

Original Research Article

Early removal of nasogastric tube with early feeding versus conventional removal of nasogastric tube with delayed feeding after bowel anastomosis: a prospective randomized controlled trial

Anil Negi, Dhiraj Kumar*, Neeraj Singh Rajput, Avinash Pandey,
Divyansh Gawer, Afzal Ahmad Ansari

Department of Surgery, SRMS, IMS, Bareilly, Uttar Pradesh, India

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***Correspondence:**

Dr. Dhiraj Kumar,

E-mail: surgeon180680@gmail.com

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ABSTRACT

Background: Nasogastric (NG) decompression and delayed oral feeding after bowel anastomosis is conventional and years old practice. The aim of the present study was to evaluate the advantages and disadvantages of early removal of naso gastric tube (<24 hrs) and delayed feeding, compared with delayed removal and delayed enteral feeding in patients undergoing bowel anastomosis.

Methods: It is a single blind, prospective randomized study involving patients with bowel anastomosis from December 2016- November 2018 at a tertiary care hospital. In study group naso gastric tube was removed within 24 hours. After 12 hours of surgery patients were allowed sips of water, then free liquids followed by semisolid and normal diet in calculated way. In control group naso gastric tube was retained till passage of flatus and orally allowed only after passage of stool.

Results: A total of 241 patients were enrolled. In study group bowel sound returned after 30.57 ± 31.19 hours of surgery and in control group 46.90 ± 48.65 hours and this difference was significant ($p < 0.002$). In study group first free liquid was allowed on 38.14 ± 38.50 hours in post operative period, as compared to the control group where free liquids were allowed after 50.09 ± 51.80 hours this difference was significant ($p < 0.04$). Total hospital stay in the study group was significant ($p < 0.02$).

Conclusions: Early removal of naso gastric tube and early feeding is better than the conventional practice.

Keywords: Early removal of nasogastric tube with early feeding, Nasogastric tube with delayed feeding

INTRODUCTION

Nill per oral with nasogastric (NG) decompression and delayed oral feeding after bowel anastomosis is conventional and year old practice, generally believed to drain secretions and gas from upper gastro intestinal tract, thereby reducing distension of abdomen, abdominal discomfort vomiting to prevent anastomotic leak and wound dehiscence.¹ However recent reports had questioned the delayed removal of NG tube.²

There is no evidence that bowel rest and nil per oral state are beneficial for healing of wounds, anastomotic integrity, and early return of bowel activity, indeed enteral feeding may enhance wound healing and anastomotic strength.³

The period of hypomotility of bowel varies from few hours to five days, depending on the segment of gastrointestinal tract involved.⁴

Recent reports shows that prolonged decompression predisposes to pulmonary complications (lung atelectasis), dyselectrolyemia, mechanical complications and gastro esophageal reflux disease.⁵

The aim of the study was to evaluate the advantages and disadvantages of early removal of naso gastric tube (<24 hrs) and delayed feeding, as compared to delayed removal and delayed enteral feeding in patients undergoing bowel anastomosis.

METHODS

It is a single blind, prospective randomized study involving emergency and elective bowel anastomosis from December 2016- December 2018 (two years). Study was conducted in Shri Ram Murti Smarak, Institute of Medical Sciences, Bareilly, Uttar Pradesh, a tertiary care hospital.

Total 258 patients were enrolled in this study out of which 12 did not consent for participation in the study, 3 patient left treatment in between against medical advice (LAMA) and 2 patients expired in immediate post operative period because of associated medical conditions and co-morbidities at the time of admission thus finally 241 patients participated in the study. For all patients ethical clearance was obtained from the college ethical committee.

Inclusion criteria

Inclusion criteria were age >18 years; both sexes; elective/emergency primary bowel (small/large) anastomosis; bilio enteric anastomosis; perforation peritonitis; stoma closure (illeostomy/colostomy); laparoscopic bowel anastomosis.

Exclusion criteria

Exclusion criteria were laparoscopic surgery (other than bowel anastomosis); abdominal surgeries other than bowel anastomosis; paralytic ileus; inflammatory bowel disease; patients requiring ICU care >24 hours in post operative period; unconscious/sedated patient.

Among 241 cases, patients were randomized and categorized into two groups; randomization was done by computer generated system.

In the study group (Group A) naso gastric tube was removed within 24 hours. After 12 hours of surgery patients were allowed sips of water, then free liquids followed by semisolid and normal diet in calculated way. If they tolerated one liter within 24 hours, they were started with free liquid on the second day and semi solid diet on third post operative day.

In control group (group B) naso gastric tube was retained till passage of flatus and orally allowed only after passage of stool.

All the patients were operated by the same surgeon or by the surgeon with same level of competence. In both the groups no laxative were added after surgery and early mobilization (after 24 hours) were ensured. Clinical assessment and bowel sounds were auscultated on morning and evening rounds on 12 hourly basis.

All required information was collected as per prepared proforma, including history, clinical examination, surgical procedures.

Patients were evaluated in terms of return of bowel sound, first free liquids intake, and mean hospital stay. Other than this, complications were noted in term of vomiting, pharyngitis, pneumonia, anastomosis leak, wound infections and death.

Data were collected in MS EXCEL sheet and evaluated in Epi Info. Software Chi square test was used to compare categorical data. Student t-test was applied to compare means of numerical data. p value of less than 0.05 was considered statistically significant.

RESULTS

Patients were divided into two groups; group 1 (n=122), the study group consisted of the patients in whom nasogastric tube was removed early (within 24 hours of surgery) and early feeding was started.

In group 2 (n=119), the control group consisted of the patient in whom nasogastric tube was removed after patient had passed stool and flatus and was orally allowed thereafter.

In group 1, fifty seven males (46.72%) and sixty five females (53.27%), whereas in group 2, fifty five males (46.21%) and sixty four females (53.78%), both the groups were comparable to each other.

In group 1 fifty nine (48.36%) emergency surgeries and sixty three (51.63%) elective surgeries were performed whereas in group 2, sixty (50.42%) emergency surgery and fifty nine (49.57%) elective surgeries were conducted and both the groups were comparable (p=0.89, OR=0.96) (Table 1).

Majority of the elective surgeries consisted of stoma closure (illeostomy/colostomy); whereas emergency surgeries consisted of resection and anastomosis after hollow viscus perforation (Table 2).

In study group bowel sound returned after 30.57±31.19 hours of surgery as compared to the control group in which bowel sound returned on 46.90±48.65 hours, and

there was a significant difference between the two groups ($p < 0.002$) (Table 3).

Table 1: Demographic and clinical details.

Variables	Early	Late	Total
Male	57	55	112
Female	65	64	129
Mean age (years)	28.7±8.6	30±7.6	
Surgical procedure			
Small bowel anastomosis	80	78	158
Large bowel anastomosis	30	30	60
Bilio- enteric anastomosis	12	11	23
Type of surgery			
Elective	59	60	119
Emergency	63	59	122

Table 2: Type of surgery.

Types	Emergency	Elective
Stricture	18	07
Stoma reversal		96
Malignancy	13	16
Perforation	91	
Enteric	31	
Tubercular	29	
Diverticular	11	
Iatrogenic/ traumatic	20	

Table 3: Comparison of outcome variables.

	Early (mean±S.D.)	Late (mean±S.D.)	P value
Time of first bowel sound (hours)	30.57±31.19	46.90±48.65	0.002
Time of first free liquid intake (hours)	38.14± 38.50	50.09±51.80	0.040
Mean hospital stay (hours)	52.58± 54.71	71.00±73.99	0.003

Table 4: Complications.

Complications	Early	Late
	N (%)	N (%)
Vomiting	43 (35.24)	33 (27.73)
Pharyngitis / sore throat	17 (13.93)	66 (55.46)
Abdominal distension	35 (28.68)	14 (11.76)
Respiratory infection (Pneumonia, ARDS)	9 (7.37)	20 (16.80)
Anastomotic leak	2 (1.63)	3 (2.52)
Wound infection	10 (8.19)	11 (9.24)
Death	1 (0.81)	1 (0.84)

DISCUSSION

Naso gastric decompression after abdominal surgery is strongly practiced and taught worldwide. Supportive data available are from the year 1921, since Levin introduced naso gastric intubation.⁶

In study group first free liquid was allowed on 38.14±38.50 hours in post operative period, as compared to the control group where free liquids were allowed after 50.09±51.80 hours post operatively, and there was significant difference between the two ($p < 0.04$) (Table 3).

Total hospital stay in the study group was of 52.58±54.71 hours, whereas it was of 71.00±73.99 hours in the control group and this difference was significant ($p < 0.02$) (Table 3).

Vomiting (35.24%) followed by abdominal distension (28.68%) were the predominant complaints/complications in the study group, whereas respiratory tract infection in the form of pharyngitis (55.46%) and cough followed by vomiting (27.73%) were the complaints/complications in the control group (Table 4).

Post operative wound infections were almost equal i.e. 8.19% and 9.24% in the study and control group respectively (Table 4).

Mortality in both the group was same i.e. 0.8%, and cause was associated co morbidities rather than surgery per se.

Total of two (1.63%) and three (2.52%) of the patient in the study group and control group respectively had anastomotic leak, for which they had to undergo surgery again and they survived thereafter, exact cause of leak could not be make out but underlying hypoalbuminemia and associated co morbidities might be the cause.

Earlier it was taught that post operative abdominal distension is because of swallowed air; which can be prevented by naso gastric intubation, this believe became routine practice thereafter.⁷

This practice continued as there were subsequent supportive scientific researches which supported that post operative ileus is decreased by using naso gastric intubation.⁸ Practiced continued for years, by the time people noticed that some time after major abdominal surgeries, naso gastric tube remained in the throat and esophagus only but post operative stay went uneventful, than they started questioning role of naso gastric intubation, than in 1963 Gerber refuted the idea of routinely using naso gastric intubation.^{2,9}

Post operative ileus after abdominal surgery is unavoidable and transient phenomenon, the exact etiology is unknown, but there are multiple factors which aggravates or play role in ileus for example intra operative bowel manipulation, anesthetic drug interaction, peri-operative narcotics usages and post operative sympathetic over activity.¹⁰ All these resulted in accumulation of gas, secretion leading to distension, bloating, nausea and vomiting, ultimately leading to prolong hospital stay.^{11,12}

Clevers et al reported that naso gastric decompression does not decrease ileus.¹³

This fact is further supported by the physiologic studies on myoelectric motor activity of the stomach, which is not at all affected by abdominal surgery.¹⁴

In our study vomiting and abdominal distension are the main complaints in the study group, but that has no bearing on the end results and anastomosis. Nearly same complaints were observed in our control group also, so no obvious role of naso gastric decompression. Koukouras et al in his study published in 2001 proposed the same thought.¹⁵

Upper respiratory tract infection was the main complications of prolonged naso gastric intubation as shown by our control group (55.45%) compared to the study group where it was significantly less (14.67%). Our study like many other published articles, showed higher frequency of upper respiratory tract infection in prolong naso gastric intubation.¹⁶

In the study group bowel sound returned earlier (33.64±31.1 hours), as compared to control group where it was late (45.36±52.10 hours). These results are in accordance with the fact that motor activities and myoelectric activities of stomach is not affected by the type of surgery and bowel sound returns early in non decompressed bowel as published by Tanguy et al.^{17,18}

First liberal oral feeds were started earlier in the study group (41.97±38.35 hours) and they tolerated well as compared to control group (55.84±63.59 hours). Results here are in accordance to the results published by Yamin et al, which states that early feeding starts intestinal dysmotility to recover early, good psychosomatic outcome and increase strength to anastomotic site.^{19,20} In

a systemic review of 13 randomized trials, published in 2006 also supported the idea of early feeding.²¹

Early removal of naso gastric tube and early feeding led to the shorter hospital stay in the study group (57.86±54.66 hours) as compared to the control group (78.15±88.97 hours), prolong stay may be due to delayed naso gastric tube removal, delayed feeding and more complications (upper respiratory tract infection, pneumonia). Similar results were appreciated by other authors also.^{22,23}

CONCLUSION

It is years old practice and believe, that naso-gastric intubation prevents anastomotic leak, lessen the complications, but actually it is not so. On the contrary to this believe we recommend early removal of naso gastric tube and early feeding for faster recovery. As post operative patients are in hyper catabolic states which can be tied off by early enteral feeding.

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