

# SAFETY OF EARLY VERSUS DELAYED ENTERAL FEEDING FOLLOWING ILEOSTOMY CLOSURE: RANDOMIZED CONTROLLED TRIAL

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Date Submitted: December 12, 2012

Date Revised: October 02, 2013

Date Accepted: October 05, 2013

## ABSTRACT

**OBJECTIVE:** to compare the safety of early versus late enteral feeding in terms of tolerability and leak following ileostomy closure.

**METHODOLOGY:** This prospective randomized trial was conducted at Lady Reading Hospital, Peshawar from January 2010 to December 2011 on 60 patients, hospitalized for temporary ileostomy after fulfilling the inclusion and exclusion criteria. The patients were allocated into two groups of 30 each by simple random technique. Group A were allowed oral feeds in the early postoperative period (within 24 hours after surgery). Group B who were postoperatively kept "nil by mouth" up to 72 hours. All patients were followed up on day 7th and 14th after surgery. Post-Operative complications like intra-abdominal collection, leak/ fistula and any mortality were diagnosed on the basis of clinical examination, ultrasound and C.T Scan abdomen. Data were compiled and analyzed with SPSS 16.

**RESULT:** The age of the patients ranged from 21-79 years with the mean age for early oral feeding was  $42 \pm 13$  years and for delayed oral feeding was  $44 \pm 15$  years. The male to female ratio for early feeding was 4:1 and for delayed feeding 2.3:1. Early oral feeding was well tolerated in 83.3% cases while in late oral feeding 90% which was statistically insignificant with  $p$ -value=0.7065. In this study no leak, fistula or death was documented in either group.

**CONCLUSION:** Early postoperative oral feeding after ileostomy closure is safe, well tolerated and the fear related with its failure do not have solid grounds and it should be encouraged in elective cases.

**KEY WORDS:** Early Oral feeding, Late Feeding, Ileostomy Reversal, Leak.

**THIS ARTICLE MAY BE CITED AS:** Ahmad M, Qayyum A, Akhtar M, Shah R, Afridi S, Alam S, et al. Safety of early versus delayed enteral feeding following ileostomy closure: Randomized controlled trial. *Khyber Med Univ J* 2013; 5(4): 195-198.

## INTRODUCTION

Ileostomy is usually reversed at 8 to 12 weeks and ileostomy closure is often considered a minor procedure but it is associated with significant morbidity and

mortality.<sup>1-4</sup> A period of starvation- "nil by mouth" is a common practice after intestinal anastomosis. The stomach is decompressed with a nasogastric tube and intravenous fluid are given with oral feeding being introduced as gastric

dysmotility resolves.<sup>5</sup> The concept of postoperative ileus as a paralysis of the entire bowel with the complete absence of any functional contractile activity is misleading. When postoperative ileus develops, it is usually transient and clinically not significant. Therefore, feeding within 24 hours after laparotomy is tolerated, and the feed is absorbed.<sup>6</sup> However many prospective randomized trials performed in recent years evaluating the effects of nasogastric intubation have suggested that it may be unnecessary, itself delaying passage of flatus and bowel movements as well as lengthening the duration of the hospital stay.<sup>7</sup> The rationale of nil by mouth is to prevent postoperative nausea and vomiting and to protect the anastomosis allowing it time to heal before being stressed by food. It is however unclear whether deferral of enteral feeding is beneficial. In several prospective studies, beneficial effects of oral feeding were shown with regard to the rate of infectious complications and the length of hospital stay.<sup>8</sup>

It is an inevitable response to surgical trauma leading to uncomplicated ileus where the area of gastrointestinal tract resumes function at different times. The small intestine recovers first, usually within the first 24 hours, followed by the stomach about 12-24 hours later, and recovery of the normal large intestine function usually takes between 48 and 72 hours.<sup>9</sup>

There was no clear advantage of keeping patients nil by mouth after elective gastrointestinal resection and early feeding may be of benefit. Since surgical

patients are subjected to postoperative stress and hypercatabolic state, these patients require some form of nutritional support in the form of enteral or total parenteral nutrition. Although there is strong evidence that “nil by mouth” is not justified, the data are still conflicting over the role of early enteral nutrition compared with the traditional methods of postoperative feeding including total parenteral nutritional support.<sup>10</sup>

Finally, early enteral feeding may reduce septic morbidity after abdominal trauma and pancreatitis.<sup>11,12</sup>

Ileostomy is not uncommon in our population and late enteral feeding following closure may increase hospital stay and add financial burden to the patient. The current study was designed to compare the safety of early versus late enteral feeding following ileostomy closure in terms of tolerability and leak. Furthermore there is no local data available in this respect, so the results of this study will generate local statistics.

## METHODOLOGY

This prospective randomized trial was conducted in surgical “A” unit and Radiology Department of PGMI Lady Reading Hospital, Peshawar from January 2010 to December 2011. The patients suffering from temporary ileostomy for six weeks; have normal distal loopogram and above 14 years of age were admitted in the ward from outpatient department. Patients received radiotherapy, chemotherapy and leak or obstruction on distal loopogram and closure of ileostomy before six weeks were excluded from the study. Informed written consent obtained. Distal loopogram was done to check any distal pathology like stricture or leakage. Patients fulfilling inclusion criteria were included in this study. Detailed history, clinical examination, routine investigations like CBC, ECG, X-ray chest, blood sugar, HBsAg, and Anti HCV were done in each case pre-opera-

tively. Mechanical bowel preparation was done the day before surgery. Single layer interrupted extramucosal technique with vicryl 3/0 suture was carried out for the closure of ileostomy by consultant in both groups.

This study was carried out on 60 patients who underwent ileostomy closure. Patients were randomly randomized into two groups of 30 patients each. Patients in group-A were allowed oral feeds in the early postoperative period (within 24 hours after surgery) and patients in group-B were kept “nil by mouth” in postoperative period up to 72 hours.

In post-operative period, patients were kept nil by mouth while intravenous antibiotics and fluids up to the duration mentioned in both groups. Thirty milliliters liquid per hourly orally were started within 24 hours in group A and after 72 hours in group B. Tolerability of feed were considered if patients felt hunger and not nauseated or vomiting after feed. In case of nausea and vomiting frequency of intake decreased and stop feeding if patients refused feed. Daily progress including timing of appearance of bowel sounds, passage of flatus and stools were recorded of both groups. All patients were followed up on day 7<sup>th</sup> and 14<sup>th</sup> after surgery. Post-operative complications like abdominal distension, vomiting, intra-abdominal collection, leak/ fistula and any mortality were diagnosed on the basis of clinical examination, ultrasound, and CT Scan abdomen. Duration of hospital stay was recorded in all cases of both groups and data were compiled and analyzed with SPSS 16. Frequency and percentages were computed for categorical variables such as gender and

safety while numerical variables such as age was presented with mean  $\pm$  SD. Chi square test was used to compare the safety between the two groups.

## RESULTS

Out of a total 60 patients studied, of which 30 patients were allowed to early oral feeding and 30 patients to late oral feeding. The age of the patients ranged from 21 to 79 years with the maximum number in the 4<sup>th</sup> decade. The mean age for early oral feeding was  $42 \pm 13$  years and for delayed oral feeding was  $44 \pm 15$  years. The male to female ratio for early feeding was 4 to 1 and for delayed feeding 2.3 to 1. Sex distribution was shown in Table 1. The hospital stay for early oral feeding was 3-4 days and for late oral feeding was 4-7 days.

Early oral feeding was well tolerated in 83.3% cases while in late oral feeding 90% which was statistically insignificant with p-value=0.7065.

In this study no leak or fistula was documented in either group and due to its constant value no statistical test was computed. No deaths were reported in any group.

## DISCUSSION

It is customary to keep the patients “nil by mouth” after gastrointestinal anastomosis till patient passes flatus. However, adequate nutrition has been a major goal in postoperative care and now it is being increasingly recognized that withholding oral feeds for few days after post- Surgery in such cases leads to nutritional depletion and its consequences. In the past few years, some studies have found that it improved immune-competence.

TABLE I: SEX DISTRIBUTION

Sex	Group A (Early Oral Feeding)	Group B (Late Oral Feeding)	Total	p-value
Male	24 (80%)	21 (70%)	45 (75%)	0.5520
Female	6 (20%)	9 (30%)	15 (25%)	
Total	30 (100%)	30 (100%)	60 (100%)	

**TABLE II: COMPARASION OF TOLERABILITY OF FEED WITH OTHER STUDIES**

Studies	Time of start of early oral feed	Percentage of feed tolerated
Stewart et al <sup>10</sup>	Within 4 hours	90%
Patrelli et al <sup>9</sup>	24 - 48 hours	73%
Difronzo et al <sup>12</sup>	48 - 72 hours	89.6%
Our study	Within 24 hours	83.3%

tence, decreased septic complications, improved wound healing and possibly improved anastomotic strength<sup>13-16</sup>.

The traditional approach to start post operative feeding following bowel resection has been traditionally to await the resolution of postoperative adynamic ileus, as indicated by presence of bowel sounds and passage of flatus. However, recent clinical trials of patients undergoing laparoscopic or laparoscopic-assisted colectomy, with feeding initiated by protocol rather than by objective signs of return of bowel function resulted in early feeding and shortened hospital stay.<sup>17,18</sup>

These advantages initially were believed to be unique to laparoscopic colectomy, owing to smaller incisions and less manipulation of the gastrointestinal tract. More recently, numerous clinical trials examining the feasibility of early postoperative feeding following open colon resection and randomized trials comparing early postoperative feeding in open and laparoscopic colectomy, have demonstrated that early postoperative feeding is equally safe and effective following open colon resection.<sup>19,20</sup>

Lewis and coworkers published a meta-analysis in 2001 looking at early feeding versus a restricted diet. Based on 11 studies, they concluded that there was no benefit in adhering to restricted diet<sup>21</sup>. They pointed out that post laparotomy dysmotility predominantly affects the stomach and colon and that the small bowel recovers normal function between 4 and 8 hours, with feeding tolerated and food absorbed within 24 hours.<sup>5,22</sup>

Reissman et al.<sup>23</sup> compared 80 patients undergoing open bowel resection who were managed by traditional postoperative feeding protocol with 80 patients undergoing similar open procedures but who are managed by an early postoperative feeding protocol. No significant

differences were noted between the early postoperative and regular feeding groups for the rate of emesis, need for nasogastric tube reinsertion, and duration of ileus or overall complication.

Another common belief is that patients should not eat for several days after colorectal surgery in order to avoid anastomotic leakage (which lacks evidence). However, there is evidence that adequate oral intake has strengthening effect on intestinal anastomosis and does not lead to anastomotic complications. Furthermore, it was shown that feeding reverses the mucosal atrophy induced by starvation and increases anastomotic collagen deposition and strength<sup>24</sup>.

Seenu and Goel<sup>25</sup> showed that early oral feeding after elective colorectal surgery is safe and can be tolerated by most patients. Anderson and colleagues conducted a systemic review of 13 randomized trials on 1173 patients undergoing gastrointestinal surgery.<sup>26</sup> There were no significant differences between restricted and early postoperative diets, but the findings also suggested that there was no advantage to dietary restriction and indicated that earlier feeding may reduce the risk of postoperative complications.

In the present study oral feed started within 24 hours in the study group and it was well tolerated in 83.3% and 90% in late oral feeding ( $p= 0.7065$ ). Only 10 patients could not tolerate early oral feed and feeding had to be withheld for 12 hours and then continue feed in small quantities. The tolerance to early feed in the present study is comparable to the results of others studies as shown in Table II.

Fukuzawa et al<sup>27</sup> showed that early oral feeding after upper GI surgery leads to prompt anastomotic healing. Ekingen et al<sup>28</sup> showed that neither anastomotic

leakage nor dehiscence was observed in any group. Fanaie et al<sup>29</sup> reported that the anastomotic complications were similar in early and late oral feeding in GI surgery. In our study there was no leak in either group and the result is comparable with above mentioned studies.

In a systematic review and meta-analysis of controlled trials on early enteral feeding versus 'nil by mouth' after gastrointestinal surgery, eleven studies with 837 patients it was concluded that there was no clear advantage of keeping patients nil by mouth after elective gastrointestinal resection and early feeding may be of benefit. Since surgical patients are subjected to postoperative stress and hypercatabolic state, these patients require some form of nutritional support in the form of enteral or total parenteral nutrition. Although there is strong evidence that 'nil by mouth' is not justified, the data are still conflicting over the role of early enteral nutrition compared with the traditional methods of postoperative feeding including total parenteral nutritional support<sup>9</sup>.

The limitation of this study included less number of cases, short follow up period. We are also unable to study various patients' characteristics, co-morbidities considered a potential risk factors for postoperative outcome including BMI, and ASA score. Furthermore, it is not linked to a pre-determined standard protocol. We recommend a large multicenter prospective trial to confirm our findings.

## CONCLUSION

Early enteral feeding after ileostomy closure is safe, well tolerated. No morbidity (leak) and mortality documented. The fear related with its failure does not have solid grounds and it should be encouraged in elective cases. But due to small number of patients, this study does not advocate that the use of late enteral feeding should be abandoned in ileostomy closure, rather it provides data in favour of potential benefits of early enteral feeding.

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## AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

- MA:** Conception and design, acquisition of data, drafting the manuscript, final approval of the version to be published
- AQ,MA,RS,SA,SA;NK:** Acquisition & analysis of data, drafting the manuscript, final approval of the version to be published
- MUDS:** Supervision, critical revision, final approval of the version to be published

## CONFLICT OF INTEREST

Author declares no conflict of interest

## GRANT SUPPORT AND FINANCIAL DISCLOSURE

NIL