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Evaluation of Use of Fast Track Surgery

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Abstract Despite surgical and anesthetic advances, many studies show complications after major gastrointestinal surgery in a subset of patients. Studies have also shown that the main focus must be developing new therapies for postoperative benefit. Studies have shown interest in the FTS pathway but need to be more precise. Our literature review shows that very little FTS pathway data is available from India. Thus, we investigated FTS use in our study. We performed 70 elective abdominal surgical procedures. Comorbidities and other variables that may affect surgery were assessed for patients. Each individual learned about FTS and its benefits. After counseling, written informed consent was obtained. Each individual received an appropriate workout program and behavior change strategy. We found that FTS reduced postoperative ileus and NG tube usage. Hence, FTS is superior to traditional surgery when utilized appropriately during surgery.

Key Words FTS, New therapies, Postoperative, Ileus, Ng tube, Comorbidities, Other variables

1. Introduction

Despite advancements in surgical and anesthetic methodologies, a subset of patients encounter complications in many studies following major gastrointestinal surgery [1]. Furthermore, researchers have claimed that there is a notable divergence in care procedures and outcomes among practitioners [2]–[4]. Additionally, studies conclude that achieving complete patient recovery often necessitates several weeks or even months, even in the case of ambulatory surgery [5]–[7]. So, researchers in various past studies showed that the expenses associated with care are steadily increasing without yielding improved population health outcomes [8]. Researchers also conclude that the primary objective should be to attain enhanced value care for patients, which refers to the accomplishment of health outcomes that are significant to patients about the amount of money spent [8]. In perioperative care, studies have shown a collective responsibility to ensure the patient's postoperative recovery [9]. In addition to this, studies have also shown several factors that can impede the recovery process. These include preoperative organ dysfunction, surgical stress and catabolism, pain, postoperative nausea and vomiting, postoperative ileus, fluid excess, semi-starvation, immobility, and surgical traditions or culture [10]. Over the past two decades, researchers have shown a significant advancement in improving the recovery process for numerous surgeons in training, adopting less invasive surgical techniques. The duration of recovery from physical activities, particularly after low-impact surgeries such as laparoscopic cholecystectomy, often exceeds the expectations of most surgeons [5]. Studies have also shown various interventions, some of which may be outside the scope of surgeons, that can potentially impact the surgical stress response and consequently influence the pace of recovery. The interventions encompass pharmaceutical approaches, hydration and temperature management, dietary adjustments, and physical exercise [11]. Hence, studies have shown that the available evidence strongly supports implementing best practices in perioperative care [12]–[14].

Furthermore, researchers in their various past studies have shown that the problem stems from something other than a deficiency in evidence or a dearth of guidelines. The primary concern revolves around the organization of care to facilitate the seamless integration of evidence into practice, ultimately leading to enhanced patient outcomes. In order to advance, it is imperative to implement new interventions that have been empirically proven to be advantageous. Equally significant is the need to discontinue practices that lack benefits and may potentially yield detrimental outcomes. However, it should be noted that there is an approximate time delay of 17 years between the completion of research and the subsequent realization of its societal benefits [15]. Studies have also shown that the importance of specific elements within Fast Track Surgery(FTS) is not clearly defined, and various approaches, ranging from simple to complex, have shown success [16].

Furthermore, according to studies, the optimal execution of a FTS approach necessitates the collaboration of a diverse group of professionals, including surgeons, anesthesiologists, nurses involved in all stages of care, nutritionists, physiotherapists, pain service personnel, and administrators [16]–[24].

In past studies, researchers have concluded that the development and execution of a new FTS involves several key steps. Firstly, it is necessary to thoroughly examine the available evidence and guidelines about each stage of the perioperative process for a particular procedure. This ensures that the best practices are identified and incorporated into the protocol. Next, it is crucial to establish a consensus among healthcare practitioners regarding delivering each care element within the specific local context. This collaborative effort ensures all team members are aligned and working towards a common goal.

Additionally, the creation of patient education materials is essential. These materials should include daily milestones, standard order sets, nursing flow sheets, and discharge criteria that are directly linked to the identified milestones. This linkage allows for a clear understanding of the patient's progress and helps determine a target discharge date. Lastly, it is imperative to provide adequate training to perioperative personnel [25]. This training ensures that all team members can effectively implement the new FTS protocol. By following these steps, a new FTS can be successfully developed and implemented. The team must audit specific processes and outcomes, making necessary revisions to the program accordingly.

Additionally, it is recommended that the team periodically review the literature for any new evidence, with a suggested frequency of every two years. Further, studies have revealed that implementing FTS involves a change in approach. While the elements of this approach are simple, the initiative's success relies on the involvement of dedicated surgical, anesthesia, and nursing champions, along with the necessary administrative support. These enthusiastic individuals are crucial in ensuring the initiative's effectiveness, similar to other quality improvement initiatives [25].

Henceforth, as per our literature research, the data on the use of the FTS pathway from India is minimal. Thus, in our study, we have assessed and evaluated the use of FTS.

2. Materials & Method

Our study was a prospective type of study. Patients were included who fulfilled all the inclusion criteria of the study. Our study was conducted in KHMRC, Karad, starting in December 2017 and ending in June 2019.

Methodology

A total of 70 patients who were scheduled for elective abdominal surgical procedures were included in the study. The patients underwent assessments to identify comorbidities and other factors that may impact the surgery. Each individual received education regarding FTS and its associated advantages. After providing counseling, informed consent was obtained in written form. A proper exercise regimen and habit modification plan were provided to each individual as necessary.

Inclusion Criteria

- All those patients who undergoing elective abdominal or oncological surgery.
- Patients who give their respective consent for the surgery.
- Both male & female were included in the study.

Exclusion Criteria

- Patients with multiple systemic disease.
- Patients presenting in emergency setting.
- Patients not willing for the surgery.
- Moribund patients.

Pre-operative

The evaluation of preoperative risks and the optimization of organ dysfunction. The test, known as "incentive spirometry," has to be started five days before the patient is hospitalized. Optimization work was done to prepare the respiratory and cardiovascular systems for the treatment. Instruct the patient in treating their condition both during and after the operation (intraoperative and postoperative). Exercise, prehabilitation, quitting smoking if necessary, preparing the selective bowel for colorectal surgery, and current fasting guidelines, such as clear water allowed up to 2 hours before surgery and overnight fasting discouraged, are all essential steps to take before having colorectal surgery.

Intra-Operative

It is recommended to employ appropriate hydration management, utilize regional anesthesia techniques such as spinal or epidural anesthesia, and administer ropivacaine at a controlled rate of 3-5 ml/min over a 24-hour duration. The administration of opioids with a rapid onset of action, such as fentanyl, is crucial. Additionally, ensuring normothermia by utilizing warming devices and offering warm beverages is essential. Controlling glucose levels and providing antiemetic prophylaxis, specifically through antiemetics like 5HT3 antagonists, during both the induction and conclusion of surgery are also significant factors to consider.

Post-Operative

Use of multimodal, opioid-sparing analgesic with epidural analgesia up to 72 hours post-operatively-further use of antiemetic, anti-ileus prophylaxis, less use of drains, tubes, and catheters. Check for early nutrition, early ambulation, and post-discharge rehabilitation plan. Discharge criteria will include patients who can tolerate a soft diet, those who can ambulate properly without help, those who have pain scores up to 1-2 for at least 24 hrs & and those who show no signs of surgical site infections. Furthermore, 6 weeks follow-up is required to look for any complications related to the

Gender	Number of cases	Percent
Males	45	64.3
Females	25	35.7
Total	70	100

Table 1: Gender wise distribution

Age group	Number of cases	Percent
<25 years	9	12.9
26-35	8	11.4
36-45	7	10
46-55	12	17.1
56-65	16	22.9
66-76	10	14.3
>76	8	11.4
Total	70	100
Mean $\pm$ SD	52.71 ± 20.89 years	

Table 2: Age-wise distribution

surgery. Lastly, a comparison between the data collected & conventional methods of surgery was made.

3. Result

Gender wise distribution is given in Table 1. 64% patients were males and 36% were females.

In Table 2, it was observed that the mean age was 52.71 years, with a standard deviation of 20.89 years. The age group with the highest number of patients was between 46 and 65. Furthermore, it is noteworthy to mention that no mortality was seen within the study cohort. This outcome may be attributable to many reasons, with post-operative surgical care being of paramount importance.

In Table 3 we have found that, patients presents with various surgical pathologies.

FT and traditional surgery were explained to every patient in Table 4. Each patient underwent preoperative medical optimization and habit change counseling. Even though a majority of patients underwent resection and anastomosis, the utilization of drains during intraoperative operations was modest. Patients could walk the day after treatment, start physiotherapy, and start oral intake on day three once intestinal motility was established.

Diagnosis	Number of cases	Percent
Abdominal cocoon	1	1.4
Adrenal mass	1	1.4
Appendicular carcinoid	1	1.4
Carcinoma cervix	1	1.4
Carcinoma colon	13	18.6
Carcinoma gall bladder	1	1.4
Carcinoma ovary	4	5.7
Carcinoma rectum	1	1.4
Carcinoma stomach	7	10.0
Cecal volvulus	1	1.4
Diverticulosis	1	1.4
Gastric outlet obstruction	7	10.0
GIST	8	11.4
Incisional hernia	6	8.5
Intussception	1	1.4
Meckel's diverticulum	1	1.4
Mesenteric cyst	2	2.9
Pseudocyst of pancreas	1	1.4
Total	70	100

Table 3: Clinical presentation

All patients received pre-medication and antibiotics before induction. Surgical anesthesia varies from procedure to procedure. The majority of surgeries were epidurals. When using epidural anesthesia, less of the general anesthesia substance is administered so that side effects may be avoided. To promote healing, regional anesthesia like epidural is suggested Table 5.

The patients in Table 6 underwent various surgical procedures and were administered analgesics as needed. The Visual Analogue Scale was used to monitor patients' pain threshold every 8 hours, and necessary actions were taken. All surgical patients switched to oral analgesics 72 hours later. Non-opioid oral analgesics were selected wherever possible. Low-dose opioids and local analgesics were also employed to give pain relief through epidural infusion. Postoperative pain is a significant cause of morbidity and typically precedes surgical problems. This study employed multimodal, non-opioid analgesia. Epidural analgesia was administered for 72 hours after surgery. NSAIDs and other oral analgesics were then administered daily. Preemptive use of non-opioid, multimodal analgesia for up to 72 hours following surgery was more effective in facilitating early ambulation and prompt resumption of daily activities than traditional surgical methods that relied on surgery as needed after the procedure.

Table 7, 8 succinctly presents the distribution patterns of pain experienced by subjects, offering a concise yet comprehensive overview of this critical variable within the study.

In Table 9, we have found a reduction in the incidence of PONV with the use of FTS protocols and vigorous antiemetic prophylaxis, beginning with the induction of anesthesia and continuing through the postoperative period. The incidence was up to 25% and up to 80% in situations of high risk when using traditional procedures.

Table 10 "Incidence Rates of Postoperative Nausea and Vomiting (PONV)" - This table provides a concise summary of the occurrence frequencies of PONV among patients post-surgery.

Intra-abdominal drains are one of the major causes of post-operative postoperative morbidity and postoperative complications. The longer a patient is required to have drains in place, the longer they will need to stay in the hospital. Only 36% of patients met the requirement for drains in this study. On postoperative day 3, after it was determined that there was no major drainage, all drains were removed Table 11.

The utilization of intra-abdominal drains poses a challenge in perioperative patient care. Table 12 indicates that drains were not employed in cases involving laparotomies and excisions without bowel resections, as well as laparotomies and small intestinal resections for non-ischemic conditions.

	Number of cases	Percent
Abdominal orchidectomy	1	1.4
Adrenelectomy	1	1.4
Cecopexy	1	1.4
Cystogastrostomy	1	1.4
Exploratory laparotomy and excision	5	7.1
Laparotomy with adhesinolysis	4	5.7
Laparotomy with excision	1	1.4
Laparotomy with resection and anastomosis	44	62.9
Radical cholecystectomy	1	1.4
Radical hysterectomy with pelvic lymph node dissection	5	7.1
Splenectomy	6	8.6
Total	70	100

Table 4: Surgical procedure

Type of anaesthesia administered	Number of cases	Percent
General anaesthesia	1	1.4
GA with epidural	40	57.1
Spinal anaesthesia with epidural	29	41.4
Total	70	100

Table 5: Anaesthesia Administered

Pain score	Value
Mean pain score	0.96
Standard deviation	0.53
Minimum pain score	0
Maximum pain score	2

Table 6: Pain score

In contrast, the utilization of drains is a common practice in laparotomy procedures involving colonic resections and anastomoses. Furthermore, it is worth noting that the utilization of intra-abdominal drains is contingent upon the discretion of the operating surgeon and the specific intra-abdominal condition at hand.

Table 13 "Application of Ryle's Tube" - This table systematically presents data on the usage of Ryle's tube in clinical scenarios, providing a succinct overview of its implementation.

A nasogastric tube was employed in our study's patients (34%), either during or after surgery. After the resumption of bowel sounds, the feeding tube was removed and enteral nutrition was resumed. The use of the NG tube may be reduced with the routine use of Fast Track Surgery Protocols.

Table 14 "Ryle's Tube Utilization: Intraoperative and Postoperative" - This table offers a detailed breakdown of the application of Ryle's tube during both intraoperative and postoperative phases, encapsulating a comprehensive view of its usage across different stages of patient care.

Table 15 "Duration to Pass Flatus Postoperatively" - This table methodically documents the time taken by patients to pass flatus following surgery, providing a clear representation of this postoperative recovery indicator.

We observed that it usually takes 48-72 hours to overcome the post-operative ileus, which can be reduced significantly with the use of FTS. Various methods exist to check bowel movements, but the patient's affirmation of passing flatus is the most confirmatory.

Table 16 "Re-hospitalization Necessity Distribution" - This table categorizes and presents data on the frequency and reasons for patient re-hospitalization post-discharge, offering insight into the patterns and needs for such occurrences.

Table 17 "Incidence of Cases Requiring Re-hospitalization" - This table details the instances where patients needed to be re-admitted to the hospital post-discharge, providing a focused analysis of such cases.

Table 18 "Discharge Dates: Postoperative Day (POD) Analysis" - This table compiles and presents the dates of patient discharge in relation to the postoperative day, offering a structured overview of discharge timings in the post-surgical period.

4. Discussion

Henrik Kehlet's pioneering work in the early 1990s is where the notion of fast-track surgery started. He applied patient management advancements to colorectal surgery. Some of these protocols are applied to other specialties, such as breast reconstructive surgery. Post-operative results of elective abdominal surgery improved significantly with FTS, according to a study [26]. Furthermore, many studies have been conducted to use FTS in emergency settings, and Lohsiriwat et al. [27], Wisely & Barclay [28], Shida et al. [29], and Shang et al. [30]. are some of the compared studies. This study addresses the fallacies of some of the conventional methods used during surgical procedures, their evidence-based issues, and the proper methods for applying FTS Protocols.

5. Conclusion

In our study, we found a significant improvement in the surgical management of the patients if appropriately used. It is a team-work type of surgery where the surgeon, anesthetist, nursing staff, physiotherapists, and nutritionist work in coordination. Thus, FTS is better than conventional methods of surgery when appropriately used. Although there are more than 20 elements in FTS, each should be separated for their impact on surgical care to reduce post-operative morbidity.

Conflict of Interest

The authors declare no conflict of interests. All authors read and approved final version of the paper.

Sr No	Diagnosis	Procedure	Pain score
1	Retroperitoneal Mass	Exploratory Laparotomy and excision	2
2	Splenic Cyst	Splenectomy	2
3	Mesenteric Cyst	Exploratory Laparotomy and excision	1
4	Appendicular Carcinoid	Laparotomy with Resection and anastomosis	0
5	GIST	Laparotomy with Resection and anastomosis	0
6	GIST	Laparotomy with Resection and anastomosis	0
7	Splenomegaly	Splenectomy	1
8	Carcinoma Colon	Laparotomy with Resection and anastomosis	0
9	Retroperitoneal Mass	Exploratory Laparotomy and excision	0
10	GIST	Laparotomy with Resection and anastomosis	2
11	Diverticulosis	Laparotomy with Resection and anastomosis	1
12	Incisional hernia	Laparotomy with Resection and anastomosis	2
13	Carcinoma Ovary	Radical Hysterectomy with pelvic lymph node dissection	1
14	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
15	Splenomegaly	Splenectomy	1
16	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
17	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
18	Incisional Hernia	Laparotomy with Resection and anastomosis	1
19	GIST	Laparotomy with Resection and anastomosis	1
20	Subacute Obstruction	Laparotomy with adhesinolysis	1
21	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
22	Splenomegaly	Splenectomy	1
23	GIST	Laparotomy with Resection and anastomosis	2
24	Abdominal Cocoon	Laparotomy with adhesinolysis	1
25	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
26	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	1
27	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	1
28	Pseudocyst of pancreas	Cystogastrostomy	1
29	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
30	Mesenteric Cyst	Exploratory Laparotomy and excision	1
31	Incisional hernia	Laparotomy with Resection and anastomosis	1
32	Carcinoma Ovary	Radical Hysterectomy with pelvic lymph node dissection	1
33	Meckel's Diverticulum	Laparotomy with Resection and anastomosis	2
34	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
36	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
37	Carcinoma Cervix	Radical Hysterectomy with pelvic lymph node dissection	0
38	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	0
39	Intussception	Laparotomy with Resection and anastomosis	1
40	GIST	Laparotomy with Resection and anastomosis	0
41	Incisional hernia	Laparotomy with adhesinolysis	1
42	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	1
43	Incisional hernia	Laparotomy with Resection and anastomosis	2
44	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
45	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
46	Incisional hernia	Laparotomy with adhesinolysis	2
47	Cecal Volvulus	Cecopexy	1
48	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	1
49	Sigmoid Voulvulus	Laparotomy with Resection and anastomosis	1
50	GIST	Laparotomy with Resection and anastomosis	1
51	Adrenal Mass	Adrenelectomy	1
52	Carcinoma Colon	Laparotomy with Resection and anastomosis	1

Table 7: Distribution of pain-I

53	GIST	Laparotomy with excision	1
54	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
55	Carcinoma Ovary	Radical Hysterectomy with pelvic lymph node dissection	1
56	Splenic Mass	Splenectomy	1
57	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
58	Carcinoma Ovary	Radical Hysterectomy with pelvic lymph node dissection	1
59	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
60	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
61	Seminoma	Abdominal Orchidectomy	1
62	Carcinoma Stomach	Laparotomy with Resection and anastomosis	1
63	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	1
64	Carcinoma Rectum	Laparotomy with Resection and anastomosis	1
65	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
66	Retroperitoneal Mass	Exploratory Laparotomy and excision	1
67	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
68	Carcinoma Colon	Laparotomy with Resection and anastomosis	1
69	Carcinoma Gall Bladder	Radical Cholecystectomy	0
70	Gastric Outlet Obstruction	Laparotomy with Resection and anastomosis	0

Table 8: Distribution of pain-II

PONV	Number of cases	Percent
YES	13	18.6
NO	57	81.4
TOTAL	70	100

Table 9: PONV

Authors Contribution

All authors contributed equally in this paper.

References

[1] Schilling, P. L., Dimick, J. B., & Birkmeyer, J. D. (2008). Prioritizing quality improvement in general surgery. Journal of the American College of Surgeons, 207(5), 698-704.

[2] Lassen, K., Hannemann, P., Ljungqvist, O., Fearon, K., Dejong, C. H., von Meyenfeldt, M. F., ... & Revhaug, A. (2005). Patterns in current perioperative practice: survey of colorectal surgeons in five northern European countries. BMJ, 330(7505), 1420-1421.

[3] Lassen, K., Dejong, C. H., Ljungqvist, O., Fearon, K., Andersen, J., Hannemann, P., ... & Revhaug, A. (2006). Nutritional support and oral intake after gastric resection in five northern European countries. Digestive Surgery, 22(5), 346-352.

[4] Cohen, M. E., Bilimoria, K. Y., Ko, C. Y., Richards, K., & Hall, B. L. (2009). Variability in length of stay after colorectal surgery: assessment of 182 hospitals in the national surgical quality improvement program. Annals of Surgery, 250(6), 901-907.

[5] Feldman, L. S., Kaneva, P., Demyttenaere, S., Carli, F., Fried, G. M., & Mayo, N. E. (2009). Validation of a physical activity questionnaire (CHAMPS) as an indicator of postoperative recovery after laparoscopic cholecystectomy. Surgery, 146(1), 31-39.

[6] Lawrence, V. A., Hazuda, H. P., Cornell, J. E., Pederson, T., Bradshaw, P. T., Mulrow, C. D., & Page, C. P. (2004). Functional independence after major abdominal surgery in the elderly. Journal of the American College of Surgeons, 199(5), 762-772.

[7] Tran, T. T., Kaneva, P., Mayo, N. E., Fried, G. M., & Feldman, L. S. (2014). Short-stay surgery: what really happens after discharge?. Surgery, 156(1), 20-27.

[8] Porter, M. E. (2010). What is value in health care. The New England Journal of Medicine, 363(26), 2477-2481.

[9] Feldman, L. S., Lee, L., & Fiore Jr, J. (2015). What outcomes are important in the assessment of Enhanced Recovery After Surgery (ERAS) pathways?. Canadian Journal of Anesthesia, 62(2), 120.

[10] Kehlet, H., & Wilmore, D. W. (2002). Multimodal strategies to improve surgical outcome. The American Journal of Surgery, 183(6), 630-641.

[11] Kehlet, H., & Wilmore, D. W. (2008). Evidence-based surgical care and the evolution of fast-track surgery. Annals of surgery, 248(2), 189-198.

[12] Gustafsson, U. O., Scott, M. J., Schwenk, W., Demartines, N., Roulin, D., Francis, N., ... & Ljungqvist, O. (2012). Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERASÂ®) Society recommendations. Clinical Nutrition, 31(6), 783-800.

[13] Nygren, J., Thacker, J., Carli, F., Fearon, K. C. H., Norderval, S., Lobo, D. N., ... & Ramirez, J. (2012). Guidelines for perioperative care in elective rectal/pelvic surgery: Enhanced Recovery After Surgery (ERASÂ®) Society recommendations. Clinical Nutrition, 31(6), 801-816.

[14] Lassen, K., Coolsen, M. M., Slim, K., Carli, F., de Aguilar-Nascimento, J. E., SchÃ¤fer, M., ... & Dejong, C. H. (2012). Guidelines for perioperative care for pancreaticoduodenectomy: Enhanced Recovery After Surgery (ERASÂ®) Society recommendations. Clinical Nutrition, 31(6), 817-830.

[15] Morris, Z. S., Wooding, S., & Grant, J. (2011). The answer is 17 years, what is the question: understanding time lags in translational research. Journal of the Royal Society of Medicine, 104(12), 510-520.

[16] Nicholson, A., Lowe, M. C., Parker, J., Lewis, S. R., Alderson, P., & Smith, A. F. (2014). Systematic review and meta-analysis of enhanced recovery programmes in surgical patients. Journal of British Surgery, 101(3), 172-188.

[17] Zhuang, C. L., Ye, X. Z., Zhang, X. D., Chen, B. C., & Yu, Z. (2013). Enhanced recovery after surgery programs versus traditional care for colorectal surgery: a meta-analysis of randomized controlled trials. Diseases of the Colon & Rectum, 56(5), 667-678.

[18] Coolsen, M. E., Van Dam, R. M., Van Der Wilt, A. A., Slim, K., Lassen, K., & Dejong, C. H. C. (2013). Systematic review and meta-analysis of enhanced recovery after pancreatic surgery with particular emphasis on pancreaticoduodenectomies. World journal of Surgery, 37, 1909-1918.

[19] Dorcaratto, D., Grande, L., & Pera, M. (2013). Enhanced recovery in gastrointestinal surgery: upper gastrointestinal surgery. Digestive Surgery, 30(1), 70-78.

[20] Zaouter, C., Kaneva, P., & Carli, F. (2009). Less urinary tract infection by earlier removal of bladder catheter in surgical patients receiving thoracic epidural analgesia. Regional Anesthesia & Pain Medicine, 34(6), 542-548.

Procedures	Total cases	PONV	No PONV
Laparotomy with Resection and Anastomosis	44	11	33
Laparotomy with Excision	6	-	6
Laparotomy with Adhesiolysis	4	-	4
Splenectomy	6	-	6
Cholecystectomy	1	-	1
Radical hysterectomy with pelvic lymph node dissection	5	1	4
Cystogastrostomy	1	1	-
Others (Cecopexy, Adrenalectomy, Orchidectomy)	3	-	3
Total	70	13	57

Table 10: Incidence of PONV

Drains	Number of cases	Percent
Yes	19	27.1
No	51	72.9
Total	70	100

Table 11: Distribution of drains used

[21] Maessen, J. M. C., Hoff, C., Jottard, K., Kessels, A. G. H., Bremers, A. J., Havenga, K., ... & Dejong, C. H. C. (2009). To eat or not to eat: facilitating early oral intake after elective colonic surgery in the Netherlands. Clinical Nutrition, 28(1), 29-33.

[22] Basse, L., Jakobsen, D. H., BillesbÃ¸lle, P., Werner, M., & Kehlet, H. (2000). A clinical pathway to accelerate recovery after colonic resection. Annals of Surgery, 232(1), 51.

[23] Maessen, J., Dejong, C. H. C., Hausel, J., Nygren, J., Lassen, K., Andersen, J., ... & Von Meyenfeldt, M. F. (2007). A protocol is not enough to implement an enhanced recovery programme for colorectal resection. Journal of British Surgery, 94(2), 224-231.

[24] Lee, L., Li, C., Landry, T., Latimer, E., Carli, F., Fried, G. M., & Feldman, L. S. (2014). A systematic review of economic evaluations of enhanced recovery pathways for colorectal surgery. Annals of Surgery, 259(4), 670-676.

[25] Lee, L., Mata, J., Ghitulescu, G. A., Boutros, M., Charlebois, P., Stein, B., ... & Feldman, L. S. (2015). Cost-effectiveness of enhanced recovery versus conventional perioperative management for colorectal surgery. Annals of surgery, 262(6), 1026-1033.

[26] Teeuwen, P. H., Bleichrodt, R. P., Strik, C., Groenewoud, J. J. M., Brinkert, W., Van Laarhoven, C. J. H. M., ... & Bremers, A. J. A. (2010). Enhanced recovery after surgery (ERAS) versus conventional postoperative care in colorectal surgery. Journal of Gastrointestinal Surgery, 14, 88-95.

[27] Lohsiriwat, V., Jitmungngan, R., Chadbunchachai, W., & Ungprasert, P. (2020). Enhanced recovery after surgery in emergency resection for obstructive colorectal cancer: a systematic review and meta-analysis. International Journal of Colorectal Disease, 35, 1453-1461.

[28] Wisely, J. C., & Barclay, K. L. (2016). Effects of an enhanced recovery after surgery programme on emergency surgical patients. ANZ Journal of Surgery, 86(11), 883-888.

[29] Shida, D., Tagawa, K., Inada, K., Nasu, K., Seyama, Y., Maeshiro, T., ... & Umekita, N. (2017). Modified enhanced recovery after surgery (ERAS) protocols for patients with obstructive colorectal cancer. BMC surgery, 17(1), 1-6.

[30] Shang, L. H., Xiao, Z. N., Zhao, Y. L., & Long, B. (2020). Analgesic effect of serratus anterior plane block after thoracoscopic surgery: a randomized controlled double-blinded study. Therapeutics and Clinical Risk Management, 1257-1265.

Procedures	Total cases	Drains Used	Drains Not Used
Laparotomy With Resection And Anastomosis	44	17	27
Laparotomy with Excision	6	-	6
Laparotomy with Adhesiolysis	4	-	4
Splenectomy	6	1	5
Cholecystectomy	1	-	1
Radical hysterectomy with pelvic lymph node dissection	5	-	5
Cystogastrostomy	1	1	-
Others (Cecopexy, Adrenalectomy, Orchidectomy)	3	-	3
Total	70	19	51

Table 12: Cases in which drains used

Use of Ryle tube	Number of cases	Percent
Yes	24	34.3
No	46	65.7
Total	70	100

Table 13: Use of Ryle tube

Procedures	Total cases	Ryle's tube Used	Ryle's tube Not Used
Laparotomy with Resection and Anastomosis	44	21	23
Laparotomy with Excision	6	-	6
Laparotomy with Adhesiolysis	4	2	2
Splenectomy	6	-	6
Cholecystectomy	1	1	-
Radical hysterectomy with pelvic lymph node dissection	5	-	5
Cystogastrostomy	1	1	-
Others (Cecopexy, Adrenalectomy, Orchidectomy)	3	1	2
Total	70	24	46

Table 14: Ryle tube (Intraoperative & Post-operative)

Time to pass Flatus	Value
Mean	2.54 Days
Standard deviation	0.86 days
Minimum	1
Maximum	4

Table 15: Post-operative time to pass Flatus

Re-hospitalization	Number of cases	Percent
Yes	1	1.4
No	69	98.6
Total	70	100

Table 16: Distribution According to Need of Re-Hospitalization

Diagnosis	Procedure	Cause of re-hospitalization	Post-op day
Carcinoma Stomach	Subtotal Gastrectomy with anastamosis	Pain in Abdomen and vomiting	14

Table 17: Cases which need Re-hospitalization

Discharge POD	Value
Mean hospital stay	4.20
Standard deviation	1.29
Minimum POD	2
Maximum POD	7

Table 18: Discharge POD