant chemotherapy improve outcomes in low rectal cancer? *Int J Colorectal Dis* 2020; **35**: 1387-1395 [PMID: 32504333 DOI: 10.1007/s00384-020-03656-1]
- 16 **Chua JYJ**, Ngu JCY, Teo NZ. Current perspectives on the management of lateral pelvic lymph nodes in rectal cancer. *World J Clin Oncol* 2023; **14**: 584-592 [PMID: 38179407 DOI: 10.5306/wjco.v14.i12.584]
- 17 **Hashiguchi Y**, Muro K, Saito Y, Ito Y, Ajioka Y, Hamaguchi T, Hasegawa K, Hotta K, Ishida H, Ishiguro M, Ishihara S, Kanemitsu Y, Kinugasa Y, Murofushi K, Nakajima TE, Oka S, Tanaka T, Taniguchi H, Tsuji A, Uehara K, Ueno H, Yamanaka T, Yamazaki K, Yoshida M, Yoshino T, Itabashi M, Sakamaki K, Sano K, Shimada Y, Tanaka S, Uetake H, Yamaguchi S, Yamaguchi N, Kobayashi H, Matsuda K, Kotake K, Sugihara K; Japanese Society for Cancer of the Colon and Rectum. Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019 for the treatment of colorectal cancer. *Int J Clin Oncol* 2020; **25**: 1-42 [PMID: 31203527 DOI: 10.1007/s10147-019-01485-z]
- 18 **Wo JY**, Anker CJ, Ashman JB, Bhadkamkar NA, Bradfield L, Chang DT, Dorth J, Garcia-Aguilar J, Goff D, Jacqmin D, Kelly P, Newman NB, Olsen J, Raldow AC, Ruiz-Garcia E, Stitzenberg KB, Thomas CR Jr, Wu QJ, Das P. Radiation Therapy for Rectal Cancer: Executive Summary of an ASTRO Clinical Practice Guideline. *Pract Radiat Oncol* 2021; **11**: 13-25 [PMID: 33097436 DOI: 10.1016/j.prro.2020.08.004]
- 19 **Roh MS**, Colangelo LH, O'Connell MJ, Yothers G, Deutsch M, Allegra CJ, Kahlenberg MS, Baez-Diaz L, Ursiny CS, Petrelli NJ, Wolmark N. Preoperative multimodality therapy improves disease-free survival in patients with carcinoma of the rectum: NSABP R-03. *J Clin Oncol* 2009; **27**: 5124-5130 [PMID: 19770376 DOI: 10.1200/JCO.2009.22.0467]
- 20 **van Gijn W**, Marijnen CA, Nagtegaal ID, Kranenbarg EM, Putter H, Wiggers T, Rutten HJ, Pahlman L, Glimelius B, van de Velde CJ; Dutch Colorectal Cancer Group. Preoperative radiotherapy combined with total mesorectal excision for resectable rectal cancer: 12-year follow-up of the multicentre, randomised controlled TME trial. *Lancet Oncol* 2011; **12**: 575-582 [PMID: 21596621 DOI: 10.1016/S1470-2045(11)70097-3]
- 21 **Abraham I**, Aristei C, Palumbo I, Lupattelli M, Trastulli S, Cirocchi R, De Florio R, Valentini V. Preoperative radiotherapy and curative surgery for the management of localised rectal carcinoma. *Cochrane Database Syst Rev* 2018; **10**: CD002102 [PMID: 30284239 DOI: 10.1002/14651858.CD002102.pub3]
- 22 **Glynne-Jones R**, Wyrwicz L, Tiret E, Brown G, Rödel C, Cervantes A, Arnold D; ESMO Guidelines Committee. Rectal cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2018; **29**: iv263 [PMID: 29741565 DOI: 10.1093/annonc/mdy161]
- 23 **You YN**, Hardiman KM, Bafford A, Poylin V, Francone TD, Davis K, Paquette IM, Steele SR, Feingold DL; On Behalf of the Clinical Practice Guidelines Committee of the American Society of Colon and Rectal Surgeons. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Rectal Cancer. *Dis Colon Rectum* 2020; **63**: 1191-1222 [PMID: 33216491 DOI: 10.1097/DCR.0000000000001762]
- 24 **Amano K**, Fukuchi M, Kumamoto K, Hatano S, Ohno H, Osada H, Ishibashi K, Ishida H. Pre-operative Evaluation of Lateral Pelvic Lymph Node Metastasis in Lower Rectal Cancer: Comparison of Three Different Imaging Modalities. *J Anus Rectum Colon* 2020; **4**: 34-40 [PMID: 32002474 DOI: 10.23922/jarc.2019-022]
- 25 **Kim JH**, Beets GL, Kim MJ, Kessels AG, Beets-Tan RG. High-resolution MR imaging for nodal staging in rectal cancer: are there any criteria in addition to the size? *Eur J Radiol* 2004; **52**: 78-83 [PMID: 15380850 DOI: 10.1016/j.ejrad.2003.12.005]
- 26 **van Heeswijk MM**, Lambregts DM, Palm WM, Hendriks BM, Maas M, Beets GL, Beets-Tan RG. DWI for Assessment of Rectal Cancer Nodes After Chemoradiotherapy: Is the Absence of Nodes at DWI Proof of a Negative Nodal Status? *AJR Am J Roentgenol* 2017; **208**: W79-W84 [PMID: 27959622 DOI: 10.2214/AJR.16.17117]
- 27 **Akiyoshi T**, Matsueda K, Hiratsuka M, Unno T, Nagata J, Nagasaki T, Konishi T, Fujimoto Y, Nagayama S, Fukunaga Y, Ueno M. Indications for Lateral Pelvic Lymph Node Dissection Based on Magnetic Resonance Imaging Before and After Preoperative Chemoradiotherapy in Patients with Advanced Low-Rectal Cancer. *Ann Surg Oncol* 2015; **22** Suppl 3: S614-S620 [PMID: 25896145 DOI: 10.1245/s10434-015-0467-1]

- 10.1245/s10434-015-4565-5]
- 28 **Ogura A**, Konishi T, Beets GL, Cunningham C, Garcia-Aguilar J, Iversen H, Toda S, Lee IK, Lee HX, Uehara K, Lee P, Putter H, van de Velde CJH, Rutten HJT, Tuynman JB, Kusters M; Lateral Node Study Consortium. Lateral Nodal Features on Restaging Magnetic Resonance Imaging Associated With Lateral Local Recurrence in Low Rectal Cancer After Neoadjuvant Chemoradiotherapy or Radiotherapy. *JAMA Surg* 2019; **154**: e192172 [PMID: 31268504 DOI: 10.1001/jamasurg.2019.2172]
 - 29 **Lee S**, Kassam Z, Baheti AD, Hope TA, Chang KJ, Korngold EK, Taggart MW, Horvat N. Rectal cancer lexicon 2023 revised and updated consensus statement from the Society of Abdominal Radiology Colorectal and Anal Cancer Disease-Focused Panel. *Abdom Radiol (NY)* 2023; **48**: 2792-2806 [PMID: 37145311 DOI: 10.1007/s00261-023-03893-2]
 - 30 **MERCURY Study Group**, Shihab OC, Taylor F, Bees N, Blake H, Jeyadevan N, Bleeheer R, Blomqvist L, Creagh M, George C, Guthrie A, Massouh H, Peppercorn D, Moran BJ, Heald RJ, Quirke P, Tekkis P, Brown G. Relevance of magnetic resonance imaging-detected pelvic sidewall lymph node involvement in rectal cancer. *Br J Surg* 2011; **98**: 1798-1804 [PMID: 21928408 DOI: 10.1002/bjs.7662]
 - 31 **Akasa T**, Sugihara K, Moriya Y. Male urinary and sexual functions after mesorectal excision alone or in combination with extended lateral pelvic lymph node dissection for rectal cancer. *Ann Surg Oncol* 2009; **16**: 2779-2786 [PMID: 19626377 DOI: 10.1245/s10434-009-0546-x]
 - 32 **Yamaguchi T**, Kinugasa Y, Shiomi A, Tomioka H, Kagawa H. Robotic-assisted laparoscopic versus open lateral lymph node dissection for advanced lower rectal cancer. *Surg Endosc* 2016; **30**: 721-728 [PMID: 26092002 DOI: 10.1007/s00464-015-4266-y]
 - 33 **Kim HJ**, Choi GS, Park JS, Park SY, Lee HJ, Woo IT, Park IK. Selective lateral pelvic lymph node dissection: a comparative study of the robotic versus laparoscopic approach. *Surg Endosc* 2018; **32**: 2466-2473 [PMID: 29124406 DOI: 10.1007/s00464-017-5948-4]
 - 34 **Kroon HM**, Malakorn S, Dudi-Venkata NN, Bedrikovetski S, Liu J, Kenyon-Smith T, Bednarski BK, Ogura A, van de Velde CJH, Rutten HJT, Beets GL, Thomas ML, Kusters M, Chang GJ, Sammour T. Local recurrences in western low rectal cancer patients treated with or without lateral lymph node dissection after neoadjuvant (chemo)radiotherapy: An international multi-centre comparative study. *Eur J Surg Oncol* 2021; **47**: 2441-2449 [PMID: 34120810 DOI: 10.1016/j.ejso.2021.06.004]
 - 35 **Verheij FS**, Omer DM, Williams H, Lin ST, Qin LX, Buckley JT, Thompson HM, Yuval JB, Kim JK, Dunne RF, Marcet J, Cataldo P, Polite B, Herzig DO, Liska D, Oommen S, Friel CM, Ternent C, Coveler AL, Hunt S, Gregory A, Varma MG, Bello BL, Carmichael JC, Krauss J, Gleisner A, Guillem JG, Temple L, Goodman KA, Segal NH, Cercek A, Yaeger R, Nash GM, Widmar M, Wei IH, Pappou EP, Weiser MR, Paty PB, Smith JJ, Wu AJ, Gollub MJ, Saltz LB, Garcia-Aguilar J. Long-Term Results of Organ Preservation in Patients With Rectal Adenocarcinoma Treated With Total Neoadjuvant Therapy: The Randomized Phase II OPRA Trial. *J Clin Oncol* 2024; **42**: 500-506 [PMID: 37883738 DOI: 10.1200/JCO.23.01208]
 - 36 **Valentini V**, Gambacorta MA, Barbaro B, Chiloire G, Coco C, Das P, Fanfani F, Joye I, Kachnic L, Maingon P, Marijnen C, Ngan S, Haustermans K. International consensus guidelines on Clinical Target Volume delineation in rectal cancer. *Radiother Oncol* 2016; **120**: 195-201 [PMID: 27528121 DOI: 10.1016/j.radonc.2016.07.017]
 - 37 **Zhang S**, Tang B, Yu M, He L, Zheng P, Yan C, Li J, Peng Q. Development and Validation of a Radiomics Model Based on Lymph-Node Regression Grading After Neoadjuvant Chemoradiotherapy in Locally Advanced Rectal Cancer. *Int J Radiat Oncol Biol Phys* 2023; **117**: 821-833 [PMID: 37230433 DOI: 10.1016/j.ijrobp.2023.05.027]
 - 38 **Cercek A**, Dos Santos Fernandes G, Roxburgh CS, Ganesh K, Ng S, Sanchez-Vega F, Yaeger R, Segal NH, Reidy-Lagunes DL, Varghese AM, Markowitz A, Wu C, Szeglin B, Sauvé CG, Salo-Mullen E, Tran C, Patel Z, Krishnan A, Tkachuk K, Nash GM, Guillem J, Paty PB, Shia J, Schultz N, Garcia-Aguilar J, Diaz LA, Goodman K, Saltz LB, Weiser MR, Smith JJ, Stadler ZK. Mismatch Repair-Deficient Rectal Cancer and Resistance to Neoadjuvant Chemotherapy. *Clin Cancer Res* 2020; **26**: 3271-3279 [PMID: 32144135 DOI: 10.1158/1078-0432.CCR-19-3728]
 - 39 **Wang Y**, Shen L, Wan J, Zhang H, Wu R, Wang J, Wang Y, Xu Y, Cai S, Zhang Z, Xia F. Short-course radiotherapy combined with CAPOX and Toripalimab for the total neoadjuvant therapy of locally advanced rectal cancer: a randomized, prospective, multicentre, double-arm, phase II trial (TORCH). *BMC Cancer* 2022; **22**: 274 [PMID: 35291966 DOI: 10.1186/s12885-022-09348-z]
 - 40 **De Mattia E**, Polesel J, Mezzalana S, Palazzari E, Pollesel S, Toffoli G, Cecchin E. Predictive and Prognostic Value of Oncogene Mutations and Microsatellite Instability in Locally-Advanced Rectal Cancer Treated with Neoadjuvant Radiation-Based Therapy: A Systematic Review and Meta-Analysis. *Cancers (Basel)* 2023; **15** [PMID: 36900260 DOI: 10.3390/cancers15051469]
 - 41 **Vidal J**, Casadevall D, Bellosillo B, Pericay C, Garcia-Carbonero R, Losa F, Layos L, Alonso V, Capdevila J, Gallego J, Vera R, Salud A, Martin-Richard M, Nogué M, Cillán E, Maurel J, Faull I, Raymond V, Fernández-Martos C, Montagut C. Clinical Impact of Presurgery Circulating Tumor DNA after Total Neoadjuvant Treatment in Locally Advanced Rectal Cancer: A Biomarker Study from the GEMCAD 1402 Trial. *Clin Cancer Res* 2021; **27**: 2890-2898 [PMID: 33727257 DOI: 10.1158/1078-0432.CCR-20-4769]
 - 42 **Kotani D**, Oki E, Nakamura Y, Yukami H, Mishima S, Bando H, Shirasu H, Yamazaki K, Watanabe J, Kotaka M, Hirata K, Akazawa N, Kataoka K, Sharma S, Aushev VN, Aleshin A, Misumi T, Taniguchi H, Takemasa I, Kato T, Mori M, Yoshino T. Molecular residual disease and efficacy of adjuvant chemotherapy in patients with colorectal cancer. *Nat Med* 2023; **29**: 127-134 [PMID: 36646802 DOI: 10.1038/s41591-022-02115-4]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: office@baishideng.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

