Original Article

Impact of Lymph Node Retrieval on Prognosis in Elderly Patients with Transverse Colon Cancer: A Retrospective Study

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Key Words
Transverse colon cancer;
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Background and Aim. Transverse colon cancer (TCC) is a distinct subset of colorectal cancer (CRC) with unique anatomical and oncological characteristics. Its incidence increases with age, and patients aged ≥ 80 years often present with multiple comorbidities, influencing treatment decisions and prognosis. Lymph node (LN) retrieval is crucial for accurate pathological staging and therapeutic planning. While current guidelines recommend retrieving ≥ 12 LNs, recent evidence suggests that harvesting ≥ 25 LNs may offer additional prognostic value. This study evaluates the impact of LN retrieval on overall survival (OS) in elderly TCC patients and examines the influence of body mass index (BMI), tumor location, and surgical techniques on LN harvest.

Methods. We retrospectively reviewed 78 TCC patients aged ≥ 80 years who underwent laparoscopic curative resection between 2010 and 2021. Patients were categorized into three groups based on LN retrieval (≤ 12, 13-24, ≥ 25). Kaplan-Meier analysis and Cox proportional hazards models were used to evaluate survival outcomes and independent prognostic factors.

Results. The mean LN count was 24.3 ± 9.5. Patients with ≥ 25 LNs had a five-year OS of 69.7% (95% CI: 58.3-81.1), significantly higher than the 59.5% and 37.5% observed in the 13-24 and ≤ 12 groups, respectively. Although Kaplan-Meier curves showed partial early overlap, the OS difference was statistically significant (log-rank $p = 0.002$). Multivariate Cox analysis confirmed that LN harvest ≥ 25 was independently associated with improved OS (HR = 0.52, 95% CI: 0.30-0.89, $p = 0.01$), while BMI and comorbidities were not significant predictors.

Conclusion. Extensive LN retrieval (≥ 25) is associated with improved long-term survival in elderly patients with TCC. Despite partial KM curve overlap, a statistically significant survival benefit was observed. Future research should aim to refine LN harvest guidelines for elderly populations while ensuring surgical safety.

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Transverse colon cancer (TCC) represents a rare but challenging subset of colorectal cancer (CRC), characterized by its unique anatomical complexity and lymphatic drainage patterns. Unlike other CRC subtypes, TCC poses distinct surgical and oncological challenges due to its location at the junction of the

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right and left colonic segments, which influences lymphatic spread and complicates surgical resection.[1] Accurate pathological staging is pivotal in determining adjuvant therapy requirements and predicting prognosis, particularly in elderly patients who often present with age-related physiological changes and multiple comorbidities. Lymph node (LN) retrieval plays a central role in staging accuracy, as the extent of LN harvest directly affects the identification of micrometastases and subsequent therapeutic decisions.[2-4]

Current clinical guidelines recommend retrieving at least 12 lymph nodes during curative-intent surgery for CRC to ensure adequate staging. However, emerging evidence suggests that retrieving a greater number of lymph nodes beyond this 12-node standard may further enhance micrometastasis detection, reduce the risk of understaging, and improve overall survival (OS).[5,6] This survival benefit is thought to be associated with the stage migration phenomenon, in which more extensive lymphadenectomy reveals occult nodal involvement that would otherwise remain undetected. Moreover, some studies have proposed that retrieving ≥ 25 lymph nodes may provide additional prognostic benefit, particularly by reducing staging inaccuracy in node-negative patients and improving long-term outcomes.[11] Despite these potential advantages, achieving higher lymph node retrieval thresholds in elderly patients remains a significant challenge due to their reduced physiological reserves, higher prevalence of comorbidities such as hypertension and chronic kidney disease, and increased surgical risks.[7]

Several patient- and tumor-related factors can influence LN retrieval outcomes. Body mass index (BMI) has been identified as a critical variable, with underweight patients potentially having reduced mesenteric fat complicating LN identification during pathological assessment. Conversely, obese patients may present technical challenges due to excessive mesenteric adiposity obscuring lymphatic structures. Gender differences have also been reported, with female patients often exhibiting lower LN yields than males. Tumor location within the transverse colon adds another layer of complexity, as variations in lymphatic drainage patterns may impact LN harvest. Additionally, surgical techniques play a crucial role in determining LN retrieval outcomes.

In elderly patients aged ≥ 80 years, these challenges are compounded by the need to balance oncological benefits against surgical morbidity. While extensive lymphadenectomy may optimize staging and survival outcomes, concerns about perioperative complications such as infection or impaired healing remain significant. Understanding how BMI, gender, tumor characteristics, and surgical approach interact with LN retrieval thresholds is essential for refining clinical guidelines and improving patient outcomes.[7]

This study aims to evaluate the impact of different LN retrieval thresholds (≤ 12, 13-24, ≥ 25) on OS and staging accuracy in elderly TCC patients undergoing curative-intent surgery. Additionally, we analyze the effects of BMI, gender, and surgical approach on LN harvest and assess the prognostic significance of extensive lymphadenectomy in this vulnerable patient population.[8] By addressing these critical questions, our findings seek to inform future strategies for optimizing LN retrieval guidelines while minimizing surgical risks in elderly individuals with TCC.[9,10]

Methods

Study design and patient selection

This retrospective cohort study was approved by the Institutional Review Board of China Medical University Hospital Taichung (IRB number: CMUH110-REC3-170). We included 78 patients aged ≥ 80 years who underwent curative-intent TCC resection between January 2010 and December 2021. Inclusion criteria were histologically confirmed TCC, age ≥ 80 years, and elective surgical resection with curative intent. Exclusion criteria included metastatic disease (stage IV), emergency or palliative surgery, and missing or inconsistent data. Seventy-eight patients met the inclusion criteria. All 78 cases underwent laparoscopic surgery, including extended right hemicolectomy, transverse colectomy, and left hemicolectomy. Among the cases with fewer than 12 harvested lymph nodes, six patients underwent left hemicolectomy, while two underwent transverse colectomy. Although stage 0

cases (n = 4) were included, all were > 90 years and received curative-intent surgery; therefore, they were retained in the survival analysis to reflect real-world elderly TCC care. Fig. 1 illustrates the patient inclusion process, showing how 78 cases were selected from an initial cohort after exclusion of non-curative, emergency, or incomplete datasets.

Data collection

Demographic variables, including age, gender, body mass index (BMI), and comorbidities, including hypertension, Type 2 diabetes mellitus, chronic kidney disease, and coronary artery disease, were obtained from medical records. Surgical approach, blood loss, LN count, tumor characteristics, and follow-up data were also recorded. Patients were stratified into three groups based on LN count (≤ 12, 13-24, ≥ 25). Tumor location was classified as proximal or distal transverse colon based on the middle colic artery root division. OS was defined as the time from surgery to death or last follow-up.

Statistical analysis

Kaplan-Meier curves were used to estimate five-year OS across LN groups, while Cox proportional hazards models identified independent predictors of survival. ANOVA and chi-square tests analyzed LN retrieval variation across BMI and surgical approaches, and Spearman correlation assessed the relationship between LN count and pathological stage.

Results

Baseline characteristics

The study included 78 patients aged 80-95 years (mean: 83.38 ± 3.76), with 56.41% male and 43.59% female. The median BMI was 23 (interquartile range: 21.5-25.0). The most common comorbidity was hypertension (57.69%), followed by chronic kidney disease (32.05%) and Type 2 diabetes mellitus (26.92%). American Society of Anesthesiologists (ASA) classification was as follows: ASA I (1.28%), ASA II (47.44%), ASA III (48.72%), and ASA IV (2.56%). The median CEA level was 2.90 (0.2-62.0), and the mean CEA was 6.52 ± 9.90. Table 1 summarizes the overall baseline characteristics. Extended right hemicolectomy was predominantly performed in the ≥ 25 LNs group (87.9%), whereas left hemicolectomy was more common in the ≤ 12 LNs group (75%). This difference likely reflects anatomical variations in lymphatic drainage and segmental resection extent.

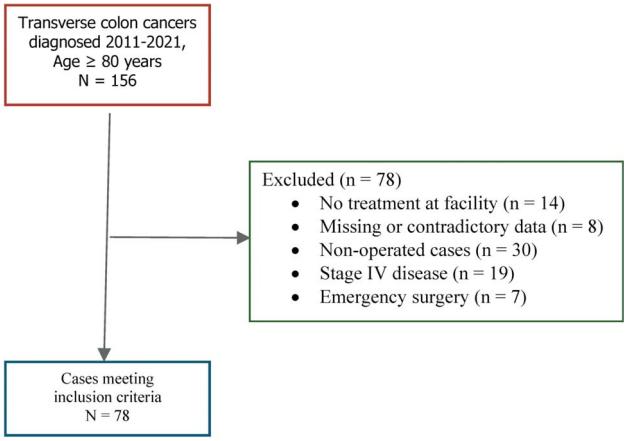

Fig. 1. Flow chart of participant recruitment. Flow diagram of participant recruitment. A total of 156 elderly patients (≥ 80 years) with transverse colon cancer were screened. After exclusions, 78 cases met inclusion criteria for final analysis.

Lymph node harvest and pathological findings

The mean total LN count was 24.3 ± 9.5, with the following distribution: ≤ 12 nodes (10.3%, n = 8), 13-24 nodes (47.44%, n = 37), and ≥ 25 nodes (42.31%, n = 33). Six of the patients with inadequate LN retrieval (≤ 12 nodes) underwent left hemicolectomy, while two underwent transverse colectomy. In terms of tumor location, 83.3% (29/33) of patients in the ≥ 25 LNs group had tumors located in the proximal transverse colon and underwent extended right hemicolectomy, while most patients with ≤ 12 LNs (75%) had distal tumors treated by left hemicolectomy. Pathological staging included stage 0 (5.1%, n = 4), stage I (15.4%, n = 12), stage II (44.9%, n = 35), and

stage III (34.6%, n = 27). The ≥ 25 group had a notably higher proportion of stage III disease, consistent with the stage migration phenomenon. As shown in Fig. 2, the proportion of stage III disease was highest in the ≥ 25 LN group, supporting the concept of stage migration, whereas patients with ≤ 12 nodes were predominantly classified as stage II. This trend highlights the potential diagnostic benefit of extensive lymphadenectomy in uncovering occult nodal disease. There was a moderate positive correlation (r = 0.39, $p < 0.001$) between the total LN count and the number of positive nodes, supporting stage migration theory. Patients with a higher LN count were more likely to be diagnosed with nodal metastases, supporting the concept of stage migration.

Survival analysis

The median follow-up duration was 53 months (range: 12-60 months). Kaplan-Meier analysis demonstrated a statistically significant difference in OS among the LN retrieval groups (log-rank $p = 0.002$),

Table 1. Comparison of baseline characteristics across lymph node retrieval groups

Variable	≤ 12 LNs (n = 8)	13-24 LNs (n = 37)	≥ 25 LNs (n = 33)	*p*-value
Age (mean ± SD)	83.6 ± 3.3	83.2 ± 3.9	83.5 ± 3.7	0.93
Male (%)	6 (75%)	20 (54.1%)	18 (54.5%)	0.62
BMI (mean ± SD)	22.9 ± 3.2	23.3 ± 3.4	23.4 ± 3.8	0.87
HTN (%)	5 (62.5%)	22 (59.5%)	18 (54.5%)	0.89
CKD (%)	2 (25%)	12 (32.4%)	11 (33.3%)	0.88
DM (%)	2 (25%)	9 (24.3%)	10 (30.3%)	0.87
ASA III-IV (%)	5 (62.5%)	21 (56.8%)	20 (60.6%)	0.94
Surgery type				
Extended right hemicolectomy (%)	0 (0%)	21 (56.8%)	29 (87.9%)	< 0.001
Surgery type: transverse colectomy (%)	2 (25%)	1 (2.7%)	1 (3.0%)	
Surgery type: left hemicolectomy (%)	6 (75%)	15 (40.5%)	3 (9.1%)	

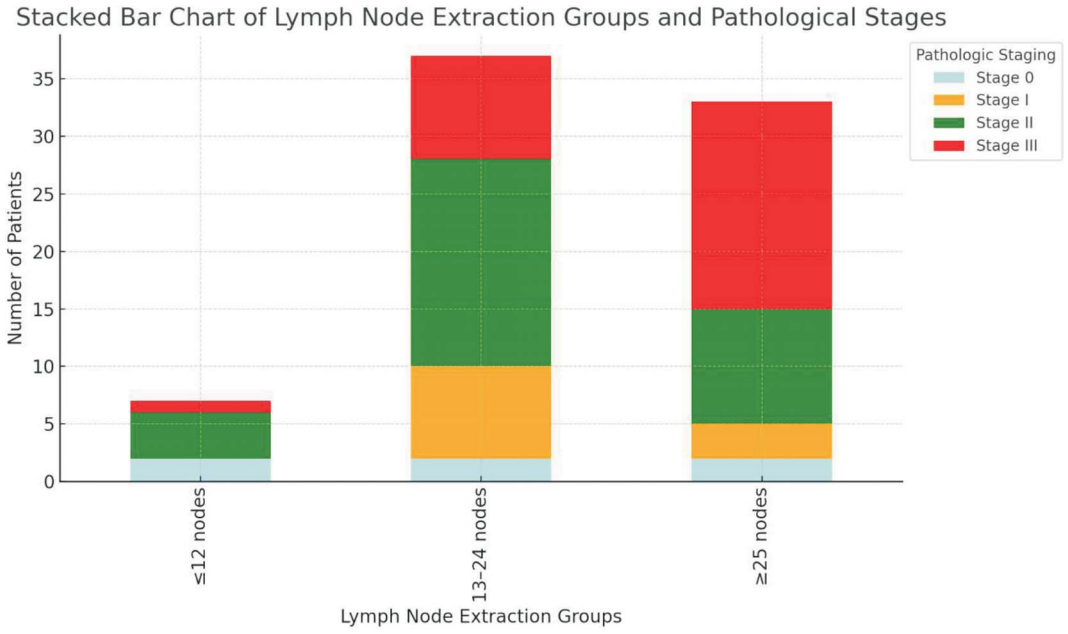

Fig. 2. Distribution of pathological stages across lymph node retrieval groups. Stacked bar chart showing pathological stage distribution across lymph node retrieval groups. Higher LN retrieval (≥ 25) correlated with increased identification of stage III disease.

although the survival curves showed partial overlap and early crossing, likely due to the small sample size and timing of events (Fig. 3A). The five-year OS estimates (95% CI) were 37.5% (16.4-58.6) for patients with ≤ 12 nodes, 59.5% (47.0-72.0) for those with 13-24 nodes, and 69.7% (58.3-81.1) for those with ≥ 25 nodes. For disease-free survival (DFS), the log-rank test did not reach statistical significance, but a non-significant divergence was observed across groups (Fig. 3B). The earlier decline in DFS observed in the ≥ 25 group may reflect a higher proportion of stage III patients in that group (Table 2; Fig. 2), supporting the stage migration phenomenon despite the absence of statistical significance. In multivariate Cox regression analysis (Table 3), retrieving ≥ 25 LNs was independently associated with improved OS (HR = 0.52, 95% CI: 0.30-0.89, $p = 0.01$). Increased pathological stage (II-III) was independently associated with poorer OS,

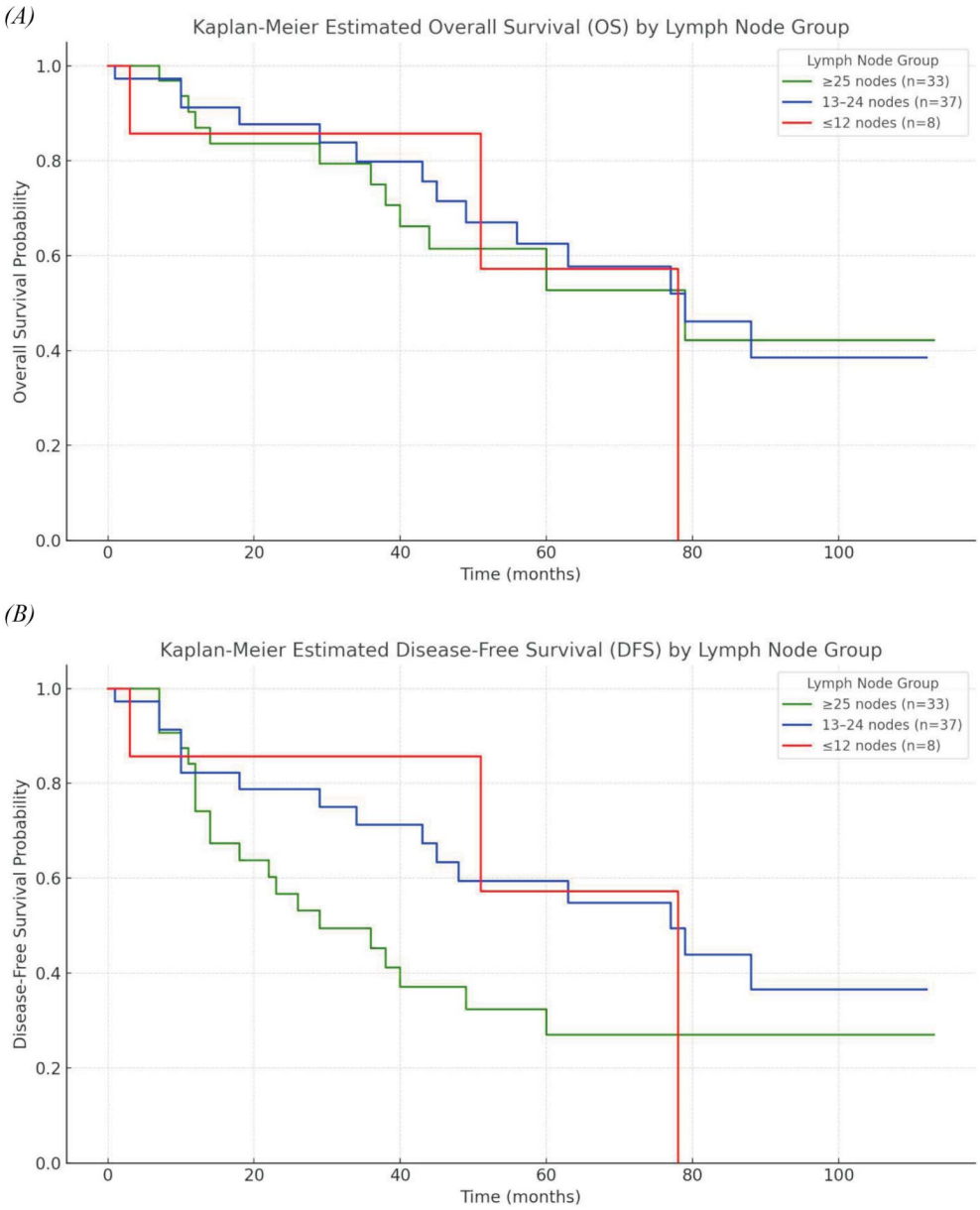

Fig. 3. Kaplan-Meier survival analysis. (A) Overall survival (OS) by lymph node retrieval group. (B) Disease-free survival (DFS) by lymph node retrieval group.

reinforcing the importance of adequate nodal staging.

Surgical and complication outcomes

All 78 patients underwent laparoscopic surgery, including extended right hemicolectomy, transverse colectomy, and left hemicolectomy. The mean operative time was 198.1 ± 68.5 minutes, and the mean estimated blood loss was 69.6 ± 98.1 mL. The average length of hospital stay was 9.2 ± 3.8 days. The overall perioperative morbidity rate was 25.6% (n = 20), with infection being the most common complication (10.3%). Patients with a normal BMI exhibited the widest variability in node yield, with an interquartile range spanning 20 to 30 nodes and several high outliers (> 40). Underweight patients had a slightly higher median LN count but a narrower range, whereas overweight/obese patients showed a lower median yield with moderately greater variance. Lymph node retrieval counts stratified by BMI categories are illustrated in Fig. 4. These findings suggest BMI may influence the technical ease of lymphadenectomy, although laparoscopic surgery appeared to overcome these differences across groups.

Discussion

Importance of adequate LN retrieval

LN retrieval is a cornerstone of pathological staging and prognosis in TCC, particularly in elderly patients. Our study demonstrated that retrieving ≥ 25 LNs significantly improves five-year OS compared to inadequate LN retrieval (≤ 12 LNs). Patients with ≤ 12 LNs had a 37.5% five-year OS, highlighting the risk of understaging and its detrimental impact on survival outcomes. Conversely, patients with ≥ 25 LNs achieved a five-year OS of 69.7%, underscoring the importance of extensive lymphadenectomy in opti-

Table 2. Operation details and histological/oncological characteristics

Parameter	Value (N = 78)
Conversion (n, %)	3 (5.77%)
Blood loss (mean ± SD), ml	69.62 ± 98.08
Operation time (mean ± SD), min	198.06 ± 68.52
Pathological stage 0 (n, %)	4 (5.13%)
Pathological stage I (n, %)	12 (15.38%)
Pathological stage II (n, %)	35 (44.87%)
Pathological stage III (n, %)	27 (34.62%)
Proximal resection margin (mean ± SD)	17.26 ± 8.73 cm
Distal resection margin (mean ± SD)	10.71 ± 15.46 cm
Specimen length (mean ± SD)	30.58 ± 9.91 cm
Tumor size (mean ± SD), cm	3.88 ± 1.79
Total lymph nodes (mean ± SD)	24.31 ± 9.52
Total lymph nodes (median)	24
≤ 12 nodes, n (%)	8 (10.3)
13-24 nodes, n (%)	37 (47.44)
≥ 25 nodes, n (%)	33 (42.31)
Positive lymph nodes (mean ± SD)	1.13 ± 2.29
Differentiation (well, n, %)	6 (7.69%)
Differentiation (moderate, n, %)	60 (76.92%)
Differentiation (poor, n, %)	12 (15.38%)
Median follow-up, months	45
5-year OS (≥ 25 nodes), %	69.7
5-year OS (13-24 nodes), %	59.5
5-year OS (≤ 12 nodes), %	37.5

Table 3. Multivariate Cox regression analysis for overall survival

Variable	HR (95% CI)	*p*-value
LN harvest ≥ 25 vs. < 25	0.52 (0.30-0.89)	0.01
Pathological stage (II-III vs. 0-I)	2.10 (1.25-3.55)	0.005
BMI (< 18.5 vs. ≥ 18.5)	1.65 (0.85-3.23)	0.14
Hypertension (yes vs. no)	1.16 (0.62-2.10)	0.64

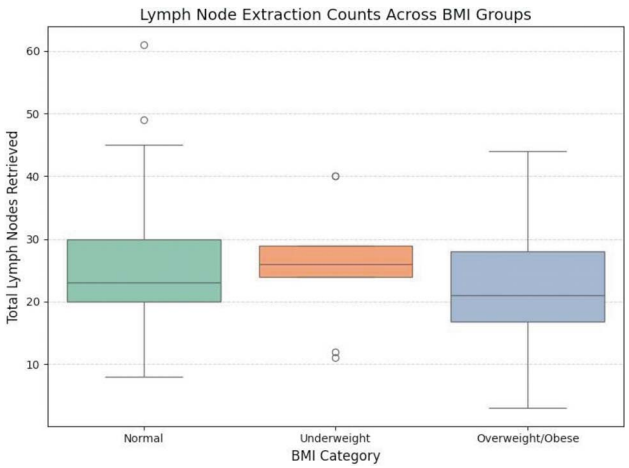

Fig. 4. Distribution of lymph node retrieval counts across different BMI categories. Boxplot of lymph node counts stratified by BMI. Normal BMI showed greatest variability in LN retrieval.

mizing oncological outcomes.[11] This survival advantage aligns with the stage migration phenomenon, where increased LN dissection uncovers occult nodal metastases, improving staging accuracy and guiding adjuvant therapy decisions. The moderate positive correlation ($r = 0.39$, $p < 0.001$) between the total LN count and the number of positive nodes in our study further supports this concept. By facilitating accurate staging, extensive LN retrieval reduces the likelihood of residual microscopic disease and enhances therapeutic precision, contributing to improved survival rates.[12] Previous studies have similarly demonstrated that retrieving more than the guideline-recommended threshold of 12 LNs enhances micrometastasis detection and survival outcomes. These findings collectively reinforce the need to revise current guidelines to recommend ≥ 25 LNs as the standard threshold for adequate lymphadenectomy in elderly TCC patients.[13]

Patient and tumor factors influencing LN retrieval

Several patient-related factors, including BMI, gender, and tumor characteristics, influence LN harvest outcomes. Although prior reports suggest that underweight and female patients may be prone to lower LN yields due to mesenteric fat variations, our study did not observe a statistically significant association between BMI or gender and LN harvest. Conversely, obese patients (BMI ≥ 25) may present technical challenges due to excessive mesenteric adiposity obscuring lymphatic structures.[14] Interestingly, despite these anatomical and physiological differences, BMI did not significantly impact the overall LN harvest in our study, as all BMI groups met the surgical standard of at least 12 nodes. However, as illustrated in Fig. 4, patients with normal BMI showed the greatest variability in LN counts, while underweight patients had narrower distribution but higher medians. These findings suggest that BMI may subtly influence retrieval ease, even if not statistically significant. This suggests that laparoscopic surgery may mitigate BMI-related challenges by enabling precise dissection across different patient subgroups.

Tumor location also plays a critical role in LN retrieval outcomes. Patients undergoing left hemicolectomy were more likely to have inadequate LN harvest (< 12 nodes), accounting for six out of eight cases with insufficient retrieval in our cohort. This observation may be attributed to anatomical variations in lymphatic drainage patterns within the left colon, where fewer LNs are naturally present.[14]

Role of surgical techniques in LN harvest

Minimally invasive surgical techniques, particularly laparoscopic surgery, have been associated with improved LN harvest due to superior magnification and meticulous dissection capabilities. All 78 patients in our study underwent laparoscopic surgery, achieving a mean LN count of 24.3 ± 9.5 — exceeding the guideline-recommended threshold of 12 nodes. Notably, laparoscopic surgery facilitated adequate lymphadenectomy across different patient subgroups regardless of BMI or tumor location. However, patients undergoing left hemicolectomy remained more likely to experience inadequate LN harvest (< 12 nodes), suggesting that anatomical factors may limit LN retrieval despite advancements in surgical techniques. This was especially evident in left hemicolectomy cases, which accounted for 75% of patients in the ≤ 12 LN group (Table 1). Such findings emphasize the importance of surgical strategy and segment-specific lymphatic mapping in preoperative planning. In our study, laparoscopic surgery achieved acceptable operative time and minimal blood loss, with a manageable complication rate (25.6%) and average hospital stay of 9.2 days. These findings reinforce its safety and feasibility in elderly patients.[12]

Prognostic implications of LN harvest

The prognostic significance of extensive LN retrieval is evident from our survival analysis, which confirmed that retrieving ≥ 25 LNs independently predicts improved OS (HR = 0.52, 95% CI: 0.30-0.89, $p = 0.01$). The stepwise improvement in five-year OS rates — from 37.5% for ≤ 12 LNs to 69.7% for ≥ 25 LNs — highlights the critical role of adequate lymphadenectomy in enhancing oncological outcomes. From a biological perspective, higher LN counts may

reflect a more robust immune response capable of containing micrometastatic disease, while extensive dissection reduces residual microscopic disease burden. Therapeutically, accurate staging facilitated by higher LN retrieval ensures appropriate allocation of adjuvant therapy, particularly for stage II-III patients who benefit most from chemotherapy.[2,13] Our findings align with prior studies demonstrating that increased LN harvest is associated with better survival outcomes in colon cancer patients across all age groups. However, elderly patients face unique challenges due to reduced physiological reserves and higher surgical risks, emphasizing the need for tailored approaches to optimize LN retrieval while minimizing morbidity. Although KM survival curves showed overlapping patterns between groups, the statistical significance observed in OS ($p = 0.002$) suggests a potential cumulative survival benefit associated with higher LN retrieval, which may not be fully visualized due to limited sample size and event frequency. Moreover, the trend of earlier recurrence in the ≥ 25 LNs group on DFS analysis may be attributed to stage migration and a higher proportion of stage III patients.

Surgical outcomes and complications

Despite concerns about increased morbidity associated with extensive lymphadenectomy in elderly patients, our study found comparable perioperative complication rates across all LN harvest groups (overall rate: 25.6%). The most common adverse event was infection (10.3%), followed by wound-related complications. Laparoscopic conversion occurred in 5.77% of cases (Table 2), yet this did not correlate with lower lymph node yields or poorer survival outcomes. This finding underscores the procedural safety and feasibility of laparoscopy, even in elderly patients with comorbidities. Notably, extensive LN retrieval did not significantly increase surgical morbidity or mortality risks in our cohort, suggesting that adequate lymphadenectomy can be safely achieved even in elderly TCC patients.

Limitations and future directions

Our study has several limitations that warrant consideration. Its generalizability may be limited as a single-center retrospective analysis with a relatively small sample size (n = 78). Additionally, while our study focused on absolute LN counts as a prognostic marker, we did not evaluate the lymph node ratio (LNR), which has been proposed as a superior predictor of survival outcomes. Future prospective multicenter studies should validate our findings in larger cohorts and explore the interaction between LN harvest thresholds, LNR values, and other oncological variables such as tumor biology and immune response markers. Investigating strategies to optimize LN retrieval — such as preoperative imaging techniques or enhanced pathological assessment protocols — may further refine lymphadenectomy guidelines for elderly TCC patients. We acknowledge that including stage 0 patients may introduce heterogeneity; however, given their advanced age and treatment approach, we considered their inclusion reflective of real-world elderly TCC management. These insights support the development of individualized surgical guidelines that balance oncologic thoroughness with the physiological limitations of aging patients.

Conclusion

Retrieving ≥ 25 LNs significantly improves pathological staging accuracy and long-term survival outcomes in elderly TCC patients undergoing curative-intent surgery. Patients with ≤ 12 LNs face a heightened risk of understaging and poorer survival rates due to residual microscopic disease and inaccurate therapeutic allocation. Minimally invasive surgical techniques such as laparoscopic resection facilitate adequate lymphadenectomy across diverse patient subgroups while minimizing perioperative risks such as infection or prolonged hospital stays. Although factors like BMI and tumor location influence LN harvest outcomes, laparoscopic surgery appears effective at mitigating these challenges.

Given the increasing prevalence of TCC among aging populations worldwide, future research should focus on validating these findings through multicenter prospective studies while investigating innovative st-

rategies to enhance LN retrieval without compromising patient safety or quality of life. Ultimately, refining lymphadenectomy guidelines to recommend ≥ 25 LNs as the standard threshold will ensure optimal management for this vulnerable cohort while improving survival outcomes through personalized oncological care strategies tailored to elderly TCC patients' unique needs.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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原　著

淋巴結摘取數目對高齡橫結腸癌患者預後的影響：回溯性研究

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背景與目的　橫結腸癌 (Transverse Colon Cancer, TCC) 為大腸直腸癌中具特殊解剖及腫瘤學特性的次類型，其發生率隨年齡增加而上升。80 歲以上高齡患者常伴有多重共病，進一步影響治療策略與預後判斷。淋巴結 (lymph node, LN) 擷取數量為正確病理分期與術後治療規劃之關鍵。目前臨床指引建議擷取 ≥ 12 顆淋巴結，但近年研究指出擷取 ≥ 25 顆或可進一步提升預後判斷之準確性。本研究旨在探討不同 LN 擷取數量對高齡 TCC 患者整體存活率 (overall survival, OS) 之影響，並分析體重指數 (BMI)、腫瘤位置及手術方式對 LN 擷取量之影響。

方法　回溯性分析 2010 至 2021 年間在中國醫藥大學附設醫院接受腹腔鏡根除性切除之 78 位年齡 ≥ 80 歲 TCC 患者。依 LN 擷取數量分為三組 (≤ 12、13-24、≥ 25)。以 Kaplan-Meier 法及 Cox 比例風險模型評估整體存活率與獨立預後因子。

結果　平均 LN 擷取數為 24.3 ± 9.5 顆。五年整體存活率分別為：≤ 12 組為 37.5% (95% CI: 16.4-58.6)、13-24 組為 59.5% (95% CI: 47.0-72.0)、≥ 25 組為 69.7% (95% CI: 58.3-81.1)，具統計顯著差異 (log-rank $p = 0.002$)。多變項 Cox 分析亦顯示擷取 ≥ 25 顆 LN 與較佳整體存活率獨立相關 (HR = 0.52, 95% CI: 0.30-0.89, $p = 0.01$)。BMI 與共病數則無統計顯著相關。

結論　於高齡 TCC 患者中，擷取 ≥ 25 顆 LN 可顯著提升整體存活率，即使 Kaplan-Meier 曲線早期略有重疊，其長期預後差異仍具統計意義。本研究支持修訂現行指引，建議於高齡 TCC 病患中達成 ≥ 25 顆 LN 擷取標準，並強調手術安全與病理分期準確性之重要性。

關鍵詞　橫結腸癌、高齡患者、淋巴結摘取、腹腔鏡手術、病理分期、整體存活率。