Does the Avoidance of Nasogastric Decompression Following Elective Abdominal Colorectal Surgery Affect the Incidence of Incisional Hernia?

Results of a Prospective, Randomized Trial

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PURPOSE: In a previous, prospective, randomized study of the use of nasogastric tubes in patients undergoing elective abdominal colorectal surgery, we found that patients who did not have nasogastric (NG) decompression postoperatively had a significantly higher rate of abdominal distention, nausea, and vomiting. Patients from that study have now been followed for a median duration of 5.3 years to evaluate whether this elevation in perioperative intra-abdominal pressure would subsequently lead to an increased incidence of incisional hernia. RESULTS: Of the 251 patients who received NG decompression, 8 (3.2 percent) developed incisional hernias compared with 15 (6.6 percent) of 229 patients who were not decompressed (P = 0.085). CONCLUSIONS: The increase in postoperative abdominal distention and vomiting that occurs in patients who do not receive NG decompression does not lead to a significantly increased incidence of incisional hernia. Furthermore, we continue to support avoidance of routine prophylactic postoperative nasogastric decompression in uncomplicated, elective abdominal colorectal surgery. [Key words: Nasogastric tube; Incisional hernia; Colorectal surgery]


The nasogastric tube was initially introduced by Levin in 1921 for the purpose of duodenal fluid analysis. Its use for bowel obstruction and postoperative ileus was popularized by Wangensteen and Paine. Over the ensuing fifty years it became surgical dogma that patients undergoing gastrointestinal surgery would require a nasogastric (NG) tube until their postoperative ileus resolved. This dictum remained essentially unchallenged until 1963 when Gerber stated that routine use of NG decompression after surgery was not only unnecessary but also could lead to complications specifically related to its use.

The necessity of using NG decompression following elective abdominal surgery has been increasingly questioned over the last several years. A number of reports have demonstrated that patients who do not receive NG decompression following elective abdominal operations do not experience an increase in early postoperative morbidity. The largest of these studies was reported by Wolff and associates in 1989. In this study, 535 patients undergoing elective colorectal abdominal surgery were prospectively randomized to receive or not receive postoperative NG suction with a Salem sump tube (Sherwood Medical, St. Louis, MO). Wolff and colleagues found that there was no significant difference between the two groups in the length of hospital stay or major postoperative complications. They concluded that routine NG decompression was not warranted after elective colorectal abdominal surgery. However, one worrisome finding of this study was that patients who were not decompressed did experience significantly more abdominal distention, nausea, and vomiting than those who were decompressed.

Because elevated intra-abdominal pressure may be a potential risk factor for development of incisional hernia, there was concern on our part that non-decompressed patients had been put at an increased risk of developing an incisional hernia in the future. Because of this, we have continued to follow these patients prospectively to ascertain whether the omission of the NG tube would increase their risk of incisional hernia development. If indeed an increase in this late complication was present, it may necessi-
tate a modification in our recommendation regarding the use of routine postoperative NG decompression.

METHODS

The study group consisted of the 535 patients who had been prospectively randomized by Wolff et al. in their previously reported study on the use of nasogastric decompression. (Readers should refer to that report for details of the randomization.) In brief, all patients undergoing elective abdominal colorectal surgery between February 1986 and August 1988 were eligible. After consideration of exclusionary criteria and obtaining consent, patients were randomized to either receive (Group I) or not receive (Group II) postoperative NG decompression. Near completion of the operation, randomization using a randomization table was performed at a site remote from the operating room. All patients had a NG tube inserted during operation, and if they were in Group II, the tube was removed in the recovery room.

Patients with acute and chronic small or large bowel obstruction were excluded from the initial study. Other criteria for exclusion were a history of full-dose abdominal and/or pelvic irradiation, multiple (more than three) serosal tears, peritonitis, pancreatitis, abdominal or pelvic abscesses, extensive fibrotic adhesions, prolonged mask ventilation or difficult endotracheal intubation at the beginning of the procedure, and an operating time longer than six hours. Obviously, surgical judgment entered into the decision for exclusion of patients with multiple dense fibrotic adhesions, prolonged operating time or with "complicated" surgery. These exclusionary criteria were put in place to insure that study groups were composed of patients undergoing elective, uncomplicated colorectal surgery.

For Group I patients, the NG tube was left in place at least 72 hours or until passage of flatus or stool. Insertion or reinsertion of a NG tube was prompted by repeated vomiting, nausea, abdominal distention, or patient discomfort as determined by the attending surgeon.

To ascertain whether a patient had developed an incisional hernia, several means were used. Most patients were evaluated repeatedly during follow-up visits to the clinic, and the abdominal wound was examined at that time. Records of each patient were reviewed to verify results of these examinations. All patients known to be alive at the time of this study were sent a questionnaire asking whether a hernia (described as a bulge in the area of the abdominal scar) had developed and whether they had sought or required any subsequent medical or surgical therapy for that or other problems since their last visit to the Mayo Clinic. Patients who did not respond, who were unsure whether a hernia developed or not, and who answered affirmatively were contacted by phone to obtain, clarify, or verify the answer. Incidence of hernia development was then compared between Groups I and II using the two-sided Pearson chi-squared test. Because accurate dates of hernia development were not able to be determined for each patient, we were unable to appropriately compare the time until hernia development using the Kaplan-Meier method, which takes into consideration varied lengths of postoperative follow-up.

Length of follow-up was calculated from the date of abdominal surgery until the date of death, or last patient contact. If the patient had undergone additional surgery through the previous incision, length of follow-up was censored at the date of the second surgery. Eighteen patients were enrolled in the nasogastric tube study on two separate occasions. Because we were interested in the incidence of hernias on a per patient basis rather than a per case basis, time of follow-up for these 18 patients was stopped at the time of their second surgery, and their second enrollment was not included in the calculation of hernia incidence.

Seven different attending surgeons enrolled patients into the study. Although all used a vertical midline incision, the method of closure varied. To determine whether the method of closure was a factor in hernia development, operative records were reviewed to determine whether a continuous or interrupted suture technique had been use. Within each randomization group, incidence of hernia development was compared between these two types of closure using the two-sided Fisher's exact test.

There were 33 patients in whom there were protocol violations. These consisted of having tubes removed when they were randomized to NG decompression or patients not receiving NG decompression who were randomized to do so. Because our intent was to determine the effect of NG decompression on hernia development, these patients were excluded from the statistical analysis of hernia incidence.

RESULTS

There were 274 patients enrolled in Group I and 261 in Group II. Ten patients in Group I were enrolled