

Early recovery after small bowel surgery

Abstract

Background: Bowel anastomoses are common procedures in both elective and emergency general surgery. Therefore, the aim of this study was to assess the safety, tolerability and outcome of early oral feeding after small bowel anastomosis.

Methodology: This is a Quasi experimental study conducted at Surgical unit (ward 26) Jinnah postgraduate medical center, Karachi, Pakistan, during the period from March 2014 to November 2016. In the present study we investigated 59 cases, their ages ranging from 17-45 years.

Results: Out of 35 elective cases, 51.4% were operated for ileoileal and 20% were operated for ileocolic anastomosis. Out of the 24 emergency cases, 75%, 20.8%, and 4.2% were presenting with Penetrating abdominal trauma, Blunt trauma, and Intestinal obstruction section to internal hernia.

Conclusion: Early oral feeding is safe and if associated with careful selection and multimodal postoperative care promotes faster convalescence following small bowel surgery.

Keywords: bowel anastomosis, abdominal trauma, intestinal obstruction, nasogastric tubes, anastomosis, blunt trauma, restoration, internal hernia, bowel surgery, mobilization, protocols, restoration, tolerability, diverticulitis, prevention, abdominus plane

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Introduction

Stoma of small bowel is made for diverse causes, extending from decompression and bypass to relieve a distal obstruction, to protect distal anastomosis, or for enteral feeding.¹⁻³ This procedure has various complications like bleeding, prolapse, ulceration, stenosis adhesions and obstruction.⁴ Small bowel motility complaints leading to elevated intraluminal pressure are the well-known factors for their progress. Most of the patients are asymptomatic, but around 10-30% of patients tend to develop severe complications, such as diverticulitis, stone formation, perforation, hemorrhage and intestinal obstruction.^{5,6} Surgery is the backbone in most of the patients with gastrointestinal obstruction.⁷ Variable presentation of diverticuli leads to delayed diagnosis or misdiagnosis which results in associated morbidity and mortality.⁸ Postoperative care has evolved significantly over the past few decades with emphasis on a safe, stress free and early recovery of the patients.⁹ Conventional postoperative care emphasized resting the gastrointestinal tract until full recovery of function occurs. Prolonged preoperative fasting, use of long acting sedatives, anesthetic agents and opiates, I/V fluids in excess, extended use of drains, nasogastric tubes, urinary catheters, and prolonged nil per oral status all contributed to delayed convalescence after surgery. Thus the patients underwent starve, stress and down protocol, which lasted for around a week. Inspired by the success of Enhanced recovery protocols in colorectal surgery, our surgical team decided to implement these changes in patients undergoing small bowel surgery. Therefore, the aim of this study was to assess the safety, tolerability and outcome of early oral feeding after small bowel anastomosis.

Materials and methods

This is a Quasi experimental study conducted at surgical unit (ward 26) Jinnah postgraduate medical center, Karachi, Pakistan, during the period from March 2014 to November 2016.

Patient selection

Inclusion criteria- Patients above the age of 13 years, American Society of Anesthesiologists (ASA) classification ASA 1-4, and undergoing primary repair or resection anastomosis of small bowel.

Exclusion criteria- Patients below the age of 13 years or above the age of 70 years, ASA 5, undergoing gastroduodenal surgery, ileostomy, colostomy, or emergency trauma cases with multiple visceral injuries and severe contamination. The standard Enhanced Recovery after Surgery (ERAS) protocol was adopted in patients undergoing colorectal surgery, as indicated below.

Preadmission counseling Selective bowel prep

- CHO loading-Fasting 6hr solids, 2hrs liquids
- No premeds-No N/G tubes
- Thoracic epidural-Short acting anesthetic agent
- Avoidance of Na/fluid overload - Short incisions
- Ambient temperature-Non opiate analgesia
- Standard mobilization-Prevention of nausea/ vomiting
- Early oral nutrition-stimulation of gut motility

- Early removal of catheters/drains-Audit of compliance/outcomes.

The aim of the above recommendations is early restoration of gastrointestinal function, early mobilization and pain relief, thus expediting the recovery process and resulting in early discharge.

Postoperative care of our patients undergoing small bowel surgery

Anti-emetics: ondansetron 4mg or metoclopramide 10mg intravenous given at time of anesthesia reversal to prevent postoperative nausea and vomiting.

i. Pain relief: Peripheral nerve blocks by local infiltration or trans verses abdominus plane (TAP) blocks with 20ml bupivacaine given at incision closure. Postoperatively intravenous ketorolac 30mg, 8hourly. Intravenous acetaminophen up to 4g/day was also used. If pain relief still inadequate then intravenous tramadol 100mg, 6-8hourly was added. Tramadol was needed more often in patients with midline laparotomy.

ii. Nasogastric tube: If inserted intraoperatively was removed immediately in the postoperative period. Reinsertion if patient developed ileus.

iii. Urinary catheters and drains: These were removed by the first or second postoperative day as this facilitated early ambulation.

iv. Early oral intake: Liquids orally on the same evening after surgery progressing gradually to semisolids and then solids.

v. Maintenance I/V fluids: restricted to 2lit/day.

vi. Early ambulation: Bed to bench on first postoperative day and made to stroll in ward by the 2nd postoperative day.

vii. Discharge: By postoperative day 3-day 5.

Results

In the present study we investigated 59cases, their ages ranging from 17-45years. Out of the 59patients, 35/59(59.3%) were elective cases and the remaining 24/59(40.7%) were emergency cases. Out of 35 elective cases 22/35(63%) were males and 13/35(37%) were females. All elective cases were included for reversal of ileostomy. Out of 35 elective cases, 18/35(51.4%) were operated for ileoleal and 7/35(20%) were operated for ileocolic anastomosis, as shown in (Figure 1).

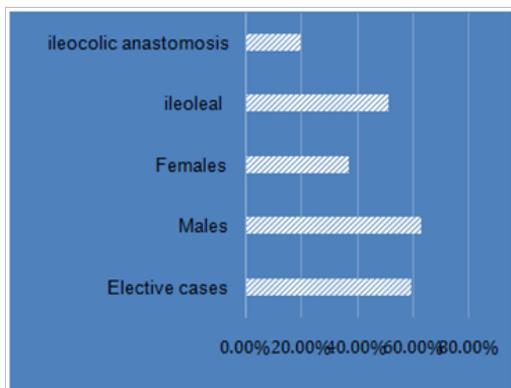


Figure 1 Description of cases by gender and initial presentation.

Initial surgery for which stoma had been formed included: Ileal perforation section to enteric fever 17/35(48.5%), abdominal Kochs 9/35(25.5%), ischemic gut 5/35(14.2%), Trauma 3/35(8.5%), and missed perforation of Meckel’s diverticulum 1/35(0.3%), as shown in (Figure 2). Complications included 1/35(0.3%) case of Anastomotic leak, and 8/35(22.9%) cases of nasogastric tube reinsertion for ileus. With regard to the 24 emergency cases, all of them were males and their ages ranging from 18- 40 years old. Out of the 24cases, 18/24(75%), 5/24(20.8%), and 1/24(4.2%) were presenting with, Penetrating abdominal trauma, Blunt trauma, and Intestinal obstruction section to internal hernia, respectively, as shown in (Figure 3). Complications included 1/24(4.2%) case of Anastomotic leak, and 4/24(16.7%) cases nasogastric tube reinsertion. No readmissions.

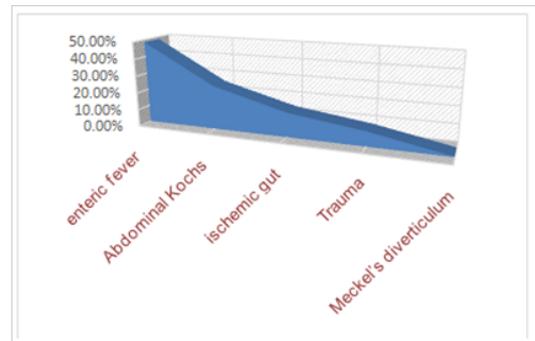


Figure 2 Description of cases by initial surgery.

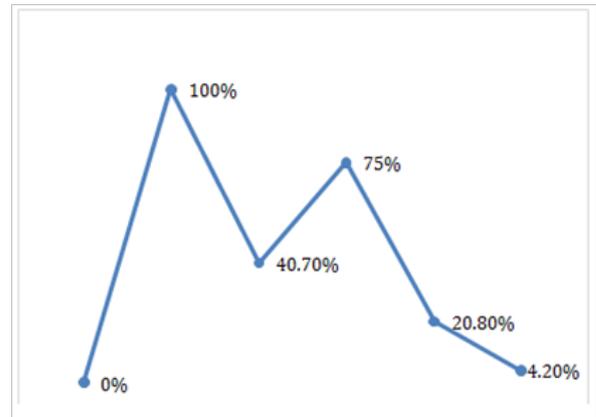


Figure 3 Description of emergency cases by gender and initial presentation.

Discussion

The most frequent encountered causes of small bowel surgery in the developed world are adhesions, trauma, hernias, ischemic bowel and complications of crohns disease, while in developing world, the most common causes include enteric perforations, complications of abdominal kochs, hernias, adhesions, ischemic bowel, trauma and rarely malignancies as evident in the present study.¹⁰ In the present study most of the elective patients were operated for ileoleal (51.4%) and ileocolic anastomosis (20%), hence most of emergency cases were operated for Penetrating abdominal trauma (75%) and Blunt trauma (208%). Similar reports with variable proportions for these conditions have been reported in several studies. Penetrating abdominal injuries have been traditionally managed by routine laparotomy. Penetrating trauma of the abdomen continues to be a major cause of trauma admission in several countries.¹¹⁻¹³ Complications after surgery are

still a major problem. ERAS Protocol¹⁴ may minimize some of the negative impact of surgery on organ function and this study inspired the application of the ERAS in small bowel surgery and the role of the restrictive adherence in this context. Consequently, the current study implemented this protocol in patients presenting to our unit with small bowel diseases in elective as well as emergency surgery. Trauma patients undergoing small bowel surgery were most suitable for inclusion in our study since they had not been suffering from a protracted illness.

After surgery patients can be discharged safely if they are pain free, reasonably mobile and have a functioning gastro-intestinal tract. The thought behind withholding early oral intake was postoperative ileus and an anastomotic leak. Anastomotic disruption is perhaps the most dreaded complication after intestinal surgery.¹⁵ Postoperative ileus was encountered in 12 out of 59 patients in this study. After the patient had been allowed oral intake (fluids) on the evening following surgery, they felt unwell on the first or second postoperative day, had a pulse of around hundred, had little desire to drink, had epigastria fullness and abdominal distension and often had a green colored vomit. Following insertion of a nasogastric tube, about 500ml to a liter of greenish colored fluid was aspirated and then the patient began to feel better within 12 to 24 hours. On removal of the tube the patients began to tolerate oral feeding again. The reason that ileus was more common in elective patients was perhaps their segment of the gut distal to the stoma had been dormant for the past three to six months and took time to regain function. Faster resolution of postoperative ileus or shorter hospitalizations is associated with multimodal perioperative care including early mobilization, continuous epidural analgesia and comprehensive patient's selection.

There were two patients who had anastomotic leak. The first one was a female who was malnourished and had adhesions secondary to multiple laparotomy, had been operated by an experienced surgeon, and the cause was clearly the patient's malnourished condition and adhesions. The other was an adult male, having intestinal obstruction due to an internal hernia and operated by an inexperienced surgeon, who on re-exploration had a leak at the mesenteric border and the cause was clearly a technical fault of the surgeon. Normal gastrointestinal tract handles seven liters of fluids and seven liters of gas per day, so it is unlikely that early oral feeding causes anastomotic leak. Moreover, we didn't come across there are no reports of anastomotic leak in patients having early oral feeding undergoing gastrointestinal surgery in the international literature.

Conclusion

Early oral feeding is safe and if associated with careful selection and multimodal postoperative care promotes faster convalescence following small bowel surgery.

Acknowledgements

None.

Conflict of interest

The author declares no conflict of interest.

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