The Short-term Outcomes of Laparoscopic Right Hemicolectomy with Transrectal Specimen Extraction— A Propensity Score Matching study of 100 Cases

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Background

Compared with conventional laparoscopic surgery, natural orifice specimen extraction surgery (NOSES) has many advantages. Laparoscopic right colectomy with transvaginal specimen extraction has been reported by several researchers. However, the safety and feasibility of transrectal specimen extraction in male patients with ascending colon cancer have not yet been verified.

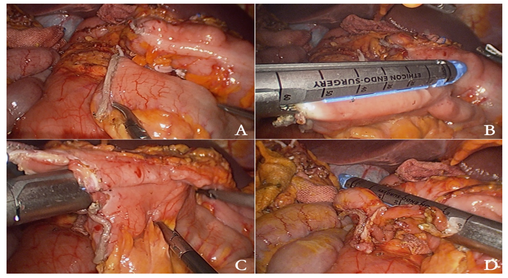


Figure 1. Procedures of intracorporeal anastomosis

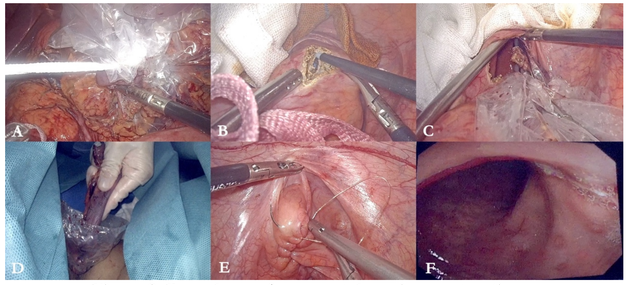


Figure 2. Procedures of transrectal specimen extraction

Method

The study was conducted at a single tertiary medical center in China. 474 consecutive patients who underwent laparoscopic right colectomy with from October 2018 to October 2021 were recruited. Transrectal specimen extraction was performed in 20 male patients. Patients in NOSES group were matched to conventional laparoscopic group using propensity score matching at the ratio of 1:4. Short-term outcomes between two groups were compared and evaluated.

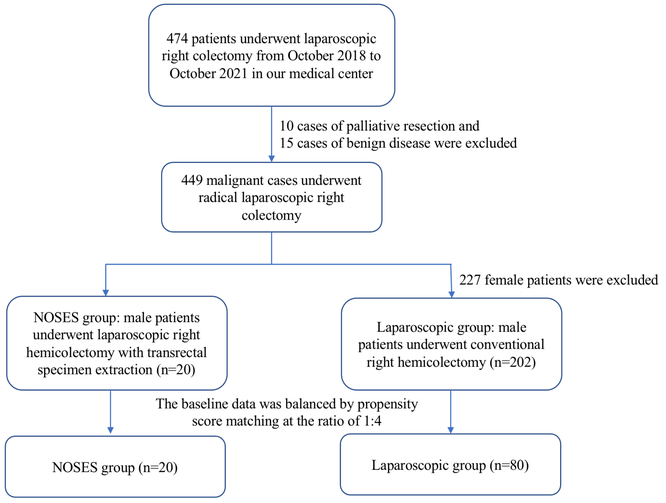


Figure 3. Flowchart of patient selection

Results

20 patients in NOSES group and 80 patients in conventional laparoscopic group were matched for analysis. We found that the operative features like operating time, intraoperative bleeding, harvested lymph nodes were statistical comparable in both groups. In terms of postoperative recovery, patients in NOSE group were preferable, as certified by less postoperative pain, faster to flatus, defecation and discharge. Post-operative complications rate according to Clavien-Dindo classification system was also similar in both groups.

	NOSES (n=20)	Lap (n=80)	P value
Gender			1.000
Male	20 (100.0%)	100 (100.0%)	
Female	0 (0.0%)	0 (0.0%)	
Age	61.4±12.4	59.8±13.5	0.639
BMI (kg/m²)	22.5±3.6	23.2±2.8	0.316
Localization of tumor			0.781
Cecum	34 (42.5%)	10 (50.0%)	
Ascending colon	26 (32.5%)	5 (25.0%)	
Hepatic flexure	20 (25.0%)	5 (25.0%)	
Abdominal surgery history	0 (0.0%)	0 (0.0%)	1.000
Preoperative ileus	0 (0.0%)	7 (8.8%)	0.339

Table1. Demographics and disease-related characteristics

	NOSES (n=20)	Lap (n=80)	P value
Pain score (VAS)			
POD1	1.8±1.1	2.8±0.8	0.001
POD2	0.8±0.8	2.1±0.9	<0.001
POD3	0.3±0.4	1.2±0.8	<0.001
Reoperation	0 (0.0%)	2 (2.5%)	1.00
Time to first flatus (d)	2.7±0.7	3.1±0.5	0.001
Time to first defecation (d)	4.0±1.1	4.6±1.0	0.011
Length of stay (d)	6.5±1.4	8.5±3.8	0.027
Re-admission	0(0%)	0(0%)	

Table3. Postoperative recovery

	NOSES (n=20)	Lap (n=80)	P value
Operative time (min)	177.2±36.8	172.7±43.6	0.673
Estimated blood loss (ml)	31.3±27.7	27.1±46.4	0.705
Length of incision (cm)	0	7.5±2.4	<0.001
Conversion to laparotomy	0(0.0%)	1(0.9%)	1.00

Table2. Operative characteristics

Grade	Complication	NOSES (n=20)	Lap (n=80)	P value
Grade I		4 (20.0%)	17 (21.3%)	
	Pain	2	4	
	Fever	1	3	
	Wound infection	0	2	
	Nausea & vomit	1	5	
	Urinary infection	0	2	
	Chylous ascites	0	1	
Grade II		0 (0%)	2 (2.5%)	
	Blood transfusion	0	2	
Grade IIIa		1 (5.0%)	2 (2.5%)	
	Abdominal infection	0	1	
	Anastomotic hemorrhage	1	1	
Grade IIIb		0 (0%)	2 (2.5%)	
	Anastomotic leakage	0	1	
	Ileus	0	1	
Grade IV		0 (0%)	2 (2.5%)	
	ICU management	0	2	
Grade V	Mortality	0(0%)	0(0%)	
Number of Grade I-II complications		4 (20.0%)	19 (23.8%)	0.953
Number of Grade III-V complications		1 (5.0%)	6 (7.5%)	1.000
Total number of complications		5 (25.0%)	25 (31.3%)	0.585

Table4. Complications according to Clavien-Dindo classification

Conclusion

Laparoscopic right colectomy with transrectal specimen extraction is safe and feasible for selected patients. Compared with conventional laparoscopic right colectomy, it can reduce postoperative pain, accelerate postoperative recovery, shorten the hospital stay and achieve better cosmetic effect.