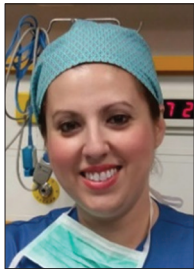


Impact of the Enhanced Recovery Program after Hepato-Pancreato-Biliary Surgery

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ABSTRACT

Enhanced Recovery after Surgery (ERAS) is a multicentric program that includes the fields of nursing and anesthesia, nutrition and fluid management, and minimally invasive surgery. ERAS protocols focus on reducing the postoperative complications and stress response, optimizing the postoperative recovery. They have been implemented in many surgical fields, such as cardiac, gastric, and urologic, as they were shown to

be effective in reducing morbidity and the overall health costs and in improving patient satisfaction. The aim of this minireview was to investigate the impact of ERAS programs on patients' postoperative outcome after hepato-pancreato-biliary surgery.

Key words: Enhanced Recovery after Surgery programs, fast track and surgery, fast-track surgery

Kehlet and Wilmore introduced the concept of fast-track (FT) protocols and Enhanced Recovery after Surgery (ERAS) in 2001. ERAS is a multicentric program that includes the fields of nursing and anesthesia, nutrition and fluid management, and minimally invasive surgery. ERAS protocols focus on reducing the postoperative complications and stress response, generally optimizing the postoperative recovery. Thus, ERAS programs reduce the postoperative hospitalization time and morbidity.^[1]

ERAS protocols were first applied in hip and knee arthroplasty and gynecological and colorectal surgeries.

These protocols have been implemented in many surgical fields, such as cardiac, gastric, and urologic, as they were shown to safely reduce morbidity^[2] and the cost of hospitalization and also improve patient satisfaction.^[3] The aim of this minireview was to investigate the impact of ERAS programs in patient's postoperative outcome after hepato-pancreato-biliary (HPB) surgery.

After ERAS protocols were introduced in postoperative care, 2326 studies were conducted from 2001 to 2019.

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ERAS programs have been implemented in 422 studies in the past 2 years. A literature review of studies in the Medline/PubMed, Cochrane, Scopus, and Google Scholar databases was conducted from 2018 to 2019. The keywords used in the bibliography search were “fast track surgery,” “ERAS programs,” “fast track,” and “surgery.” The inclusion criteria were (a) studies that were directly related to the topic and (b) studies in English and Greek languages published in peer-reviewed journals. The search strategy was applied to 422 studies, 412 of which were excluded and 10 of which met the inclusion criteria.

A data extraction sheet was developed including the name of the first author; country of origin; year of publication; study design; aim; patient characteristics; sample size; data collection method and instrumentation; and finally, the main results and outcomes. Figure 1 (flow diagram) summarizes the selection process.

In the past 2 years, many studies have demonstrated the benefits of implementing the ERAS programs in HPB surgery, such as reduction in the length of stay (LOS) and complications.^[4]

The results of the minireview appeared in Table 1.

Cho *et al.* reported that patients undergoing pancreatoduodenectomy in the ERAS group started the oral liquid diet and soft diet 1.1 and 2.5 days earlier than the control group, respectively.^[5] Mahendran *et al.* reported that patients were mobilized on the day of surgery, 90% of whom tolerated the liquid diet on the 2nd postoperative day (POD) and were discharged on the 6th POD.^[6]

Furthermore, Kaman *et al.* reported in 2019 that, although patients were mobilized on the 1st POD and received a solid diet from the 3rd POD, the LOS was not statistically significant.^[7] In contrast, Williamsson *et al.* showed in 2018 that the postoperative complications and LOS were not significantly different between the ERAS and control groups.^[8]

In a Brazilian tertiary center, Teixeira *et al.* showed that patients in the ERAS group after hepatectomy were

discharged 2 days earlier than those in the control group ($P < 0.001$).^[9] In 2019, Chong *et al.* reported shorter LOS ($P = 0.033$) with ERAS, without any increase in complication rates. Patients were discharged at least 1–10 days earlier.^[10] In 2018, Wang *et al.* focused on the predictive modeling of ERAS program failure, which was 0.866, with 69.6% sensitivity and 9.1% specificity after liver resection.^[11]

Although many studies have evaluated the postoperative parameters of patient hospitalization, not many have evaluated patient satisfaction and quality of life. Hepatectomy patients who were preoperatively informed about their inclusion in the ERAS program showed increased stress levels preoperatively. However, after the implementation of ERAS, the stress levels were not increased.^[12]

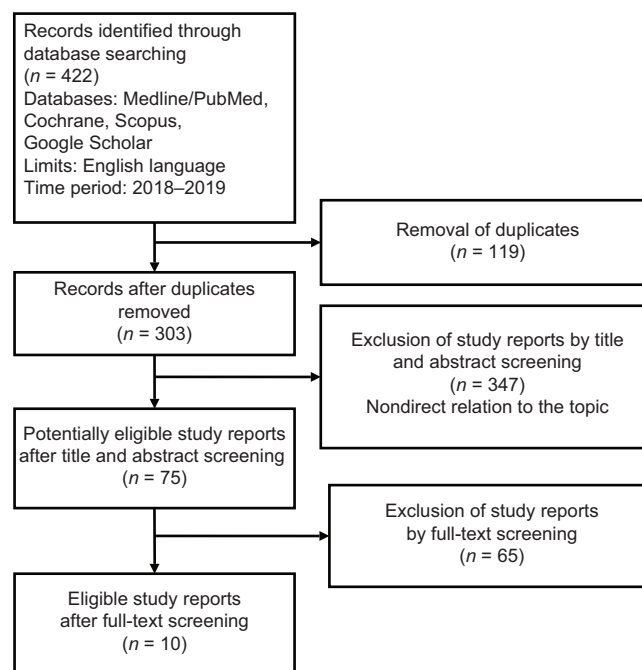


Figure 1: Flow diagram of literature review

Table 1: Characteristics of studies

References	Sample size (n)	Mobilization	Early oral intake	LOS	Morbidity	Mortality
Pancreatoduodenectomy						
Mahvi <i>et al.</i> , 2019 ^[7]	10,741			+	+	
Kaman <i>et al.</i> , 2019	56	+	+	+	+	+
Cho <i>et al.</i> , 2018	48		+			
Williamsson <i>et al.</i> , 2018	160		+	+	+	
Mahendran <i>et al.</i> , 2018	50	+	+	+	+	
Takagi <i>et al.</i> , 2018 ^[8]	74	+	+	+	+	
Hepatectomy						
Chong <i>et al.</i> , 2019	40	+	+	+	+	
Teixeira <i>et al.</i> , 2019	85	+	+	+	+	
Thornblade <i>et al.</i> , 2019	127	+	+	+	+	
Kapritsou <i>et al.</i> , 2018	46	+	+	+	+	

LOS: Length of stay

ERAS protocols in colorectal surgery offered no significant difference in patient satisfaction in two studies but significantly improved the overall satisfaction in one study.^[4] A few researches demonstrated the quality of life after colorectal surgery. Many patients reported a high quality of life after the early discharge, but there were patients with worse emotional status after the discharge.^[4]

Nurses play a cornerstone role in the implementation of ERAS programs. The success of these programs depends on successful postoperative care.^[13] Nurses are responsible for patients' postoperative mobilization and evaluation of nausea, vomiting, pain, and stress levels.^[14] Furthermore, nurses have a key position in the FT postoperative care after HPB surgery.

The ERAS society has been developing guidelines for HPB surgery since 2012. The society published guidelines for pancreaticoduodenectomy in 2012 and 2013 and for hepatectomy in 2016.^[15]

HPB surgery is a complicated procedure with high rates of morbidity and mortality.^[15] Therefore, the ERAS programs should be implemented carefully by doctors and nurses, with a focus on the evolution of evidence quality and recommendations for HPB surgery.

Perioperative management is an important component of ERAS programs.^[16] The findings of this review highlight the ERAS protocols of postoperative care, which are beneficial for patients undergoing HPB surgery. Future studies should aim at the improvement of hospitalization conditions, reduction of patient stress, safer care, fewer complications, and cost-effectiveness.

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Conflicts of interest

There are no conflicts of interest.

References

- Jørgensen LB, Mikkelsen LR, Noe BB, Vesterby M, Uhd M, Fridlund B. The psychosocial effect of web-based information in fast-track surgery. *Health Informatics J* 2017;23:304-18.
- Xu X, Zheng C, Zhao Y, Chen W, Huang Y. Enhanced recovery after surgery for pancreaticoduodenectomy: Review of current evidence and trends. *Int J Surg* 2018;50:79-86.
- Schultz NA, Larsen PN, Klarskov B, Plum LM, Frederiksen HJ, Kehlet H, *et al.* Second generation of a fast-track liver resection programme. *World J Surg* 2018;42:1860-6.
- Li D, Jensen CC. Patient satisfaction and quality of life with enhanced recovery protocols. *Clin Colon Rectal Surg* 2019;32:138-44.
- Cho J, Kim HM, Song M, Park JS, Lee SM. Application of an early oral feeding protocol after pylorus-preserving pancreaticoduodenectomy. *Support Care Cancer* 2019;27:981-90.
- Mahendran R, Tewari M, Dixit VK, Shukla HS. Enhanced recovery after surgery protocol enhances early postoperative recovery after pancreaticoduodenectomy. *Hepatobiliary Pancreat Dis Int* 2019;18:188-93.
- Kaman L, Chakarathi K, Gupta A, Dahiya D, Singh K, Ramavath K. Impact of enhanced recovery after surgery protocol on immediate surgical outcome in elderly patients undergoing pancreaticoduodenectomy. *Updates Surg* 2019. doi: 10.1007/s13304-019-00625-4. [Epub ahead of print].
- Williamsson C, Karlsson T, Westrin M, Ansari D, Andersson R, Tingstedt B, *et al.* Sustainability of an enhanced recovery program for pancreaticoduodenectomy with pancreaticogastrostomy. *Scand J Surg* 2019;108:17-22.
- Teixeira UF, Goldoni MB, Waechter FL, Sampaio JA, Mendes FF, Fontes PRO. Enhanced recovery (eras) after liver surgery: Comparative study in a brazilian tertiary center. *Arq Bras Cir Dig* 2019;32:e1424.
- Chong CC, Chung WY, Cheung YS, Fung AK, Fong AK, Lok HT, *et al.* Enhanced recovery after surgery for liver resection. *Hong Kong Med J* 2019;25:94-101.
- Wang RD, Jia WD, Ge YS, Ma JL, Xu GL. Influential factors for failure of enhanced recovery after surgery from hepatectomy for hepatocellular carcinoma and the establishment of risk prediction model. *Zhonghua Wai Ke Za Zhi* 2018;56:693-700.
- Maria K, Evangelos KA, Dimitris KP, Maria K, Ioannis K, Margarita G, *et al.* Postoperative stress and pain response applying fast-track protocol in patients undergoing hepatectomy. *J Perioper Pract* 2018; doi: 10.1177/1750458918812293.
- Philp S, Carter J, Barnett C, D'Abrew N, Pather S, White K. Patients' perspectives of fast-track surgery and the role of the fast-track clinical nurse consultant in gynecological oncology. *Holist Nurs Pract* 2015;29:158-66.
- Kapritsou M, Korkolis DP, Giannakopoulou M, Kaklamanos I, Elefsiniotis IS, Mariolis-Sapsakos T, *et al.* Fast-track recovery after major liver and pancreatic resection from the nursing point of view. *Gastroenterol Nurs* 2014;37:228-33.
- Buhrman WC, Lyman WB, Kirks RC, Passeri M, Vrochides D. Current state of enhanced recovery after surgery in hepatopancreatobiliary surgery. *J Laparoendosc Adv Surg Tech A* 2018;28:1471-5.
- Rao JH, Zhang F, Lu H, Dai XZ, Zhang CY, Qian XF, *et al.* Effects of multimodal fast-track surgery on liver transplantation outcomes. *Hepatobiliary Pancreat Dis Int* 2017;16:364-9.
- Mahvi DA, Pak LM, Bose SK, Urman RD, Gold JS, Whang EE. Fast-track pancreaticoduodenectomy: Factors associated with early discharge. *World J Surg* 2019;43:1332-41.
- Takagi K, Yoshida R, Yagi T, Umeda Y, Nobuoka D, Kuise T, *et al.* Effect of an enhanced recovery after surgery protocol in patients undergoing pancreaticoduodenectomy: A randomized controlled trial. *Clin Nutr* 2019;38:174-81.