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Bilateral Pelvic Lymphadenectomy in Rectal Cancer with Total Mesorectal Excision

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ABSTRACT

Background: Total mesorectal excision [TME] is regarded as the standard procedure in rectal cancer surgery to decrease local recurrence. However, controversy still exists on the integration of TME with lateral pelvic lymph node dissection [LPLD].

Aim of the work: This study aimed to evaluate the result of TME with LPLD in patients with resectable rectal carcinoma.

Patients and Methods: This prospective interventional study included 60 patients with rectal cancer and submitted for total mesocolic excision. Awareness of operative findings, postoperative course, and cancer-related prognosis was determined. Data collected was also subjected to a set of Statistical tests to compare aspects such as mean specimen length, mean lymph node retrieve, mean operative time, mean blood loss, ICU admission status, mean time taken for gastrointestinal function, mean hospital length of stay, and mean recurrence rate on the two groups.

Results: Regarding the perioperative data, operative time and intra-operative blood loss were quantitatively higher in Group A than in Group B [P = 0.034 and P = 0.003, respectively] as well as the resection time [P = 0. 031]. Group B suffered from a high recurrence rate of 33. 3% compared to 13. 3% of Group A [P= 0. 021]. The result showed that the mortality rates of the subjects were nearly similar and were not statistically significantly different between sample A and sample B [P = 0. 231].

Conclusion: Our study reveals that TME with LPND is presented as an effective method to decrease local recurrence while increasing the operation time and blood loss. These adverse outcomes must be considered when generalizing the LPLN, especially for patients with a high risk of lateral pelvic lymph node involvement.

Keywords: Rectal cancer; Total Mesorectal Excision; Lymph Node Dissection; Lymph Node Retrieval; Local Recurrence.

INTRODUCTION

Cancer of the rectum is one of the most common malignant cancers that affects people globally, and its incidence increases in both developed and developing nations. It is the third most prevalent type of cancer worldwide and the third most common cause of cancer death, underlining the necessity for proper management. The disease typically affects the distal part of the colon, and its management requires a multidisciplinary approach, with surgical intervention playing a pivotal role [1,2].

The management of rectal cancer surgery has changed dramatically over the past few decades mainly in terms of knowledge and application of the different anatomical structures. Total mesorectal excision [TME], which was developed in the 1980s, became a significant improvement in the treatment of rectal cancer by providing a standardized technique that focuses on the precise removal of the mesorectum. This method greatly minimized the risk of local recurrence [3,4].

The success of TME can be attributed to the sharp dissection within the embryological planes, preserving the integrity of the mesorectal envelope and ensuring the removal of potentially cancerous tissues [5,6].

Despite decreased local recurrence and improved survival rates associated with TME, challenges persist, including those related to the treatment of advanced rectal cancer. Of particular concern is the spread of cancer to the lateral pelvic lymph nodes, which are not addressed by standard TME [7].

Metastatic disease can be concealed in these node stations, especially in those patients who have an advanced stage of rectal cancer resulting in increased local recurrence rate and worse oncologic results. Therefore, there has been increasing focus on identifying other surgical approaches that may be performed in conjunction with TME to enhance its efficacy in managing rectal cancer, particularly in cases where lateral pelvic lymph node involvement is suspected [8].

In Eastern countries especially Japan and South Korea, the practice of performing lateral pelvic lymph node dissection [LPLD] along with TME in patients with advanced rectal cancer has become a standard of care. This recommendation is based on various regional studies that highlight a high rate of lateral pelvic lymph node involvement in patients with lower-stage rectal cancer, even when primary tumors are confined to the rectal wall. Japanese guidelines recommend LPLD for patients with T3 and T4 cancers without distant metastases because of the observed benefits in local tumour control and the possible impact on survival [9].

This is in contrast to the Western practice where LPLD is less commonly performed and this is probably because of concerns about increased surgical morbidity [10].

In our cohort, we aim to evaluate the oncological outcome and the rate of postoperative complications of the group of patients that received TME associated with additional LPLD against the control group of patients receiving conventional TME.

PATIENTS AND METHODS

This prospective interventional study included 60 patients with rectal cancer and submitted for total mesocolic excision at the Al-Azhar University Hospital. Patients were classified into 2 groups:

Group A: included 30 patients assigned to total mesocolic excision with lateral pelvic lymph node dissection.

Group B: Included 30 patients assigned to traditional total mesorectal excision.

Ethical approval was obtained from the ethical committee of our institution. Our study was guided by the declarations of Helsinki. Written informed consent was obtained from every patient at the time of recruitment.

Inclusion and Exclusion Criteria

We included patients with resectable left-sided colon cancer; they had to be above eighteen years of age. Patients with emergency conditions such as obstruction and perforation, patients with metastasis, and patients who had previous history of abdominal surgeries were excluded.

Data collection

All patients underwent a comprehensive preoperative evaluation that included; full history taking, general examination, local abdominal examination, and routine laboratory investigations such as the complete blood count [CBC], fasting blood sugar, liver function, kidney function and tumor markers, including Alpha-fetoprotein [α-FP], Carcino-embryonic antigen [CEA], and CA19.9, were measured to confirm malignancy.

Radiological were done including abdominal ultrasonography to evaluate the abdominal organs, screen for masses, and look for signs of ascites, and abdominal CT scan to assess the size and stage of the tumor or help in determining the rectal disease stage including the LN.

MRI was applied to outline the extent of the tumor and invasion of organs in the abdominal cavity. A colonoscopy was applied for the visual inspection of the colon, evaluation of the lesion, and taking biopsies.

Tissue Diagnosis

Candidate specimens were also collected by biopsy using colonoscopy [brushes, true-cut needle biopsy, and punch biopsy] and open surgical biopsies. Invasive properties were established by performing a histopathological examination of the tumor type, extension, invasiveness, and surgical margins.

Surgical Technique

The standard surgery was TME with rectal mobilization, it was required that the plane around the mesorectum be resected 4 cm distal to the tumor. In patients, if the mesorectum extended less than 4 cm distal to tumor, then the TME was done.

The Ligation of the inferior mesenteric artery was done. When the blood supply in the distal colon became insufficient, the left colic artery was spared following the mobilization of the lymph nodes.

All lateral pelvic lymph node stations were excised after TME of the rectum, while the preservation of autonomic nerves as they are infrequently invaded by lymph node metastases.

Pathohistological examination of the resected specimen was carried out by a pathologist following the Danish Colorectal Cancer Group guidelines. The mesentery was divided into sections and then examined separately; as for the total count of conventional lymph nodes, the lymph nodes located at the border between the conventional and extra sections were added to the total count of conventional lymph nodes [11].

Follow-Up

The assessment done after the surgery was based on the data on operative duration, intraoperative blood loss, accidental occurrences during surgery, and other details relating to specimen surgeries. Assessments of short-term surgical outcome measures were done in the first month after the surgery.

After our operations, short-term follow-up for the patients for three years was done every 3–6 months, and we followed up with the patient's physical examinations, serum CEA levels, and CA19. 9, chest X-ray, abdominopelvic CT scan, chest CT [annually], and colonoscopy if indicated.

Outcome Measures:

- **Local Recurrence:** Identified as any radiologic or histologic signs of tumor regrowth within the original surgical site within two years.
- **Distant Recurrence:** Defined as the reappearance of the tumor in distant solid organs outside the original surgical area, verified through imaging-guided biopsy whenever feasible.

Statistical analysis

Statistical analysis was performed with SPSS statistical software, version 26 [IBM, Chicago, Illinois, USA]. The normality of the data was tested by the Kolmogrov-Smirnov test. Qualitative data were presented as numbers and percentages and were compared by the Chi square test, or Fisher exact test. Quantitative data were presented as mean and standard deviations and were compared by the independent t test. As a result, the p-value will be considered significant at the level of <0.05

ESULTS

A total number of 60 patients were included in our study. In terms of their demographics, age in Group [A] was ranged between 42-70 years with mean age of 54.1±10.1 years while in Group [B] was ranged between 45-69 years with a mean of 52.3±9.714 years [P = 0.9]. Sex in Group [A] showed that 19 [63.3%] were male and 11 [36.7%] were female while in Group [B] 16 [53.3%] were male and 14 [46.7%] were female [P = 0.6]. Co-morbidities in Group [A] showed that 13 patients [43.3%] had DM, 8 patients [26.7%] had hypertension [HTN] and 5 patients [16.7%] had dyslipidemia while in Group [B]; 18 patients [60.0%] had DM, 16patents [53.3%] had HTN and 6 patients [20.0%] had dyslipidemia. Family history of colonic cancer in Group [A] showed that 4 [13.3%] had family history of colonic cancer while in Group [B] 3 [10.0%] family history of colonic cancer. The difference between the two groups in terms of their comorbidities was not significant statistically [P = 0.98]. Tumor size in Group [A] was ranged between 3.0-6.8 cm with a mean of 4.79±1.192 cm while in Group [B] it was ranged between 3.3-6.9 cm with a mean of 4.87±1.339 cm with no statistically significant differences between groups regarding tumor size [P = 0.89]. Location of tumor in Group [A] showed that 10 [33.3%] had tumor in low rectum, 10 [33.3%] had tumor in mid rectum, 8 [23.3%] had tumor in high rectum, 3 [10.0%] had tumor in recto-sigmoid junction while in Group [B]; 13 [43.3%] had tumor in low rectum, 5 [16.7%] had tumor in mid rectum, 9 [30.0%] had tumor in high rectum, 3 [10.0%] had tumor in recto-sigmoid junction with no statistically significant difference between the two groups [P = 0.579]. Ascites in Group [A] showed that 5 [16.7%] had ascites while in Group [B] 4 [13.3%] had ascites. There were no statistically significant differences between groups regarding the presence of ascites [P = 0.963] **[Table 1].**

Laboratory Investigations showed no statistically significant differences between the two groups [P> 0.05 for all] **[Table 2].**

Specimen length in Group [A]; was ranged between 8-15.59 cm with a mean of 14.1±2.6 cm while in Group [B]; it was ranged between 9-16 cm with a mean of 13.9±2.28 cm [P = 0.946]. Stages in Group [A] showed that 4 [13.3%] in stage I, 17 [56.7%] in stage II and 9 [30%] in stage III while in Group [B]; 5 [16.7%] in stage I, 16 [53.3%] in stage II and 9 [30%] in stage III [P = 0.93]. Number of lymph nodes retrieved in Group [A] was ranged between 9-32 with a mean number of 21.40±5.341 node while in Group [B] was ranged between 7-25 with a mean number of 14.83±4.684 node. There was a statistically significant differences between both groups regarding number of lymph nodes as P <0.001. Operative findings showed a statistically significant differences between groups according to operative time, time of resection and intra-operative blood loss [P = 0.034; 0.031 and 0.003 respectively] **[Table 3].**

Intensive care unit admission in Group [A] occurred in 9 [30.0%] patients while in Group [B] admission to ICU occurred in 6 [20.0%] admission to ICU. Admissions were due to either severe septicemia and/or anastomotic leak. There was statistically significant increase in ICU admission in group A than group B regarding the percentage of patient's admission and the length of ICU stay [P = 0.031 and 0.021 respectively]. In group A; patients stay from 2-5 days to pass the first flatus with a mean period of 3.80±0.89 days while in group B patients stays 1-4 days to pass the first flatus with a mean period of 2.63±1.13 days with a significant increase in the period in group A [P = 0.021]. Also, the day of passing the first stool motion ranged between 2-7 days in group A with a mean period of 4.43±1.31 days while in group B patients stays 2-6 days to pass the first stool motion with a mean period of 3.7±1.09 days with a significant increase in the period in group A [P = 0.032]. Length of hospital stay in Group [A] ranged between 5-11 days with a mean period of 7.33±1.85 days while in Group [B] it ranged between 4-11 days with a mean period of 6.43±2.11 days with no statistically significant differences between both groups regarding the length of hospital stay as P = 0.064 **[Table 4].**

Comparison between both groups of the study as regard occurrence of complications showed that complications occurred in 10 [33.3%] of cases in group A and occurred in 9 [30.0%] in group B with no statistically significant differences between both groups as P = 0.898. Patients of the study were followed-up for two years for recurrence which occurred in Group [A] in 4 [13.3%] while in Group [B] recurrence occurred in 10 [33.3%] with a significant rate of recurrence in group B as P = 0.021 [Table 5]. Death occurred in 2 [6.7%] of patients in group [A] and only one [3.3%] occurred in group [B] with no statistical difference between both groups regarding mortality as P = 0.231. Chemotherapy was needed in 26 [86.7%] of cases in Group [A] while in Group [B] 25 [83.3%] cases needed Chemotherapy with no statistically significant differences between both groups regarding the need for chemotherapy as P = 0.963 **[Table 5].**

Table [1]: Comparison between two groups as regard to patient's age [years].

Variable		Group [A] [n = 30]	Group [B] [n = 30]	P Value
Age	Min. – Max. Mean±SD.	42-70 54.10 ± 10.15	45-69 52.30±9.714	0.910
Sex [n,%]	Male Female	19 [63.3%] 11 [36.7%]	16 [53.3%] 14 [46.7%]	**0.601**
Comorbidities [n,%]	DM HTN Dyslipidemia	13[43.3%] 8[26.7%] 5[16.7%]	18[60.0%] 16 [53.3%] 6 [20.0%]	**0.301** **0.064** **0.875**
Positive Family History [n,%]		4 [13.3%]	3 [10.0%]	**0.736**
Location of tumor [n,%]	Low rectal Mid rectal High rectal Recto-sigmoid junction	10[33.3%] 10[33.3%] 8 [23.3%] 3 [10.0%]	13 [43.3%] 5 [16.7%] 9 [30.0%] 3 [10.0%]	**0.579**
Ascites [n,%]		5 [16.7%]	4 [13.3%]	**0.963**
Tumor size	Min. – Max. Mean±SD.	3.0-6.8 4.79±1.192	3.3-7.0 4.87±1.339	**0.953**

Table [2]: Laboratory findings in both groups of the study.

	Laboratory Investigations	Group [A] [n = 30]	Group [B] [n = 30]	P value
Hemoglobin concentration [g/dl]	Min.-Max. [Mean± S.D]	8.6-13.3[11.28±1.37]	8.5-13.3[11.27±1.43]	**0.830**
Platelets x 10^3 / ml	Min.-Max. [Mean± S.D]	157-248 [201.43±27.49]	163-253 [202.37±30.06]	**0.901**
Serum urea [mg/dl]	Min.-Max. [Mean± S.D]	9-27 [19.07±5.40]	9-28 [20.40±5.84]	**0.276**
Creatinine [mg/dl]	Min.-Max. [Mean± S.D]	0.6-1.1 [0.86±0.15]	0.6-1.1 [0.79±0.16]	**0.071**
AST [IU/L]	Min.-Max. [Mean± S.D]	20-48 [36.83±8.03]	20-47 [33.07±8.59]	**0.097**
ALT [IU/L]	Min.-Max. [Mean± S.D]	21-64 [48.07±13.33]	21-69 [43.83±15.20]	**0.256**
Serum bilirubin [mg/dl]	Min.-Max. [Mean± S.D]	0.2-1.3 [0.76±0.34]	0.2-1.3 [0.80±0.34]	**0.722**
CEA	Min.-Max. [Mean± S.D]	0.79-15.46 [9.88±4.72]	0.82-14.59 [8.05±4.25]	**0.120**
CA19-9	Min.-Max. [Mean± S.D]	32.0-97.4 [62.84±20.80]	28.4-97.80 [62.25±22.50]	**0.916**

Table [3]: Operative findings in the groups of the study.

	Variable	Group [A] [n = 30]		Group [B] [n = 30]		P Value
		No.	%	No.	%	
Specimen length:	Min.-Max. [Mean± S.D]	8-15.5 [14.1±2.6]		9-16 [13.9±2.28]		**0.946**
Stage:	Stage I Stage II Stage III	4 17 9	13.3 56.7 30.0	5 16 9	16.7 53.3 30.0	**0.932**
No L.Ns retrieved:	Min.-Max. [Mean± S.D]	9-32[21.40±5.341]		7-25[14.83±4.684]		**<0.001***
Operative Time:	Min.-Max. [Mean± S.D]	130-255[194.83±31.91]		140-260[160.00±33.85]		**0.034***
Time of resection only:	Min.-Max. [Mean± S.D]	65-90[72±18.5]		74-103[55±16.7]		**0.031***
Intraoperative blood loss:	Min.-Max. [Mean± S.D]	54-190[185.43±24.35]		80-175[110.73±25.58]		**0.003***

Table [4]: Post-operative outcome in groups of the study.

Variable		Group [A] [n = 30]		Group [B] [n = 30]		P Value
		No.	%	No.	%	
ICU admission:	Yes No	9 21	30 70	6 24	20.0 80.0	0.031*
ICU duration	Min. – Max. Mean±SD.	3-5 4.1±1.1		2-4 2.5±0.9		0.021*
Days of the first flatus:	Min. – Max. Mean±SD.	2-5 3.80±0.89		1-4 2.63±1.13		0.021*
Day for first stool:	Min. – Max. Mean±SD.	2-7 4.43±1.31		2-6 3.70±1.09		0.032*
Length of hospital stay:	Min. – Max. Mean±SD.	5-11 7.33±1.85		4-11 6.43±2.11		0.064

Table [5]: Early post-operative complications in groups of the study.

Variable		Group [A] [n = 30]		Group [B] [n = 30]		P Value
		No.	%	No.	%	
Early postoperative complications:	**No**	**20**	**66.7**	**21**	**70.0**	
	Yes	**10**	**33.3**	**9**	**30**	**0.898**
	Wound infection	*3*	*10.0*	*2*	*6.7*	
	Intestinal obstruction	*1*	*3.3*	*3*	*10.0*	
	Anastomotic leakage	*3*	*10.0*	*1*	*3.3*	
	Seroma of the wound	*1*	*3.3*	*1*	*3.3*	
	Chest infection	*1*	*3.3*	*1*	*3.3*	
	Urinary tract infection	*1*	*3.3*	*1*	*3.3*	
Operative mortality:		**2**	**6.7**	**1**	**3.3**	**0.231**
Recurrence		**4**	**13.3**	**10**	**33.3**	**0.021***
The need for PO chemotherapy:	No	**4**	**13.3**	**5**	**16.7**	**0.963**
	Yes	**26**	**86.7**	**25**	**83.3**	

DISCUSSION

Our study offers important information on TME with LPLD compared to standard TME in patients with resectable left-sided colon cancer. The results demonstrate several key differences in surgical outcomes, postoperative recovery, and long-term recurrence rates between the two groups, offering critical data for refining surgical approaches to rectal cancer. LPLN has garnered increasing attention in the surgical management of rectal cancer, particularly for patients at high risk of LPLN metastasis. LPLNs are a common site for metastasis in advanced rectal cancer, and their involvement is associated with a higher risk of local recurrence and poorer overall survival. Standard TME does not address these nodes, which can leave residual cancerous tissues that contribute to recurrence.

Incorporating LPLN into rectal cancer surgery allows for more comprehensive removal of potentially metastatic lymph nodes, particularly in patients with clinically suspected or radiologically confirmed LPLN involvement. This extended dissection may improve oncological outcomes by reducing the incidence of local recurrence and offering a chance for curative resection in patients with advanced disease. However, the procedure is not without risks, as it adds complexity to the surgery and is associated with increased morbidity. Therefore, the decision to perform LPLN should be carefully considered, weighing the potential oncological benefits against the risks of surgical complications.

One of our interesting findings is that the two groups were equal in specimen length. The LPLN was performed in Group A, and the mean specimen length was 14.1±2.6 cm, while in Group B which received conventional TME, the mean was 13.9±2. 28 cm. The lack of statistically significant difference between the groups [P = 0. 946] indicates that LPLN does not reduce the extent of the primary tumor resection. This finding is in line with previous studies, which have indicated that lateral dissection does not adversely affect the completeness of mesorectal excision, as reported by **Nagtegaal et al.** [12].

One of the major findings in this study is also the variation in the number of lymph nodes harvested. The mean number of lymph nodes in Group A was significantly higher [P <0.001] and was estimated to be 21.40±5.341 than the mean number of lymph nodes in Group B 14. 83±4. 684. This supports the hypothesis that LPLN improves the efficiency of lymph node retrieval which is necessary for proper staging and may improve the oncological outcome.

Akiyoshi *et al.* [13] **and Lykke *et al.*** [14] have reported that improved lymph nodes retrieval improves rectal cancer survival due to optimal staging and detection of skip metastases. Similarly, the operative characteristics showed that patients in group A had a significantly longer operative time and intraoperative blood loss than those in group B with a P value of 0.034 and 0.003 respectively. These findings align with related studies, indicating that the extension to LPLN entails higher operating difficulty and time [15]. The increase in blood loss may be explained by deeper dissection in the lateral pelvic region, which contains numerous vascular structures. While this raises concerns about the potential for increased perioperative morbidity, it is important to weigh these risks against the potential oncological benefits.

In terms of early postoperative outcomes, Group A showed a significantly higher rate of ICU admission and longer duration of ICU stay compared to Group B [P = 0.031 and P = 0.021, respectively]. This finding is likely related to the more extensive nature of the surgery in Group A, which may lead to greater physiological stress and a higher risk of complications requiring intensive care [16].

Additionally, the delayed return of bowel function in Group A, as evidenced by the longer time to first flatus and stool motion, underscores the impact of more extensive surgical intervention on gastrointestinal recovery. These findings suggest that while TME with LPLN may offer oncological advantages, it also poses a greater challenge in terms of postoperative recovery. Interestingly, despite the more challenging postoperative course in Group A, there was no statistically significant difference between the groups regarding the overall length of hospital stay [P = 0.064]. This could mean that although ICU admission and early recovery are relatively more challenging in the Group A, there is no substantial lengthening of the total period of hospitalization suggesting that patients eventually stabilize at a similar rate to those undergoing traditional TME which is similar to **Kim *et al.*** [17].

The occurrence of postoperative complications was similar between the two groups, with no statistically significant difference [P = 0.898]. This finding is somewhat reassuring, as it suggests that the addition of LPLN does not substantially increase the risk of postoperative complications beyond the immediate perioperative period. However, the higher initial ICU admission rates in Group A highlight the importance of careful perioperative management in patients undergoing this more extensive surgical approach. One of the most significant findings of this study is the difference in recurrence rates between the two groups. Group B, which did not undergo LPLN, exhibited a higher rate of local recurrence [33.3%] compared to Group A [13.3%], with a statistically significant difference [P = 0.021]. This finding supports the rationale for adding LPLN in cases where there is a high risk of lateral pelvic lymph node involvement, as it appears to contribute to improved local control of the disease [18].

The incidence of local recurrence was higher in Group B which did not have the LPLN performed on them, 33.3% as compared to 13.3% in Group A with a P value of 0.021. This fact supports the necessity of the addition of LPLN in those cases when there is a probability of lateral pelvic lymph node involvement, as this provides better local control of the disease. The decrease in local recurrence in Group A is another factor that has to be considered because local recurrence has been reported to increase morbidity and has been shown to decrease overall survival for rectal cancer patients which is evident by **Moriya *et al.* [19].** Thus, LPLN may contribute to increased local control and potential long-term survival rates due to the decrease in cases of local recurrence although this study did not focus on long-term results.

Limitations and Future Directions: While our study provides valuable data, it is important to acknowledge its limitations. One of our main limitations originates from its relatively small sample size which can reduce the external validity of the conclusions. Furthermore, the study was carried out in a single center and this might limit its generalization due to the differences in institutional practices and the level of the surgeon regarding the index procedures. Further work should involve more extensive, multicentric, prospective research to confirm these results and to evaluate in detail the effects of LPLD on overall survival.

Conclusion: Our study reveals that TME with LPND is presented as an effective method to decrease the local recurrence rate of rectal cancer patients while increasing the operation time, blood loss, and consequent postoperative convalescence. These adverse outcomes must be considered when generalizing the decision to perform an LPLN based on this calculation, especially for patients with a high risk of lateral pelvic lymph node involvement.

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REFERENCES

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin [Internet]. 2018 Nov 12;68[6]:394–424. doi: 10.3322/caac.21492

2. Rawla P, Sunkara T, Barsouk A. Epidemiology of colorectal cancer: incidence, mortality, survival, and risk factors. Gastroenterol Rev 2019;14[2]:89–103. doi:10.5114/pg.2018.81072

3. Heald RJ, Husband EM, Ryall RDH. The mesorectum in rectal cancer surgery—the clue to pelvic recurrence? Br J Surg 2005 Dec 7;69[10]:613–6. doi: 10.1002/bjs.1800691019.

4. Delibegovic S. Introduction to Total Mesorectal Excision. Med Arch 2017;71[6]:434. doi: 10.5455/medarh.2017.71.434-438.

5. Quirke P, Steele R, Monson J, Grieve R, Khanna S, Couture J, et al. Effect of the plane of surgery achieved on local recurrence in patients with operable rectal cancer: a prospective study using data from the MRC CR07 and NCIC-CTG CO16 randomised clinical trial. Lancet 2009 Mar;373[9666]:821–8. doi: 10.1016/S0140-6736[09]60485-2.

6. Kitaguchi D, Hasegawa H, Ando K, Ikeda K, Tsukada Y, Nishizawa Y, et al. Transanal Total Mesorectal Excision for Rectal Cancer: Toward Standardization of the Surgical Technique. J Anus, Rectum Colon 2023 Oct 25;7[4]:2023–7. doi: 10.23922/jarc.2023-027. eCollection 2023.

7. Emile SH, Elfeki H, Shalaby M, Sakr A, Kim NK. Outcome of lateral pelvic lymph node dissection with total mesorectal excision in treatment of rectal cancer: A systematic review and meta-analysis. Surgery 2021 May;169[5]:1005–15. doi: 10.1016/j.surg.2020.11.010.

8. Elbarmelgi MY, Abdelaal AM, Refaie O, Tamer M, Shafik AA. Total Mesorectal Excision with or without Lateral Pelvic Lymph Node Dissection in Rectal Cancer. Int J Surg Oncol. 2023 Dec 26; 2023: 6653624. doi: 10.1155/2023/6653624.

9. Hashiguchi Y, Muro K, Saito Y, Ito Y, Ajioka Y, Hamaguchi T, et al. Japanese Society for Cancer of the Colon and Rectum [JSCCR] guidelines 2019 for the treatment of colorectal cancer. Int J Clin Oncol 2020 Jan 15;25[1]:1–42. doi: 10.1007/s10147-019-01485-z

10. Parsons SE, Carter EA, Waterhouse LJ, Fritzeen J, Kelleher DC, O'connell KJ, et al. Improving ATLS performance in simulated pediatric trauma resuscitation using a checklist. Ann Surg. 2014 Apr; 259 [4]:807-13. doi: 10.1097/SLA.0000000000000259. PMID: 24096751.

11. Ingeholm P, Gögenur I, Iversen LH. Danish Colorectal Cancer Group Database. Clin Epidemiol. 2016 Oct 25; 8:465-468. doi: 10.2147/CLEP.S99481.

12. Nagtegaal ID, Marijnen CAM, Kranenbarg EK, van de Velde CJH, van Krieken JHJM. Circumferential Margin Involvement Is Still an Important Predictor of Local Recurrence in Rectal Carcinoma. Am J Surg Pathol 2002; 26[3]:350–7. doi: 10.1097/00000478-200203000-00009.

13. Akiyoshi T, Ueno M, Matsueda K, Konishi T, Fujimoto Y, Nagayama S, et al. 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 Jan 21;21[1]:189–96. doi: 10.1245/s10434-013-3216-y

14. Lykke J, Roikjær O, Jess P. The relation between lymph node status and survival in Stage I–III colon cancer: results from a prospective nationwide cohort study. Color Dis [Internet]. 2013 May 25;15[5]:559–65, doi: 10.1111/codi.12059

15. Ogawa S, Itabashi M, Inoue Y, Ohki T, Bamba Y, Koshino K, et al. Lateral pelvic lymph nodes for rectal cancer: A review of diagnosis and management. World J Gastrointest Oncol [Internet]. 2021 Oct 15;13 [10]: 1412–24, doi: 10.4251/wjgo.v13.i10.1412

16. Okamoto D, Matsuda T, Sawada R, Hasegawa H, Yamashita K, Harada H, et al. Risk Factors for Complications Following Lateral Pelvic Lymph Node Dissection for Rectal Cancer. Anticancer Res 2021 Nov 3;41[11]:5599–604. doi: 10.21873/ anticanres.15374

17. Kim MJ, Oh JH. Lateral Lymph Node Dissection with the Focus on Indications, Functional Outcomes, and Minimally Invasive Surgery. Ann Coloproctol 2018 Oct 31;34[5]:229–33. doi: 10.3393/ac.2018.10.26

18. Watanabe T, Muro K, Ajioka Y, Hashiguchi Y, Ito Y, Saito Y, et al. Japanese Society for Cancer of the Colon and Rectum [JSCCR] guidelines 2016 for the treatment of colorectal cancer. Int J Clin Oncol [Internet]. 2018 Feb 27;23[1]:1–34. doi: 10.1007/s10147-017-1101-6

19. Moriya Y, Sugihara K, Akasu T, Fujita S. Importance of extended lymphadenectomy with lateral node dissection for advanced lower rectal cancer. World J Surg. 1997 Sep;21[7]:728-32. doi: 10.1007/s002689900298.

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