

Immediate Ambulation, Alimentation is the Key to Abolish Adynamic Ileus : Our Surgical Experience of Past 10 Years

K. Jagadeesan¹, S. Kalirathinam², Kesav Jagadeesan³, C. Prabu⁴, N. B. Venkataraman⁵

¹Chief Surgeon & Director, K. J. Hospital & Chairman, K. J. Research Foundation

²Professor, Department of Surgery, Madurai Medical College

³Surgeon, K. J. Hospital Research & Postgraduate Centre

⁴Post Graduate M. S. General Surgery, Madurai Medical College

⁵Interventional Cardiologist, Vasantham Hospital, Nagercoil

ABSTRACT

Traditionally oral feeding in the post operative patients was given after bowel sounds are heard. We have undertaken this study where oral feeding was given from immediately after the postoperative recovery period. In this retrospective study of 890 post operative case records of K J Hospital, Chennai over a period of 10 years from 2006-2015 were studied to find out the effectiveness of immediate postoperative feeding as well as early ambulation to reduce the incidence of postoperative adynamic ileus. It was observed that all the patients were given early feeding from day one onwards. The entire patient had same postoperative instructions, feeding schedule and outcome assessed. 9 (1.01 %) patients developed adynamic ileus. 6 (0.67%) patients developed nongastrointestinal morbidity. Rest of the patients did not experience any adverse effects associated with the oral feeding. This study showed that immediate postoperative feeding and stimulating bowel is effective in reducing the incidence of adynamic ileus.

Key Words: Adynamic ileus, oral feeding, Post operative, patients

Introduction

Intestinal stasis (Paralytic ileus) or adynamic ileus refers to obstipation and intolerance of oral intake due to non mechanical factors that disrupt the normal coordinated propulsive motor activity of gastrointestinal tract following abdominal surgeries (Figure 2).

For efficient digestion of food during passage through the digestive tube there are two types of movements in gastro intestinal tract :

- (1.) Propulsive movements and
- (2.) Mixing movements.

Propulsion movements primarily push food towards the anus but spreads it for allowing the digestive enzymes to mix with it. Mixing movements mainly churns food but also pushes it forward. Peristalsis is a series of muscular contractions that propel food through the small intestine. Food is propelled through small intestine by peristalsis,

Address for correspondence

Dr. K.Jagadeesan, Chairman, K J Research Foundation,
152 Poonamallee High Road, Chennai - 600084, India
Ph: 044 26411513
Email : kjresearchfoundation@gmail.com, kjh@rediffmail.com

Received: 08.05.17
Accepted: 21.06.19

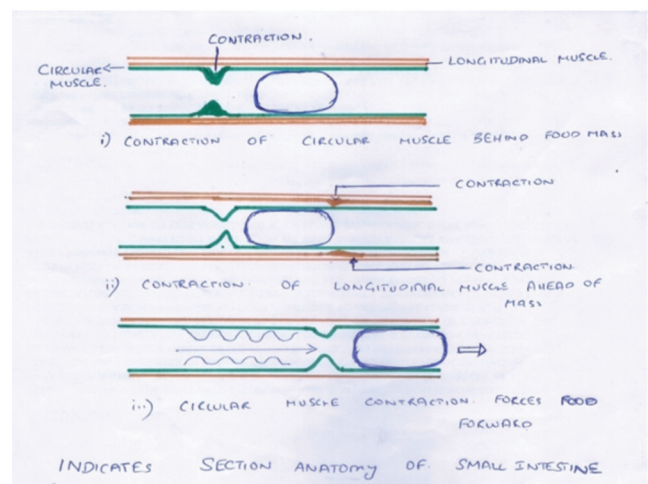


Fig. 1 : Sectional anatomy of small intestine

a wavelike series of muscular contractions. There are also other movements in the intestine. Segmentation is one of these movements. It is a localized contraction of circular smooth muscles that constrict the intestine into segments. This is a rhythmic movement that involves the contraction and relaxation of adjacent segments of muscles as if the small intestine is being momentarily pinched closed along its path. While these movements do not push food along the tract like peristalsis, they do mix the chyme with the digestive juices and bring particles of food into contact with the wall, where they are absorbed. Chyme refers to

the undigested food particles mixed with gastric intestinal and pancreatic secretions. During passage in the small intestine the outer longitudinal layer contracts followed by contraction of inner circular layer (Figure 1). This coordinated movement of smooth muscle helps in forward unidirectional movement through digestive tract.

Types of Motility

Peristalsis

Peristalsis refers to propulsion of material in the aboral (away from mouth) direction. Rate of peristalsis varies in region, but peristalsis usually gets slower as we move down the tract. Bolus of food in a particular area stimulates mechanoreceptors and chemoreceptors in the gastrointestinal lumen, causing peristalsis.

Relaxation of the muscle occurs distal to the bolus, so that the food can go forward. This is mediated by vasoactive intestinal polypeptide (VIP) / nitric oxide, contraction of longitudinal muscle layer also occurs distal to bolus and causes widening of the gastro intestinal lumen. Contraction of the muscle occurs proximal to the bolus, in order to propel the bolus forward. There is a basal level of VIP inhibition in the muscle, and a bolus of food turns off this inhibition. Distension of lumen by a bolus will subsequently cause inhibition of release of vasoactive intestinal polypeptide / nitric oxide causing contraction of proximal region.

Rhythmic segmentation

Rhythmic segmentation is mixing and churning of materials without propelling them forward in the tract, usually seen in small and large intestine. Tonic contraction-blocking of the passage of contents.

Although ileus originally refers to lack of digestive propulsion, up to date medical usage restricts its usage to those disruptions caused by failure of peristalsis rather than mechanical obstruction. Possible cause of ileus is inflammation of gastro intestinal tract, mesenteric plexus stimulation, anesthetic effect and use of opioids.

Early postoperative feeding and stimulation of gastrointestinal tract by stimulation of parasympathetic system, gastrointestinal hormones help in preventing postoperative ileus.

Materials & Methods

The present study took place during 10 years period from 2006-2015 at KJ Hospital, Chennai. During the study the operating surgeon recorded information of all patients



Fig. 2: Abdominal radiograph of a patient with adynamic ileus

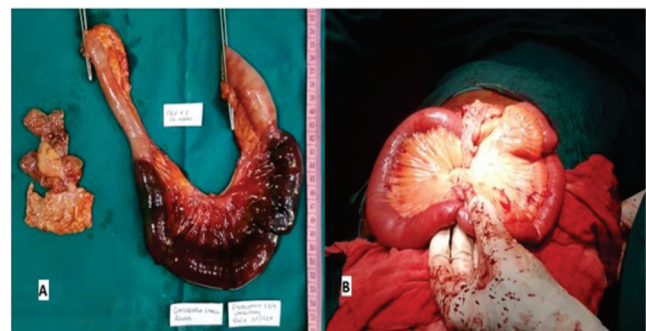


Fig. 3: (A) Excised gangrenous small bowel loop. (B) Continuity of the small bowel established. A case of obstructed hernia operated with alimentation & ambulation started immediately after recovery.

in prospective surgical database. Patient details taken preoperatively and recorded in database, surgical outcomes were entered immediately postoperatively and follow up examination entered in database for 2 weeks.

Postoperative instructions were similar for all patients including early feeding - oral feed started as soon as patient is brought to recovery room within 2 hours.

Early ambulation includes engaging in light activities such as sitting, standing, walking as early as possible. No patients were kept in elective nasogastric decompression. All patients received preoperative and postoperative instructions regarding adynamic ileus and food of choice. We have avoided opioids. The Gynecology and obstetrics group were used as control group as they are regularly on nasogastric decompression and go by bowel sounds and flatus. Each patient examined by the operating surgeon on post operative day 1 for any complaints and symptoms of obstruction. All patients were given bowel preparation with plain water enema, single dose IV antibiotics, IV fluids restricted to 1000 ml maximum and performed early ambulation. All patients were given paracetamol as analgesic after surgery.

Results

During the ten years period, 890 patients met the criteria for study. Information recorded in database. No patients lost or excluded in follow up. Procedures documented in following table. 195 cases of Cholecystectomy, 391 cases of Appendicectomy, 161 cases of Hernioplasty with open hernia repair, 64 cases of ventral hernia repair, 79 cases of Laparotomy (Figure 3) done and outcome recorded. All postoperative complications were managed with diet of choice and continued with nature's bowel stimulation. Of the total cases studied 9 patients developed adynamic ileus in spite of early feeds and ambulation. Oral feeds withheld for these patients till appetite recovered. 6 patients developed nongastrointestinal morbidity which was managed symptomatically.

Mean blood loss was 50 ml. Mean operating time was 1 hour 30 minutes and mean hospital stay was 3 days. All the abdominal wounds managed by single layer closure technique which obviate wound complications.

Table 1

	No.
Surgical Procedure	
Cholecystectomy	195
Open Hernia Repair	161
Appendicectomy	391
Ventral Hernia	64
Laparotomy and Proceed	79
Post Op Complications	
Intestinal Leak	0
Adynamic Ileus	9
Nongastrointestinal Morbidity	6
Bowel Obstruction	0
Others	0

Discussion

Postoperative adynamic ileus is a major complication of abdominal surgical procedures. Ileus and colonic pseudo-obstruction cause functional obstruction of intestinal transit, without mechanical obstruction, because of uncoordinated or attenuated intestinal muscle contractions [1].

Established adynamic ileus with distension and water retention is now considered a rare complication. The problem is not confined to this branch of surgery as such complication arises after operations on urinary system, female pelvic organs, spine. Adynamic ileus is functional obstruction of intestines with marked distension of gut with gas and fluid. Various studies have documented the unnecessary use of nasogastric tube. A study by Christopher M D et al.[2] showed no change in post

operative outcome following enteral feeding after cystectomy with p value of 86. Duration of hospital stay (8.74 vs 9.69) and return of bowel sounds (4.67 vs 4.09) were also found to be similar in both control and study group.

Study by Haung H et al. [3] showed early return of bowel sounds in study of 1800 patients who were started on early feeding. No statistically significant complications were seen in the study group. After every abdominal surgery there is inhibition of intestinal motility which lasts for a period in direct proportion to severity of operation. This post operative decrease in intestinal motility is not due to actual paralysis of gut musculature but due to reflex inhibition of its activity.

In a similar study by Chan M K et al. [4] using chewing gum in elective colorectal resection cases the patients passed flatus 24.3 percent earlier (weighted mean difference, -20.8 hours; p = 0.0006) and had bowel movement 32.7 percent earlier (weighted mean difference, -33.3 hours; p = 0.0002). In an effort to prevent adynamic ileus in post operative period, patients were started early postoperative feeding and bowel stimulation. The study of Lyer S et al. [5] showed that paralytic ileus was major cause of increased hospital stay in patients with delayed oral feeding. Our study findings showed 9 patients (1.01 %) had incidence of ileus with no patient requiring nasogastric decompression and 6 (0.67%) developed non gastrointestinal morbidity. In addition we used paracetamol as analgesic. No opioids were used as opioids were found to increase chance of paralytic ileus as documented by Chen J Y et al. [6]. There were no serious adverse effects associated with bowel stimulation or bowel obstruction. A randomized trial by Reissman et al. [7] showed that the patients in the early feeding group tolerated a regular diet significantly earlier than did the patients in the regular feeding group (2.6 +/- 0.1 days vs. 5 +/- 0.1 days; p < 0.001).

Conclusion

This study showed postoperative patients did not warrant the use of nasogastric tube. The incidence of adynamic ileus was statistically insignificant as seen from the table. Patients started on early feeds required less duration of hospital stay and recovered early. There was early return of bowel sounds and patients passed flatus and faeces early with no associated complications. It is observed that the immediate postoperative feeding and bowel stimulation is safe in preventing adynamic ileus. We must turnover a new leaf as new approaches exist to reduce postoperative discomfort. There is no justification for withholding early attempts at enteral nutrition.

Conflict of interest:	All authors declare no COI
Ethics:	There is no ethical violation as it is based on voluntary anonymous interviews
Funding:	No external funding
Guarantor:	Dr. K. Jagadeesan will act as guarantor of this article on behalf of all co-authors.

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