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MEDICAL SCIENCES

EFFECTS OF EARLY ENTERAL FEEDING ON PATIENTS UNDERGOING GASTROINTESTINAL ANASTOMOSIS

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Abstract

A retrospective study was conducted to evaluate the efficacy and safety of early enteral feeding for a patient who underwent a gastrointestinal anastomosis for various reasons. The results of the study were based on a comparison of two groups of patients that differed in the timing of the beginning of enteral nutrition.

Keywords: *Enteral feeding, gastrointestinal anastomosis*

Introduction. An adequate nutrition regimen has so far been one of the major concerns in postoperative care. Traditional management consist of no oral feeding over several days after operation before restore bowel function [17]. Despite its clinical benefits, early oral nutrition after different types of gastrointestinal anastomosis is not widely implemented because of concerns about tolerability and safety. There is the traditional belief that the early enteral nutrition of the patients who underwent intestinal resection and anastomosis can be dangerous and may cause such life-threatening complication as leakage [19].

For a long time it was believed that fasting after intestinal surgery played a protective role at the site of the anastomosis, while some researchers consider that this hypothesis is not based on scientific evidence and is not justified, since about 2 liters of secretion enter the gastrointestinal tract daily, which pass through the anastomosis without damaging it, and, on the contrary, have demonstrated many advantages, such as improved wound healing, prevention of intestinal villous atrophy and reduction in surgical infection [1, 2, 7, 13].

A meta-analysis and systematic review of 11 studies, which included medical records of 837 patients, showed that prolonged fasting of patients after gastrointestinal surgery is not useful and the beginning of early enteral nutrition is more beneficial [10]. Sugita [16] found that enteric bacteria and endotoxins are prone to translocation if patients fast too long postoperatively [16].

Recently numerous studies have reported that giving enteral feeding to patients at an early stage following surgery was well tolerated and had many others positive effects that included: rapid restoration of the integrity of the digestive tract, prevention of atrophy of the intestinal mucosa, stimulation of intestinal motility, reduction of stasis; immunologic enhancement, reduction in the incidence of infectious complications; enhances rehabilitation, reduces the length of hospital stay; reduction of morbidity and mortality [2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 18].

Materials and methods. Between 2015 – 2019 a 57 patients underwent surgery with gastrointestinal (GI) anastomosis for various reasons and they were divided consecutively to early feeding group (EFG) and late feeding group (LFG). The patients were selected from all the participants who underwent a different gastrointestinal tract anastomosis regardless of whether it was an elective or emergency surgery. The inclusion criteria in the current study were any history of surgery involving anastomosis from the esophagus to the rectum.

Most common reasons for different types of gastrointestinal anastomosis were: intestinal obstruction due to adhesion band with irreversible ischemia, strangulated hernia with damaged intestine, invagination, mesenteric thrombosis with gangrene, bezoar-induced small bowel obstruction, gallstone ileus, colostomy closure, Crohn's disease, neoplasia, varices bleeding in liver cirrhosis patients. All patients who underwent gastrointestinal anastomosis as elective or emergency were included in the study.

Most of operations were including bowel resection with primary anastomosis (39 cases), colostomy closure (4 cases), esophagus transection with esophago-esophago circular stapler anastomosis (14 cases).

The number of emergency surgeries was 15 cases in patients with EFG (55.5%) and 17 cases in patients with LFG (56.6%), which indicated no statistically significant difference ($P = 0.076$).

The early feeding group ($n = 27$) began fluids on the first postoperative day while the late feeding groupe ($n = 30$) was managed in the traditional nutritional regimen. Surgical outcomes, including mortality, the incidences of postoperative complications (such as wound infections, anastomosis leakage, intraabdominal abscesses, peritonitis, pleural effusion, pneumonia, sepsis), length of hospital stay, postoperative readmissions, and reoperation rates were compared between two groups.

Considering that postoperative ileus is resolved within a few days, we tried to accelerate this process by

early removal of the nasogastric tube, that reduce fluid and electrolytes loss and carefully initiated a fluid diet on the first day after surgery in EFG.

The EFG group included patients with early feeding after surgery, where the diet initiated by liquids within 24 h after surgery and progressed to soft blended diet (after 48 h). Then the soft blended diet was replaced by a normal diet in case tolerance was desirable. The patients went fasting in case there were symptoms of intolerance including vomiting, abdominal pain or distention after starting the diet.

The clinical characteristics of the two groups were described through statistical measures such as central tendency and frequency distribution.

Qualitative variables were compared through Chi-square test or Fisher's exact test. The quantitative variables in the two groups involved *t*-test and Mann-Whitney test. In all calculations, $P > 0.05$ was considered the significance level.

Results.

Of 57 patients in this study, there were 11 males (40.7%) and 16 females (59.3%) for EFG with an average age of 43.7 ± 18.9 years. Moreover, there were 13 males (43.3%) and 17 females (56.7%) for LFG with an average age of 44.8 ± 13.6 years.

The mean time of first enteral feeding in the EFG was 1.5 ± 0.5 days and it was 5.8 ± 0.7 days in the LFG.

The majority 25 (92,5%) of the patients that started on an early enteral feeding (water or other liquids) on the 1st day after the surgery responded well. Only two (7,4%) patients of EFG continued fasting because they had symptoms of intolerance including vomiting, distention or abdominal pain after starting the diet.

In the current study we found that patients with early enteral nutrition started had earlier return of bowel function. We achieved earlier ileus resolution which was manifested by early activation of intestinal function (start of bowel sounds, movements, gas passing and defecation). The average first time bowel sounds auscultation was 1.8 ± 0.5 days in EFG and 3.2 ± 1.1 days in LFG. The time to passage of flatus (2.3 ± 0.6 days vs 4.2 ± 1.2 days), and defecation (3.2 ± 1.6 vs 4.8 ± 1.2 days) were significantly faster in EFG ($p > 0,05$).

We found that the frequency of wound infection was in statistically significant correlation with elective or emergency surgery and with systemic comorbidities. In fact, emergency surgery and systemic comorbidities (such as liver cirrhosis on a scale B,C Child-Pugh, obesity, diabetes mellitus and other) significantly increased the risk of complications.

In our study postoperative complications occurred in 11 (19,2%) patients. The wound complications were the most common and developed in 9 (15,7%) patients. There was a 4 (14,8%) rate in the EFG compared to 7 (23,3%) in the LFG of general surgical complications with a significant statistical difference; among these complications wound infections predominated in both groups.

Anastomotic leakage was developed in two cases (6,6%) in LFG that underwent several re-operations and one patient died because of intra-abdominal septic

complication. Anastomosis leakage were not seen in early feeding group.

We observed one case (3,3%) of early post-operative adhesive intestinal obstruction in LFG and this patient was reoperated.

Other non-infectious complications included right-sided pleural effusion in 3 (10%) patients with liver cirrhosis from the LFG, which were removed by pleural punctures under ultrasonography and pneumonia in one patient, that was resolved under conservative treatment.

The average length of hospital stay in EFG was significantly less $8 \pm 0,7$, than in LFG 12 ± 0.8 ($p > 0,05$).

Thus, our study confirmed the safety and feasibility of early enteral nutrition for patients with various types of gastrointestinal anastomoses.

Conclusions.

1. Early initiation of enteral feeding following GI tract anastomosis based on the results of this study was not associated with an increase in the incidence of gastrointestinal complications such as anastomotic leakage and other complications.

2. Early enteral feeding is safe, good tolerated by the majority of patients undergoing GI anastomosis and associated with clinical benefits, including fast GI function recovery, postoperative complications reduction and shorten hospital stay.

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STATE OF DEFORMATION CAPACITY OF ERYTHROCYTES IN PATIENTS WITH PEPTIC STOMACH ULCER AND DUODENUM IN COMBINATION WITH METABOLIC SON

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СТАН ДЕФОРМАЦІЙНОЇ ЗДАТНОСТІ ЕРИТРОЦИТІВ У ХВОРИХ НА ПЕПТИЧНУ ВИРАЗКУ ШЛУНКА ТА ДВНАДЦЯТИПАЛОЇ КИШКИ У ПОЄДНАННІ З МЕТАБОЛІЧНИМ СИНДРОМОМ

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Abstract

We found changes in the rheological properties of erythrocytes in patients with PVS and duodenum with the presence of MS, in particular, a decrease in the ability to deform, increased VVE can significantly affect the state of microcirculation in PVS and duodenum. Changes in the properties of erythrocytes, in turn, lead to increased destruction with the release of procoagulation factors into the blood, slowing down the blood flow as a result, the formation of microthrombi in small vessels of the stomach and duodenum.

Анотація

Виявлені нами зміни реологічних властивостей еритроцитів у хворих на ПВШ та ДПК з наявністю МС, зокрема, зменшення здатності до деформації, підвищення ВВЕ може суттєвим чином впливати на стан мікроциркуляції при ПВШ та ДПК. Зміни властивостей еритроцитів, у свою чергу, призводять до

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