Title: The Impact of ERAS and Multidisciplinary Teams on Perioperative Management in Colorectal Cancer

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Supplementary Table 1: Adherence to Core ERAS Components in the ERAS group.

ERAS Component	Adherent (n = 58)	Non-Adherent (n = 58)
Early oral feeding within 48 hours	34	19
Precise minimally invasive surgery	58	0
Early Mobilization Within 24 Hours	53	5
Combined Triple Modality Prophylaxis for VTE	55	3
Pain Management	58	0

VTE: Venous thromboembolism.

Supplementary Table 2: QLQ-CR29 quality of life comparison table between the two groups one year after surgery

Outcome Measure	Control (n=21)*	ERAS (n=19)	P
Urinary frequency and incontinence	4.58±0,60	4.87±0.30	0.083
Stool frequency	4.35±0.64	4.87±0.93	0.0035
Blood and mucus in stool	5±0.00	5±0.00	1
Body image	4.05±0.88	4.80±0.63	0.0032
Dysuria	4.76±0.64	4.93±0.29	0.274
Abdominal pain	4.76±0.50	4.93±0.29	0.188
Buttock pain	4.64±0.58	4.74±0.52	0.593
Bloating	4.88±0.38	4.87±0.39	0.919
Dry mouth	4.94±0.27	5.00±0.00	0.329
Hair loss	5±0.00	5±0.00	1
Taste changes	4.88±0.38	4.93±0.29	0.616
Anxiety	2.32±0.99	3.36±0.73	0.00056
Weight	2.14±0.98	3.22±0.76	0.00037
Flatulence **	3.75±0.00	3.75±0.00	1
Faecal incontinence **	3.75±0.00	3.75±0.00	1
Sore skin **	3.75±0.00	3.75±0.00	1
Embarrassment	3.75±0.00	3.75±0.00	1
Stoma care problems ***	5±0.00	-	-
Impotence	4.69±0.58	4.64±0.61	0.89
Dyspareunia	5±0.00	5±0.00	1
Sexual interest (men)	4.69±0.58	4.29±0.67	0.05
Sexual interest (women)	4.81±0.69	4.79±0.72	0.929

The P-values in the comparison between the two surgical modalities were generated with Mann-Whitney U test. *Some patients died or lost during follow-up period *Some patients died or lost during follow-up period. QLQ-CR29: Quality of Life Questionnaire-Colorectal Cancer Module 29. **Survey only conducted among patients with stoma. ***All stomas in the ERAS group were reversed within one year.

Supplementary Table 3: Distribution of AJCC Pathological Stages in ERAS vs. Control Groups

T staging, case (%)	Control (n=23)*	ERAS (n=19)	P
0	-	2(10.52)	-
I	3 (13.04)	4 (21.05)	0.0374
IIA	4(17.39)	7(36.84)	0.153
IIB	-	-	-
IIC	1(4.34)	2(10.52)	0.863
IIIA	2(8.69)	-	-
IIIB	9(39.13)	3(15.78)	0.095
IIIC	2(8.69)	1(5.26)	0.667
IVA	1(4.34)	-	-
IVB	1(4.34)	-	-

P-values were calculated using Chi-square test. AJCC: American Joint Committee on Cancer. *Some patients died or lost during follow-up period.

Supplementary Table 4: Comparison of Procedures Between Control Group and ERAS Group

Category	*Control Group*	*ERAS Group*
Surgical Method	**Laparoscopic Surgery** - Routine laparoscopy. - No preservation of Rectoprostatic fascia in rectal surgery. - Mixed approach from the caudal was utilized for the right colon. - Routine placement of a gastric tube, abdominal drainage tubes, and urinary catheters, which were kept in place for 2-3 days postoperatively.	**Enhanced Laparoscopic Surgery** - Laparoscopic surgery with ERAS enhancements. - Mixed approach for right colon from the head, reducing intraoperative bleeding and shortening operation time. - Preservation of Rectoprostatic fascia and pelvic plexus to reduce sexual and urinary dysfunction. - No routine gastric tube placement, urinary catheters were used but removed early, within 48 hours.
Anesthesia	**General Anesthesia** - General anesthesia combined with nerve block. Short-acting sedatives: sufentanil, propofol; muscle relaxants: Rocuronium; nerve blocks: Ropivacaine. - Lung protective ventilation: small tidal volume (6–8 mL/kg), individualized PEEP (5–8 cm	**ERAS Anesthesia Protocol** - General anesthesia combined with nerve block. Short-acting sedatives: sufentanil, propofol; muscle relaxants: Rocuronium; nerve blocks: Ropivacaine. - Lung protective ventilation: small tidal volume (6–8 mL/kg), individualized PEEP (5–8 cm H_2O), and low abdominal pressure (8-10 mmHg).

	H_2O). Abdominal pressure maintained at 12-15 mmHg.	
Intraoperative Fluid Management	**Conventional Rehydration** - Rehydration at 1800-2500 mL/day.	**Goal-Directed Therapy (GDT)** - Fluid management following GDT. between (500-1000 mL/day), customized based on intraoperative conditions.
Analgesia	**Single-Mode Analgesia** - Nonsteroidal anti-inflammatory drugs (NSAIDs; Indomethacin) or opioids. - Sufentanil via intravenous patient-controlled analgesia (PCA).	**Multimodal Analgesia** - Ropivacaine via subcutaneous injection, and sufentanil via intravenous PCA. - Phloroglucinol injection, oral tramadol, traditional Chinese medicine (auricular acupoint pressure), and regional nerve block.
Preoperative Care	**Standard Preoperative Care** - Fasting and abstaining from water for 10 hours. - Routine psychological support. - No prehabilitation or systematic nutritional interventions.	**ERAS-Enhanced Preoperative Care** - Fasting for 6 hours, stop drinking fluids 2 hours before surgery. - Structured psychological intervention, lung function exercises, and smoking/alcohol cessation. - Prehabilitation including nutritional support, anemia correction, and aerobic exercise plans.
Postoperative Care	**Conventional Postoperative Care** - Routine urinary catheter for 2-3 days. - Intravenous fluid replacement at 25-30 mL/kg per day. - Early mobilization on day 2. - Gradual resumption of oral intake after bowel sounds return.	**ERAS-Enhanced Postoperative Care** - Early removal of urinary catheters within 48 hours. - The patient was given oral fluids, and if needed, intravenous fluids were administered at a rate of 25-30 mL/kg per day, with careful monitoring to prevent fluid overload and dehydration. - Early mobilization on day 1, with assistance if needed. - Chewing gum therapy to promote bowel motility, oral intake resumed earlier.
Pain Management	**Standard Pain Management** - PCA with limited options for pain relief.	**Enhanced Pain Management** - Multimodal pain relief strategy ensuring pain scores between 1-2 on VAS within three days.

PEEP: positive end-expiratory pressure; GDT: goal-directed therapy; PCA: patient-controlled analgesia; VAS: Visual Analog Scale.