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Feasibility and limitations of combined treatment for lateral pelvic lymph node metastases in rectal cancer

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Abstract

Colorectal cancer ranks among the most commonly diagnosed cancers globally, and is associated with a high rate of pelvic recurrence after surgery. In efforts to mitigate recurrence, pelvic lymph node dissection (PLND) is commonly advocated as an adjunct to radical surgery. Neoadjuvant chemoradiotherapy (NACRT) is a therapeutic approach employed in managing locally advanced rectal cancer, and has been found to increase the survival rates. Chua *et al* have proposed a combination of NACRT with selective PLND for addressing lateral pelvic lymph node metastases in rectal cancer patients, with the aim of reducing recurrence and improving survival outcomes. Nevertheless, certain studies have indicated that the addition of PLND to NACRT and total mesorectal excision did not yield a significant reduction in local recurrence rates or improvement in survival. Consequently, meticulous patient selection and perioperative chemotherapy may prove indispensable in ensuring the efficacy of PLND.

Key Words: Rectal cancer; Lateral pelvic lymph nodes metastases; Pelvic lymph node dissection; Neoadjuvant chemoradiotherapy; Total mesorectal excision

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Core Tip: Management of lateral pelvic lymph node metastases in rectal cancer patients who receive neoadjuvant chemoradiotherapy and selective pelvic lymph node dissection (PLND), can be effective in reducing recurrence rates and extending survival. However, meticulous patient selection and aggressive perioperative chemotherapy are crucial factors contributing to the success of PLND in this context.

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INTRODUCTION

As one of the most frequently identified types of cancer globally, colorectal cancer is the second greatest source of cancer mortality[1]. Surgery is still the main treatment for colorectal cancer, while there is a high incidence of pelvic recurrence after the procedure, which may be closely related to the perirectal lymph nodes in the mesentery. Research has shown that if total mesorectal is done, the rate of recurrence decreases significantly to 6.5% [2,3]. The recurrence rate of colorectal cancer in a local area is connected to lateral pelvic lymph node metastases (mLLN). According to Gerota and Villemin, a noteworthy lateral lymph flows from the lower rectum to the iliac lymph nodes. It has been reported that 15%-20% of people with locally advanced middle and low rectal cancer experience mLLN, and the treatment of lateral pelvic lymph node disease is quite complex from both an oncological and technical standpoint[4]. Chua *et al*[5] suggested that the best approach to treating mLLN is a multi-modal one, which includes neoadjuvant chemoradiotherapy (NACRT) and selective pelvic lymph node dissection (PLND). Based on some reports, PLND is more advantageous in terms of prognostic survival than conservative or conventional resection in colorectal cancer and mLLN cases. The primary method for predicting mLLN is based on the size diagnosis of the maximum short axis diameter (SAD) of the lymph nodes on computed tomography or magnetic resonance imaging (MRI) after NACRT. However, it has recently been suggested that it is more appropriate to use the initial lateral pelvic lymph nodes (LPN) size rather than the post-chemoradiotherapy (CRT) LPN size as a predictor of mLLN, because in clinical practice, there are many cases where CRT is not performed before surgery for various reasons, such as patient rejection, old age, or complication[6]. Therefore, PLND is advocated as an adjunct to radical surgery for colorectal cancer. There exist different views from East to West regarding the current indications for PLND. Malakorn *et al*[7] recommend using a 5mm threshold for lymph node SAD after neoadjuvant therapy, aiming to diagnose PLND. Chua *et al*[5] proposed that based on neoadjuvant pre-MRI, it would be prudent to select a SAD of 7 mm or the presence of suspicious features as criteria for selective PLND until more reliable data are available. The results from Chinese studies suggested that PLND should be considered for patients with MRI SAD \geq 7 mm after CRT and poor/signet/mucinous adenocarcinoma. However, for the patients who suffered from LPN enlarged beyond the obturator region or the intrailiac region or involving 3 or more LPN, even PLND was performed after preoperative CRT, the prognosis is still unsatisfactory and poor. Therefore, PLND should be carefully considered for such patients[8]. Studies from Japan proved that the optimal indications for PLND in rectal cancer are the initial lymph node \geq 8 mm and the distance between the anus and the tumor edge $>$ 5 cm or the initial lymph node \geq 6 mm and the distance between the anus and the tumor edge \leq 5 cm[6,9]. Malakorn *et al*[7] showed no evidence of local or distant recurrence of disease after 2 years of follow-up by using minimally invasive robot-assisted PLND to treat patients with persistent lateral pelvic lymph node enlargement after NACRT, which confirmed that Chua *et al*[5] The proposed robotic assistance may be a useful aid for PLND. In addition, studies retrospectively compared the clinical results of elderly and non-elderly patients and concluded that selective lateral PLND after NACRT in elderly patients with locally advanced rectal cancer was safe[10]. Lateral PLND may improve the tumor prognosis in some rectal cancer patients but may adversely affect the functional prognosis. Cribb *et al*[11] compared the functional outcomes of lateral PLND patients with non-lateral PLND patients and concluded that lateral PLND is associated with male sexual dysfunction compared to standard surgical resection. Another study indicated that additional lateral PLND use not only increased postoperative complications, urinary dysfunction, and sexual dysfunction, but also did not improve recurrence rates or enhance long-term survival [12]. Law *et al*'s research revealed that lateral PLND patients did not have a statistically significant decrease in 3-year and 5-year local recurrence rates in comparison to non-lateral PLND patients ($P = 0.10$ and $P = 0.12$, respectively)[13]. Additionally, there was no meaningful change in overall survival rate for 3-year and 5-year periods ($P = 0.81$ and $P = 0.57$, respectively). Therefore, the addition of lateral PLND to NACRT and total mesorectal excision (TME) did not have a substantial effect on local recurrence rates or survival. The study by Zhou *et al*[14] also illustrated that patients who experienced pathological lateral lymph node metastasis and received TME + lateral PLND after NACRT still showed a higher overall recurrence rate after surgery. To understand the role of PLND in low rectal cancer, further studies are required. Both NACRT and lateral PLND have the potential for residual tumors, and adjuvant chemotherapy (ACT) after radical surgery can help eliminate micrometastases, thus preventing distant metastasis and improving prognosis. Jiang *et al*[15] explored the effectiveness of ACT in the new era of intensive local therapy (*i.e.*, post-NACRT TME and lateral PLND in patients with clinically suspected mLLN, and the results showed that the efficacy of adding ACT to TME combined with lateral PLND after NACRT was not confirmed in patients. Besides, patients with age \geq 64 years and those with ypStage 0 may not receive benefit from ACT after NACRT followed by TME plus PLND. Therefore, it is necessary to further explore the effectiveness of ACT in clinically suspected mLLN patients.

CONCLUSION

The ideal management of mLLN in rectal cancer patients requires a comprehensive approach involving NACRT comb-

ined with selective PLND. Criteria for the latter include SAD in lymph nodes after neoadjuvant use of 5 mm, SAD in lymph nodes as displayed on pre-neoadjuvant MRI of 7mm, or any suspicious features. To guarantee the efficacy of lateral PLND, careful patient selection and thorough perioperative chemotherapy must be used.

FOOTNOTES

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