Q: How can postoperative ileus be prevented and treated?

VAISHALI SINGH, MD, MPH, MBA*
Section of Hospital Medicine
Department of General Internal Medicine
Cleveland Clinic, Cleveland, OH

A: A multifaceted approach that addresses the mechanical and chemical pathophysiology of ileus appears appropriate, although there is a paucity of prospective data to support it.

Postoperative ileus (POI) describes a period of impaired gastrointestinal (GI) motility without mechanical obstruction that occurs after surgery. It is characterized by abdominal distension, delayed passage of gas and bowel movement, lack of bowel sounds, and accumulation of gas and fluid in the bowel, creating symptoms of nausea and vomiting. Ileus can last from 2 days to more than 1 week, and contributes to delayed enteral nutrition. It is a common and clinically important problem that also contributes to prolonged patient discomfort and hospitalization.

* Dr. Singh reported that she has no commercial affiliations or financial interests that pose a potential conflict of interest with this article.

Multimodal approach to treatment

Several contributors have been linked to inhibition of GI motility, including the nervous system, neurotransmitters, local factors, hormones, inflammation, anesthesia, and narcotic analgesia. Current research therefore suggests a multifaceted approach to prevention and treatment of POI.

Minimally invasive surgery, use of regional anes-

thetic agents (specifically thoracic epidural anesthesia), treatment of prolonged electrolyte abnormalities (eg, hypokalemia, hyponatremia, and hypomagnesemia), and reduction of opioid use in the postoperative period have all been suggested to be beneficial in preventing POI.[1,2] Minimal manipulation of the intestines can help to reduce the inflammatory cascade of cytokines and prostaglandins in the bowel wall that has been associated with significant intestinal muscle dysfunction.

Individualize other options

In the past, early ambulation was thought to enhance intestinal motility, but study results are inconclusive, and the benefits are derived mostly from a reduction of other pulmonary and thromboembolic complications.[2,3]

Treatment of POI has usually been supportive, consisting of nasogastric decompression and intravenous fluids. Recent studies have also questioned the utility of nasogastric decompression, concluding that it does not shorten time to first bowel movement and, in fact, may contribute to postoperative complications such as fever, pneumonia, and atelectasis.[3] Although the findings from these studies do not support routine use of nasogastric decompression, the clinician must decide which patients may benefit from symptomatic relief.

A variety of pharmacologic agents has been tried as potential treatments for POI. Metoclopramide and other prokinetic agents decrease emesis and enhance motility by acting as dopamine antagonists and cholinergic stimulants. The macrolide antibiotic erythromycin also acts as a motilin agonist, and stimulates activity in the gut migrating motor complex, theoretically enhancing bowel activity. Although nonsteroidal anti-inflammatory drugs (NSAIDs) may reduce the inflammatory response to surgery as well as decrease the need for opiates, careful consideration should be given to their use in light of their effects on platelets and their association with GI bleeding. In early clinical trials, the investigative mu-opioid receptor antagonist alvimopan was shown to reduce opioid-induced bowel dysfunction in patients receiving chronic opioid therapy without disrupting centrally mediated opioid analgesia.[4] Studies evaluating other opioid antagonists (eg, naloxone), adrenergic blockers, parasympathetic agonists (eg, neostigmine), and laxatives as possible stimulators for the GI tract have been inconclusive; these agents have either been associated with prominent side effects or been shown to be ineffective in reducing POI.[2,3]

Early postoperative feeding, before ileus resolves, has been promoted as a way to decrease the duration of POI, and several studies have demonstrated that early postoperative nutrition reduces gut permeability, enhances immunocompetence, and decreases the stress response to surgery.[2,3]

Chewing gum in the postoperative setting three times a day has enhanced bowel motility, with earlier passage of flatus and defecation compared with controls.[5] The mechanisms appear to be vagal cholinergic stimulation and the release of gastrin, pancreatic polypeptide, and neurotensin, all of which affect GI motility.[2,3,5]

Massage of the abdominal wall daily after colectomy has been shown in a randomized trial to decrease postoperative pain and ileus.[6]

Other potential treatments being evaluated include electrical stimulation of the bowel wall, mechanical massage, acupuncture, and atilmotin, a synthetic human motilin.[2]

Bottom line: A core approach plus tailored supportive measures

Currently, treatment of POI can best be achieved by using a multimodal approach that combines several therapies. Minimizing the use of opioids and handling of intestines, as well as other supportive options (eg, gum chewing, early ambulation and/or feeding, use of NSAIDs) can be individualized at the physician's discretion to improve POI. There are currently no therapies approved for POI by the US Food and Drug Administration, but ongoing research is expected to define the potential of emerging pharmacotherapies to reduce the incidence and severity of POI.

REFERENCES

1. Luckey A, Livingston E, Tache Y. Mechanisms and treatment of postoperative ileus. Arch Surg 2003; 138:206–214.
2. Person B, Wexner SD. The management of postoperative ileus. Curr Probl Surg 2006; 43:12–65.
3. Behm B, Stollman N. Postoperative ileus: etiologies and interventions. Clin Gastroenterol Hepatol 2003; 1:71–80.
4. Paulson DM, Kennedy DT, Donovick RA, et al. Alvimopan: an oral, peripherally acting, mu-opioid receptor antagonist for the treatment of opioid-induced bowel dysfunction: a 21-day treatment-randomized clinical trial. J Pain 2005; 6:184–192.
5. Schuster R, Grewal N, Greaney GC, Waxman K. Gum chewing reduces ileus after elective open sigmoid colectomy. Arch Surg 2006; 141:174–176.
6. LeBlanc-Louvry I, Costaglioli B, Boulon C, et al. Does mechanical massage of the abdominal wall after colectomy reduce postoperative pain and shorten duration of ileus? Results of a randomized study. J Gastrointest Surg 2002; 6:43–49.

Address: *Vaishali Singh, MD, MPH, MBA, Section of Hospital Medicine, Department of General Internal Medicine, Cleveland Clinic, 9500 Euclid Avenue, S70, Cleveland, OH 44195; singhv@ccf.org.*