

Abdominal Operations without Nasogastric tube :A major advance in modern surgery

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Summary

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Background: Routine use of nasogastric tubes, after abdominal operations, is intended to hasten the return of bowel function, prevent pulmonary complications, diminish the risk of anastomotic leakage, increase patient comfort and shorten hospital stay. Aim of this study is to evaluate the efficacy of routine nasogastric decompression after abdominal surgery, in achieving each of the above goals.

Patients and methods: Two hundred and twelve patients having abdominal operations of any type, emergency and elective have been followed prospectively over a period of three years (1st December 2004 until end of December 2007) in Baghdad teaching hospital. Patients were randomized into two groups. Group 1 had nasogastric tube inserted and kept in place until intestinal function has returned. Group 2 had no nasogastric tube or immediately removed at the end of the operation. Excluded from the study, were laparoscopic surgeries, gastric and duodenal surgeries.

Results: There was earlier return of bowel function and shorter hospital stay in the non tube group. There were no significant statistical differences concerning the occurrence of postoperative vomiting, pulmonary complications, anastomotic leakage and wound dehiscence.

Conclusions: Routine nasogastric decompression does not accomplish any of its intended goals and so should be abandoned in favor of selective use of nasogastric tube.

Key words: Nasogastric tube, Nasogastric decompression.

Introduction :

Routines in surgery have evolved as a way of eliminating as many variables as possible in effecting safe outcomes. One such routine, practiced during the last 50 years was post operative nasogastric decompression. (1)

Since the introduction of nasogastric tube by *Levin* in 1921, its use has remained relatively unchallenged. In 1926, *McIver* demonstrated that post operative distension is a result of swallowed air and could be prevented by the nasogastric tube. (2)

In 1930, *Wangensteen*, popularized the use of nasogastric tube after gastric as well as other forms of intra abdominal operations.(3) This dictum remained essentially unchallenged until 1963, when *Cerber* stated that routine use of nasogastric tube for decompression after surgery was not only unnecessary, but also was accompanied by complications specifically related to its use.(4)

Prophylactic use of nasogastric tubes after abdominal surgery until gastrointestinal function return is a routine post operative procedures. For many years, surgeons believe that intestinal decompression via a nasogastric tube is mandatory following abdominal surgeries.

This has been largely, based on the concept that the post operative ileus which develops after most abdominal operations causes distension of the small and large bowel. It has been hypothesized that this distension is related to an increased incidence of complications such as anastomotic leakage, repeated vomiting, pulmonary complications and prolonged hospital stay.(5) 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 content, as well as swallowed air, it certainly has 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 gastrointestinal tract. (6)

Many studies have suggested that routine nasogastric decompression is unnecessary following abdominal surgeries and may, even be associated with an increased incidence of complications such as slowing recovery from postoperative ileus(6). Nasogastric tube increases patients discomfort during introduction and the feeling of a tube in the nasopharynx. It may lead to local complications related to nasogastric tube insertion as making wounds in the mucosa of the nose and nasopharynx with bleeding. Increase incidence of gastro esophageal reflux. Increase the

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incidence of pulmonary complications by increasing the incidence of aspiration (7).

The aim of this study was to find out whether the use of nasogastric tube was beneficial to justify its routine use.

Patients and methods

This is a prospective randomized study of two hundred and twelve patients who had elective or emergency laparotomies over a three year period (1st Dec. 2004 until end of Dec 2007) at Baghdad teaching hospital.

The data form included history, physical exam, imaging, biochemical, hematological investigations, operative findings, the time of return of bowel function, the development of repeated vomiting, postoperative chest infection, leakage from site of repaired bowel or site of anastomosis.

Patients were randomized into two groups: group (1) - [106 patients] a nasogastric tube was introduced postoperatively and maintained until the return of bowel function. Group (2) – [106 patients] had no nasogastric tube or had their nasogastric tube removed immediately after end of surgery. Patients in group (2) who developed projectile vomiting in large amounts postoperatively due to Acute gastric dilatation or those with repeated vomiting and those who developed paralytic ileus, nasogastric tube had to be used. This study excluded patients who had gastric, duodenal, pancreatic surgeries, and those with intestinal obstruction.

The end points in the two groups were the followings:

- 1) Timing of return of bowel function.
- 2) The development ileus.
- 3) The development of repeated vomiting.
- 4) The development of chest infection.

5) Duration of hospital stay.

6) Development of leakage from an anastomotic site or, site of repaired bowel perforation.

Statistical analysis: Difference between variables was measured using t-test. $P < 0.05$ considered as level of significance.

Results

The number of patients who had elective surgeries were 60 patients. The types of operations are shown in Table (1).

Twenty six patients in Group 1 (86.7%) had return of bowel function in first 24hrs. compared with twenty seven patients in Group 2, Table(2).

No patients in both groups developed ileus, repeated vomiting, chest infection, and there were no leakage from site of repaired bowel or from site of anastomosis.

The number of patients who had emergency operations were 152 patients, non-traumatic 22 patients Table (3) and traumatic (blunt & penetrating injuries) 130 patients. Table (4)

There was earlier return of bowel functions in emergency surgeries in group 2 Table (2).

Complications which occurred in the emergency patients are shown in Table (5). Two patients in Group 1 needed re-insertion of nasogastric tube compared to 6 patients in Group 2.

The average hospital stay for patients in group 1 was 4.6 days and 3.8 days in group 2.

There was general discomfort suffered by almost all patients (95.28%) who had nasogastric tube. Minor local complication from the presence of the tube such as nasopharyngeal soreness occurred in most of the patients with the tube.

Chest infection occurred more in patients who had nasogastric tube especially in the emergency surgeries. Table (5).

Table 1
Types of elective surgeries included in the study

Type of operation	With nasogastric decompression	Without nasogastric decompression	Total
Closure colostomy	12	13	25
Splenectomy	2	1	3
Open cholecystectomy	6	5	11
Closure ileostomy	1	2	3
Oophorectomy	2	2	4
Incisional hernia	3	3	6
Para umbilical hernia	2	2	4
Liver hydatid	2	2	4
Total	30	30	60

Table 2
Timing of return of bowel function

Elective surgery	First postoperative 24 hours	Second postoperative 24 hours	Third postoperative 24 hours	Total number of patients
Group(1)	26	4	0	30
Group(2)	27	3	0	30
Emergency surgery				
Group 1	33	38	3	76
Group 2	39	32	2	76

Table 3
Types of emergency surgeries for acute abdomen not due to trauma

Type of operation	With nasogastric decompression	Without nasogastric decompression	Total
Perforated appendix	5	6	11
Purulent peritonitis due to primary peritonitis or secondary to other causes as pelvic inflammatory disease	1	1	2
Twisted ovarian cyst or ruptured ovarian cyst	3	2	5
Perforated typhoid ulcer	1	1	2
Appendicular abscess	1	1	2
Total	11	11	22

Table 4
Types of injuries encountered during laparotomies for penetrating or blunt trauma

Type of injury	With nasogastric decompression	Without nasogastric decompression	Total
Injuries to the liver, spleen, kidney, each alone or together with or without diaphragmatic injury.	14	14	28
Injuries to the small bowel alone.	17	17	34
Injuries to the large bowel alone	11	11	22
Injuries to both small & large bowel	8	7	15
Multiple associated injures	8	8	16
Negative laparotomies	7	8	15
Total	65	65	130

TABLE 5
Selective versus routine use of nasogastric tube in emergency surgeries

Variable studied	WITH NASOGASTRIC DECOMPRESSION		WITH OUT NASOGASTRIC DECOMPRESSION		P-Value
	Number	PERCENT	Number	PERCENT	
RETURN OF BOWEL FUNCTION IN THE FIRST 24 HOURS	33	43.4	39	51.3	0.41
DEVELOPMENT OF ILEUS	2	2.63	3	3.94	1
DEVELOPMENT OF REPEATED VOMITING	2	2.63	3	3.94	1
DEVELOPMENT OF CHEST INFECTION	3	3.94	2	2.63	1
THE NEED FOR INSERTING NASOGASTRIC TUBE	2	2.7	6	7.9	1
THE DEVELOPEMENT OF LEAKAGE FROM THE SITE OF REPAIRED BOWEL OR SITE OF ANASTOMOSIS	0	0	0	0	
Wound dehiscence	0	0	0	0	

Discussion

Controversy exists regarding the use of nasogastric tube decompression post operatively. In the present review of 212 patients who had undergone abdominal surgery, elective and emergency, half of them were managed by routine post operative nasogastric decompression and the other half managed with selective nasogastric tube insertion.

In this study there was earlier return of bowel function in the non tube group. Many authors on similar study indicated the earlier return of bowel function in non tube group (8, 9).

In elective surgery no patients in the tube group or the non tube group developed ileus, repeated vomiting and chest infection.

In patients who had emergency surgery with and without nasogastric tube, there were no significant differences in the incidence of postoperative ileus, repeated vomiting and chest infection. Similar results were obtained by other studies (10, 11, and 12).

In group 2 patients who had emergency surgeries 7.9% needed the selective insertion of the nasogastric tube for repeated vomiting or ileus. In a study by Dins more JE et al (14), has indicated that 10% of patients in the non tube group needed the selective insertion of nasogastric tube. Another study by Joel J. et al (15) showed that 6% of patients studied needed the selective insertion of the nasogastric tube.

In both groups of patients who had elective surgery there was no need for the re-insertion of the tube.

Patients who had emergency surgeries 2.6% needed re-insertion in Group 1 this result compares equally with the result of a study by Macvae Hm et al (16) who found that 2% of those who were managed routinely by nasogastric tube needed its re-insertion.

In the present study the average hospital stay for patients who had elective surgery in group 1 was 3.5 days as compared to 2.9 days in the non tube group. As for the emergency surgeries the average hospital stay was 4.6 day for group 1 compared with 3.8 day in group 1.

Shorter hospital stay for non tube patients has been confirmed by other workers (17).

No patients in both groups who had elective or emergency surgery developed wound dehiscence or anastomotic leak these results are in accordance with the results of Cunningham J et al (17)

Almost all patients (95.28%) with the nasogastric tube had suffered general discomfort from the presence of the tube and needed more nursing care. Minor local complications from the presence of the tube such as nasopharyngeal soreness occurred in most of our patients who had the tube. In one series (18) as many as 63% of patients developed such complication.

In our study respiratory complications developed in 3.94% of patients with the tube in emergency surgeries. Serious chest complications due to the presence of the nasogastric tube have been reported by previous study (19).

Conclusion

Although, abdominal distension and vomiting are slightly increased without nasogastric decompression, selective nasogastric tube insertion is required only in 7-8% of patients undergoing abdominal surgery.

Routine nasogastric decompression does not accomplish any of its intended goals. Its use is still indicated in selected cases both prior to and after surgery.

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