

CASE REPORT

Is enhanced recovery after surgery safe and beneficial for the elderly?

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ABSTRACT

Introduction: Enhanced recovery after surgery (ERAS) protocols are multidisciplinary perioperative care aimed to achieve early recovery after surgery by maintaining pre-operative organ function and reducing the surgical induced stress response. **Case presentation:** A 79-year-old female patient with Transverse Colon Adenocarcinoma, elective admitted for colon resection. Patient was cachexia with weight 33 kg; loss of 7 kg within 1 month; PGSGA score 14 (severe malnourished); Albumin 30 g/L. She experienced very poor oral intake for past 1 month with intake of 450 kcal/day and 15 g/day protein. Carbohydrate loading with 100 g carbohydrate as evening drink and 50 g carbohydrate 3 hours pre-operation. Clear fluid (carbohydrate plus whey protein drink) was allowed on the first day of operation (POD). Regular diet was started on the POD3 since patient tolerated 500 ml of clear fluid. Patient tolerated well with solid food on POD4 and allowed discharged on POD5. As summary, length of hospital stay 5 days 2 hours, ambulation length 20 hours, length of clear fluid toleration 18 hours, length of solid food toleration 4 days and length of gastrointestinal function (flatus & bowel open) 4.5 days. **Discussion:** Advanced age is a proven risk factor of post-operative complications. Shorter hospital stay was found associated with a lower risk of post-operative complications. Length of hospitalization after colorectal surgery does not significantly differ between younger and older age groups of the patients. **Conclusion:** ERAS showed good overall outcome even elderly. Good quality of care at home is required and crucial as well after quicker discharged.

Keywords: Enhanced recovery after surgery, clear fluid, elderly, length of hospital stay

INTRODUCTION

Enhanced recovery after surgery (ERAS) protocols are multidisciplinary perioperative care aimed to achieve early recovery after surgical procedures by maintaining pre-operative organ function and reducing the stress response following surgery and improve clinical practice by incorporating evidence-based

medicine into patient management. Optimal pain control, prevention of fluid overload, and aggressive post-operative rehabilitation, including the early recovery of oral feeding and mobilisation should improve short-term outcome after surgery (Veenhof *et al.*, 2012). ERAS is shown beneficial young surgical patient but how about elderly?

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Case presentation

A 79-year-old female patient was diagnosed with Transverse Colon Adenocarcinoma, elective admitted for colon resection operation on the next day of admission. During admission, patient was cachexia with weight 33 kg where weight loss of 7 kg within 1 month. Patient's height was 1.5 m and BMI was 14.7 kg/m²; her PGSGA score was 14 (moderate malnourished) and albumin level was 30 g/L. Patient reported reduced appetite significantly and poor oral intake for past 1 month. From diet recall, patient tolerated half bowl of plain porridge and some sugary drink. Estimated oral intake was 450 kcal and 15 g/day protein. After discussed with surgical team, ERAS protocol (carbohydrate loading) was started on this patient. Specific drink with carbohydrate plus whey protein was served as carbohydrate loading drink. Patient was loaded with 100 g carbohydrate and 18 g of whey protein as evening drink, and 50 g carbohydrate and 9 g whey protein 3 h pre-operation. Her operation took 95 min. Patient was allowed and served with specific drink on the first day of operation. On the second day of operation, patient able to ambulate and sit on chair; tolerated 300 ml of specific drink. Patient was allowed a regular diet on the third day in view of being able to tolerate >500 ml of drink. Patient tolerated solid food well on 4th day of post operation and was allowed to be discharged on 5th day of post operation. In summary, length of hospital stay was 5 d 2 h, with ambulating time of 20 h, length of clear fluid toleration was 18 h, length of solid food toleration was 4 d and length of gastrointestinal function (flatus & bowel open) was 4.5 d.

DISCUSSION

Cancers are one of the leading causes of morbidity and mortality in worldwide.

There are frequent development of malnutrition and metabolic derangement among cancer patients due to increase nutrients requirement and reduced oral intake. Treatment of cancers includes surgeries, radiotherapies and pharmacological therapies. Surgery, like any injury, leads to inflammation and metabolic stress response. Surgical stress and trauma will induce further catabolism of nutrient storage in body (glycogen, fat and protein) among cancer patients (Arends *et al.*, 2017).

Elective surgery has been shown that reduce in surgery stress, minimise catabolism and support anabolism throughout surgical treatment and promote speedy recovery process. Traditionally, patient was kept nil-by-mouth prior to surgery. Nasogastric tube was used to clear stomach content and withheld oral feeding until resolution of the post-operative ileus because patient was believed that unable to tolerate early feeding. Once bowel function returned with bowel sound, patient was allowed for clear fluid as standard post-surgery drink and step up feeding/diet accordingly (Kehlet *et al.*, 1997). However, researches have proven that early recovery after surgery (ERAS) whereby patient was allowed for solid food 6 h and clear fluid 2 h before surgery as well as early oral feeding on first day of post-surgery length of hospital stay, length of bowel function and length of solid food toleration significantly (Kehlet *et al.*, 1997; Fearon *et al.*, 2005; Ljungqvist, 2014; Bakker *et al.*, 2015; Lassen *et al.*, 2009).

Advanced age is shown as the risk factor of post-operative complications. Studies showed that elderly patients' post-operative morbidity rate and mortality rate were significantly higher if compared with younger patients (Ljungqvist, 2014). The elderly probably take a longer time to recover from

anaesthesia and their ileus rate after surgery is higher if compared with younger patients (Bakker *et al.*, 2015). Traditional perioperative care patient's length of stay after elective colorectal surgery was reported around 10-15 d and was associated with delayed return of bowel motility (Gustafsson *et al.*, 2013; Bardrum *et al.*, 2000; Marusch *et al.*, 2002; Kehlet *et al.*, 2006). However, studies showed that the length of hospitalisation after colorectal surgery does not significantly differ between younger and older age groups of patients, averaging about 5 d in both groups (Bardram *et al.*, 2000; Scharfenberg *et al.*, 2007).

Good compliance with the ERAS protocol also resulted in faster peristalsis return and earlier bowel movement, which was 2.5 d post-operatively on average regardless of the age of patients. Patients stayed in the ward for 10-15 d and with delayed bowel motility post-operatively under traditional care (Murasch *et al.*, 2002; Staib *et al.*, 2002; Kehlet *et al.*, 2006). Studies also proved that ERAS significantly shorten the length of hospital stay and reduced the number of post-operative complications (Gustafsson *et al.*, 2013; Bardram *et al.*, 2000). Post-surgery complication rate, length of hospital stay and length of solid food toleration indicate successfulness of ERAS protocol implementation. There are no significant differences in length of stay post colorectal operation between younger and older age groups of patients; mean of hospital stay was 5 d (Scharfenberg *et al.*, 2007; Bardram *et al.*, 2000). Both younger and older groups of patients reported that able to tolerate early post-operative oral fluid and food intake.

This case report is supported by previous studies result whereby elderly patient benefited via ERAS protocol post-operatively. ERAS protocol did not show to be harmful in elderly surgical

patients; instead, it has comparable positive outcomes as younger surgical patients (Verheijen *et al.*, 2012; Keller *et al.*, 2013). In summary, ERAS protocol showed good recovery and overall outcome in morbidity and mortality even in elderly patients.

CONCLUSION

Implementation of the ERAS protocol is possible for all age groups of elective colorectal patients. ERAS protocol do help in shorten length of hospitalisation, length of bowel motility and length of solid food toleration but not cause a higher risk of post-operative complications or readmissions. Implementation of ERAS among elderly patients requires good quality of care at home, especially after quicker discharge from the surgical ward.

Acknowledgement

We would like to thank the Director General of the Health Ministry of Malaysia for permission to publish this article.

Conflict of interest

The authors declare no conflict of interest arising from the findings for the reported case and its management.

References

- Arends J, Patrick B, Vickie B, Nicole B, Hartmut B, Federico B, Ken F, Elisabeth H, Elizabeth I, Stein K, Zeljko K, Barry L, Maria L, Alessandro L, Stefan M, Maurizio M, Line O, Paula R, Tora S, Florian S, Marian S & Jean-Charles P (2017). ESPEN guidelines on nutrition in cancer patients. *Clinical Nutrition* 36:11e48.
- Arved W, Marco B, Franco C, Takashi H, Martin H, Stanislaw K, Alessandro L, Ljungqvist O, Dileep NL, Robert M, Dan W, Stephan CB & Pierre S (2017). ESPEN guideline: Clinical nutrition in surgery. ESPEN guideline: Clinical nutrition in surgery. *Clinical Nutrition*. doi. 10.1016/j.clnu.2017.02.013
- Bakker N, Cakir H, Doodeman HJ & Houdijk AP (2015). Eight years of experience with Enhanced Recovery After Surgery in patients with colon cancer: impact of measures to improve adherence. *Surgery* 157:1130e6.

- Bardram L, Funch-Jensen P & Kehlet H (2000). Rapid rehabilitation in elderly patients after laparoscopic colonic resection. *Br J Surg* 87:1540-5.
- Fearon KC, Ljungqvist O, Von Meyenfeldt M, Revhaug A, Dejong CH & Lassen K (2005). Enhanced recovery after surgery: a consensus review of clinical care for patients undergoing colonic resection. *Clin Nutr* 24:466e77.
- Gustafsson UO, Scott MJ & Schwenk W (2013). Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations. *World J Surg* 37:259-84.
- Kehlet H, Buchler MW, Beart RW, Billingham RP & Williamson R (2006). Care after colonic operation: is it evidence-based? Results from a multinational survey in Europe and the United States. *J Am CollSurg* 202:45-54.
- Kehlet H (1997). Multimodal approach to control postoperative pathophysiology and rehabilitation. *Br J Anaesth* 78:606-17.
- Lassen K, Soop M, Nygren J, Cox PB, Hendry PO, Meyenfeldt MF, Fearon KCH, Revhaug A, Norderval S, Ljungqvist O, Lobo DN & Dejong CHC (2009). Enhanced Recovery After Surgery (ERAS) Group. Consensus review of optimal perioperative care in colorectal surgery: Enhanced Recovery After Surgery (ERAS). Group recommendations. *Arch Surg* 144:961e9.
- Ljungqvist O (2014). ERAS-enhanced recovery after surgery: moving evidence based perioperative care to practice. *J Parenter Enteral Nutr* 38:559e66.
- Marusch F, Koch A, Schmidt U, Zippel R, Geissler S, Pross M, Roessner A, Köckerling F, Gastinger I & Lippert H (2002). Colon-/rectal carcinoma prospective studies as comprehensive surgical quality assurance. *Chirurg* 73:138-46.
- Muscaritoli LO, Paula R, Tora S, Florian S, Marian de van der S & Jean-Charles P (2017). ESPEN guidelines on nutrition in cancer patients. *Clinical Nutrition* 36:11e48.
- Scharfenberg M, Raue W, Junghans T & Schwenk W (2007). "Fast-track" rehabilitation after colonic surgery in elderly patients: is it feasible? *Int J Colorectal Dis* 22:1469-74.
- Staib L, Link KH, Blatz A & Beger HG (2002). Surgery of colorectal cancer: surgical morbidity and five- and ten-year results in 2400 patients: monoinstitutional experience. *World J Surg* 26:59-66.
- Veenhof AA, Vlug MS, Van Der Pas MH, Sietses C, van der Peet DL, de Lange-de Klerk ES, Bonjer HJ, Bemelman WA & Cuesta MA (2012). Surgical stress response and postoperative immune function after laparoscopy or open surgery with fast track or standard perioperative care: a randomized trial. *Ann Surg* 255:216-221.
- Verheijen PM, Vd Ven AW, Davids PH, Vd Wall BJ & Pronk A (2012). Feasibility of enhanced recovery programme in various patient groups. *Int J Colorectal Dis* 27:507-11.