

Simple Steps to Hasten Post-Operative Recovery

Felicia Katz and Anita Nelson*

Department of Obstetrics and Gynecology, Los Angeles BioMedical Research Institute at Harbor-UCLA Medical Center Torrance, CA, USA

Abstract

Early recovery from major surgery is desirable both from the perspective of patient satisfaction, as well as cost-effectiveness. Prolonged hospital stays after surgery can result in increased morbidity, including deep vein thrombosis and nosocomial infections such as pneumonia, and can rapidly increase hospital costs and reduce reimbursement.

Keywords: Post-operative recovery; Pneumonia; Nosocomial infections

Introduction

Early recovery from major surgery is desirable both from the perspective of patient satisfaction, as well as cost-effectiveness. Prolonged hospital stays after surgery can result in increased morbidity, including deep vein thrombosis and nosocomial infections such as pneumonia, and can rapidly increase hospital costs and reduce reimbursement [1]. All patients recovering from major surgery in gynecology and obstetrics must meet several post-operative milestones before being discharged from the hospital, including tolerating a diet, being able to ambulate, passing flatus, voiding spontaneously, and adequate pain control with oral pain medication. In order to help our patients achieve these milestones, there are many aspects of traditional post-operative management that must be questioned, and simple evidence-based steps that can be taken to hasten short-term post-operative recovery.

Early post-operative feeding

Tradition has dictated that feeding after surgery not be initiated until after the patient has passed flatus or has normal bowel sounds, indicating a return to bowel function. The rationale for this practice was that early feeding prior to return to bowel function was thought to result in increased nausea and vomiting which would, in addition to causing the patient discomfort, result in increased risk of aspiration and necessity of nasogastric tube placement [1]. It was also thought that early feeding would exacerbate normal post-operative ileus and result in worsening abdominal distension and wound dehiscence. However, more and more data has suggested that these presumed risks of early feeding are unfounded, and that early feeding is both safe and effective in reducing short-term post-operative recovery time for appropriate patients.

In 1998, a randomized controlled trial was conducted by Pearl et al. [1] in which 200 gynecological oncology patients undergoing intra-abdominal surgery were randomized to either receive traditional post-operative management (i.e. nothing by mouth until passing of flatus) or immediate initiation of clear liquid diet, to be advanced as tolerated [1]. While post-operative complications were found to be equal between the two groups, it was found that the early feeding group experienced significantly shorter hospital stays (how long??), and had shorter time until onset of bowel sounds. Several years later, in 2002, the same authors conducted a similar study of 254 gynecological oncology patients [2], this time comparing early initiation of clear liquid diet versus regular diet. All patients received a diet on the first post-operative day unless they were experiencing significant vomiting or abdominal distension. Patients were randomized to receive either clear liquid diet or regular diet as their first post-operative meal. When post-operative complications and length of hospital stay were compared, there were found to be no differences between the two groups.

In 2007, a meta-analysis of randomized studies of early versus traditional feeding after major abdominal gynecologic surgery was performed and published in the Cochrane database [3]. The findings were consistent with previous studies, indicating that early feeding (within 24 hours of surgery regardless of bowel function) is associated with shorter onset of bowel sounds, shorter time until first solid meal, and average reduced length of hospital stay of 0.73 days. As with prior studies, there were no differences in the rates of post-operative ileus, abdominal distention, nasogastric tube placement, pneumonia, or wound complications. They did not find a significant difference in the time until onset of flatus, and patients in the early feeding group did experience more nausea.

A similar Cochrane database meta-analysis was performed in patients undergoing cesarean section in 2002 [4]. Six studies were included, with patients having received both general and regional anesthesia. As with gynecological surgery, there was found to be a reduced onset to bowel sounds (average difference four hours), and reduced length of hospital stay (average difference of 0.75 days), and there were no differences in post-operative complications. As stated in the conclusion, there is no evidence support withholding PO intake from uncomplicated post-operative patients.

Previous tradition in post-operative management regarded gastro-intestinal surgery as an especially important case in which to delay enteral feeding. In terms of gynecology, dissection involving bowel and repair of bowel injury has often been a justification for withholding feeding until clinical evidence of return to bowel function, and a contraindication to early feeding. However, the literature on GI surgery has not shown any clear benefit to this practice. A Cochrane database meta-analysis of 13 randomized trials involving 1173 patients undergoing gastro-intestinal surgery was published in 2006 [5]. Although results were non-significant, the data seemed to indicate that early enteral feeding, even in patients with bowel anastomosis, was associated with reduced post-operative complications and reduced length of hospital stay. There was no evidence supporting the presumption that early feeding results in increased leakage of anastomosis or other complications, although further data is needed.

*Corresponding author: Anita Nelson, Department of Obstetrics and Gynecology, Los Angeles BioMedical Research Institute at Harbor-UCLA Medical Center Torrance, CA, USA, Tel: 310-222-2345; E-mail: anitanelson@earthlink.net

Received July 19, 2013; Accepted November 18, 2013; Published November 24, 2013

Citation: Katz F, Nelson A (2013) Simple Steps to Hasten Post-Operative Recovery. J Women's Health Care 2: 137. doi:10.4172/2167-0420.1000137

Copyright: © 2013 Katz F, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Gum chewing

Numerous studies have looked at the effect of so-called “sham-feeding,” in which neuronal pathways of oral intake are stimulated by gum-chewing hasten the return of coordinated propulsive activity in the intestines. A meta-analysis of multiple older studies in the general surgical literature was performed [6], and showed that gum-chewing reduced the time to flatus by 20 hours, and time to bowel movement by 29 hours. There was also a non-significant trend toward reduced hospital stay. Two recent randomized controlled trials focusing on gynecologic patients have now further confirmed these findings. The first was in gynecologic oncology patients undergoing open hysterectomy and staging procedures, and showed that gum chewing significantly reduced the time to flatus, time to bowel movement, time to tolerate diet, and length of hospital stay. The second focused on patients undergoing gynecologic laparoscopy, and found that gum chewing every 2 hours reduced the time to flatus and regular bowel sounds postoperatively, with no adverse side effects.

Other methods of reducing post-operative ileus

Post operative ileus refers to the decreased GI motility associated with surgery, especially open abdominal procedures. Normal post-operative ileus can be expected to last 1-3 days. The mechanisms are multifactorial [7]. The main cause is thought to be disorganized electrical activity within the GI smooth muscle, preventing coordinated peristalsis [8,9]. In addition, excessive manipulation of the intestines during surgery produces a sympathetic neural reflex that inhibits GI motor neurons, decreases secretions, and increases sphincter contraction [10]. The stress of surgery on the body also results in increased pro-inflammatory mediators and cytokines, which contribute to reduced GI motility. Other iatrogenic practices contribute to the problem as well: aggressive pre-operative mechanical bowel prep and overuse of opioid analgesia compound the problem of decreased GI motility [11]. It was previously thought that peri-operative fluid overloading caused intestinal edema significant enough to prolong post-operative ileus, although studies on peri-operative fluid restriction have not demonstrated any improvement [12].

While some of these problems are an unavoidable consequence of abdominal surgery, the clinician can take steps to reduce or prevent other practices that contribute to prolonged ileus. These include:

- Avoiding aggressive pre-operative mechanical bowel prep and excessive pre-operative fasting if possible [7]
- Use of NSAIDs such as ketorolac (Toradol) to reduce opioid use [7]; use of PCA has been shown to slightly prolong post-operative ileus, but is not associated with increased length of hospital stay, and provides improved analgesia without increasing cumulative opioid dose [13]
- Stimulant laxatives such as bisacodyl (Dulcolax) in place of stool softeners such as docusate (Colace) [7,14]

Early ambulation

In addition to psychologically preparing patients for discharge and resuming their independence and daily activities, early ambulation is one of the key steps in prevention of deep vein thrombosis. DVT and pulmonary embolus remain among the most significant causes of morbidity and mortality in post-operative patients, in spite of well-known means of prophylaxis, including sequential compression devices during periods of immobilization, chemoprophylaxis with temporary anticoagulation, and early ambulation.

In order to successfully implement early ambulation in a safe manner, the entire care team must be involved, especially in removing barriers to early ambulation. Unless contraindicated, removal of the foley catheter in the morning of post-operative day 1 will make ambulating more comfortable and will incentivize ambulating to the restroom. Although there is little data from gynecology regarding optimal duration of bladder drainage, literature from colorectal surgery indicates that removing the catheter on day 1 reduces incidence of UTI and is not associated with higher rates of urinary retention [15]. Nursing must be involved in encouraging patients out of bed and assisting patients during ambulation to prevent falls. Overuse of opioid medication has been shown to delay ambulation by causing decreases in arterial pressure that result in orthostatic intolerance [16]. Combining NSAIDs with less potent opioids rather than relying solely on potent opioids will improve a patient's ability to ambulate on post-operative day 1, and may prevent complications such as falls and syncope.

It has been suggested (and many practitioners believe) that ambulation promotes early passing of flatus. However, a study of 34 patients did not show increased seromuscular activity in the GI tract after early ambulation.

Patient education and pre-operative counseling

Patient expectations have been shown to influence post-operative outcomes. Specifically, appropriate pre-operative counseling regarding expected length of hospital stay and appropriate anticipation of pain level post-operatively has actually been shown to improve overall patient perception of pain [17]. Anxiety is associated with a slower and more complicated post-operative course, as anxiety influences behavioral, psychological, and even neuroimmunological function, and exaggerates perception of pain. It is known that psychological stress prolongs wound healing [18]. Thus, detailed pre-operative counseling can play a role in alleviating patient anxiety, so that the patient knows what to expect.

Fast track

One problem with many of the previously described methods of improving post-operative recovery is that from a clinical standpoint, the reductions in hospital stay and return to normal functioning is modest at best. However, there has recently been a trend toward the so-called “fast-track” approach to peri-operative care, in which the entire care team is involved in a multi-modal, coordinated effort involving many different evidence-based methods of hastening post-operative recovery simultaneously [19]. This has been the standard for most surgical specialties in Europe [20], where many of these protocols were developed. Recently, AJOG published a similar “fast-track” protocol for gynecological oncology patients undergoing laparotomy [21]. A retrospective study was performed, looking at length of hospital stay, readmission rates, and post-operative complications in 880 oncology patients in Southern California whose post-operative care was dictated by a “fast-track” clinical pathway involving seven elements:

- PCA/pain control - reduced use of opioids: discontinuation of PCA in the morning of post-operative day 1, with initiation of oral pain medication, and use of ketorolac in the case of PO intolerance or breakthrough pain
- Diet - early feeding: clear liquid diet on the morning of post-operative day 1, advanced as tolerated
- IV fluids – early discontinuation when tolerating PO intake
- Ambulation - encouraged on post-operative day 1

- Urinary bladder drainage - removal of foley catheter on the morning of post-operative day 1
- Flatus/bowel sounds – not used as an indication of return to bowel function or to predict resolution of post-operative ileus
- Patient education - extensive pre-operative counseling

In this clinical pathway, patients were discharged on post-operative day 2 unless otherwise contraindicated, and were given instructions for continued recuperation at home, including ambulation, non-opioid pain control, and normal diet. Median length of stay was 2 days (36% of total study population; another 25% were discharged after 3-5 days), and re-admission rate was 5% (most commonly for surgical site infections and small bowel obstruction). Older age, higher BMI, higher EBL, and presence of ovarian cancer were all associated with increased length of hospital stay. The rate of post-operative complications and readmission rates were comparable to those previously reported in the literature.

Several cost-effectiveness analyses have been performed on “fast-track” protocols for hysterectomy, with the finding of significant reduction in hospital costs without compromising patient satisfaction or complication rates [22].

Conclusions

- Early feeding, although associated with increased nausea, has been shown to shorten time until toleration of diet, facilitating early discharge and reducing length of hospital stay. Decision to withhold feeding should be individualized, and in part based on surgical complications such as bowel injury.
- Other methods of preventing prolonged post-operative ileus include avoiding aggressive mechanical bowel prep pre-operatively, reducing use of opioids in favor of NSAIDs, and using stimulant laxatives (Dulcolax) in addition to stool softeners such as Colace.
- Gum chewing has been shown to hasten return to bowel function, and may contribute to reducing length of hospital stay [23,24].
- Early ambulation reduces incidence of venous thromboembolic events and helps psychologically prepare patients for discharge. No evidence that ambulation hastens return to bowel function.
- Early removal of the foley catheter in uncomplicated patients encourages early ambulation, prevents UTIs, and is *not* associated with increased incidence of urinary retention.
- Multimodal “fast-track” approach: while many of the above methods are only modestly effective when used alone, a significant improvement can be seen when used in combination, with the help of the entire patient care team. Even complicated gynecologic oncology patients can have improved outcomes with this type of coordinated approach.

References

- Pearl ML, Valea FA, Fischer M, Mahler L, Chalas E (1998) A randomized controlled trial of early postoperative feeding in gynecologic oncology patients undergoing intra-abdominal surgery. *Obstet Gynecol* 92: 94-97.
- Pearl ML, Frandina M, Mahler L, Valea FA, DiSilvestro PA, et al. (2002) A randomized controlled trial of a regular diet as the first meal in gynecologic oncology patients undergoing intraabdominal surgery. *Obstet Gynecol* 100: 230-234.
- Charoenkwan K, Phillipson G, Vutyavanich T (2007) Early versus delayed (traditional) oral fluids and food for reducing complications after major abdominal gynaecologic surgery. *Cochrane Database Syst Rev* : CD004508.
- Mangesi L, Hofmeyr GJ (2002) Early compared with delayed oral fluids and food after caesarean section. *Cochrane Database Syst Rev* : CD003516.
- Lewis SJ, Andersen HK, Thomas S (2009) Early enteral nutrition within 24 h of intestinal surgery versus later commencement of feeding: a systematic review and meta-analysis. *J Gastrointest Surg* 13: 569-575.
- de Castro SM, van den Esschert JW, van Heek NT, Dalhuisen S, Koelemay MJ, et al. (2008) A systematic review of the efficacy of gum chewing for the amelioration of postoperative ileus. *Dig Surg* 25: 39-45.
- Story SK, Chamberlain RS (2009) A comprehensive review of evidence-based strategies to prevent and treat postoperative ileus. *Dig Surg* 26: 265-275.
- Person B, Wexner SD (2006) The management of postoperative ileus. *Curr Probl Surg* 43: 6-65.
- Bauer AJ, Boeckxstaens GE (2004) Mechanisms of postoperative ileus. *Neurogastroenterol Motil* 16 Suppl 2: 54-60.
- Kalf JC, Schraut WH, Simmons RL, Bauer AJ (1998) Surgical manipulation of the gut elicits an intestinal muscularis inflammatory response resulting in postsurgical ileus. *Ann Surg* 228: 652-663.
- Luckey A, Livingston E, Taché Y (2003) Mechanisms and treatment of postoperative ileus. *Arch Surg* 138: 206-214.
- Holte K, Sharrock NE, Kehlet H (2002) Pathophysiology and clinical implications of perioperative fluid excess. *Br J Anaesth* 89: 622-632.
- Walder B, Schafer M, Henzi I, Tramèr MR (2001) Efficacy and safety of patient-controlled opioid analgesia for acute postoperative pain. A quantitative systematic review. *Acta Anaesthesiol Scand* 45: 795-804.
- Zingg U, Miskovic D, Pasternak I, Meyer P, Hamel CT, et al. (2008) Effect of bisacodyl on postoperative bowel motility in elective colorectal surgery: a prospective, randomized trial. *Int J Colorectal Dis* 23: 1175-1183.
- Benoist S, Panis Y, Denet C, Mauvais F, Mariani P, et al. (1999) Optimal duration of urinary drainage after rectal resection: a randomized controlled trial. *Surgery* 125: 135-141.
- Iwata Y, Mizota Y, Mizota T, Koyama T, Shichino T (2012) Postoperative continuous intravenous infusion of fentanyl is associated with the development of orthostatic intolerance and delayed ambulation in patients after gynecologic laparoscopic surgery. *J Anesth* 26: 503-508.
- Kiecolt-Glaser JK, Page GG, Marucha PT, MacCallum RC, Glaser R (1998) Psychological influences on surgical recovery. Perspectives from psychoneuroimmunology. *Am Psychol* 53: 1209-1218.
- Egbert LD, Battit GE, Welch CE, Bartlett MK (1964) Reduction of Postoperative Pain by Encouragement and instruction of patients. A study of Doctor-Patient Rapport. *N Engl J Med* 270: 825-827.
- Kehlet H, Wilmore DW (2002) Multimodal strategies to improve surgical outcome. *Am J Surg* 183: 630-641.
- Møller C, Kehlet H, Friland SG, Schouenborg LO, Lund C, et al. (2001) Fast track hysterectomy. *Eur J Obstet Gynecol Reprod Biol* 98: 18-22.
- Chase DM, Lopez S, Nguyen C, Pugmire GA, Monk BJ (2008) A clinical pathway for postoperative management and early patient discharge: does it work in gynecologic oncology? *Am J Obstet Gynecol* 199: 541.
- Ghosh K, Downs LS, Padilla LA, Murray KP, Twiggs LB, et al. (2001) The implementation of critical pathways in gynecologic oncology in a managed care setting: a cost analysis. *Gynecol Oncol* 83: 378-382.
- Ertas IE, Gungorduk K, Ozdemir A, Solmaz U, Dogan A, et al. (2013) Influence of gum chewing on postoperative bowel activity after complete staging surgery for gynecological malignancies: A randomized controlled trial. *Gynecol Oncol* 131: 118-122.
- Husslein H, Franz M, Gutschi M, Worda C, Polterauer S, et al. (2013) Postoperative gum chewing after gynecologic laparoscopic surgery: a randomized controlled trial. *Obstet Gynecol* 122: 85-90.