

Original Article

# Long-term Outcomes in Very Old Patients with Colorectal Cancer Undergoing Laparoscopic Surgery

Gary Wong  
En-Kwang Lin  
Yen-Jung Lu  
Chien-Hsin Chen

Division of Colorectal Surgery, Department  
of Surgery, Wan Fang Hospital, Taipei  
Medical University, Taipei, Taiwan

---

**Key Words**

Very old patients (aged > 75 years);  
Colorectal cancer;  
Laparoscopic surgery;  
Long-term outcomes

**Purpose.** Colorectal cancer (CRC) is among the most prevalent cancers globally. Many patients with CRC are aged > 75 years, but this group is often excluded from clinical trials. Consequently, existing trial results may not be applicable to this group. This study evaluated long-term outcomes in very old patients with CRC who underwent laparoscopic surgery.

**Methods.** This retrospective, observational study assessed the data of 384 patients who received laparoscopic surgical treatment for CRC between January 2007 and December 2019. The patients were stratified into three age groups: < 60 years (Group 1), 60-74 years (Group 2), and ≥ 75 years (Group 3). The primary outcomes measured were 5-year overall survival (OS) and disease-free survival (DFS).

**Results.** The median follow-up time was 72 months (range 2-192 months), with Group 3 having a significantly lower 5-year OS rate than did the other two groups (92.7% in Group 1 vs. 84.0% in Group 2 vs. 69.2% in Group 3,  $p < 0.001$ ). No significant differences in 5-year DFS rates were observed between the groups (84.7% in Group 1 vs. 82.7% in Group 2 vs. 81.7% in Group 3,  $p = 0.437$ ).

**Conclusion.** Despite the significant difference in OS, very old patients with CRC who underwent laparoscopic surgery had a similar 5-year DFS rate to younger patients.

[J Soc Colon Rectal Surgeon (Taiwan) 2026;37:1-9]

Colorectal cancer (CRC) is the third most commonly diagnosed cancer globally and the second leading cause of cancer-related deaths.<sup>1,2</sup> The global burden of CRC is expected to rise owing to population growth, aging, and the adoption of Westernized lifestyles in developing countries.<sup>2,3</sup> Despite advancements in diagnosis and treatment, CRC remains a major public health concern, particularly among older adults.<sup>3</sup>

In Taiwan, CRC is among the most prevalent cancer types and the leading cause of cancer-related deaths.<sup>4,5</sup>

The incidence of CRC continues to increase, with considerable improvements in treatment outcomes over the past two decades.<sup>4,6</sup> The age-standardized mortality rate of CRC in Taiwan has also increased, and the rate of increase is higher in men than in women.<sup>6</sup> Treatment delays, especially among individuals with disabilities, and the need for continuous follow-up after treatment remain critical challenges.<sup>5</sup>

The incidence of CRC peaks in individuals aged over 70 years.<sup>7,8</sup> Older patients often experience frailty, comorbidities, and functional dependency, which can

---

Received: December 29, 2024.

Accepted: June 4, 2025.

Correspondence to: Dr. Chien-Hsin Chen, Division of Colorectal Surgery, Department of Surgery, Wan Fang Hospital, Taipei Medical University, No. 111, Sec. 3, Hsing Long Rd., Taipei 116, Taiwan. Tel: 886-970-746675; E-mail: 88227@w.tmu.edu.tw

complicate treatment and increase postoperative mortality and morbidity.<sup>9,10</sup> Moreover, very old patients with CRC are less likely to receive standard treatments, including curative resection and adjuvant therapy, because of concerns regarding treatment tolerance and concurrent health problems.<sup>7,10</sup> Such undertreatment may cause poorer outcomes and higher mortality rates in this population.<sup>10</sup>

The benefits of laparoscopic surgery have been demonstrated among older adults. Laparoscopic surgery is associated with fewer complications, less blood loss, shorter hospital stays, and better overall survival (OS) rates when compared with open surgery.<sup>10,11</sup> However, high-quality data on long-term CRC outcomes in very old patients remain lacking, which poses substantial challenges to clinical decision-making and treatment optimization in this population. The present study evaluated long-term outcomes in very old CRC patients undergoing laparoscopic surgery.

## Patients and Methods

We conducted a retrospective, observational, single-center study of 384 patients who received laparoscopic surgical intervention for CRC. The demographic and clinical data of these patients were prospectively included in the database of our Colorectal Surgery Department between January 2007 and December 2019.

Patients who were aged < 18 years, had stage IV disease, underwent open surgery, or had synchronous CRC were excluded from the study. Accordingly, we included 384 patients with CRC who were aged > 18 years and underwent laparoscopic surgery with curative intent.

The patients were stratified into three age groups: < 60 years (Group 1), 60-74 years (Group 2), and ≥ 75 years (Group 3). The variables included in our analysis were age, gender, anesthetic risk (according to the American Society of Anesthesiologists [ASA]), primary tumor site, tumor size (according to the pathological report), pathological staging, histologic grade, lymphovascular invasion, and perineural invasion. The surgical outcomes analyzed were surgical time, blood

loss, time to soft diet, duration of hospital stay, number of isolated lymph nodes, adjuvant chemotherapy, postoperative morbidity (Clavien-Dindo class II-V), 5-year OS rate, and 5-year disease-free survival (DFS) rate.

Data analysis was conducted using SPSS Statistics software for Mac (IBM SPSS Statistics version 29, Chicago, IL, USA). Student's t-test was used to compare the means of quantitative variables. Pearson's chi-square test was applied to compare qualitative variables and mortality. Survival was analyzed using the Kaplan-Meier method, and the curves were compared using the log-rank test. A *p* value of < 0.05 was considered statistically significant.

## Results

This study included the data of 384 patients with CRC who underwent laparoscopic surgery with curative intent at Taipei Municipal Wanfang Hospital between 2007 and 2019. The demographic and clinical characteristics of these patients are presented in Table 1. No significant differences in gender, body mass index, primary tumor site, histologic grade, lymphovascular invasion, or perineural invasion were observed between the groups. Groups 2 and 3 had a significantly higher number of patients with ASA class III than did Group 1 (18.6% and 39.4% vs. 4.8%, *p* < 0.001). Moreover, Group 3 exhibited a larger tumor size ( $4.19 \pm 2.12$  cm) than did Group 2 ( $3.37 \pm 1.89$  cm) and Group 1 ( $3.45 \pm 2.26$  cm; *p* = 0.005). Significant differences in pathological staging were observed among the groups; Group 1 had a higher number of patients with stage II disease (48.4%) than did Group 2 (43.6%) and Group 3 (27.9%; *p* = 0.005).

Surgical outcomes, the number of lymph nodes harvested, operation time, and blood loss were similar among the three groups (Table 2). Group 3 exhibited a significantly longer time to soft diet and longer duration of hospital stay than did the other groups. Moreover, the overall postoperative morbidity (Clavien-Dindo class II-IV) was 14.06%. Postoperative morbidity was significantly higher in Group 3 (21.2%) than in Group 2 (13.5%) and Group 1 (8.9%; *p* = 0.005).

**Table 1.** Demographic and clinical characteristics by group

	Group 1 < 60 years (n = 124)	Group 2 60-74 years (n = 156)	Group 3 ≥ 75 years (n = 104)	p value
<b>Demographic characteristics</b>				
Gender				0.246
Male	66 (53.2%)	90 (57.7%)	49 (47.1%)	
Female	58 (46.8%)	66 (42.3%)	55 (52.9%)	
BMI	23.83 ± 3.65	24.54 ± 4.02	23.99 ± 3.50	0.461
<b>Underlying disease</b>				
Diabetes mellitus	17 (13.7%)	35 (22.4%)	35 (33.7%)	< 0.001
Cardiovascular disease	10 (8.1%)	32 (20.5%)	42 (40.4%)	0.002
Pulmonary disease	9 (7.3%)	34 (21.8%)	30 (28.8%)	< 0.001
CCI, median (IQR)	3 (2-4)	5 (4-6)	7 (6-8)	< 0.001
<b>ASA score</b>				
I	20 (16.1%)	2 (1.3%)	1 (1.0%)	
II	98 (79%)	125 (80.1%)	62 (59.6%)	< 0.001
III	6 (4.8%)	29 (18.6%)	41 (39.4%)	
<b>Tumor characteristics</b>				
Primary site				0.100
Right-sided	32 (25.8%)	45 (28.8%)	40 (38.5%)	
Left-sided	92 (74.2%)	111 (71.2%)	64 (61.5%)	
Tumor size (cm)	3.45 ± 2.26	3.37 ± 1.89	4.19 ± 2.12	0.005
<b>Pathological characteristics</b>				
Pathological staging				0.005
I	32 (25.8%)	36 (23.1%)	25 (24.0%)	
II	32 (25.8%)	52 (33.3%)	50 (48.1%)	
III	60 (48.4%)	68 (43.6%)	29 (27.9%)	
Grade				0.663
Well differentiated	26 (21%)	28 (17.9%)	18 (17.3%)	
Moderately differentiated	95 (76.6%)	126 (80.8%)	82 (78.8%)	
Poorly differentiated	3 (3.3%)	2 (1.2%)	4 (3.8%)	
No. of examined regional LN	22.88 ± 11.30	20.80 ± 10.24	20.68 ± 9.851	0.179
Lymphovascular invasion (%)				0.844
Positive	46 (37.1%)	62 (39.7%)	38 (36.5%)	
Negative	78 (62.9%)	94 (60.3%)	66 (63.5%)	
Perineural invasion (%)				0.152
Positive	41 (33.1%)	49 (31.4%)	23 (22.1%)	
Negative	83 (66.9%)	107 (68.6%)	81 (70.6%)	

ASA: American Society of Anesthesiologists; BMI: body mass index; CCI: Charlson Comorbidity Index; LN: lymph node.

**Table 2.** Surgical outcomes by group

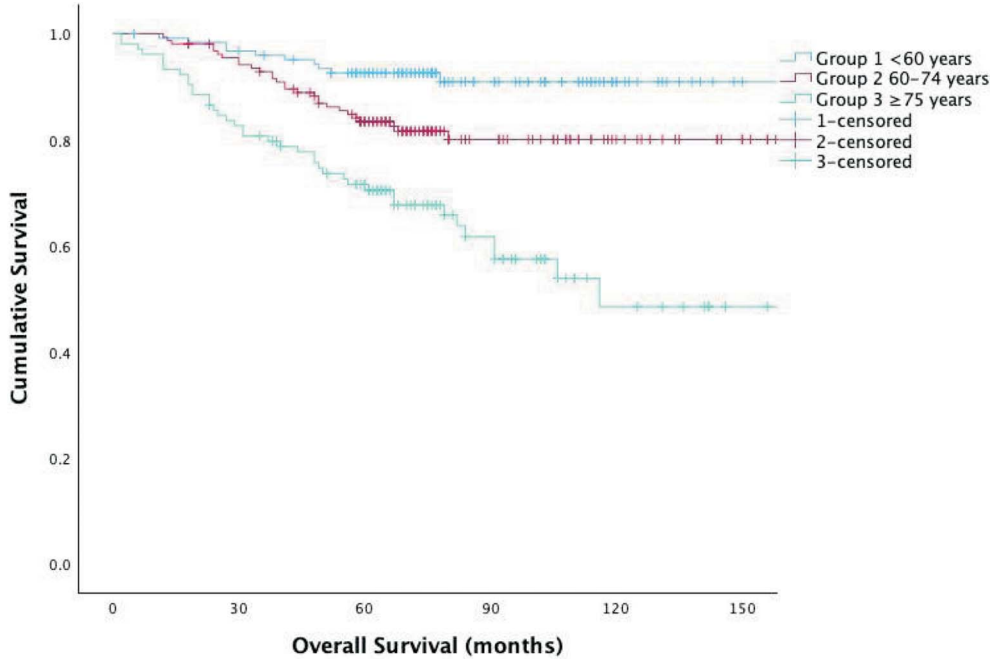
	Group 1 < 60 years (n = 124)	Group 2 60-74 years (n = 156)	Group 3 ≥ 75 years (n = 104)	p value
Operative time (minutes)	235.86 ± 73.33	257.15 ± 92.00	249.08 ± 76.78	0.100
Blood loss (ml)	24.09 ± 3.54	24.41 ± 4.15	23.70 ± 3.346	0.112
Time to soft diet (days)	3.99 ± 1.41	4.92 ± 3.59	5.20 ± 2.60	0.002
Hospital stay (days)	8.05 ± 2.43	9.56 ± 5.45	11.61 ± 8.20	< 0.001
Morbidity (Clavien-Dindo II-IV)	11 (8.9%)	21 (13.5%)	22 (21.2%)	0.028

Median follow-up time: 72 months (range 2-192 months).

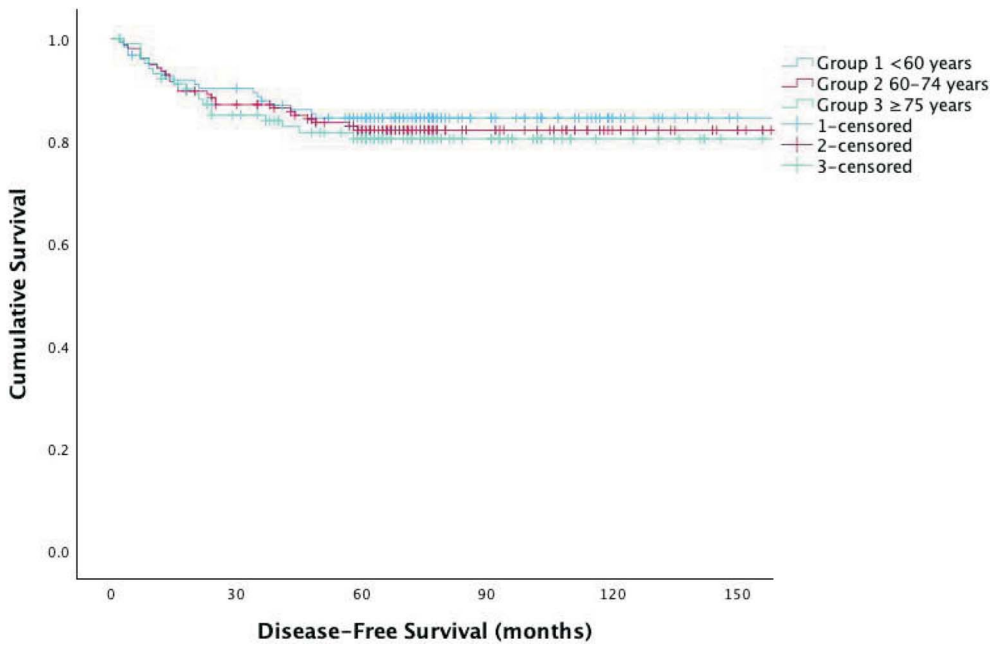
The median follow-up time was 72 months (range, 2-192 months). The 5-year OS rate was significantly lower in Group 3 than in the other two groups (92.7% in Group 1 vs. 84.0% in Group 2 vs. 69.2% in Group 3,  $p < 0.001$ ; Fig. 1). No significant differences in 5-year DFS rates were observed between the groups

(84.7% in Group 1 vs. 82.7% in Group 2 vs. 81.7% in Group 3,  $p = 0.437$ ; Fig. 2).

Group 3 exhibited a significantly higher non-CRC-related mortality rate compared with the other groups (Table 3). Pneumonia was the major cause of mortality, followed by sepsis and respiratory failure (Table 4).



**Fig. 1.** Overall survival by group.



**Fig. 2.** Disease-free survival by group.

**Table 3.** Mortality by group

	Group 1 < 60 years (n = 124)	Group 2 60-74 years (n = 156)	Group 3 ≥ 75 years (n = 104)	<i>p</i> value
Morbidity related to CRC	9	9	10	< 0.001
Morbidity unrelated to CRC	1	17	24	

CRC: colorectal cancer.

**Table 4.** Causes of non-CRC-related mortality by group

	Group 1 < 60 years (n = 1)	Group 2 60-74 years (n = 17)	Group 3 ≥ 75 years (n = 24)
Pneumonia	1	3	9
Sepsis		4	4
Other cancer		5	1
Respiratory failure		1	3
Bone marrow disease		1	1
Upper gastrointestinal bleeding		1	
Acute myocardial infarction		1	
Out-of-hospital cardiac arrest		1	
Heart failure			2
Arrhythmia			1
Meningitis			1
Stroke			1
End-stage renal disease			1

CRC: colorectal cancer.

## Discussion

Patients with CRC aged  $\geq 75$  years are considered very old; the age of  $\geq 75$  years is a generally accepted cutoff point worldwide.<sup>12-15</sup> Older patients with CRC are often undertreated and receive suboptimal management compared with younger patients, despite evidence suggesting that fit elderly patients can obtain similar benefits from chemotherapy.<sup>16-18</sup> Age-related variations in the treatment of colon cancer have been observed in several large databases. Older patients tend to receive adjuvant chemotherapy for advanced disease and undergo elective surgery less often than do younger patients.<sup>19</sup> Patient preferences and general concerns regarding comorbidities, performance status, cognitive function, social support, and advanced stage cancer at diagnosis have been reasons for not offering aggressive treatment to older patients.<sup>20</sup> In our study, patients in Group 3 typically received oral rather than intravenous chemotherapy. No patients in Group 3 received adjuvant radiotherapy.

Older patients, particularly those aged  $> 75$  years,

are often underrepresented in clinical trials, despite constituting a substantial portion of patients diagnosed as having CRC. This underrepresentation is primarily due to concerns regarding comorbidities, functional status, and potential increased toxicity from treatments, resulting in a lack of prospective data to guide treatment decisions for older adults.<sup>16-18</sup> The lack of data from clinical trials creates challenges in developing evidence-based guidelines for treating older patients with CRC. Consequently, treatment decisions often rely on data from younger, fitter patients, which do not necessarily apply to the older population.<sup>21</sup> Despite these challenges, studies have indicated that fit older patients, similar to younger patients, can benefit from standard CRC treatments, including surgery, chemotherapy, and targeted therapies.<sup>13,14,22</sup> Accordingly, proper patient selection, dose adjustments, and close monitoring are crucial to achieve positive outcomes.<sup>16</sup>

The results of the MRC FOCUS2 trial support the use of reduced-dose chemotherapy in older adults and frail patients with advanced CRC. The trial revealed

that reduced-dose chemotherapy was nearly as effective as full-dose chemotherapy in terms of OS and progression-free survival. This finding suggests that reduced-dose chemotherapy could be an effective treatment option with a lower risk of severe side effects for older adults and frail patients.<sup>23</sup> In our study, the majority of the patients with stage III disease in Group 3 received oral monotherapy with capecitabine or tegafur/uracil (11.7% in Group 1 vs. 16.2% in Group 2 vs. 31.0% in Group 3,  $p = 0.004$ ) or did not receive any treatment (35.0% in Group 1 vs. 48.5% in Group 2 vs. 55.2% in Group 3,  $p = 0.004$ ). The 5-year DFS rates did not differ significantly among the patients with stage III disease in the groups (78.3% in Group 1 vs. 76.5% in Group 2 vs. 62.1% in Group 3,  $p = 0.082$ ).

Laparoscopic surgery has been demonstrated to have particular benefits for older patients. This method is associated with fewer complications, less blood loss, shorter hospital stays, and higher OS rates compared with open surgery.<sup>10,11,24</sup> Age alone is not a major risk factor for poor postoperative outcomes. Studies have indicated that older patients can safely undergo surgery for CRC with comparable outcomes to younger patients, provided they do not have preoperative symptoms, noncurative resection, lymph node metastases, or other risk factors.<sup>25</sup> Our results are consistent with prior findings indicating that frail patients are more likely to experience complications, a longer time to soft diet, and longer hospital stays. Although laparoscopic surgery has its merits, it does not fully overcome the inherent challenges faced by older patients, such as increased postoperative complications and delayed recovery. However, frailty does not necessarily affect long-term oncologic outcomes; this implies that frail patients can achieve similar cancer control benefits from surgery as nonfrail patients.<sup>26,27</sup> These findings have implications for clinical practice in that they can serve as a reference for implementing tailored treatment strategies for older adults.

Several studies have indicated that older patients (aged  $\geq 75$  years) who underwent laparoscopic surgery for CRC had poorer OS rates than did younger patients. For example, a study reported a 5-year OS of 78.1% in older patients, compared with 92.9% in younger patients; the 5-year DFS rate was 86.9% in older

patients and 96.3% in younger patients, but this difference was nonsignificant.<sup>22</sup> Another study observed similar 5-year OS rates between older and younger patients (65.8% vs. 81.8%) and similar long-term outcomes in terms of recurrence-free survival (RFS) and cancer-specific survival rates.<sup>28</sup> Moreover, in another study, no significant differences were observed in 5-year RFS (74.0% vs. 85.2%,  $p = 0.091$ ) or 5-year OS (81.8% vs. 90.1%,  $p = 0.112$ ) rates between patients aged  $\geq 75$  years and those aged  $< 75$  years.<sup>29</sup> Our study observed a significantly poorer 5-year OS rate in Group 3, possibly due to the significantly higher rate of non-CRC-related mortality. The 5-year DFS rate of this group did not differ from that in the other groups. As mentioned, age does not necessarily affect long-term oncologic outcomes while radical surgery remains a crucial prognostic factor for colorectal cancer survival.<sup>30-32</sup> This may explain the comparable DFS between groups despite older patients receiving lower intensity and less frequent adjuvant chemotherapy.

Group had a relatively low number of patients with stage III disease, and the patients in this group received the least amount of adjuvant chemotherapy compared with those in the other groups. Instead, the patients in this group received oral chemotherapy or did not receive any adjuvant treatment, possibly because older patients with advanced stage CRC were reluctant to receive aggressive treatment. A similar phenomenon has been observed worldwide. A study using data from the Northern and Yorkshire Cancer Registry revealed that older patients with CRC were significantly less likely to receive surgery and adjuvant chemotherapy than those aged  $< 60$  years.<sup>33</sup> Additionally, a retrospective cohort analysis based on the US National Cancer Database revealed that older patients underwent open surgery more often and received chemotherapy and radiation therapy less often than did younger patients.<sup>34</sup>

Our study has several limitations, including its single-center, retrospective design and relatively small sample size, which may limit the generalizability of our findings to broader populations. Although data such as living ability and function recovery are important decision-making factors for elderly patients, this study could not provide data about life quality.

## Conclusion

Despite having a higher ASA score and morbidity rate, older patients (aged > 75 years) with CRC who underwent laparoscopic surgery had a similar 5-year DFS rate to younger patients. Further research is warranted to optimize curative treatment for the growing population of older patients.

## Acknowledgments

We thank the staff at the Division of Colorectal Surgery, Department of Surgery, Taipei Municipal Wanfang Hospital, Taiwan, for providing valuable advice to assist our study. In particular, we thank Dr. Chien-Hsin Chen for critically revising the manuscript. This manuscript was edited by Wallace Academic Editing.

## Conflicts of Interest

The authors declare no financial (e.g., honoraria; educational grants; speakers' bureau associations; membership, employment, consultancy, stock ownership, or other equity interest; and expert testimony or patient-licensing arrangement) or nonfinancial (e.g., personal or professional relationships, affiliations, and knowledge or beliefs) interest related to the work reported in the manuscript.

## References

1. Favoriti P, Carbone G, Greco M, Pirozzi F, Pirozzi RE, Corcione F. Worldwide burden of colorectal cancer: a review. *Updates Surg* 2016;68:7-11.
2. Gunter MJ, Alhomoud S, Arnold M, Brenner H, Burn J, Casey G, et al. Meeting report from the joint IARC-NCI international cancer seminar series: a focus on colorectal cancer. *Ann Oncol* 2019;30:510-9.
3. Ju JH, Chang SC, Wang HS, Yang SH, Jiang JK, Chen WC, et al. Changes in disease pattern and treatment outcome of colorectal cancer: a review of 5,474 cases in 20 years. *Int J Colorectal Dis* 2007;22:855-62.
4. Kan JY, Hsieh JS, Pan YS, Wang WM, Chen FM, Jan CM, et al. Clinical characteristics of patients with sporadic colorectal cancer and primary cancers of other organs. *Kaohsiung J Med Sci* 2006;22:547-53.
5. Perng DS, Lu IC, Shi HY, Lin CW, Liu KW, Su YF, Lee KT. Incidence trends and predictors for cost and average lengths of stay in colorectal cancer surgery. *World J Gastroenterol* 2014;20:532-8.
6. Su SY, Huang JY, Jian ZH, Ho CC, Lung CC, Liaw YP. Mortality of colorectal cancer in Taiwan, 1971-2010: temporal changes and age-period-cohort analysis. *Int J Colorectal Dis* 2012;27:1665-72.
7. Papamichael D, Audisio RA, Glimelius B, de Gramont A, Glynne-Jones R, Haller D, et al. Treatment of colorectal cancer in older patients: International Society of Geriatric Oncology (SIOG) consensus recommendations 2013. *Ann Oncol* 2015;26:463-76.
8. Karanikas M, Esebidis A. Increasing incidence of colon cancer in patients < 50 years old: a new entity? *Ann Transl Med* 2016;4:164.
9. Chong RC, Ong MW, Tan KY. Managing elderly with colorectal cancer. *J Gastrointest Oncol* 2019;10:1266-73.
10. Fujii S, Ishibe A, Ota M, Yamagishi S, Watanabe K, Watanabe J, et al. Short-term results of a randomized study between laparoscopic and open surgery in elderly colorectal cancer patients. *Surg Endosc* 2014;28:466-76.
11. Rinaldi L, Ouaiissi M, Barabino G, Loundou A, Clavel L, Sielezneff I, et al. Laparoscopy could be the best approach to treat colorectal cancer in selected patients aged over 80 years: outcomes from a multicenter study. *Dig Liver Dis* 2017;49:84-90.
12. Dekker JW, van den Broek CB, Bastiaannet E, van de Geest LG, Tollenaar RA, Liefers GJ. Importance of the first postoperative year in the prognosis of elderly colorectal cancer patients. *Ann Surg Oncol* 2011;18:1533-9.
13. Millan M, Merino S, Caro A, Feliu F, Escuder J, Francesch T. Treatment of colorectal cancer in the elderly. *World J Gastrointest Oncol* 2015;7:204-20.
14. Audisio RA, Papamichael D. Treatment of colorectal cancer in older patients. *Nat Rev Gastroenterol Hepatol* 2012;9:716-25.
15. Hoshino N, Fukui Y, Hida K, Sakai Y. Short-term outcomes of laparoscopic surgery for colorectal cancer in the elderly versus non-elderly: a systematic review and meta-analysis. *Int J Colorectal Dis* 2019;34:377-86.
16. Power DG, Lichtman SM. Chemotherapy for the elderly patient with colorectal cancer. *Cancer J* 2010;16:241-52.
17. Saif MW, Lichtman SM. Chemotherapy options and outcomes in older adult patients with colorectal cancer. *Crit Rev Oncol Hematol* 2009;72:155-69.
18. Piercey O, Wong HL, Leung C, To YH, Heong V, Lee M, et al. Adjuvant chemotherapy for older patients with stage III colorectal cancer: a real-world analysis of treatment recommendations, treatment administered and impact on cancer recurrence. *Clin Colorectal Cancer* 2024;23:95-103 e103.

19. Abrams TA, Brightly R, Mao J, Kirkner G, Meyerhardt JA, Schrag D, Fuchs CS. Patterns of adjuvant chemotherapy use in a population-based cohort of patients with resected stage II or III colon cancer. *J Clin Oncol* 2011;29:3255-62.
20. McCleary NJ, Dotan E, Browner I. Refining the chemotherapy approach for older patients with colon cancer. *J Clin Oncol* 2014;32:2570-80.
21. Hubbard J, Jatoi A. Adjuvant chemotherapy in colon cancer: ageism or appropriate care? *J Clin Oncol* 2011;29:3209-10.
22. Arimoto A, Hasegawa H, Sugiyama H, Yamashita K, Matsuda T, Tominaga M, et al. Safety and effectiveness of laparoscopic colorectal resection in elderly patients with colorectal cancer: a propensity score matching study. *Anticancer Res* 2017;37:4195-8.
23. Seymour MT, Thompson LC, Wasan HS, Middleton G, Brewster AE, Shepherd SF, et al. Chemotherapy options in elderly and frail patients with metastatic colorectal cancer (MRC FOCUS2): an open-label, randomised factorial trial. *Lancet* 2011;377:1749-59.
24. Vacante M, Cristaldi E, Basile F, Borzi AM, Biondi A. Surgical approach and geriatric evaluation for elderly patients with colorectal cancer. *Updates Surg* 2019;71:411-7.
25. Maeda H, Okabayashi T, Ichikawa K, Miyazaki J, Hanazaki K, Kobayashi M. Colorectal cancer surgery in patients older than 80 years of age: experience at one nonteaching hospital in Japan. *Am Surg* 2011;77:1454-9.
26. Fagard K, Leonard S, Deschodt M, Devriendt E, Wolthuis A, Prenen H, et al. The impact of frailty on postoperative outcomes in individuals aged 65 and over undergoing elective surgery for colorectal cancer: a systematic review. *J Geriatr Oncol* 2016;7:479-91.
27. Souwer ETD, Verweij NM, van den Bos F, Bastiaannet E, Slangen RME, Steup WH, et al. Risk stratification for surgical outcomes in older colorectal cancer patients using ISAR-HP and G8 screening tools. *J Geriatr Oncol* 2018;9:110-4.
28. Hashimoto S, Tominaga T, Nonaka T, To K, Wada H, Takeshita H, et al. Short- and mid-term outcomes of laparoscopic colorectal surgery in patients  $\geq$  85 years old: a multicenter study using a propensity score-matched analysis. *Surg Today* 2022;52:1292-8.
29. Tokuhara K, Nakatani K, Ueyama Y, Yoshioka K, Kon M. Short- and long-term outcomes of laparoscopic surgery for colorectal cancer in the elderly: a prospective cohort study. *Int J Surg* 2016;27:66-71.
30. Hall GM, Shanmugan S, Bleier JI, Jeganathan AN, Epstein AJ, Paulson EC. Colorectal specialization and survival in colorectal cancer. *Colorectal Dis* 2016;18:O51-60.
31. Hermanek P Jr, Wiebelt H, Riedl S, Stammer D, Hermanek P. Long-term results of surgical therapy of colon cancer. Results of the Colorectal Cancer Study Group. *Chirurg* 1994;65:287-97.
32. Makela JT, Klintrup KH, Rautio TT. Mortality and survival after surgical treatment of colorectal cancer in patients aged over 80 years. *Gastrointest Tumors* 2017;4:36-44.
33. Hayes L, Forrest L, Adams J, Hidajat M, Ben-Shlomo Y, White M, Sharp L. Age-related inequalities in colon cancer treatment persist over time: a population-based analysis. *J Epidemiol Community Health* 2019;73:34-41.
34. Gefen R, Emile SH, Horesh N, Garoufalia Z, Wexner SD. Age-related variations in colon and rectal cancer: an analysis of the national cancer database. *Surgery* 2023;174:1315-22.

原 著

## 高齡大腸直腸癌患者接受腹腔鏡手術的長期結果

王家威 林恩光 盧延榕 陳建信

臺北市立萬芳醫院 大腸直腸外科

**目的** 大腸直腸癌是全球診斷最多的癌症之一，但有相當部分患者年齡在 75 歲以上。然而，大部分臨床試驗排除年齡大於 75 歲之病患。因此，臨床試驗的研究結論並不適用於高齡患者。本研究的目的是評估接受腹腔鏡手術的高齡大腸直腸癌患者的長期結果。

**方法** 本研究回顧了 2007 年 1 月至 2019 年 12 月期間在萬芳醫院接受腹腔鏡手術治療的 384 例大腸直腸癌患者。患者被分為三個年齡組：第 1 組 < 60 歲；第 2 組 60-74 歲，第 3 組 ≥ 75 歲。主要結果是 5 年總生存率和 5 年無病生存率。

**結果** 本研究的中位追蹤時間為 72 個月。第 3 組的 5 年總生存率顯著低於其他兩組。就 5 年無病生存率而言，各組之間沒有統計學差異。

**結論** 儘管 5 年總生存率有顯著差異，接受腹腔鏡手術的高齡大腸直腸癌患者的 5 年無病生存率與年輕患者相似。

**關鍵詞** 高齡 (大於 75 歲)、大腸直腸癌、腹腔鏡手術、長期結果。