Surgical strategies for preventive anastomotic leakage and no local recurrence after colorectal surgery
“ All surgical Techniques for a Good Outcome”

Chanyut Turanon,MD,FRCST [1]
Pornthep Prathanvanich,MD,FRCST,FACS,FASMBS [2]

[1,2]*Department of Surgery, Taksin Hospital, Bangkok, 10600 Thailand*

Background

Colorectal surgery is a cornerstone of treating colorectal malignancies, and the choice of surgical technique, whether laparoscopic or open. This comprehensive research study aims to investigate and compare clinical outcomes between laparoscopic and open surgery in colorectal procedures, with a specific focus on anastomotic leakage and local recurrence, two critical factors influencing outcomes patient well-being

Objectives

The primary endpoint was anastomotic leakage after operative treatment and secondary endpoint was the tumor recurrence incidence

Materials & Methods

This prospective cohort study included patients diagnosed with colorectal cancer who underwent either laparoscopic or open surgery between October 2017 to October 2019 and follow up to 6 years(October 2017 to January 2023) , All laparoscopic colorectal surgery within those 2 years was performed the procedure by single colorectal surgeon. In open surgery, multiple surgeons are involved in the procedure. Data on patient demographics, tumor characteristics, surgical details, postoperative complications, and oncological outcomes were collected and analyzed.

Results

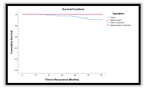
A total of 150 patients were included in the study, with 75 patients in the laparoscopic group and 75 patients in the open surgery group.

Comparison of baseline characteristics and outcome between laparoscopic resection (LR) versus open resection (OR).

Items	LR (n=75)	OR (n=75)	P-value
Gender			0.111
Male	31 (41.6)	42(56.8)	
Female	44 (58.4)	33 (43.2)	
Cancer disease			< 0.001
stage I	25 (33.3)	7 (9.3)	
stage II	35 (47.3)	34 (45.3)	0.122
stage III	16 (21.6)	34 (45.3)	0.001
stage IV	0 (0)	10 (13.3)	0.003
Tumor location			0.023
cecum, N (%)	13 (17.3)	17 (22.6)	
ascending colon, N (%)	6 (8)	12 (16)	
transverse colon, N (%)	1 (1.3)	1 (1.3)	
descending colon, N (%)	1 (1.3)	0 (0)	
sigmoid colon, N (%)	13 (17.3)	9 (12)	
rectosigmoid, N (%)	10 (13.3)	6 (8)	
middle rectum N (%)	14 (18.6)	14 (18.6)	
lower rectum, N (%)	17 (22.6)	16 (21.3)	
Type of operation			< 0.001
Right hemicolectomy, N (%)	19 (25.3)	27 (36)	
Sigmoidal colectomy, N (%)	13 (17.3)	9 (12)	
LAR(Anterior resection), N (%)	31 (41.3)	7 (9.3)	
Hartmann procedure, N (%)	0 (0)	4 (5.3)	
low anterior resection N (%)	10(13.3)	10(13.3)	
Abdominoperineal resection N (%)	2 (2.6)	18 (24)	
APR N (%)	0 (0)	0 (0)	
Primary tumor (pT)			0.001
pT1 , N (%)	6(8)	4 (5.3)	
pT2 , N (%)	31 (41.3)	9 (12)	
pT3 , N (%)	35(47)	50 (67)	
pT4 , N (%)	3 (4)	12 (16)	

Items	LR (n=75)	OR (n=75)	P-value
Length of stay (day) (mean ± SD)	5.76 ± 0.73	7.75 ± 1.19	< 0.001
Mean follow-up (month) %(min-max)	52(42-65)	52(42-65)	0.26
Postoperative blood transfusion N (%)	0 (0)	37 (49.3)	< 0.001
Postoperative pain scale (mean ± SD)	4.45 ± 1.0	8.2 ± 1.39	< 0.001
Mean of flatus (hours) (mean ± SD)	36.0 ± 11.76	49.47 ± 8.99	< 0.001
Anastomosis leakage N (%)	0 (0)	4 (5.3)	0.004
Local recurrence tumor N (%)	0 (0)	7 (9.3)	0.003
Mean lymph nodes (mean ± SD)	19.69 ± 8.25	17.64 ± 12.05	0.364
Distant metastasis N (%)	0 (0)	10 (13)	0.003
Pre operative chemo-RT			0.07
none , N (%)	47 (62.6)	36 (48.0)	
yes, N (%)	28 (37.3)	39 (52.0)	
Protective stoma N (%)	36(80.0)	36(72.0)	0.43
Surveillance CT whole abdomen in 6 yrs, N (%)	34(58.6)	29(57.3)	0.59
Surveillance colonoscope in 6 yrs, N (%)	34(58.6)	27(53.0)	0.71

Group	number of survivor	Mean of survival month	survival rate			
			12 month	36 month	60 month	p-value
Laparoscopic (n=77)	75	60.00	100%	100%	100%	0.007
Open (n=75)	68	57.85	98.7%	97.3%	90.7%	



Kaplan–Meier curves showing the rate of event-free survival 60-month follow-up according to Open and Laparoscopic

The laparoscopic group demonstrated a shorter length of stay (5.76 day vs. 7.75 day, $p < 0.001$), no perioperative blood transfusion (0 patient vs. 37 patients, $p<0.001$), and a shorter postoperative pain scale (4.48 point vs. 8.20 point, $p<0.001$) and shorter mean of flatus(36.0 hr vs. 49.47 hr ,$p<0.001$).

The overall postoperative complication rate was lower in the laparoscopic group (0%) compared to the open surgery group (8.0%, p=0.006).

Anastomosis leakage was lower in laparoscopic group(0%) compared to open surgery group (5.3%,p=0.004) .

Local recurrent tumor was lower in laparoscopic group (0%) compared to open surgery group (9.3%) . DFS of 6 yrs follow up was more in laparoscopic group(100%) and (90.7%,p=0.007). Including the concurrent CCRT , surveillance CT scan and colonoscope, protective stoma were not difference significant between the two groups.

Conclusion

Laparoscopic surgery for colorectal cancer demonstrated superior clinical outcomes compared to open surgery. Laparoscopic surgery was associated with shorter length of stay, no post-operative blood transfusion, shorter postoperative pain scale, and shorter mean of flatus and more number mean lymph nodes .

Importantly, anastomosis leakage and local recurrent tumor was lower in laparoscopic group compared to open surgery group. These findings support the use of laparoscopic surgery as a safe and effective alternative to open surgery for colorectal cancer

All surgical Techniques for a Good Outcome

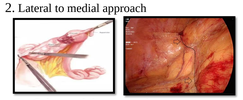
Step to prevent anastomosis leakage and improve surgical outcome

Colon surgery

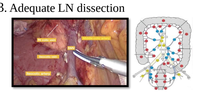
1. follow NCCN guideline



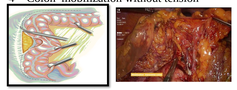
2. Lateral to medial approach



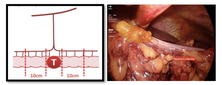
3. Adequate LN dissection



4 Colon mobilization without tension



5. Adequate margin of colon cancer



6. Side to side anastomosis



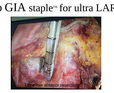
Rectal surgery

1. follow NCCN guideline

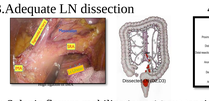


2. Suprapubic port for applied endo GIA staple for ultra LAR





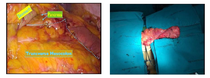
3.Adequate LN dissection



4.Distal margin of lower rectal cancer



5. Splenic flexure mobilization without tension



6 Intraoperative rectal washing and irrigation with betadine and sterile water



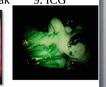
7. Try no more than 2 staplers



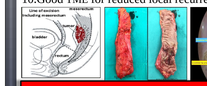
8.Intraoperative colonoscopic test leak



9. ICG

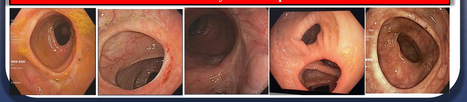


10.Good TME for reduced local recurrence



11. No ureter injury and Normal urination

Surveillance colonoscope after laparoscopic colorectal surgery : 0% local recurrence within 6 yrs follow up



Taksin Hospital, Bangkok

printed by MegaPrint Inc. www.postersession.com