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Early Enteral Feeding Post-Resection Anastomosis without Diversion in Colon Cancer

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ABSTRACT

Background: Understanding early oral feeding (EOF) benefits among post colon cancer surgery patients is essential, as it allows surgeons to decrease the incidence of dangerous complications.

Objective: The aim of the current work was to prove that early enteral feeding is safe with little incidence of complications like fecal fistula.

Subjects and Methods: At General Surgery Department, Zagazig University Hospitals, 18 patients underwent urgent and elective colonic cancer surgery. The patients were randomly allocated by the closed envelop technique after completion of surgery into 2 groups: Group (A): consisted of 18 patients who followed early postoperative oral feeding protocol with oral fluids the first day after surgery and progressed to a normal diet within the next 24 to 48 hours, as tolerated with no leakage. Group (B): consisted of the same 18 patients who followed post-operative early oral feeding with anastomosis leakage.

Results: early post-operative feeding after colonic resection anastomosis was tolerated in 80.8% of patients. Also, there was no affection for the nutritional status. Also, the study revealed safety of early oral feeding in the recently performed anastomosis even in emergency situations as there was no increase in morbidity. In group research, those who were given solid foods as soon as they were able after surgery had a much shorter hospital stay (median of 4 days)., while among group (B) Complications after surgery led to a 10-day hospital stay as the average length of care.

Conclusion: Early post-operative feeding is safe and tolerable after colorectal surgery.

Keywords: Enteral Feeding, Post-Resection Anastomosis, Diversion, Colon Cancer.

INTRODUCTION

With a prevalence estimate between 40% and 80%, malnutrition is a typical observation in patients presenting for surgical therapy of colon cancers [(1)]. Patients may be at risk for malnutrition due to a wide range of circumstances, including but not limited to tumor location; type; disease stage; preoperative radiation and/or chemotherapy; and other factors [(2)].

Weight loss is a powerful predictive indication of poor outcome in terms of survival and responsiveness to therapy and can be caused by a number of factors, including nausea, vomiting, reduced appetite, early satiety, taste alterations, diarrhea, discomfort, mucositis, physical obstruction, and malabsorption. Cancer cachexia is also commonly seen in individuals with colon cancer solid tumors, and it is believed that the loss of both fat and lean body tissue associated with this disease contributes to 30%-50% of all cancer deaths [(3)].

By reducing postoperative infection, hospital length of stay, and mortality, EOF has the potential to enhance patient outcomes following colorectal surgery. The evidence-based guidelines for the management of complications following colorectal surgery now include EOF recommendations that advocate the prescription of an unrestricted meal within 24 hours after the procedure [(4)].

Putting the evidence from EOF into clinical practice is difficult even with defined guidelines. Poor adherence to postoperative feeding instructions has been previously observed, with a higher prevalence of delayed feeding after colon cancer treatments [(5)].

It has been hypothesized that this gap is due to a number of factors, including a failure to appreciate the potential advantages, a deficiency in nutrition education during surgical training, and the persistent yet unsubstantiated dogma of waiting for bowel activity to return before feeding [(6)]. Successfully introducing new rehabilitation program calls for a shift in organizational culture to foster better lines of communication, teamwork, and overall support [(7)].

The aim of the current work was to prove that early enteral feeding is safe with little incidence of complications like fecal fistula.

SUBJECTS AND METHODS

This prospective cohort clinical study included a total of 18 patients with colorectal cancer having elective open colon resection with anastomosis without diversion, attending at Onco-Surgery Unit's, Department of General Surgery, Zagazig University Hospitals.

Ethical Consideration:

This study was ethically approved by Zagazig University's Research Ethics Committee. Written informed consent of all the participants was obtained and submitted them to Zagazig University (ZU-IRB #9856). The study protocol conformed to the Helsinki Declaration, the ethical norm of the World Medical Association for human testing.

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Inclusion Criteria: Patients between 18 to 75 years, male and female, eligible for elective open colorectal cancer resection surgery with a primary anastomosis. Type of hemicolectomy (right or left or transfer hemicolectomy), and patient sent with colonic mass are candidates for colon surgery.

Exclusion Criteria: Patients refused to participate in the study. Patients with a bleeding disorder. Patients with chronic diseases like heart and kidney disease, and patient unfit for general anesthesia.

The patients were randomly allocated by the closed envelop technique after completion of surgery into 2 groups: Group (A): 18 patients who followed early postoperative oral feeding protocol. The first postoperative day should consist of only drinking oral fluids, with a gradual transition to a normal diet over the next 24 to 48 hours (as tolerated, with no leakage). **Group (B):** the same 18 patients who followed post-operative early oral feeding with anastomosis leakage

All patients were subjected to:

A. **History taking** with special emphasis on the presenting symptoms including pain, discharge, itching, and absence of incontinence. Patient demographics, previous surgical history were obtained.
B. **Clinical Examination:** Both general and local examination were performed to every patient. Local examination included perineal and perianal inspection, palpation, digital rectal examination in males and rectal and per-vaginal in females, and proctoscopic evaluation. Clinical anastomotic leakage, confirmed by pus or stool drainage on the drainage bag or from the incision site, was used as the gold standard for measuring the success of the relaparotomy. Patients who show signs of leaking on imaging studies but do not ultimately develop clinical leakage are said to have radiological anastomotic leakage. According to **Zissin and Gayer[8],** radiographic signs of a failed anastomosis include air at the anastomosis, contrast outside the intestinal lumen, and perianastomotic fluid collections occurring more than a week after surgery**.**
C. **Imaging:** Patients with cancer colon should have CT abdomen and pelvis with contrast oral and intravenous. Lower endoscope. Biopsies and pathology, and metastatic work-up.
D. **Laboratory investigations:** Liver function tests, kidney function tests, CBC, coagulation profile, and glycemic profile.

Procedure:

All patients entered the operation room. Introduction of intra venous line, urinary catheter. All patients had prophylactic antibiotics, general anesthesia was started, and abdomen was sterilized. Midline exploration was docalculatedne, dissection around affected part, resection of the affected part, end to end anastomosis. Blood loss was calculated. Registration of blood transfusion, time of operation, and recovery of the patient and transferring to ICU were done.

Post Operative:

- Care on the first day of post-operation: patients follow up by chart of fluid input and output. Monitoring of vital sing and random blood sugar. Patients were advised to early feeding by drinking Sips of water and gradually increasing the amount of fluid then taking semisolid fluid then taking solid food, assessment of color and amount of the drain fluid, and physical therapy and early mobilization.

Follow-up:

- All patients followed in outpatient clinic thirty-day after the operation.
- Registration of any complications such as fistula wound dehiscence, leakage from primary anastomosis, wound infection, burst abdomen and patient readmission.

Statistical analysis

To analyze the data acquired, Statistical Package of Social Services version 20 was used to execute it on a computer (SPSS). To convey the findings, tables and graphs were employed. The quantitative data was presented in the form of the mean, median, standard deviation, and confidence intervals. The information was presented using qualitative statistics such as frequency and percentage. The student's t test (T) is used to assess the data while dealing with quantitative independent variables. Pearson Chi-Square and Chi-Square for Linear Trend (X^2) were used to assess qualitatively independent data. The significance of a P value of 0.05 or less was determined.

RESULTS

Table (1) shows that age of cases were **51.22±10.95** with minimum 40 and maximum 74 years, and female were majority with 61.1%.

Table (1): Age and sex among studied group (N=18)

		Age (years)	
Mean± SD		**51.22±10.95**	
Median (Range)		**46.0 (40-74)**	
		N	**%**
Sex	**Female**	**11**	**61.1**
	Male	**7**	**38.9**
	Total	**18**	**100.0**

Table (2) shows about 11.1% were abnormal.

Table (2): Pre–Operative WBCs distribution among studied group.

		N	%
Pre–Operative WBCs	Abnormal	2	11.1
	Normal range	16	88.9
	Total	18	100.0

Table (3) shows majority did resection of mass and hemicolectomy.

Table (3): Type of operation distribution among studied group

		N	%
Type of operation	Extended hemicolectomy and ileocolic anastomosis with partial gastrectomy without diversion	2	11.1
	Low anterior resection without diversion	2	11.1
	Mass resection without diversion	2	11.1
	Pelvic exentration without diversion	2	11.1
	Resection of mass with anastomosis	4	22.2
	Hemicoloctomy with ileocolic anastomosis	4	22.2
	Transfer colectomy and coliocolic anastomosis	2	11.1
	Total	18	100.0

Table (4) shows that no cases had vomiting, 2 cases had fever, 4 cases with Leukocytosis, 2 cases had wound infection and 2 cases had Wound dehiscence and 2 had leakage.

Table (4): Outcome distribution among studied group

		N	%
Vomiting	No	18	100.0
	Yes	0	0.0
Fever	No	16	88.9
	Yes	2	11.1
Post WBCs	Leukocytosis	4	22.2
	Normal range	14	77.8
Wound infection	No	16	88.9
	Yes	2	11.1
Wound dehiscence	No	16	88.9
	Yes	2	11.1
Leakage	No	16	88.9
	Yes	2	11.1
	Total	18	100.0

Table (5) shows hospital stay was distributed as 4.94±1.86.

Table (5): Hospital stay distribution among studied group

	Hospital stay
Mean± SD	4.94±1.86
Median Range	4.0 (4-9)

Table (6) shows hospital stay was significantly higher among complicated cases

Table (6): Relation with complications

			Non	Complicated		
Age			52.64± 11.95	46.25± 4.34	1.03	0.31
Hospital stay			4.07±0.26	8.0± 1.15	6.75	0.006*
Sex	Female	N	9	2		
		%	64.3%	50.0%		
	Male	N	5	2	0.26	0.60
		%	35.7%	50.0%		
Pre op WBCs	Abnormal	N	2	0		
		%	14.3%	0.0%		
	Normal range	N	12	4	0.64	0.42
		%	85.7%	100.0%		
Total		N	14	4		
		%	100.0%	100.0%		

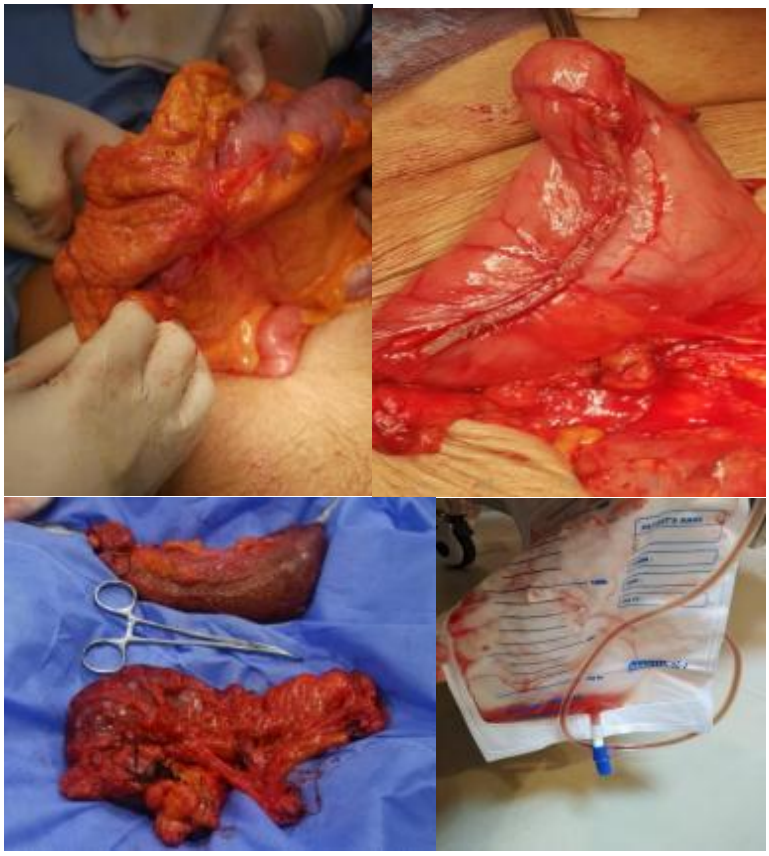

Figure (1): Case of Female patient 74 years old with intestinal obstruction with mass in transverse colon invading greater curvature of stomach operated by EN block resection, extended Rt hemicolectomy and ileotransverse-anastomosis with partial gastrectomy without diversion.

Figure (2): Case of Male patient with cancer Rt. colon, operated by Rt hemicolectomy and ileotranverse anastomosis Pt shows in the third day some leakage manifestation like fever and drain turbid content, entral feeding did not stopped together with close monitoring and fluid support no leakage by the 7 day post operative

DISCUSSION

Epidural analgesia, early oral feeding and movement, and laxative are all part of a successful multimodal rehabilitation regimen following open colonic resection, which has been shown to restore gastrointestinal motility quickly. Oral feeding as soon as possible following gastrointestinal surgery is widely tolerated, safe, and can significantly improve recovery and result [9].

Patients undergoing emergency or elective intestinal surgery are the focus of this study, which compares the two contrasting strategies of early vs delayed oral feeding in terms of primary outcome indicators such hospital stay and problems connected to the surgical procedure itself. There was no correlation between age or gender and the positive effects of early postoperative feeding in this trial. **Delany and colleagues** [10] showed that people under the age of 70 who start feeding again soon after surgery saw the greatest benefits.

Our results showed that age of cases was **51.22±10.95 years**, female were majority (61.1%). **Difronzo *et al.*** [11] stated that no age-related differences, although he did find that males are more likely to experience early post-operative food intolerance than females. This research does not lend credence to such hypothesis. **Petrelli and colleagues** [12] found no correlation between male sex and early oral feeding tolerance among patients.

Difronzo *et al.* [11] observed that the success of early postoperative oral feeding was unaffected by the presence of other medical conditions. The results of early postoperative oral feeding were not influenced by the presence of concomitant medical conditions, according to this study.

In our study different indications for emergency bowel resection and different types of intestinal anastomosis were performed. There was no correlation between the type of anastomosis and the benefits of early postoperative feeding. However, patients with intestinal obstruction were intolerant to early postoperative feeding and suffered from vomiting, which stopped spontaneously or with an antiemetic and some of them needed nasogastric tube reinsertion.

Fanaie and Ziaee [13] stated that regardless of the kind of anastomosis, early postoperative feeding was well tolerated and associated with positive outcomes.

Reissman and colleagues [14] studied 80 individuals following open bowel resection. They found that half of them were handled using the standard postoperative feeding regimen and the other half using an early postoperative feeding program. There were no statistically significant changes in emesis rate, requirement for NG tube reinsertion, length of ileus, or total problems between the early postoperative feeding and regular feeding groups.

Self-sufficiency after surgery depends on prompt nutrition restoration. According to the meta-analysis conducted by **Lewis *et al.*** [15]**,** early postoperative per oral feeding minimises infection problems and shortens hospital stays without increasing the risk of anastomosis dehiscence. The duration of postoperative ileus is also reduced when oral feeding is started right away.

There was only one occurrence of clinical anastomotic leak in the early feed patients, so this study lends credence to the idea that early postoperative feeding in intestinal surgery didn't put the newly completed intestinal anastomosis at risk. This research lends credence to the idea that postoperative feeding has a protective impact against morbidity. There was no increase in the rate of serious complications after surgery; however, three cases (11.5 percent) of wound infection occurred in the early feed patient, and no cases of burst abdomen occurred in the early feed patients (11.5 percent). Early feeding patients have a minimal risk of postoperative problems, and they also benefit from shorter hospital stays.

Fanaie and colleagues [13] concluded that early feeding after gastrointestinal anastomosis is safe, well tolerated, and not linked to an increased risk of postoperative symptoms like ileus or consequences like wound dehiscence, infection, anastomotic leaking, or mortality. **Difronzo and colleagues** [11] also observed that in 200 patients tested for early post-operative feeding following open colon resection, there was no incidence of anastomotic leak.

According to the research of **Schwenk and colleagues** [16], fast track rehabilitation after elective colon surgery has been thoroughly studied, and it has been found to reduce the overall rate of problems from 20-30% to 10%. In a series of 1,132 patients, **Proske *et al.*** [17] found that 11 percent experienced surgical complications; specifically, 4 percent experienced anastomotic leakage, 3 percent experienced general complications, 1 percent experienced mortality, the median length of hospital stay was 4 days, and 14 patients required readmission.

Lewis and colleagues [15] 13 randomized controlled trials comparing nil by mouth care in gastrointestinal surgery with early initiation of enteral feeding were pooled and analysed. Early feeding was observed to minimize the incidence of infection in seven studies, including six where patients were fed directly into the small bowel and five where patients were fed orally, pneumonia, wound infection, intra-abdominal abscess, anastomotic dehiscence, death were all associated risks that decreased.

The primary success of early post-operative feeding was the significant shortening of hospital stay. This study found that patients who started feeding soon after surgery had a considerably shorter hospital stay than those who started feeding after surgery (median 4 days vs. 9 days). The medical, psychological, and financial benefits of early oral feeding to shorten hospital stays were validated.

Raue and colleagues [18] demonstrated that patients on the fast track to recovery from laparoscopic

sigmoidectomy were released from the hospital on day 4 (range: 3-6), while patients on the conventional care track were released from the hospital on day 7 (range: 4-14).

Difronzo and colleagues [11] demonstrated that early postoperative feeding is safe and effective, and results in a shorter hospital stay, according to a case series of 200 patients who underwent elective open colon resection.

No deaths were recorded in the early fed group during the course of this investigation. Proof positive that starting solids so soon after birth does not raise the risk of dying. When comparing early oral feeding versus delayed oral feeding following intestinal anastomosis, **Fanaie and colleagues** [13] observed no significant changes in mortality. The decrease was also confirmed by other investigations.

CONCLUSION

It could be concluded that early post-operative feeding is safe and tolerable after colorectal surgery. Physical, mental, and financial gains can all be realized through shorter hospital stays, which is the primary success of early post-operative feeding.

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