

# Is Routine Postoperative Nasogastric Decompression Really Necessary?

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Controversy exists regarding the need for nasogastric tube decompression and the incidence of complications resulting from its use following major intra-abdominal surgery. To determine the value of such tubes, 100 patients were managed after surgery with a nasogastric tube *in situ* until the passage of flatus per rectum (Group I). In a second group of 100 patients, no nasogastric tube was placed after surgery unless vomiting, gross distention, or overt obstruction occurred (Group II). In Group I, the nasogastric tube remained in place an average of 6 days and five patients required replacement of the tube after its initial removal. In Group II, nasogastric intubation was required at some point after surgery in six patients. No aspiration pneumonia, nasal septum necrosis, anastomotic leak, or wound dehiscence was seen in either group. There were three wound infections in Group I and two in Group II. The most obvious difference was the increased comfort and mobility of the group of patients treated without routine nasogastric decompression (Group II). Routine use of the nasogastric tube adjunct to patient care following gastrointestinal tract surgery may be safely eliminated.

FOR MANY YEARS physicians have believed that intestinal decompression *via* a nasogastric tube is mandatory following abdominal surgery. This has been based largely on the concept that the postoperative ileus which develops after most abdominal operations causes distention of the small and large intestine. It has been hypothesized that this distention is related to an increased incidence of complications, including wound infection, anastomotic leak, and abdominal wall dehiscence. This concept has occasionally been challenged through the years; however, very few studies have been performed to clarify the effectiveness of the nasogastric tube.

At the Mount Sinai Hospital, the use of the nasogastric tube was virtually a routine adjunct to postoperative care following gastrointestinal (GI) surgery. Nasogastric tubes were placed during the operative procedure and were usually kept in place until there were signs that postoperative ileus had ceased (usually passage of flatus or feces per rectum). Because of significant patient discomfort related to the nasogastric tube and the con-

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troversty existing in the literature as to the need for routine postoperative nasogastric tube decompression, this study was undertaken.

## Material

All of the patients in the study were operated upon by one of the four authors. Two hundred consecutive patients were studied. They were randomly assigned to one of two groups. Nasogastric tubes were placed in all patients either before or during surgery. One group was managed in the traditional fashion leaving the nasogastric tube *in situ* until the passage of flatus per rectum (Group I). In the second group of 100 patients, the nasogastric tube which was placed intraoperatively was removed at the end of the procedure and was not replaced unless vomiting, gross distention, or overt obstruction occurred in the postoperative period (Group II). In this group, care was taken to minimize air swallowing by interdicting all oral intake. A breakdown of the operative procedures performed is detailed in Tables 1 and 2. The two groups are similar in their composition and represent a reasonable sample of the usual procedures by the authors during this time period.

## Results

In order to confirm our impression that many patients found the nasogastric tube extremely uncomfortable, ten consecutive patients were asked to relate their impressions of the nasogastric tubes on the first postoperative day. Eight of them found the tube to be a source of significant discomfort.

In Group I the nasogastric tube remained in place for an average of 6 days and five patients required replacement of the tube after its initial removal. In Group II, postoperative insertion of the nasogastric tube was required in six patients. The operations where nasogastric

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TABLE 1. Routine Nasogastric Decompression

Right hemicolectomy	15*
Left sided colon resection (rx.)	12
Anterior rx.	4
Abdominoperineal rx.	3
Colocostomy	1
Hartman procedure	2
Small bowel rx.	2
Total proctocolectomy with/without reservoir ileostomy	4
Conversion to reservoir ileostomy	3*
Ileostomy valve revision	4
Total abdominal colectomy with standard ileostomy, ileoproctostomy, or stripping, reservoir and ileoanal anastomosis	
Mucosal stripping, reservoir and ileoanal anastomosis	3*
Ileostomy or colostomy closure Cholecystectomy with/without CDE	4*
	17*
Miscellaneous intra-abdominal procedures (splenectomy, gastrectomy, adrenalectomy, exploratory laparotomy)	16
Total patients	100

\* Patients in whom N-G tube had to be reinserted (5).

tubes had to be replaced in the Group I patients are detailed in Table 3 and include a total abdominal colectomy, mucosal proctectomy and ileoanal anastomosis, conversion from standard ileostomy to a reservoir ileostomy, cholecystectomy and common duct exploration, an ileostomy closure, and a right hemicolectomy. In this group, tubes were reinserted between the fifth and tenth postoperative day. The cases in Group II where nasogastric tubes had to be placed in the postoperative period are also detailed in Table 4. They include two patients with abdominoperineal resection, two patients with small bowel resections, and two with colostomy closures. In this group, tubes had to be inserted between the first and third postoperative days.

TABLE 2. No Routine Nasogastric Decompression

Right hemicolectomy	15
Left-sided colon rx.	11
Anterior rx.	3
Abdominoperineal rx.	3**
Small bowel rx.	4**
Total proctocolectomy with/without reservoir ileostomy	3
Conversion to reservoir ileostomy	5
Proctectomy and pouch	1
Reservoir nipple revision	6
Total abdominal colectomy with either standard ileostomy, ileoproctostomy, or mucosal stripping, reservoir and ileoanal anastomosis	17
Mucosal stripping, reservoir and ileoanal anastomosis	2
Colostomy or ileostomy closure	6**
Cholecystectomy with/without CDE	12
Miscellaneous intra-abdominal procedures (appendiceal abscess, exploratory laparotomy, gastrectomy, pancreatic resection, etc.)	12
Total patients	100

\* Patients in whom N-G tube had to be reinserted (6).

TABLE 3. Cases in Which Nasogastric Decompression Had to Be Performed in the Postoperative Period

Routine N-G Decompression	Tube Removed	Reinserted
Mucosal stripping reservoir and ileoanal anastomosis	P.O.* #5	P.O. #7
Conversion to reservoir ileostomy	#6	#9
Cholecystectomy and CDE	#6	#10
Right hemicolectomy	#4	#6
Ileostomy closure	#3	#5
Total	5 Patients had tubes reinstated	

\* P.O. = Postoperative day.

Wound dehiscence and anastomotic leak were not seen in either group. Wound infection was present in three patients in Group I and two patients in Group II (Table 5). Postoperative pulmonary complications were also studied (Table 6). In the group of patients with routine nasogastric decompression, one patient developed a postoperative pneumonia and four had significant postoperative atelectasis. In the Group II patients where nasogastric tubes were not used routinely, two patients developed pulmonary atelectasis. Although these figures are suggestive, a Chi square test fails to prove that this difference is significant.

## Discussion

Since the introduction of the nasogastric tube by Levin in 1921,<sup>1</sup> its use has remained relatively unchallenged. In 1926, McIver<sup>2</sup> demonstrated that postoperative distention is a result of swallowed air and could be prevented by the nasogastric tube. Wangenstein,<sup>3</sup> in the 1930s, popularized the use of the nasogastric tube after gastric as well as other forms of intrabdominal operations. This dictum remained essentially unchallenged until 1963 when Gerber<sup>4</sup> stated that routine use of nasogastric decompression after surgery was not only unnecessary but also was accompanied by complications specifically related to its use. More recently, an American College of Surgeons publication on pre- and postoperative care stated that "intestinal decompression is required after resection and anastomosis of gastrointestinal tract."<sup>5</sup>

In our study, seven of ten patients questioned found

TABLE 4. Cases in Which Nasogastric Decompression had to be Performed in the Postoperative Period

No Routine N-G Decompression	
Abdominoperineal rx.	2 Patients, day #1, #3
Small bowel rx.	2 Patients, day #2, #2
Colostomy closure	2 Patients, day #2, #3
Total	6 Patients had tubes inserted

the nasogastric tube to be a significant source of discomfort. This is similar to one study where 33/47 patients found the tube either "distressing" or "unpleasant."<sup>6</sup> To date, no study has clearly detailed or defined a significant benefit to the routine use of nasogastric decompression. The current study was undertaken to answer three questions:

1. Was the tube beneficial in a large enough percentage of cases to justify its routine use?
2. Were there any postoperative complications that were eliminated by the routine use of the nasogastric tube?
3. Were there any significant complications directly related to the nasogastric tube?

Paralytic ileus is a normal physiologic response to operative trauma and frequently persists for 48–72 hours. Although the nasogastric tube may remove the saliva and gastric contents, as well a swallowed air, it certainly has a minimal effect on the removal of some 4–5 liters per day of intestinal secretions, pancreatic secretions, and bile. These secretions obviously are partially absorbed by the GI tract. In Group II, nasogastric tubes had to be inserted after surgery in only six patients of the 100 studied. These tubes were put in relatively early in the postoperative period, usually between the first and third day. This number, however, compares very closely to the five patients in Group I where nasogastric tubes had to be reinserted in the postoperative period after they had already been removed. Berg<sup>7</sup> describes that tubes had to be inserted in four per cent of his group of patients when routine gastric decompression was omitted. Likewise, in Ibrahim's<sup>8</sup> study one of 23 patients required insertion of a nasogastric tube after surgery.

### Conclusion

Several authors<sup>8,9</sup> have suggested that nasogastric decompression may reduce the risk of significant postoperative complications, specifically wound dehiscence, anastomotic dehiscence, and wound infection. We found no evidence of this in the current study. In the 200 cases studied neither wound dehiscence nor anastomotic

TABLE 6. *Postoperative Pulmonary Complications*

	Routine N-G Decompression	No Decompression
Pneumonia	1	0
Atelectasis	4	2
Total	5*	2*

\* Not statistically significant.

leak was seen and the rate of wound infection was similar in each group (occurring in three per cent where routine nasogastric decompression was used and two per cent where it was not used). This is similar to the experience of both Burg<sup>7</sup> and Ibrahim.<sup>8</sup>

It has been suggested that there may be complications directly related to the nasogastric tube. In addition to the general discomfort suffered by most patients with the nasogastric tube, minor complications developed in as many as 63% in one series.<sup>7</sup> These consisted of vomiting, nasopharyngeal soreness, cough, wheezing, or sinusitis. Grant<sup>11</sup> reported that serious complications of nasogastric decompression occurred in 0.7% of the cases studied, with significant but lesser complications in many more. In addition to these minor complications, respiratory complications developed in 15% of his patients. In another study, clinical signs of chest infection were present in 24 of 47 patients who were treated after surgery with a nasogastric tube as compared to 12 of 42 patients who were treated without nasogastric decompression.<sup>6</sup>

In our study, documented pneumonia or atelectasis occurred in five patients in the routine nasogastric decompression group and in two patients in the non-decompression group. Although this is suggestive, it is not statistically significant.

Although difficult to document, there was considerably less nursing care required in these patients where routine nasogastric decompression was omitted.

In conclusion, only six per cent of the patients undergoing abdominal surgery where nasogastric tubes were not routinely used required the insertion of a nasogastric tube during the postoperative period. In the remainder, no nasogastric decompression was necessary and therefore these patients were spared the discomfort associated with the nasogastric tube. There was no increase in the rate of wound dehiscence, anastomotic breakdown, or wound infection in this group of patients. As a result of this study, the authors have eliminated nasogastric decompression as a routine adjunct to patient care following abdominal surgery. Its use is still indicated in selected cases both prior to and after surgery.

TABLE 5. *Additional Complications*

	Routine N-G Decompression	
	Yes	No
Wound dehiscence	0	0
Anastomotic leak	0	0
Wound infection	3	2

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