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Role of Nasogastric Tube Placement in Patients Admitted for Ileostomy Reversal

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ABSTRACT

Introduction: Ileostomy is surgical opening to take ileum outside onto skin. Reversal is done after the recovery of patients from illness **Objective:** To compare the mean hospital stay between ileostomy reversal patients with and without nasogastric tube placement. **Methods:** A comparative study using randomized controlled trial (RCT) was conducted at Nishtar Hospital Multan from 30th June 2015 to 29th July 2016. In total 60 patients, who underwent ileostomy reversal with Nasogastric tube (group A: 30 patients) or without nasogastric tube (group B: 30 patients), were enrolled in the study. Mean hospital stay was noted in both groups. . All the patients with Ileostomy of 1 to 6 months duration were included in the study. Patients with permanent ileostomy, with h/o pelvic irradiation, malnutrition (anemia, hypoalbuminemia), diabetes mellitus, chronic renal failure, jaundice and on steroids medications were excluded from study. Further unfit patients (American society of anesthesiologist (ASA) III & IV) and patients not willing to be included in the study were also excluded from study. **Results:** Mean hospital stay in Group A (ileostomy reversal without nasogastric tube) was 5.39 ± 2.51 days while in Group B (ileostomy reversal with nasogastric tube) was 8.53 ± 3.78 days (p-value<0.0001). **Conclusion**: Mean hospital stay is shorter after ileostomy reversal without nasogastric tube placement compared to those with nasogastric tube placement. This will not only reduce the expenses of the patients but also will help in decreasing the workload on the surgical floor.

Key words:- Nasogastric tube, ileostomy reversal, mean hospital stay.

INTRODUCTION

An ileostomy is a surgical opening constructed of bringing the end or loop of small intestine (the ileum) out onto the surface of the skin. Ileostomy is usually sited above the groin on the right hand side of the abdomen[1.] An ileostomy is a life-saving surgery that enables individuals to enjoy a full range of activities including traveling, sports, family life and work, even though they have a stoma and wear a pouching system.[2] Ileostomy surgery is performed for many different diseases and conditions. Some of the indications for ileostomy surgery are ulcerative colitis, Crohn's disease, familial polyposis and complications of cancer.[3]

The reversal of ileostomy is considered a simple procedure but can be associated with significantly high morbidity and even mortality.[4] Stoma is closed after maturation and complete recovery of patient from his initial illness. The rates of major and minor postoperative complications following ileostomy reversal procedures are reported to range between 22% and 33%.[5, 6, 7] The incidence of small bowel obstruction or postoperative ileus following ileostomy reversal may be as high as 12%.[8, 9] Further, a meta-analysis of 48 ileostomy reversal studies found that 7.2% of patients experienced bowel obstruction, more than one-third of whom (2.5%) required surgical intervention.[10]

Conventionally, after reversal operations, patients are kept nothing by mouth for 4-5 days with nasogastric tube in situ.[11] Levin in 1921 and

Wangensteen in 1933 popularized nasogastric decompression (NGD) after abdominal surgeries. In the 1960s, however, reports began to question the routine use of nasogastric tubes.[12] Many clinical studies have suggested that this practice does not provide any benefit but could lengthen the hospital stay, in addition to patient discomfort and respiratory complication.[4,13-15] Qureshi et al[12] has shown a significant difference in mean hospital stay between ileostomy reversal with nasogastric (NG) tube and without nasogastric tube *i.e.* 8.1±4.4 days versus 5.7±1.4 days respectively. The problems combined with the discomfort and restrictions in mobility led several to support a selective approach to use the postoperative nasogastric tubes.[15]

The purpose of this study was to compare the mean hospital stay between ileostomy reversal patients with nasogastric tube and without nasogastric tube in local population. Then based on these results, the method with shorter hospital stay could be opted in our routine practice guidelines for these particular patients which would help them to save their time and money by early discharge from hospital.

MATERIALS AND METHODS

This study was conducted at Department of General Surgery, Nishtar Hospital, Multan from 30th June 2015 to 29th July 2016. This was conducted on randomized controlled trial basis. The objective of the study was: "To compare the mean hospital stay between ileostomy reversal patients with and without nasogastric tube placement." Hypothesis made was" The mean hospital stay is less after ileostomy reversal without nasogastric tube placement compared to those with nasogastric tube placement." Operational definition was hospital stay and this was measured in days. The start time was the day of operation and end time was the day of discharge from ward after the patient was stable.

Sixty patients were included in this study. All the patients of both genders between 20-50 years with informed consent were included in the study. Ileostomy of 1-6 months duration as per operational definition was included. Patients with permanent ileostomy, with h/o pelvic irradiation, malnutrition (anemia, hypoalbuminemia), diabetes mellitus, chronic renal failure, jaundice and on steroids medications were excluded from study. Further unfit patients (American society of anesthesiologist (ASA) III & IV) and patients not willing to be included in the study were also excluded from study.

The sample size was calculated by: Significance level (α) = 5%: Power (1-β) =80%. Sample size of one group (n) = 30. Non-probability, consecutive sampling technique was adopted.

Data Collection Procedure

After approval from local ethical committee, 60 cases of ileostomy (as per-operational definition) in the Department of Surgery, Nishtar Hospital, Multan, fulfilling the inclusion/exclusion criteria were selected. Informed, written consent was taken after explaining the aims, methods, reasonably anticipated benefits, and potential hazards of the study.

All patients were divided into two groups offering them to pick up slip. In group A patients, ileostomy reversal was done and no nasogastric tube was placed post-operatively. In group B patients, ileostomy reversal was done and nasogastric tube was placed post-operatively. All procedures were performed by the same surgeon (with at least 5 years post-fellowship experience). Mean Hospital stay was noted in every patient of both groups from day of operation to day of discharge at which final outcome was measured. This all data was recorded on a specially designed proforma.

All the data was entered and analyzed by using SPSS version 20.0. The quantitative variables like age, duration of ileostomy and hospital stay were presented as mean and standard deviation. The qualitative variables like gender were presented as frequency and percentage. Student 't' test was used to compare the mean hospital stay of both groups and p-value ≤ 0.05 was considered as significant.

Effect modifiers like age, gender and duration of ileostomy were controlled through stratification and post-stratification Student 't' test was applied to see their effect on outcome. P-value ≤ 0.05 was considered as significant.

Statistical analysis

Statistical analysis was done by SPSS system as mentioned in detail in above paragraph.

RESULTS

Age range in this study was from 20 to 50 years with mean age of 29.63±8.58 years. The mean age of patients in group A was 29.44±8.28 years and in group B was 30.12±9.09 years. Majority of the patients 23 (38.33%) were between 31 to 40 years of age as shown in Table 1. Out of 60 patients 41 (68.33%) were males and 19 (31.67%) were females with male to female ratio of 2.16:1 as shown in Figure 1.

Table 1: Age distribution for both groups (n=60).

Groups	Age (Years)			Mea±SD
	20-30	31-40	41-50	
Group A	10 (33.33%	12 (40%)	8 (26.67%)	29.44±8.28
Group B	8 (26.67%)	11(36.67%)	11(36.67%)	30.12±9.09
Total	18(30.0%)	23(38.33%)	19(31.67%)	29.63±8.58

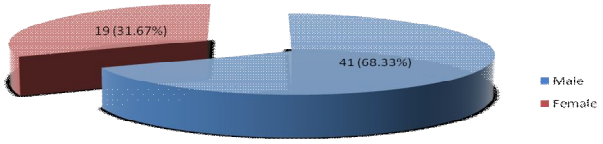


Fig. 1: Percentage of patients according to Gender (n=60).

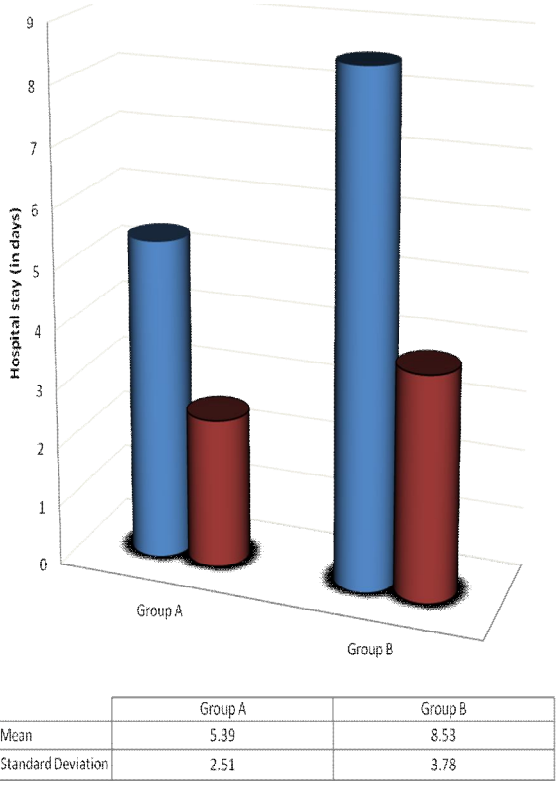
Mean duration of ileostomy was 3.31±1.37 days. The mean duration of ileostomy in group A was 3.13±1.43 days and in group B was 3.45±1.21 days. Majority of the patients 33 (55.0%) were between >3 to 6 months duration as shown in Table 2.

Table 2: Percentage of patients according to duration of ileostomy in both groups.

Groups	Duration of ileostomy (months)		
	1-3	>3-6	Mea±SD
Group A	14 (46.67%)	16 (53.33%)	3.13±1.43
Group B	13 (43.33%)	17 (56.67%)	3.45±1.21
Total	27 (45%)	33 (55%)	3.31±1.37

Mean hospital stay in Group A (ileostomy reversal without nasogastric tube) was 5.39±2.51 days while in Group B (ileostomy reversal with nasogastric tube) was 8.53±3.78 days as shown in Figure 2 (p-value<0.0001).

Stratification of age groups with respect to mean hospital stay has shown in Table 3 which showed significant difference in mean hospital stay in all age groups among both groups. Similarly statistically significant difference was found in mean hospital stay in both genders among both groups as shown in Table 4. Stratification of duration of ileostomy with respect to mean hospital stay has shown in Table 5 which also showed statistically significant difference among them.



P-value<0.0001 based on Student- t test, which is statistically significant

Fig. 2: Mean hospital stay in both groups.

DISCUSSION

Placement of NG tube after abdominal surgery for enteric anastomosis is classic dogmatic teaching in surgical training.[16] What is to be achieved by this prophylaxis is gastric

decompression, a decreased likelihood of nausea and vomiting, decreased distension, less chance of pulmonary aspiration and pneumonia, less risk of wound separation and infection, less chance of fascial dehiscence and hernia, earlier return of bowel function and earlier discharge from hospital.[17] Current studies have shown that routine nasogastric decompression is associated with pulmonary, electrolyte, mechanical and infectious complications.[18] The problems combined with the discomfort and restrictions in mobility led several to support a selective approach to use the postoperative nasogastric tubes.[19,20]

Table 3: Stratification of age groups with respect to hospital stay.

Age (years)	Group A (n=30) Hospital stay (days)		Group B (n=30) Hospital stay (days)		P-value
	Mean	SD	Mean	SD	
20-30	4.87	2.11	7.76	3.19	**0.0013**
31-40	5.67	1.89	8.27	3.81	**0.0006**
41-50	5.23	2.45	8.56	3.43	**0.0005**

Table 4: Stratification of gender with respect to hospital stay.

Gender	Group A (n=30) Hospital stay (days)		Group B (n=30) Hospital stay (days)		P-value
	Mean	SD	Mean	SD	
Male	5.06	2.43	8.01	3.21	<0.0001
Female	5.62	2.51	8.74	3.89	0.0026

Table 5: Stratification of ileostomy duration with respect to hospital stay.

Duration of ileostomy (months)	Group A (n=30) Hospital stay (days)		Group B (n=30) Hospital stay (days)		P-value
	Mean	SD	Mean	SD	
1-3	5.12	2.70	8.08	3.01	**<0.0001**
>3-6	5.42	2.55	8.61	3.59	**<0.0001**

Age range in our study was from 20 to 50 years with mean age of 29.63±8.58 years. The mean age of patients in group A was 29.44 ± 8.28 years and in group B was 30.12 ± 9.09 years. Majority of the patients 23 (38.33%) were between 31 to 40 years of age in both groups. These results are very much similar to studies of Qureshi et al[12] and Shamil et al[21] who had found mean age of 31 years respectively. On the other hand, Khan N et al[22] has shown a little larger mean age i.e. 35 years, compared to our study. Baraza et al[23] has shown very much larger mean age of 63 years as compared to our study and other previously described studies. This larger mean age was may be due the inclusion of larger range of age in his study. In our study, 41 (68.33%) were males and 19 (31.67%) were females with male to female ratio of 2.16:1. This male predominance has also observed in many previous studies.[12,21-23]

After few studies on the role of nasogastric decompression after colonic surgery, many surgeons have stopped routine use of nasogastric decompression after colorectal surgery but are still using it after small bowel surgery.[24] Few studies are published to find out the value of prophylactic nasogastric decompression after small bowel surgery. Mean hospital stay in Group A (ileostomy reversal without nasogastric tube) was 5.39±2.51 days while in Group B (ileostomy reversal with nasogastric tube) was 8.53±3.78 days (p-value<0.0001). Qureshi et al[12] has shown a significant difference in mean hospital stay between ileostomy reversal with nasogastric (NG) tube and without nasogastric tube i.e. 8.1±4.4 days versus 5.7±1.4 days respectively. The problems combined with the discomfort and restrictions in mobility led several to support a selective approach to use the postoperative nasogastric tubes.[15]

The necessity of nasogastric decompression following elective abdominal surgery has been increasingly questioned over the last several years. Many clinical studies have suggested that this practice does not provide any benefit but could lengthen the hospital stay, in addition to patient discomfort and respiratory complication.[25, 26] In a meta-analysis in 1995, Jottard et al[27] has compared selective versus routine NG decompression after elective laparotomy which does not support the prophylactic use of NG tube. In July 2004, the

Cochrane database of systemic review published the results of their systematic review and concluded that the routine nasogastric decompression should be abandoned in favour of selective use of the NG.[28]

Colvin et al[29] in a randomized controlled trials has concluded that there is no extra benefit of placing nasogastric tube. Rancette et al[30] and Wolf BG et al[31] in their studies have shown no significant difference of post-operative hospital stay in patients with and without NG tube placement. The shorter postoperative stay could be partly attributed to the earlier return of bowel function and advancement of diet. Several studies have shown that time to return of bowel function and oral intake was the same or sooner in the patients without nasogastric tube.[32,33]

In a randomized controlled trial done by Khan et al[22] has found the length of hospital stay as 7.93±1.27 days in patients with nasogastric tube placement versus 6.54±0.85 days in patients without NG tube placement. Nelson R et al[34] study showed the prolongation of duration to return of bowel sounds thus increasing stay of the patient in hospital. Some studies show this duration to be substantially significant in those with a nasogastric tube; possibly due to decreased or delayed ambulation.[35] Wu CC et al[36] has also found shorter hospital stay in patients without nasogastric tube placement. The length of stay in both groups was similar as seen in a study by Reissman et al.[37] Its use shows no significant benefit in reducing the duration of ileus. On the whole, it is concluded that mean hospital stay is shorter after ileostomy reversal without nasogastric tube placement compared to with nasogastric tube placement.

CONCLUSION

This study concluded that mean hospital stay is shorter after ileostomy reversal without nasogastric tube placement compared to those with nasogastric tube placement. So, we recommend that routine use of nasogastric tube placement after ileostomy reversal should be discouraged as it is associated with longer hospital stay which in turn results in more expense of money and time of these particular patients as well as their attendants.

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