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EARLY ENTERAL NUTRITION AFTER SURGICAL TREATMENT OF GUT PERFORATIONS

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ABSTRACT

Background: A 'nil by mouth' (NBM) approach after major gastrointestinal (GI) surgery has been well known for many years. Early enteral nutrition (EN), as opposed to the conventional NBM and intravenous fluids (IVF) approach, has received increasing attention in recent years.1 A period of starvation ("nil by mouth") is common practice after gastrointestinal surgery during which an intestinal anastomosis has been formed.The widespread practice of starving patients in the immediate period after gastrointestinal surgery has been challenged by this prospective study. **Aim and objectives:** This study is aimed at investigating the benefits of early oral feeding / early enteral nutrition to patients who undergo surgical treatment for the gut perforations, especially with regard to the time of Paralytic ileus recovery, period of hospital stay, tolerance to diet, nutritional status of the patient and nitrogen balance (NB) rate in post-surgery. **Material and Methods:** This prospective randomized study is carried out in MGM medical college and Hospital, Aurangabad between May 2012 and May 2015In the subjects belonging to Test Group, feed was started on the POD-2 irrespective whether the patient passed flatus or motionSubjects in Group B were assessed for the feasibility of oral intake on the fifth postoperative day and those found suitable were given sips of an appetising liquid. **Resul:** tsThe analyses of the results indicate that even after generalised peritonitis the gastrointestinal tract recovers its tone and function within 48 hours. **Conclusion:** early enteral feeding significantly reduces the incidence of wound infection, paralytic ileus and pain in post-operative patients of Perforation Peritonitis

Keywords: Early Enteral Nutrition, Gut Perforation Surgery, Nutritional Support.

INTRODUCTION

A 'nil by mouth' (NBM) approach after major gastrointestinal (GI) surgery has been well known for many years. Early enteral nutrition (EN), as opposed to the conventional NBM and intravenous fluids (IVF) approach, has received increasing attention in recent years.1 A period of starvation ("nil by mouth") is common practice after gastrointestinal surgery during which an intestinal anastomosis has been formed. The stomach is decompressed with a nasogastric tube and intravenous fluids are given, with oral feeding being introduced as gastric dysmotility resolves.2 The rationale of nil by mouth is to prevent postoperative nausea and vomiting and to protect the anastomosis, allowing it a time to heal before being stressed by food. Contrary to widespread opinion, evidence from clinical studies and animal experiments suggests that initiating feeding early is advantageous. Postoperative dysmotility predominantly affects the stomach and colon, with the small bowel recovering normal function 48 hours after laparotomy. Feeding within 24 hours after laparotomy is tolerated and the feed absorbed. Gastrointestinal surgery is often undertaken in patients who are malnourished, which in severe cases is known to increase morbidity. In animals, starvation reduces the collagen content in anastomotic scar tissue and diminishes the quality of healing, whereas feeding reverses mucosal atrophy induced by

starvation and increases anastomotic collagen deposition and strength. Experimental data in both animals and humans suggest that enteral nutrition is associated with an improvement in wound healing. Finally, earlyenteral feeding may reduce septic morbidity after abdominal trauma and pancreatitis.3,4 Adequate nutrition has always been a major goal of postoperative care. However, because of ileus, early oral feeding after abdominal surgery is usually avoided and routine nasogastric decompression has been used.' More recent studies showed that the routine use of a nasogastric tube after elective abdominal surgery and colorectal surgery may not be necessary. Regardless of the use of a nasogastric tube, oral feeding has been delayed until after the resolution of postoperative ileus. Recently, with the increased popularity of laparoscopic surgery, several authors showed that early feeding after laparoscopic colectomy is safe and tolerated by the majority of patients. Other studies clearly showed the advantages of early enteral nutrition in surgical patients in reducing septic complications and overall morbidity when compared with parenteral nutrition. There is no evidence that bowel rest and a period of starvation are beneficial for healing of wounds and anastomotic integrity. Indeed, the evidence is that luminal nutrition may enhance wound healing and increase anastomotic strength, particularly in malnourished patients. Over the past fewyears, the advantages of early enteral feeding over delayed enteral feeding and over conventional total parenteral nutrition were noticed. It has been found to preserve the integrity of the gut mucosa, reduce bacterial translocation, stimulate the host defense mechanisms and improves outcome.5,6,7 Recently, it has been demonstrated that early enteral feeding in multiple injury cases diminishes gastric intolerance towards food and promotes earlier establishment of motility in the gastroduodenal segment of the digestive tract.Catabolic response after surgery may have detrimental effects, forexample, it can compromise immune function, diminish muscle strength, delay wound healing, cause a subjective feeding of fatigue, prolong convalescence, and increase overall morbidity.9 Prolonged postoperative starvation could further jeopardize malnutrition and catabolism, but nonetheless, the traditional view was that the oral intake of fluids or nutrients be reserved until postoperative ileus has resolved. After many reports were issued on the benefits of enteral nutrition in critically ill patients,10,11 several experimental and clinical studies of gastrointestinal surgery have shown that traditional postoperative oral intake restriction is not based on scientific evidence. A number of recent randomized controlled trials and meta-analyses comparing early enteral nutrition and traditional postoperative fasting after gastrointestinal surgery have concluded that early postoperative enteral nutrition reduces postoperative morbidity (especially infectious complications), mortality, and hospital stay without increasing the risk of gastrointestinal-related complications.12–14 Fast-track surgery, also known as ‘‘enhanced recovery after surgery (ERAS)’’ or ‘‘multimodal rehabilitation’’, refers to the use of multimodal approaches aimed at enhancing postoperative recovery and reducing morbidity by implementing scientific evidence related to anesthesia, analgesia, surgical stress, fluid management, minimally invasive surgery, nutrition, and ambulation.15 Recently, several guidelines for different types of surgery including colonic, pancreatic, and pelvic surgery, have been issued from the ERAS society .Actually, early postoperative enteral nutrition is considered one of the most important multimodal approaches in the context of enhancing postoperative recovery.16 Nutritional support plays important roles in woundhealing and postoperative recovery,17,18 and a poor nutritional status is strongly associated with delayed wound healing and longer hospital stays after surgery.19,20 In particular, after emergency gastrointestinal (GI) surgery, nutritional status is impaired and basal energy expenditure is elevated,21,22 and thus, nutritional support is of considerable importance. Several reports have emphasized that early enteral feeding should be started as soon as possible after resuscitation because the immunomodulatory effect of enteral feeding could assist recovery.23-24 Furthermore, enhanced recovery after surgery has been shown to improve postoperative recovery after elective GI surgery.25,26 However, patients that undergo emergency GI surgery have an edematous or ischemic bowel, and are at high risk of postoperative complications, such as ileus, obstruction majority of surgeons are wary of early feeding after emergency GI surgery. Furthermore, relatively few reports have been issued on the safety of early oral feeding after emergency GI surgery.22,27,28. The standard method for initiating and advancing oral diet after surgery is evolving. The old approach includes nasogastric decompression and withholding oral diet until bowel function has clearly returned. While the use of nasogastric tubes (NGT) for decompression after surgery is not as common, the initiation of oral diet is still often held until the perceived return of bowel function. The resumption of an oral diet in this setting may begin with ice chips or sips of clear liquids, and then advance to clear liquids, then gradually to a regular diet. There is substantial evidence that this traditional approach is unnecessary in most instances. The widespread practice of starving patients in the immediate period after gastrointestinal surgery has been challenged by this prospective study.

AIMS AND OBJECTIVES

This study is aimed at investigating the benefits of early oral feeding / early enteral nutrition to patients who undergo surgical treatment for the gut perforations, especially with regard to the time of Paralytic ileus recovery, period of hospital stay, tolerance to diet, nutritional status of the patient and nitrogen balance (NB) rate in post-surgery.

MATERIALS AND METHODS

This prospective randomized study is carried out in MGM medical college and Hospital, Aurangabad between May 2012 and May 2015. This study proposal is studied and approved by the department review committee. Patients with enteric

perforations underwent emergency surgery after undergoing relevant investigations. Intravenous fluids, and anti-microbial agents were routinely administered prior to surgery and naso-gastric tube aspiration was routinely performed. The subjects were randomized to receive Oral Feeds within 48 hours (Test Group) or to receive intravenous alimentation for up to 7 days (Control Group) using random tables. Postoperatively, besides parenteral fluids, a broad-spectrum antibiotic combination of a cephalosporin, metronidazole, and an aminoglycoside is given to subjects in both the groups for five days. The antibiotics were changed or continued for a longer duration, if dictated by circumstances. Continuous aspiration through a nasogastric tube was provided for 48 hours.

In the subjects belonging to Test Group, feed was started on the POD-2 irrespective whether the patient passed flatus or motion The rate of feeding was slowed down or the feeding was stopped, if patient developed intolerable distension, uneasiness, vomiting, hiccough or abdominal pain. The feeds were administered to an awake patient who was propped up at 300. The patient received another 300-400 calories in the form of intravenous dextrose. The conventionally managed patients received calories only in the form of dextrose containing fluids intravenously, which amounted to 600 calories on an average. 60 From the fifth postoperative day, in addition to enteral feeds, patients belonging to Group A were kept on intravenous patency line. Between the eighth and tenth day the naso-gastric tube was removed and complete oral feeds in the form of semi-solid diet were commenced.

Subjects in Group B were assessed for the feasibility of oral intake on the fifth postoperative day and those found suitable were given sips of an appetising liquid. Those tolerating the sips graduated to 500-ml liquids and then semi-solids over the next two days. Those who did not tolerate oral feed stayed on intravenous fluids till they could take feeds orally.

Patients were closely monitored and feeding was slowed or stopped if complications related to tube feeding occurred. The patients were watched closely for signs of a leak from the repaired perforation of the gut.

Postoperatively, the patients were subjected to certain investigations at regular intervals:

Determination of weight on the first and at the time of discharge;
Biochemical and haematological investigations that were done Included estimation of haemoglobin concentration, levels of albumin and creatinine in the serum, blood urea levels and urinary urea levels on the second, fourth & seventh postoperative days;

Nitrogen balance was calculated by estimating nitrogen input and output from urinary urea by the following formula: Nitrogen Balance = (Protein intake/6.25)-(UUN + 4), where: 6.25 grams of protein has 1gram of nitrogen, UUN is urinary urea nitrogen, or grams of nitrogen excreted in the urine over a 24-hour period. “Insensible losses” via the skin and GI tract accounted for 4 grams of nitrogen lost each day
. On the POD 2nd the patient were allowed to have liquid diet for which strict charting was done The feed was stopped, if the patient developed intolerable distensions, uneasiness vomiting heaviness hiccough or crimpy abdominal pains. The feeds were administered to the patient who were propped up to 30. The patient were receiving another 300-400cals in the form of the I.V Dextrose. The conventionally managed patients were receiving calories only in the form of I.V dextrose containing fluids amounting to 600calories on an average.

On the 3rd POD the TG patients were shifted on soft diet receiving approx. (1200) calories. The soft diet that was assigned to the patient was also charted. While the conventionally managed patients were receiving calories only in the form I.V Dextrose containing fluids which were amounted to 800calories on an average. 62
On the 4th POD, if the patient tolerates the soft diet without any complications then the patient were allowed to have a semisolid diet for which calorie charting will be done which should not be less than 1400cal. Throughout the POD, patients were receiving parenteral antibiotics and supportive I.V fluids providing additional 300-400calories .

Thus, after 4th POD patients were receiving over 2000 Calories/day. The conventionally managed patients received 800 Cal on an average in the form of dextrose containing fluids. From the 5th POD, the patient were shifted on the regular diet. Patients were discharged after assessing nutritional state and outcome.

The groups were compared for incidence and duration of
1. Wound infection
2. Wound dehiscence
3. Leakage of the repaired perforation of the gut with peritonitis.
4. Septicemia
5. Intra-abdominal sepsis
6. Pneumonia

7. Hospital stay and mortality Oral feeding complications -Vomiting -Hiccough -Distension -Abdominal cramps -Diarrhoea–
Leak of the repaired perforation of the gut with peritonitis 63 Serum transferrin levels were calculated pre op and POD 4 and POD 7
The major complications were measured in terms of MAN DAYS i.e. days spent by a man suffering from particular complications which in turn depicts the time taken to control a particular complication and not its incidence.

Differences between the values of serum albumin, nitrogen balance and weight gain/ loss were considered as markers of nutritional status. These were expressed as percentage of patients showing an increase/ decrease in value. 64 Mean weight loss between the first and tenth day was calculated. The stay of each patient in the hospital was noted and the nutritional state at the time of discharge recorded. The mean duration of hospital and mean weight loss and Changes in BMI were compared by 'T' test

Inclusion and Exclusion Criteria

Inclusion criteria :

All types of perforation who present in the casualty, OPD with complaint so facuteabdomen, guardingandrigidityandonx-raystanding"gas under diaphragm ".
Age>14yrs.

ExclusionCriteria

Patients with comorbid conditions

Diabetes mellitus

Grossrenal and hepaticdys function

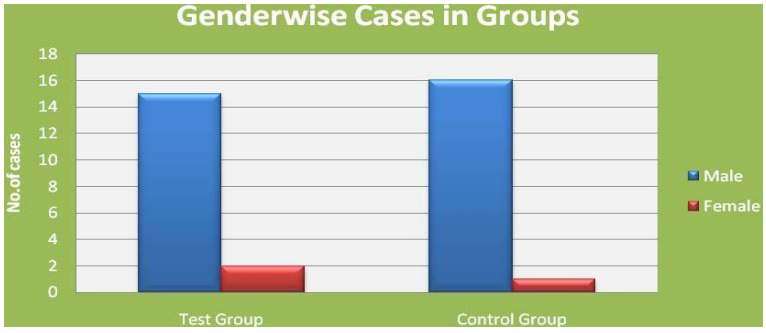
- Those with in to relence to milk and milk based products
- Those with unresectable Tumors.

Patients with severe adhesions

OBSERVATION AND ANALYSIS

Table–1: Distribution of Cases according to Gender

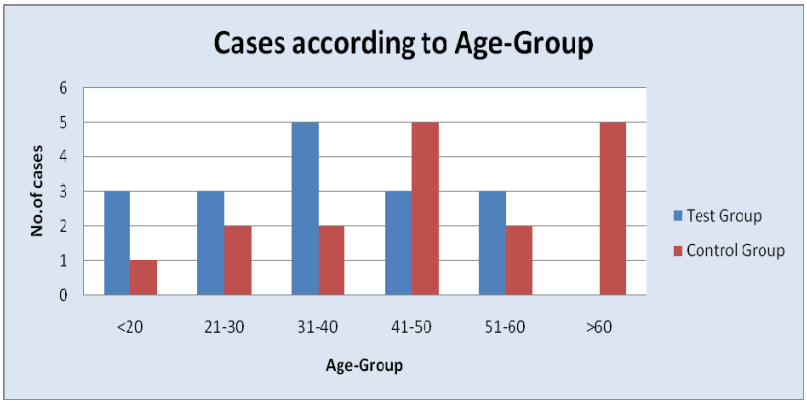
Gender	TestGroup		ControlGroup		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
Male	15	88.29%	16	94.11%	31	91.17
Female	02	11.71%	01	05.89%	03	08.83%
Total	17	100%	17	100%	34	100%



In our study total number of patients were 34(17 in each group).
The meanage group for the Test group was 35.29 were as for the control group was 49.35. The male patients were 88.29% were as 11.71% were female patient in the test group. The control group had 94.11% and the female were 5.89%.

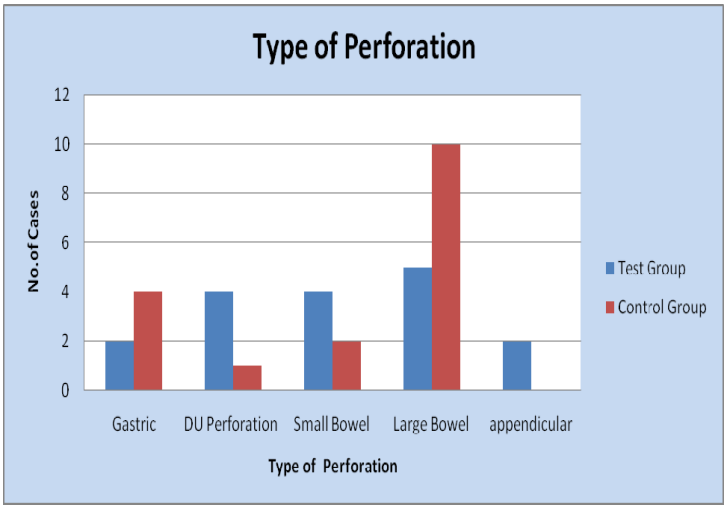
Table–2: Distribution of Cases according to Age-Group

Age-Group:	TestGroup		ControlGroup	
	No.	Percentage	No.	Percentage
<20	03	17.76%	01	05.89%
21-30	03	17.76%	02	11.76%
31-40	05	29.41%	02	11.76%
41-50	03	17.76%	05	29.41%
51-60	03	17.76%	02	11.76%
>60	00	00%	05	29.41%
Total	17	100%	17	100%
Mean±SD	35.29±13.18		49.35±16.40	



Table–3: Distribution of Cases according to Type of Perforation:

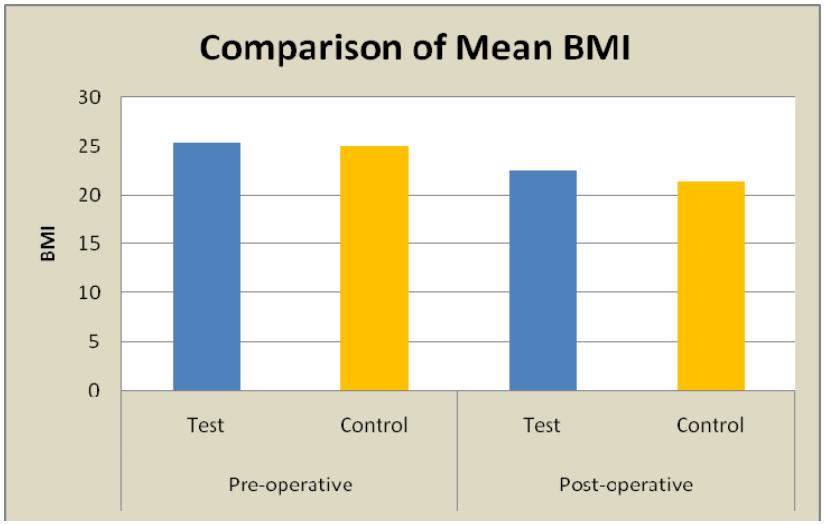
TypeofPerforation:	TestGroup		ControlGroup	
	No.	Percentage	No.	Percentage
Gastric	02	11.76%	04	23.52%
DuodenalPerforation	05	29.41%	07	41.17%
SmallBowel	06	35.29%	04	24.52%
LargeBowel	02	11.76%	02	11.76%
Appendicular	02	11.76%	00	00.00%
Total	17	100%	17	100%



As the table shows maximum number of the patients had Small bowel (illeal and jejuna perforations) in the test group that was 6(35.29%)were as the control group had Duodenal Perforations which were 7 (41.17%). Followed by Gastric (11.76%), Duodenal (29.41%), large bowel (11.76%), Appendicular (11.76%) in the Test Group and Gastric (23.52%), Small Bowel (24.52%), large bowel (11.76%) in the control group.

Table – 4: Comparison of Mean BMI in Test & Control Groupa tpre-operative & Post-operative: [Unpaired t-test]

	Group	Mean	SD	t-value	p-value
Pre-operative	Test	25.45	2.82	0.351	P=0.71 NS
	Control	25.05	3.27		
Post-operative	Test	22.57	2.39	2.78	P=0.041 S
	Control	21.47	2.64		



As the chartshows, the fall in the mean BMI was significant in the Post-Operative period (p=0.041).

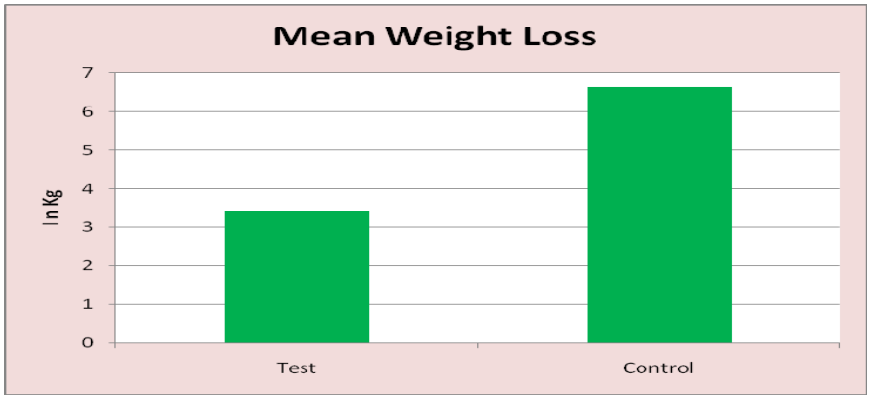
Table – 5 : Comparison of Mean BMI at pre-operative & Post-operative in Test & Control Group:[paired t-test]

BMI	MeanDifference	t-value	P-value
Pre-operativeVs Post-operativeinTest	2.88	2.02	P=0.039 NS
Pre-operativeVs Post-operativeinControl	3.58	3.97	P=0.057 S

In our study the fall in the BMI in the Test Group post operatively was not significant with meano f2.88 and p=0.039, as compared to the Control Group which was significant with mean of 3.58 and p=0.057

Table – 4 : Comparis on of Mean Weight Loss in Test & Control Group: [Unpaired t-test]

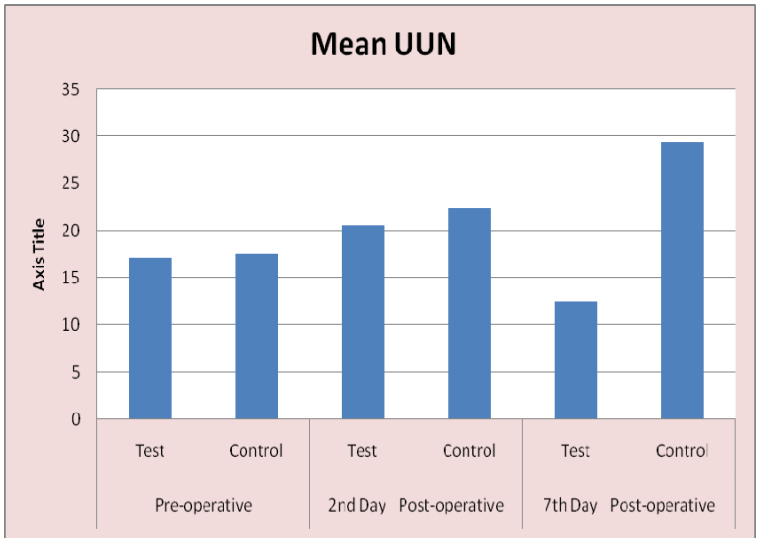
	Group	Mean	SD	t-value	p-value
Pre-operative	Test	3.41	1.06	8.76	P=0.000 S
	Control	6.64	1.08		



In our study the mean weight loss among the patient within the Test and the Control Group was 3.41 and 6.64 respectively.There was significant fall in the weight in the control group as compared to the test group.

Table – 7: Comparison of Mean UUNin Test & Control Group atpre- operative, 2ndDay & 7th Day Post-operative: [Unpaired t-test]

	Group	Mean	SD	t-value	p-value
Pre-operative	Test	17.17	8.15	0.178	P=0.865 NS
	Control	17.58	4.95		
2nd DayPost-operative	Test	20.64	6.58	0.889	P=0.381 NS
	Control	22.47	5.32		
7th DayPost-operative	Test	12.47	3.20	9.15	P=0.000 S
	Control	29.47	6.95		



As the table shows the mean UUN in the test and the control group on these cond post-operative day was not significant where as on the7th postop day it was significant(p=0.00)

Table – 8 : Comparison of Mean UUN at pre-operative, 2ndDay & 7th DayPost-operative in Test & Control Group: [paired t-test]

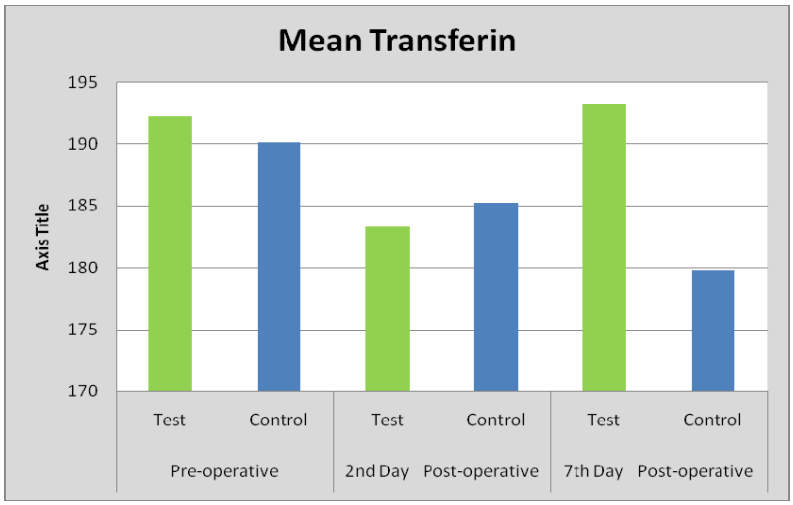
	Group	Mean Difference	t-value	p-value
Test Group	Pre-operativevs 2nd DayPost-operative	3.47	2.336	P=0.033 S
	Pre-operativevs 7th DayPost-operative	-4.70	3.258	P=0.005 S
	2nd DayPost-operativevs 7th DayPost-operative	-8.17	6.425	P=0.000 S
Control Group	Pre-operativevs 2nd DayPost-operative	4.88	5.45	P=0.000 S
	Pre-operativevs 7th DayPost-operative	11.88	6.69	P=0.000 S
	2nd DayPost-operativevs 7th DayPost-operative	7.00	4.11	P=0.001 S

IntheTestgroupcomparisonbetweenthePre-operativeandthe2nd post-operative day showed a mean difference of 3.47with ap=0.033 which was significant. The mean difference with the 7th post-operative day was -4.70 withap=0.005. The mean difference between the 2nd and 7th post-operative was -8.17 with a p=0.00.In the control group the mean difference between the Pre-operative and the 2nd post-operative day was 4.88 with ap=0.000,with7th post-operative day it was 11.88 with a p=0.000 and mean difference between the 2nd and the 7thpost-operative day it was 7.00 with a p=0.001 which was significant.

Table–9: Comparison of Mean Transfer rinin Test & ControlGroupat pre-operative,2nd Day&7thDayPost-operative:[Unpairedt-test]

	Group	Mean	SD	t-value	p-value
Pre-operative	Test	192.29	14.27	0.484	P=0.632

	Control	190.17	11.05		NS
2nd DayPost-operative	Test	183.3	12.88	0.486	P=0.631 NS
	Control	185.23	9.49		
7th DayPost-operative	Test	193.29	9.97	3.19	P=0.001 S
	Control	179.76	14.35		



Astheta bleshows the mean Transferrin on the7thpost opreativ day was significant (p=0.001)

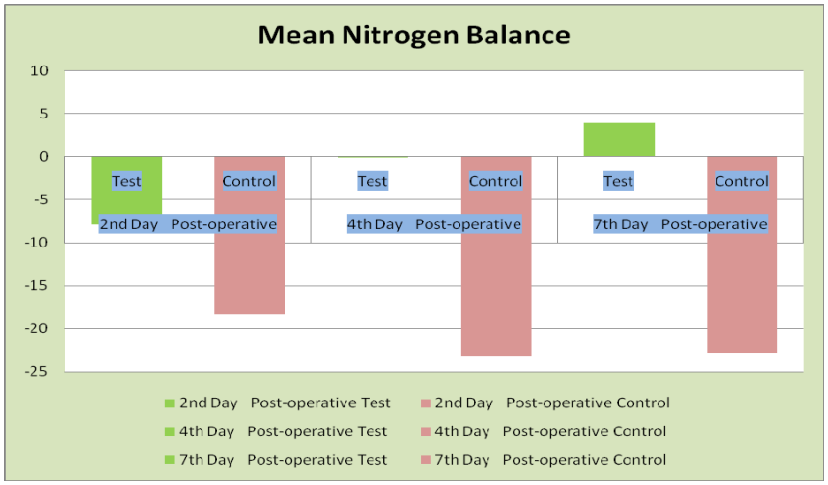
Table–10: Comparison of Mean Transfer rinatpre - operative ,2nd Day& 7th Day Post-operativein Test & Control Group:[Unpairedt-test]

	Group	Mean	t-value	p-value
Test Group	Pre-operativevs 2nd DayPost-operative	-8.94	5.043	P=0.001 S
	Pre-operativevs 7th DayPost-operative	1.00	0.517	P=0.612 NS
	2nd DayPost-operativevs 7th DayPost-operative	9.94	5.667	P=0.001 S
Control Group	Pre-operativevs 2nd DayPost-operative	4.94	2.002	P=0.063 NS
	Pre-operativevs 7th DayPost-operative	10.41	2.97	P=0.009 S
	2nd DayPost-operativevs 7th DayPost-operative	5.47	2.15	P=0.022 S

Table – 11: Comparison of Mean Nitrogen balancein Test & Control Group at 2nd Day 2ndDay, 4th Day& 7th Day Post-operative: [Unpaired t-test]

	Group	Mean	SD	t-value	p-value
2nd Day Post-operative	Test	-7.91	7.30	4.78	P=0.000 S
	Control	-18.35	5.24		
4th Day Post-operative	Test	0.009	4.33	14.29	P=0.000 S
	Control	-23.21	5.13		
7th Day Post-	Test	3.98	1.82	13.70	P=0.000 S
	Control	-22.91	7.88		

operative					



In our Study the mean nitrogen balance of the test group on the 2nd, 4th and 7th post-operative was -7.910.009, 3.98 with a (p=0.000, p=0.000, p=0.000) respectively. Incontrol group,-18.35,-23.91,-22.91.

Table – 12: Comparison of Mean Nitrogen Balanceat2nd Day,4th Day& 7th Day Post-operative in Test & Control Group: [Unpaired t- test]

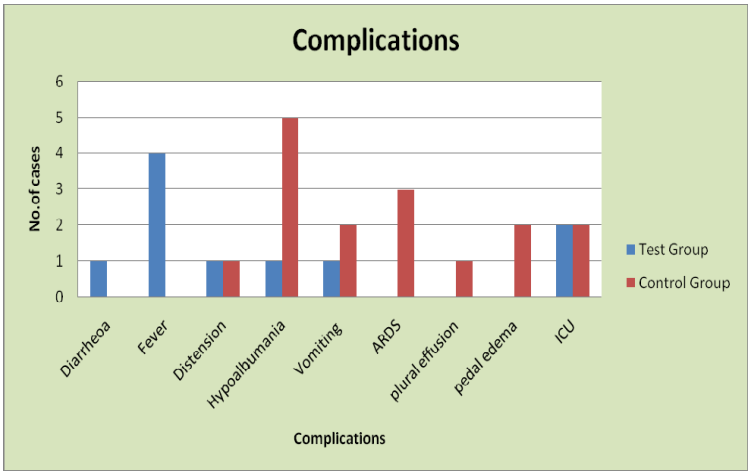
	Group	Mean Difference	t-value	p-value
Test Group	2nd Dayvs 4thDayPost-operative	7.92	4.26	P=0.001 S
	2nd Dayvs 7thDayPost-operative	11.90	6.41	P=0.000 S
	4thDay vs 7thDayPost-operative	3.97	4.20	P=0.001 S
Control Group	2nd Dayvs 4thDayPost-operative	4.86	7.514	P=0.000 S
	2nd Dayvs 7thDayPost-operative	4.55	2.609	P=0.019 S
	4thDay vs 7thDayPost-operative	0.307	0.190	P=0.852 NS

As the table shows there was significant difference in the mean Nitrogen balance in the test and the control group (p=0.001).In thecontrol grouptherewas nosignificant mean difference between nthe4th and the 7th post-operative day (p=0.852)

Table–13: Distribution of Cases according to Complications:

Complications:	TestGroup		ControlGroup	
	No.	Percentage	No.	Percentage
Diarrhea	01	05.89%	00	00%
Fever	04	23.53%	00	00%
Distension	01	05.89%	01	05.89%

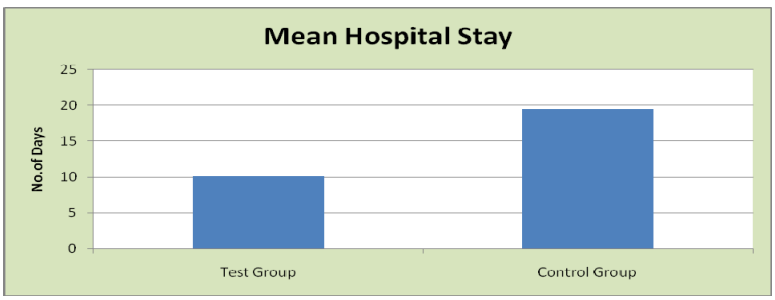
Hypoalbumania	01	05.89%	05	29.41%
Vomiting	01	05.89%	02	11.76%
ARDS	00	00%	03	17.76%
Pleuraleffusion	00	00%	01	05.89%
pedaledema	00	00%	02	11.76%
ICU	02	11.76%	02	11.76%
SurgicalSiteInfection	00	00%	04	23.53%



In the Test Group fever was seen in 4 patients (23.53%) with distension and diarrhea in one patient each (5.89%). Hypoalbumania was noted in one patient (5.89%).Two patients had to be admitted in SICU (11.76%).These two patients had to be shifted to the SICU only for observation as the patient had presented to the hospital 4 days late to the hospital. One Patient developed vomiting for which the eed had to stop on POD-3and the feed was regained on POD 4.In the control Group 5 patients developed hypoalbumania (29.41%), two developed Vomiting persistent (11.76%), Two patients Pedal edema (11.76%). Two patients were shifted to SICU Post operatively because the developed ARDS. Three Patients developed ARDS (17.76%) and were intubated. Pleural effusion in one patent(05.89%). One patient developed distension (05.89%).One patient was discharged AMA. There were no deaths in the Test as well as the control group. For one patient fee dhad to bestoppe don POD3.

Table – 14 : Comparison of Mean HospitalS tayin Test & Control Group: [Unpaired t-test]

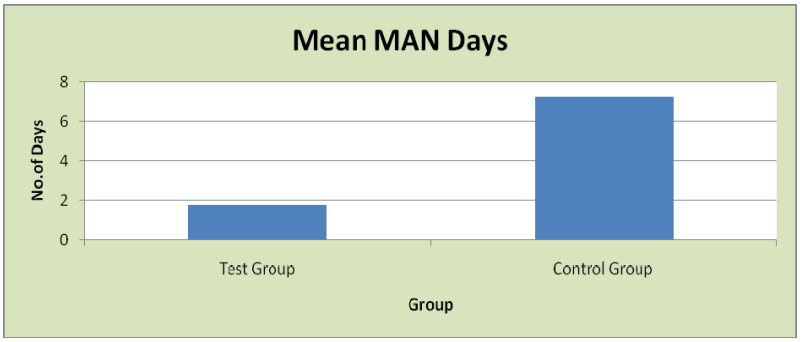
Group	Mean	SD	t-value	p-value
Test	10.06	2.99	4.19	P=0.000 S
Control	19.47	8.75		



In our Study the mean hospital stay for the Test Group were 10.06 wereas for the control group it was 19.47(p=0.000).

Table – 15 : Comparison of MAN DAY in Test & Control Group : [Unpaired t-test]

Group	Mean	SD	t-value	p-value
Test	1.76	2.63	3.02	P=0.000 S
Control	7.23	6.97		



The duration in which the major complications were controlled was significantly lower in the patients receiving early enteral nutrition. This was reflected in the fewe rnumber of‘ mandays’lost(Table15). The number of ‘man-days’lost was high erinthe subjects belonging to Control group compared with those belonging to Test Group (Table 15).

DISCUSSION

In our study total number of patients were 34 (17 in each group). The mean age group for the Test group was 35.29 were as for the control group was 49.35. The male patients were 88.29% were as 11.71% were female patient in the test group. The control group had 94.11% and the female were 5.89 %. (Table No 1). Fayaz M Saad98 in their study included 40 patients who were randomly allocated into two groups. Group A or early oral feeding group which included 20 patients, their age ranged from (22-69) years with a mean age of (46.15± 14.39) and the majority of them were males (55%). Group B or delayed oral feeding group included 20 patients, their age ranged from (18-67) years with a mean age of (42.1± 15.79) years with equal male to female ratio. There was no significant statistical difference regarding age and sex between both groups (P= 0.402) and (P= 0.752) respectively. Maximum number of the patients had Small bowel (illeal and jejunal perforations) in the test group that was 6 (35.29%) were as the control group had Duodenal Perforations which were 7 (41.17%). Followed by Gastric (11.76%), Duodenal (29.41%), large bowel (11.76%), Appendicular (11.76%) in the Test Group and Gastric (23.52%), Small Bowel (24.52%), large bowel (11.76%) in the control group (Table No 3). The fall in the mean BMI was significant in the Post-Operative period (p=0.041) (Table No.4). In our study the fall in the BMI in the Test Group post operatively was not significant with mean of 2.88 and p=0.039, as compared to 82 the Control Group which was significant with mean of 3.58 and p=0.057(Table No.5). The mean serum Transferrin level showed a significant change in the control group from the 2nd post-operative day and 7th post-operative day (p=0.022). The change in the Pre-operative and 7th POD was also significant (p=0.009). The Test group did not significant change as compared to Control group from Pre-Opreative and 7thPOD (p=0.612). (Table No-9 and 10). In the Test group comparison of UUN between the Pre-operative and the 2nd post-operative day showed a mean difference of 3.47 with a p=0.033 which was significant. The mean difference with the 7th post-operative day was -4.70 with p=0.005. The mean difference between the 2nd and 7th post-operative was -8.17 with a p=0.00.In the control group the mean difference between the Pre operative and the 2nd post-operative day was 4.88 with a p=0.000, with 7th post operative day it was 11.88 with a p=0.000 and mean difference between the 2nd and the 7th post-operative day it was 7.00 with a p=0.001 which was significant. (Table No._____). David Schroeder et al127 all demonstrated that immediate enteral nutrition is feasible and results in an improved wound healing response. However, they recommend it only in patients in whom postoperative problems with recovery are anticipated. Haydock DAHill GL4 suggest that a definite abnormality in the wound healing response exists in malnourished surgical patients, but it occurs earlier in the course of the illness than previously suppose. 83 Our study has demonstratedthat there is no evidence to suggest that bowel rest and a period of starvation are beneficial for the healing of wounds and anastomotic integrity. Indeed, the evidence is that luminal nutrition may enhance wound healing and increase anastomotic strength, particularly in malnourished patients. Lewis SJ et al12 showed that Early feeding reduced the risk of any type of infection (relative risk 0.72, 95% confidence interval 0.54 to 0.98, P=0.036) . Windsor AC et al128 showed that SIRS, sepsis, organ failure, and ICU stay, were globally improved in the enterally fed patients. The acute phase response and disease severity scores were significantly improved following enteral nutrition (CRP: 156 (117-222) to 84 (50-141), $p < 0.005$; APACHE II scores 8 (6-10) to 6 (4-8), $p < 0.0001$) without change in the CT scan scores. In parenterally fed patients these parameters did not change but there was

an increase in EndoCAb antibody levels and a fall in TAC. Enterally fed patients showed no change in the level of EndoCAb antibodies and an increase in TAC. Enteral feeding modulates the inflammatory and sepsis response in acute pancreatitis and is clinically beneficial. Oh Jeong et al showed that The mean hospital stay was significantly shorter in the Early Diet group (7.4 vs. 8.9 days, p = 0.004). There was no significant difference in postoperative morbidity (p = 0.947) between the two groups. Gastrointestinal-related complications, such as anastomosis leakage or postoperative ileus, were also similar in the two groups. Overall compliance to 84 early oral nutrition in the Early Diet group was 78.5 %, and an old age (>70 years) was found to affect the compliance to early postoperative oral nutrition. Hysong Lee et al stated that length of stay (LOS) in the intensive care unit (1 day vs. 2 days, p=0.038) and LOS in the hospital after surgery were significantly greater (9 days vs. 12 days, p=0.012) in group Late than group Early; pulmonary complications were also significantly more common (13.6% vs. 47.5%, p=0.001) in group L than group E. Fayaz M Saad94 stated that Hospital stay was significantly shorter in group A than group B with a mean length of stay (4.4±2.9) versus (8.6±1.6) days respectively

CONCLUSIONS

The analyses of the results indicate that even after generalised peritonitis the gastrointestinal tract recovers its tone and function within 48 hours. From present study, it can be concluded that, early enteral feeding significantly reduces the incidence of wound infection, paralytic ileus and pain in post-operative patients of Perforation Peritonitis. No significant increase in the incidence of an astomotic dehiscence, intra-abdominal abscess, or pneumonia was found in patients put on early enteral feeding in perforation of Gut, as the sample size was small. Post operatively early enteral feeding is well tolerated in the presence of co-morbid conditions also and may also be beneficial. Early enteral feeding significantly reduces the length of hospital stay in the post operative patients of Perforation Peritonitis, less complications and improvement in general well being We thus, very strongly recommend early oral feeding in operated cases of gut perforations.

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