

# Comparison of Early Oral Feeding and Conventional Oral Feeding in Cases of Elective Intestinal Stoma Reversal in Terms of Number of Days of Nasogastric Decompression and Hospital Stay

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## ABSTRACT

**Objective:** To compare the efficacy of early oral feeding and conventional oral feeding in elective intestinal stoma reversal in terms of mean number of days of NG tube out and hospital stay. **Study Design:** Randomized Controlled Trials. **Settings:** Surgical Units of Allied/DHQ hospitals Faisalabad. **Duration of Study:** 1 year duration from February 2014 to January 2015. **Sampling Technique:** Non-probability consecutive sampling. **Methodology:** 60 patients were selected from OPD. Patients were randomly allocated to two groups. All stomas were closed in single layer extramucosal seromuscular fashion, intraperitoneally. In post-operative period, patients in group I were allowed oral feed in early post-operative period (6-8 hours) after the surgery. Initially, oral liquids (30ml/hr) was given and patients were observed for nausea and vomiting. Oral feed was increased gradually with the response of the patient with semi-solid to solid diet on 1<sup>st</sup> or 2<sup>nd</sup> post-operative day. Patients in group II were started oral sips of liquids once they pass flatus or audible bowel sounds. At least two follow up visits were advised within two weeks of discharge of patients, 1<sup>st</sup> on the 7<sup>th</sup> day and 2<sup>nd</sup> on the 14<sup>th</sup> day, for removal of skin stitches. **Results:** Out of 60 patients 37 (61.7%) were males and 23 (38.3%) were females. Among the variables under the study, for both groups, the minimum total number of days of nasogastric decompression was 0 days and maximum total number of days of nasogastric decompression was 5 days with mean of 1.17 days and standard deviation of 1.33. In group 1, the mean of the total number of days of nasogastric decompression was 0.13±0.35 days and in group 2, the mean of the total number of days of nasogastric decompression was 2.20±1.13 days with p-value of 0.0001 for both the groups, the minimum total number of days of hospital stay was 3 days and the maximum was 9 days, with mean of 4.82 days and Std. Deviation of 1.70 days. In group 1, the mean of the total number of days of hospital stay was 3.37±0.61 days and in group 2 the mean of the total number of days of hospital stay was 6.27±1.08 days with p-value of 0.000. **Conclusion:** Early oral feeding in cases of elective intestinal stoma reversal is better than conventional oral feeding in terms of number of days of nasogastric decompression and hospital stay.

**Keywords:** Early oral feeding, Nasogastric decompression, Stoma reversal, Hospital stay.

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## INTRODUCTION

A stoma is a surgically created opening of the bowel or urinary tract on to the body surface<sup>1</sup>. An intestinal stoma is an opening of intestine on the anterior abdominal wall made surgically. The commonly performed procedures include colostomy and ileostomy<sup>2</sup>. Fecal ostomies, including diversion and end ostomies are frequently performed by general

surgeons to treat gastrointestinal diseases<sup>3</sup>. Stomas are used to divert the fecal stream away from distal bowel in order to allow a distal anastomosis to heal as well as to relieve obstruction in emergency situation. Common indications for construction of stomas are typhoid or tuberculous perforations, malignancy, Inflammatory bowel disease, iatrogenic

perforations and Rectovaginal fistula<sup>4</sup>. Subsequent reversal of the ileostomy restores bowel continuity and improves the patient's overall quality of life<sup>5</sup>. Conventionally, after bowel anastomosis patients are kept nil by mouth till they pass flatus or faeces. However, there are many literature reviews showing early feeding after gastrointestinal anastomosis is safe and is more physiological as well as prevents morphological and functional trauma related alteration of the gut and helps to modulate immune and inflammatory responses<sup>6,7</sup>.

Malnutrition is present in the majority of patients presenting for surgical management of gastrointestinal malignancies. Traditionally perioperative care following resectional surgery for gastrointestinal diseases involves, among other things withholding of nutritional provision postoperatively until resumption of bowel function. However, in the last 30 years, many studies have challenged this traditional approach to postoperative nutrition and there have been no less than 30 randomized controlled trials investigating this topic in some form. The results of these studies have collectively failed to support the traditional postoperative management principles, and many demonstrate clear benefits associated with early feeding in terms of nutritional, biochemical, anthropometric, financial, and clinical outcomes and lesser number of complications<sup>8,9</sup>.

After colorectal procedures, traditional care regimens have usually included restricted oral intake to prevent the signs of post-operative ileus and to protect the surgical anastomoses. This practice has been challenged by evidence from several gastrointestinal physiologic studies that examined the contractile small bowel recovers normal function 4-8 hours after the laparotomy. Therefore feeding within 24 hours after laparotomy is tolerated and good nutritional status contributes significantly to wound healing, to reduce sepsis risk because of decreased bacterial colonization and decreased translocation through defects on the bowel mucosa into the blood circulation<sup>10</sup>. The other rationale for withholding food or feed orally is to allow anastomosis time to heal before being stressed by food. However it is known that stomach and pancreas secrete about two liters of fluid daily which is readily absorbed in the small intestine. Therefore patients are in fact tolerating high volumes of fluids already. It has been suggested that reversal of loop ileostomy can be performed as an ambulatory procedure to

facilitate the patients to go home early. This not only benefits the patient, but is also a cost-effective use of healthcare resources. There is reduction in perioperative infection, better maintenance of nitrogen balance, and shorter hospital stay. In particular, despite long held concerns that early NG Tube out and feeding would increase the likelihood of anastomotic dehiscence, this finding was not significantly associated with the early provision of nutrition in any individual study that reported or by any of the meta-analyses examining this topic<sup>11</sup>. In comparison between postoperative outcomes, the number of days of NG Tube out and hospital stay in patients who were started early nutrition was  $1.15 \pm 0.74$  days and  $5.65 \pm 1.04$  days respectively as compared to  $3.65 \pm 0.93$  days and  $12.25 \pm 4.60$  days in those patients who were started oral feed conventionally<sup>6</sup>.

## METHODOLOGY

**Study Design:** Randomized Controlled Trials.

**Settings:** Surgical Units of Allied/DHQ hospitals Faisalabad.

**Duration of Study:** It was carried out for 1 year duration from Feb 2014 to Jan 2015.

**Sample Size:** It will be calculated using WHO sample size calculator:

Group 1 =  $5.65 \pm 1.04$  days<sup>3</sup>

Group 2 =  $12.25 \pm 4.6$  days<sup>3</sup>

Level of significance: 5%

Power of Test: 90%

Sample Size: 60

30 patients in each group

**Sampling Technique:** Non-probability consecutive sampling

## OBJECTIVE

To compare the efficacy of early oral feeding and conventional oral feeding in elective intestinal stoma reversal in terms of mean number of days of NG Tube out and hospital stay.

### Operational Definitions

**Early Oral Feeding:** Start of oral feed in early postoperative period as routine i.e. 6-8 hours after the surgery.

**Conventional Oral Feeding:** Start of oral feed after the appearance of bowel sounds and the passage of flatus or faeces.

**Intestinal Stoma:** It is an opening of intestine on the anterior abdominal wall made surgically. The

commonly performed procedures include colostomy and ileostomy.

**Intestinal Stoma Reversal:** Closure of the opening of intestine and replacing it back in the abdominal cavity to restore the intestinal continuity to be assessed by normal bowel function.

**NG Out:** Passage of nasogastric tube in the stomach for aspiration of gastric and duodenal contents, confirmed by aspiration of bilious gut contents and taking it out when there is no abdominal distension. It was calculated in mean number of days, starting from the day of surgery till there is no abdominal distension.

Hospital stay was calculated from last pre-operative day and till the patient will be fit for discharge post operatively. It was calculated in mean number of days.

### **Selection Criteria**

Inclusion criteria:

1 All the patients of ages between 16 years and 40 years and of both genders presenting in surgical OPD for follow up of intestinal stoma in which the reversal of stoma was indicated.

Exclusion criteria:

2 Patients in which stoma is other than ileostomy or colostomy i.e. gastrostomy or jejunostomy.

3 Patients who had chronic illness like tuberculosis, Crohn's disease or ulcerative colitis that may cause stricture formation in distal segments.

### **Data Collection Procedure**

During this study, 60 patients were selected from OPD presenting in follow up of intestinal stomas and in which the reversal of stoma was indicated. All patients were admitted in ward. After obtaining informed consent from the patients, demographic details of the patient like name, age, sex, occupation and address were noted on a specific proforma. Patients were randomly allocated to two groups based on computer generated table of random numbers. Laboratory investigation included CBC with ESR, Hepatitis B & C screening, Blood Urea, Serum Creatinine, and distal loopogram to check the distal patency of the gut. Blood samples were drawn by staff nurse and the laboratory investigations were reported by hospital pathologist. For distal loopogram barium powder solution was instilled in the distal segment of stoma by me and x-ray film was taken by radiography technician and loopogram was reported by hospital radiologist. In cases of colostomy reversal, faecal matter was cleared by

making the patient to drink 8 sachet of movcol (polyethylene glycol) dissolved in water. All patients were made NPO for at least six hours. Pre-op antibiotics including 3<sup>rd</sup> generation cephalosporins, metronidazole and I/V fluids were administered to all patients by staff nurse, at the time of anaesthesia. All surgeries were done by consultants. All stomas were closed in single layer extramucosal seromuscular fashion, intraperitoneally.

In post-operative period, patients in group I were allowed oral feed in early post-operative period (6-8 hours) after the surgery. Initially, oral liquids (30ml/hr) was given and patients were observed for nausea and vomiting. Oral feed was increased gradually with the response of the patient with semi-solid to solid diet on 1<sup>st</sup> or 2<sup>nd</sup> post-operative day.

Patients in group II were started oral sips of liquids once they had passed flatus and bowel sounds were heard.

Need for nasogastric decompression was assessed for each patient individually depending upon the degree and duration of post-operative vomiting or abdominal distension. It was calculated from the day of surgery till there was no abdominal distension and vomiting settled.

All the patients were discharged once they were clinically fit to go home and were on solid oral feed and had evacuated their bowel at least once.

At least two follow up visits were advised within two weeks of discharge of patients, 1<sup>st</sup> on the 7<sup>th</sup> day and 2<sup>nd</sup> on the 14<sup>th</sup> day, for removal of skin stitches.

All the informations were recorded on proforma.

### **Data analysis procedure**

The data was analyzed by statistical program of social sciences version 10. Descriptive statistics were used to summarize the data. Mean and standard deviations were calculated for quantitative data like age, number of days of NG decompression and number of days of hospital stay. Frequency and percentage were calculated for qualitative data like, gender. Independent sample t-test was used to compare the number of days of NG decompression and hospital stay between the two groups. p-value of less than 0.05 was considered significant.

## **RESULTS**

A total of 60 patients were included in this study performed at surgical units Allied /DHQ Hospitals, Faisalabad.

### Sex distribution:

Out of 60 patients 37 (61.7%) were males and 23 (38.3%) were females (Table 1) reflecting the male dominance in need for formation of stoma. Amongst the groups, in group 1 out of 30 patients, 17 (56.7%) patients were males and 13 (43.3%) patients were females and in group 2 out of 30 patients, 20 (66.6%) patients were males and 10 (33.3%) patients were females (Table 2).

**Table 1: Frequency of the sex in both groups**

	Frequency	Percentage (%)
Male	37	61.7 %
Female	23	38.3 %
Total	60	100.0 %

**Table 2: Percentage of sex in both groups**

	Group-I	Group-II	Total
Male	17 56.7 %	20 66.7 %	37
Female	13 43.3 %	10 33.3%	23
Total	30	30	60

### Age distribution

As for as the age is concerned, the minimum age was 16 years and the maximum age was 40 years with mean age of 27.82 years with Std. Deviation of 7.51. Minimum age in group 1 was 16 years and the maximum age was 40 years with mean of 28.30 years and Std. Deviation of 7.72. In group 2 the minimum age was 16 years and the maximum age was 40 years with mean of 27.33 and Std. Deviation of 7.40 .

**Table 3: Group wise distribution of age**

Group	n	Min	Max	Mean	Std. Deviation
Group-I Age	30	16	40	28.30	7.72
Group-II Age	30	16	40	27.33	7.40

### Other variables

Among the variables under the study, for both groups, the minimum total number of days of nasogastric decompression was 0 days and maximum total number of days of nasogastric decompression was 5 days with mean of 1.17 days and Std. Deviation of 1.33. In group 1, the mean of

the total number of days of nasogastric decompression was  $0.13 \pm 0.35$  days and in group 2, the mean of the total number of days of nasogastric decompression was  $2.20 \pm 1.13$  days with p-value of 0.0001.

For both the groups, the minimum total number of days of hospital stay was 3 days and the maximum was 9 days, with mean of 4.82 days and Std. Deviation of 1.70 days.

In group 1, the mean of the total number of days of hospital stay was  $3.37 \pm 0.61$  days and in group 2 the mean of the total number of days of hospital stay was  $6.27 \pm 1.08$  days with p-value of 0.0001. From the results of the study it is quite evident the p-values for both the variables under study, i.e, the total number of days of nasogastric decompression and the total number of days of hospital stay is less than 0.05 and it is considered significant.

**Table 5: Distribution of quantitative variables**

Group	n	Min	Max	Mean	Std. Deviation
Age	60	16	40	27.82	7.51
Total Number of days of nasogastric decompression	60	0	5	1.17	1.33
Total number of days of hospital stay	60	3	9	4.82	1.70

**Table: 7 Variables under study with p-values**

Variable	Group 1	Group 2	p-value
Total number of days of nasogastric decompression	$0.13 \pm 0.35$	$2.20 \pm 1.13$	0.0001
Total number of days of hospital stay	$3.37 \pm 0.61$	$6.27 \pm 1.08$	0.0001

## DISCUSSION

Although, many a times a stoma is a lifesaving procedure for the patients, but socially it is less acceptable, mostly. The loop stoma is almost always temporary and it is closed after a certain time depending upon the initial condition for formation of stoma and recovery of the patient. It is mostly done at 10-12 weeks. Traditionally, after the closure of stoma, it was the practice to keep the patient in hospital for observation until the bowel functions

return. The usual post-operative regimen included, NG intubation for decompression of stomach and upper intestine, keeping the patient nil by mouth and sometimes keeping the patients in intensive care facilities. The length of hospital stay after stoma closure may be 7-10 days.

Conventionally patients are kept nothing by mouth for 4- 5 days. There has been fear that early oral intake would result in nausea, vomiting, abdominal distension which may lead to leakage from the closure of stoma.

In my study, 86.67% patients tolerated early feeding very well and only 4 patients needed the NG decompression for abdominal distension. All the patients had a shorter number of days of hospital stay. The key finding in my study showed that there was shorter hospital stay postoperatively, a rare need for NG decompression, earlier return of bowel sounds and lesser episodes of vomiting in patient who had early enteral feeding.

Thapa PB et al.<sup>1</sup> showed that bowel activity occurred before passage of flatus, and that the patient tolerated 1-2 L of fluid secretions from the stomach and pancreas immediately after surgery. Other studies have shown tolerance to clear liquids on postoperative day 1<sup>st</sup> after GI surgeries<sup>2</sup>. Furthermore, physiologic studies reveal that myoelectric and motor activity in the stomach is not affected after abdominal surgery. Thus, many of the studies do not support the traditional practice of enteral feeding based on auscultation of normal bowel sound and passage of flatus and bowel movement. Rather, the progression of postoperative feeding based on physical signs of bowel function may not be based on postoperative GI physiology. It has been demonstrated by many that the surgical patients are often malnourished which in severe cases increases the morbidity and mortality. Starvation due to nausea or deliberate starvation for investigations adds to this state; moreover the traditional method of nil per oral after surgery immensely complicates the state. It has been shown by studies that within 24h of starvation, changes in the body's metabolism are evident including increased insulin resistance and reduced muscle function. Studies have shown that early enteral feeding improves wound healing and reduce sepsis<sup>4</sup>. Rao W, et al.<sup>8</sup> concluded that early postoperative enteral feeding is a valid alternative to parenteral feeding in patients undergoing major surgery as immunonutrition enhances the host response,

induces a switch from acute phase to constitutive proteins and hence improves outcome.

Seenu and Goel<sup>11</sup> showed that early oral feeding after elective colorectal surgery is safe and can be tolerated by most patients. Similarly, Stewart et al.<sup>12</sup> demonstrated a high tolerability (86.5%) to early postoperative oral feeding after elective open colon resection.

Traditionally, in our set up and elsewhere as well, the postoperative management of patients undergoing stoma reversal has involved the use of nasogastric tubes and avoidance of the oral intake of fluids or nutrients until resolution of the postoperative ileus. Today, a few studies have shown that nasogastric tube insertion has a limited role in postoperative care for abdominal surgery<sup>8</sup>. In addition, trials comparing postoperative fasting and early enteral feeding after gastrointestinal resections have not shown a clear advantage. My study suggests that early feeding might be of benefit in terms of morbidity and mortality<sup>9</sup>. Similarly, in the present study, nasogastric tubes are inserted before surgery and removed immediately after surgery in all patients as a standard practice. This approach is tolerated by most of the patients, and the reinsertion of a nasogastric tube was rarely needed in either group. Furthermore, this condition was free from the concept of feeding.

It was suggested that the early resumption of an oral diet diminishes the duration of ileus. In the present study, the early enteral feeding group patients had an oral diet on the day after the operation without evidence of bowel motility, and most of these patients tolerated the early feeding schedule. This result showed that oral feeding can be started on the first postoperative day without waiting for the resolution of postoperative ileus. Thus, the patients can be protected from starvation and the related side effects, such as metabolic imbalance. This situation might diminish the complications and accelerate recovery. In the present study, early feeding resulted in early intestinal movements and defecation. These findings show that an early oral diet improved the gastrointestinal recovery parameters and shortened the duration of postoperative ileus.<sup>(11)</sup>

A shorter hospital stay is a potential advantage of early postoperative feeding, and this feature was demonstrated in the present study. Because early feeding significantly shortens the length of ileus, it also significantly shortens the length of hospitalization. The overall reduction corresponded to approximately 3.5 days, which is clinically

important. In our study, patients undergoing stoma reversal were started on early oral intake regardless of objective signs of the return of bowel functions; this protocol was demonstrated to be safe and effective, with a shortened hospital stay as the primary benefit.

## CONCLUSION

Early oral feeding in cases of elective intestinal stoma reversal is better than conventional oral feeding in terms of number of days of nasogastric decompression and hospital stay. This study shows that early feeding after stoma reversal is feasible and safe in contrast to traditional practice of keeping the patient “Nil per Oral” until clinical evidence of bowel movement with return of bowel sounds or passage of flatus.

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