

Original Research Article

Early removal versus conventional removal of nasogastric tube after abdominal surgery: a prospective randomized controlled study

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Received: 23 November 2016

Accepted: 05 December 2016

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ABSTRACT

Background: Post-operative nasogastric decompression was introduced by Levin's in 1926 and is intended to drain secretions and gas from the upper gastro-intestinal tract, thereby reducing vomiting, abdominal distension, abdominal discomfort, to prevent anastomotic leak and wound dehiscence.

Methods: The current study was carried among all patients of abdominal surgeries that were conducted in S.N. Medical College and H.S.K. Hospital and Research Centre, Bagalkot, Karnataka, India. Among the total sample of 100 cases, patients undergoing abdominal surgeries nasogastric output, absence of emesis and no increasing abdominal discomfort were randomized into two groups.

Results: In the current study majority of the patients (79%) were in the age group of 21 - 60 years and male to female ratio is 2.3:1. The patients in study group tolerated the first feed earlier as compared to the control group. The mean duration of hospital stay was 8 days for study group and 10.5 days for control group ($p < 0.0001$).

Conclusions: That it is safe to remove nasogastric tube early (within 24 hours) in patients undergoing abdominal surgeries. Early nasogastric tube removal and early oral feeding thus follows the principle of achieving anatomical and physiological continuity heralding early recovery.

Keywords: Early removal, Late removal, Nasogastric tube

INTRODUCTION

Post-operative nasogastric decompression was introduced by Levin's in 1926 and is intended to drain secretions and gas from the upper gastro-intestinal tract, thereby reducing vomiting, abdominal distension, abdominal discomfort, to prevent anastomotic leak and wound dehiscence.^{1,2} But prolonged nasogastric intubation is associated with complications like basal atelectasis due to poor cough reflex, aspiration pneumonia, nasal septum necrosis and loss of electrolytes. So now reserved solely for a specific indications.³

The loss or reduction of motility is common after abdominal surgery. The period of hypomotility varies from few hours to five days, depends on segment of gastrointestinal tract is involved.⁴

The purpose of this study is to determine whether early (less than 24 hours) removal of nasogastric tube is safe and to compared with conventional removal in terms of time of return of bowel sounds, time of passing flatus, acceptance of first feed, post-operative complication and hospital stay.

METHODS

The current study was carried among all patients of abdominal surgeries that were conducted in S.N. Medical College and H.S.K. Hospital and Research Centre, Bagalkot, Karnataka, India from December 2013 to June 2015. This is single blind prospective randomized study involving elective and emergency abdominal surgeries. This work was approved by Ethical Committee of the institute and informed consent was obtained. After following inclusion and exclusion criteria a total of 100 cases were taken for the study.

Inclusion criteria

- Adult patients and both sexes were included
- All patients who underwent abdominal surgery
- Gastro duodenal surgery
- Colorectal surgery
- Biliary surgery
- Intestinal obstruction with or without resection and anastomosis
- Perforative peritonitis
- Abdominal trauma.

Exclusion criteria

- Laparoscopic surgery
- Gynecological operations
- Other lower abdominal surgery.

Among the total sample of 100 cases, patients undergoing abdominal surgeries nasogastric output, absence of emesis and no increasing abdominal discomfort were randomized into two groups. In study group (Group A) the nasogastric tube was removed within 24 hours after the operation and started oral feeding. In control group (Group B) of the nasogastric tube was maintained until the passage of flatus per rectum, return of bowel sounds by auscultation, decreasing nasogastric aspiration.

Details of cases were recorded including history, clinical examination; investigations, surgical procedure, anesthesia type and analgesic used were recorded. The study requires no specific/special investigations. This study based on clinical assessment return of bowel sounds, release of flatus and passing of stool, postoperative complication and hospital stay were noted.

Date were entered and analyzed in Microsoft Excel 2013 and with Open Epi. Categorical data were presented as frequencies and analyzed using Pearson's chi square test. In case, if the cell count was less than 5 in more than 20% of the cells in a table, then Fischer's exact test was applied. P value of <0.05 was considered statistically significant.

RESULTS

In the current study majority of the patients (79%) were in the age group of 21 - 60 years and male to female ratio is 2.3:1. In the current study, most of the patients (64%) passed the flatus early post operatively. In study group 36 (72%) patients nasogastric tube was removed in 24 hours after surgery, majority of patients felt better and were allowed clear fluids followed by soft diet. One (2%) developed vomiting, in whom nasogastric tube was reinserted. In 14 (28%) patients tube was not inserted since from the beginning. In controlled group tube kept from 3 days to 7 days based on clinical assessment, in 27 (54%) patients tube was removed in 48 hours and in rest of the patients after 48 hours.

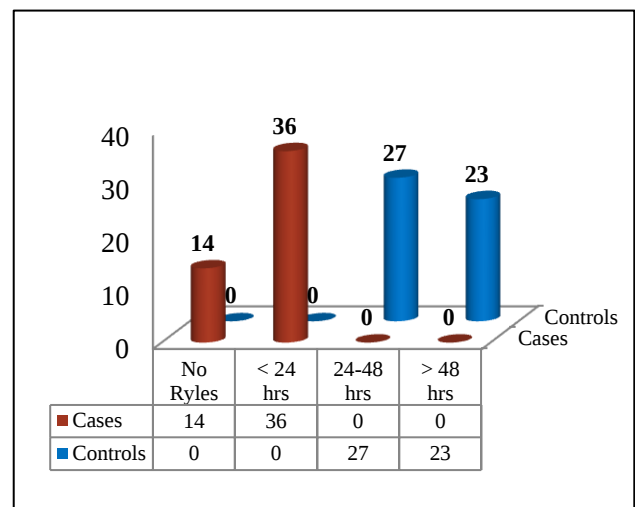


Figure 1: Distribution of study subjects based on duration of nasogastric decompression ($p = 0.001$).

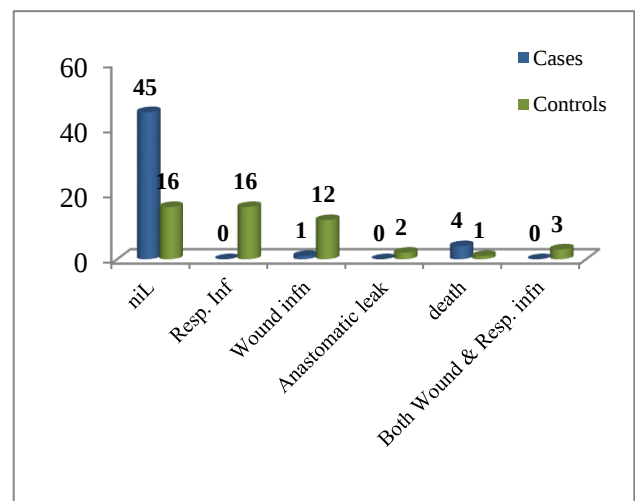


Figure 2: Distribution of study subjects based on complications among cases and controls ($p > 0.10$).

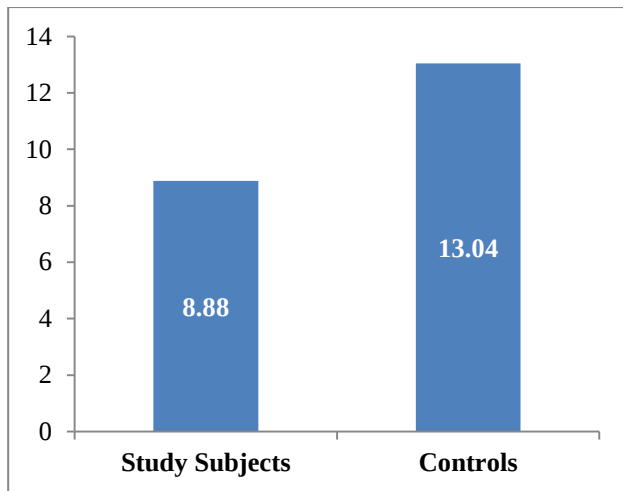


Figure 3: Mean duration of hospital stay ($p = 0.0001$).

The patients in study group tolerated the first feed earlier as compared to the control group. The mean duration of hospital stay was 8 days for study group and 10.5 days for control group ($p < 0.0001$). The incidence of upper respiratory tract infection, pulmonary complications like pneumonia, pleural effusion, pneumonitis, surgical site infection and incisional hernia was higher as compared to study group ($p > 0.10$).

DISCUSSION

Since the 1930s routine use of the nasogastric tube to achieve postoperative gastric decompression has enjoyed widespread acceptance, and for decades patients' complaints were not taken into consideration by anaesthesiologists and surgeons. This strong consensus was based on a traditionally held view, namely that postoperative ileus should be reduced by nasogastric decompression, although the different specialties had their own reasons to endorse this approach. Stomach emptying is impaired for about 24 hours after laparotomy.

In contrast, the motility and the capacity of absorption of the small intestine are normal within a few hours after surgery. The small bowel, although mobile, contains little fluid or gas and therefore does not generate bowel sounds until the stomach resumes activity after 24 hours, pushing swallowed air and fluid into the gut. Any gas that reaches the small intestine is rapidly passed on into the caecum. However, the colon remains insertia for a long time, with differences in times needed for activity in caecum (48 hours) and sigmoid colon (72 hours), with the passage of flatus or stool as a marker.⁵ The autonomic nervous system undoubtedly plays an important role in POI, with perioperative stimuli inducing an increase in tonic inhibitory sympathetic control, as indicated by the inhibition of bowel function that occurs following surgery not involving the peritoneum.

The rationale of nil by mouth is to prevent postoperative nausea and vomiting and to protect the anastomotic, allowing time to heal before being stressed by food. It is, however, unclear whether deferral of enteral feeding is beneficial. Contrary to widespread opinion, evidence from clinical studies and animal experiments suggest that initiating feeding early is advantageous.

The benefits of early enteral feeding are contributed by the trophic support of gut mucosa as well as by the improved maintenance of gut metabolic and immunologic function during the hypercatabolic phase.⁶

Also the early mobility of the patient due to nasogastric tube removal, thus preventing any thrombotic complications. Early oral feed decreased the requirement of IV fluids, injectable antibiotics and nursing care thus reducing the treatment cost, patients with non-traumatic intestinal perforation and peritonitis.

The widespread practice of keeping nasogastric tube till passage of flatus and appearance of bowel sounds and keeping patient 'nil by mouth', after gastrointestinal surgery has been challenged by recent studies. Further, the apparently beneficial effects of early removal of nasogastric tube and oral feeding definitely reduce the infection rates, length of stay and cost in hospital is compelling arguments in favor of a change in clinical practice.

This study has shown that prolonged nasogastric decompression is ineffective in achieving many of these goals and in fact significant benefit may be obtained by avoidance of prolonged intubation and only selective tube insertion when needed to relieve gastric symptoms.

Surgical and anaesthetic practice has changed, such that surgery has become less 'stressful' and patients recover from anesthesia much faster. So when combined with improved postoperative analgesia and attention to fluid and electrolyte balance, definitely hastened patients early mobilization and recovery.⁷⁻⁹ Thus, patients today may be much more able to tolerate early oral feeding than was seen in previous studies. Patients had less pulmonary complications, tolerated better oral feeds, shorten the duration of hospital stay and better wound healing as compared to control group.^{10,11}

CONCLUSION

That it is safe to remove nasogastric tube early (within 24 hours) in patients undergoing abdominal surgeries. Early nasogastric tube removal and early oral feeding thus follows the principle of achieving anatomical and physiological continuity heralding early recovery.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Goudar BV, Kalburgi EB, Giraddi HL, Karikazi MA. Early removal versus conventional removal of nasogastric tube after abdominal surgery: a prospective randomized controlled study. *Int Surg J* 2017;4:229-32.