Enhanced recovery after surgery (ERAS) program in a low volume centre improves clinical outcomes for minimally-invasive gastrectomy for gastric cancer: A Randomized Controlled Trial

Shannon M Chan[1], Anthony YB Teoh[1], Cindy SY Tsui[2], Stephen KK Ng[1], Hon Chi Yip[1], Philip Wai Yan Chiu[1], Simon KH Wong[1], Enders KW Ng[1]

[1]Department of Surgery, The Chinese University of Hong Kong

[2]Department of Anaesthesia and Intensive Care Unit, The Chinese University of Hong Kong

Introduction

Enhanced recovery after surgery (ERAS) has been a well established concept in colorectal surgery. Data on gastrectomy is scarce. The aim of the current study is to conduct a protocol-driven prospective randomized trial comparing the clinical outcomes in patients undergoing minimally invasive gastrectomy for gastric cancer with "ERAS" versus a "conventional" perioperative program.

Methods

From 30th June 2016 to 29th June 2020, all patients aged between 18-75, with American Society of Anesthiologists (ASA) I-III undergoing elective minimally-invasive gastrectomy were included. Patients who had preoperative chemotherapy or radiotherapy, known metastatic disease, previous history of midline laparotomy, gastric outlet obstruction, diabetes on insulin, coagulopathy and immunocompromised patients were excluded. The primary outcome of the study was the hospital stay. Secondary outcome include time to tolerate diet, mobilization, pain scores, peak flow rate (PFR), complications and unplanned readmissions.

Results

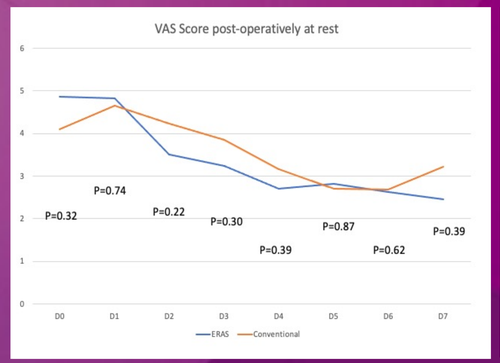
50 patients were recruited to the study. 36 patients had laparoscopic/ robotic subtotal gastrectomy, 14 had laparoscopic total gastrectomy. The baseline demographics and oncological staging were similar in both groups. ***The hospital stay (median(range) of the ERAS group was statistically shorter than the conventional group. Patients tolerated both fluid diet and soft diet significantly earlier in the ERAS group. In the ERAS group, patients were able to walk unaided earlier than the conventional arm.*** There was no difference in complication rates and unplanned readmissions. (Results shown in the table)

There was no difference in post-operative pain scores (Figure 1i and 1ii). However, the PFR showed earlier improvement in the ERAS group.

Conclusion

ERAS after minimally invasive gastrectomy for gastric cancer significantly shortened hospital stay, earlier to resumption of diet and mobilization without increasing complications or readmission rate. Although pain scores were similar, patients' peak flow rate recovered at a faster rate in the ERAS group. ERAS improved and hastened patient's recovery after gastrectomy.

	ERAS	Conventional	p-value
OT Time	298.36 (67.59)	316.44 (67.56)	0.47
Blood loss	115.24 (140.14)	144 (123.65)	0.10
Hospital Stay	**4 (3-27)**	**8 (5-50)**	**<0.001*** **
Time to resume diet			
Time to tolerate fluid diet	**1 (1-5)**	**4 (1-44)**	**<0.001*** **
Time to tolerate soft diet	**2 (2-6)**	**5 (3-47)**	**<0.001*** **
Time to mobilization			
Time to walk with assistance	1 (1-16)	2 (0-29)	0.13
Time to walk independently	**2 (1-19)**	**4 (1-37)**	**0.008** **
Unplanned readmission	3/25	4/25	0.99
Complications	6/25 (24%)	6/25 (24%)	0.49
Anastomotic leakage	3/25 (12%)	1/25 (4%)	0.61
Duodenal Stump leakage	0/25	2/25 (8%)	0.49
Intra-abdominal collection	0/25	1/25 (4%)	0.99
Wound Infection	0/25	2/25 (8%)	0.49
Others	3/25 (12%)	2/25 (8%)	0.99



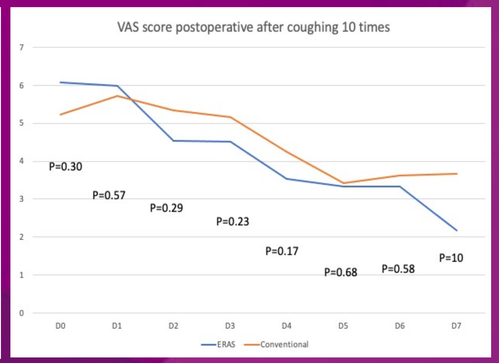


Fig 1(i). Post-op VAS score at rest; 1(ii) Post-op VAS score after coughing 10 times. Both did not show any statistical difference between the two groups

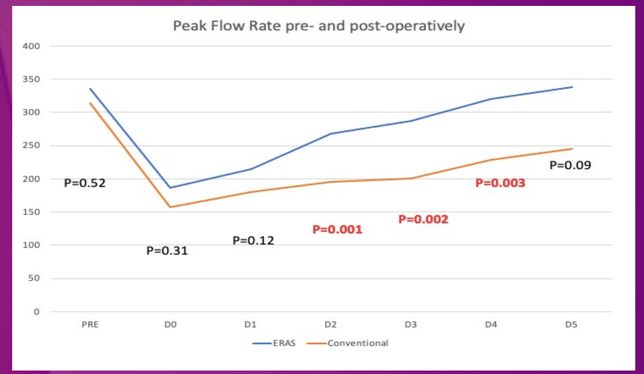


Fig 2. The post-operative peak flow rate showing a significantly faster recovery in the ERAS group.

香港中文大學醫學院
Faculty of Medicine
The Chinese University of Hong Kong