

## TO COMPARE EARLY ENTERAL FEED WITH EARLY PARENTERAL FEED IN PATIENTS OF ACUTE PANCREATITIS; A PROSPECTIVE RANDOMISED OBSERVATIONAL STUDY.

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### Abstract

Acute pancreatitis has been recognised since antiquity but the importance of pancreas and the severity of its inflammatory disorders were realized only in the middle of the 19th century. In accordance with this wide variation in clinical presentation, the treatment of acute pancreatitis requires a multidisciplinary approach. But even today with technical advances in medical and surgical fields acute pancreatitis remains a major cause of morbidity and mortality. Increasing evidence suggests that enteral feeding maintains the intestinal barrier function and prevents or reduces bacterial translocation from the gut. Our aim is to compare the effects of early enteral feeding with early parenteral feeding in acute pancreatitis in terms of occurrence of infective & non infective complications in both types of feeding groups and to assess the average duration of hospital stay and cost in both groups. This prospective randomized clinical study was carried out on patients of 50 diagnosed cases of acute pancreatitis admitted in Sir T Hospital from October 2017 to August 2019. Patients included in study were randomly divided into two group A (Enteral feeding) and group B (Parenteral feeding). After initiation of respective nutrition patients were observed for infective and non infective complication incidence, duration of hospital stay and other morbidities. Enteral feeding decrease the incidence of infective and non pancreatic complications, decreases duration of hospital stay. Patients tolerating soft diet earlier in early enteral feeding group compared to early parenteral feeding group. Cost of treatment is also less in enteral feeding. So in acute pancreatitis early enteral feeding is superior to early parenteral feeding.

**Keywords:** Acute pancreatitis , Enteral , Parenteral, Feeding.

### Introduction

Acute pancreatitis has been recognised since antiquity [1,2] but the importance of pancreas and the severity of its inflammatory disorders were realized only in the middle of the 19th century [3]. Acute pancreatitis is a common disorder. It has been noticed in most of the studies that there is an increase in the disease by a factor of 10 in the past three decades. The reason for the increase is speculated to be due to increase in alcohol abuse and an improved ability to diagnose the disease. But the disease has been a cause of significant morbidity and mortality [4,5,]. Both sexes are equally affected. Acute pancreatitis is related to alcohol or biliary tract stone disease in 80% of cases. The remaining 10% is related to metabolic factors, drugs and other conditions and 10% are idiopathic [6]. Mild acute pancreatitis is defined as inflammation of the pancreas with minimal remote organ involvement [7].

One of the main supportive mechanisms is adequate and safe nutritional supplementation. Acute pancreatitis is a hypermetabolic state marked by increased energy expenditure, proteolysis, gluconeogenesis, and insulin resistance. Nutritional supplementation in acute pancreatitis is complicated by these diverse pathophysiologic derangements associated with the disease. In the past, patients with acute pancreatitis were not given any form of enteral nutrition, because it was believed that any stimulation of the exocrine pancreas would affect the disease course negatively. Now it is known that the pancreas is already at rest during pancreatitis, and restoring secretion would be a much more physiological strategy than resting the organ. Increasing evidence suggests that enteral feeding maintains the intestinal barrier function and prevents or reduces bacterial translocation from the gut. Furthermore, enteral nutrition eliminates some of

the complications of parenteral nutrition such as catheter related sepsis, thrombosis, thrombophlebitis, catheter related embolism and pneumothorax. There is also a significant reduction in the incidence of stress- induced hyperglycemia. The risk of adversely affecting humoral immunity, as seen with TPN, is not seen with enteral nutrition. Additionally, the cost of enteral nutrition is only 15% of the cost of TPN[8].

**Aims:** To compare the effects of early enteral feeding with early parenteral feeding in acute pancreatitis.

**Objectives:** a) To assess the occurrence of infective & non infective complications in both types of feeding.

b) To assess the average duration of hospital stay in both groups.

**Material and Method:**

This is prospective randomized study done on patients of acute pancreatitis admitted in Sir T Hospital , Bhavnagar between October 2017 to august 2019. All the patients who are admitted in the ward with epigastric pain are evaluated for pancreatitis. The diagnosis of pancreatitis was made clinically, biochemically & radiologically. Serum Amylase and serum lipase is done in suspected pancreatitis cases and diagnosis confirmed. Cases of acute pancreatitis fulfilling inclusion and exclusion criteria are included in study after taking valid written informed consent.

**A. Inclusion Criteria:** 1) Age > 18 years and < 70 years  
2) Cases of Acute Pancreatitis

**B. Exclusion Criteria:**

1) Acute pancreatitis with systemic complications and unstable patients.

2) Signs of shock at the time of presentation.

3) Pregnant women

50 Patient included in studies were randomized into two groups. Severity of pancreatitis assessed by Ranson's criteria. Early enteral feeding started in Group A patients within 24 to 48 hours of admission. Patients who will be on nil per mouth and on parenteral feeding is considered as Group B patients. Incidence of complications & course of hospital stay will be observed in both groups of patients. Data will be collected & analysed. In 25 cases early enteral feeding for nutrition was given and in another group of 25 cases early parenteral feeding was given. Both groups were compared in terms of infective and non infective complications, hospital stay, morbidities and hospital cost. Enteral nutrition given either through oral or through nasogastric tube within 48 hours of admission in group A patients. In group B patients early parenteral nutrition given through central line inserted either in subclavian vein or internal jugular vein. Nutrition was given according to weight and requirement of patients in both groups. The nutritional requirement was calculated based on the weight of the patient and the recommended caloric intake for that weight. The weight was measured at the time of admission or approximated using the recumbent height.

**Results:**

**Table 1:** Age of Patients in group A and Group B

AGE GROUP (YEAR)	GROUP A (ENTERAL)		GROUP B (PARENTERAL)		TOTAL	
	Number	%	Number	%	Number	%
18 - 30	4	16	3	12	7	14
31 - 40	13	52	21	84	34	68
41 - 50	4	16	1	4	5	10
51 - 60	3	12	0	0	3	6
61 - 70	1	4	0	0	1	2

Incidence of acute pancreatitis in study is most common in age group of 31-40 yrs. Out of 50 patient included in study, 34 belongs to this age group (68%). Incidence of acute pancreatitis is only 4% over the age of 60 yr. 14% of total patients comes under 18-30 yrs age group. Average age of present study is 32.8 yr.

**Table 2: Hospital Stay**

HOSPITAL STAY(DAYS)	GROUP A (ENTERAL) 25 patients	GROUP B(PARENTERAL) 25 patients	TOTAL
0 - 5	6 (24%)	0	6
6 - 10	18(72%)	14(56%)	32
11 - 15	1(4%)	10(40%)	11
>15	0	1(4%)	1

Hospital stay is longer in group B patients. 24% of group A patients discharged within 5 days while no patients of group B discharged in same time. 96% patients of group A discharged within 10 days of admission compared to 56% in group B. Average duration of hospital stay is 7 day in group A compared to 10 day in group B.

**Table 3: Pancreatic Complications**

COMPLICATION ON 5 <sup>TH</sup> DAY	GROUP A (ENTERAL)	GROUP B (PARENTERAL)	TOTAL
PERIPANCREATIC FLUID COLLECTION	9	11	20
PLEURAL EFFUSION	2	7	9
ASCITES	4	6	10
SPLENIC VEIN THROMBOSIS	1	4	5
PANCREATIC NECROSIS	6	10	16

**Table 4: Non Pancreatic Complications**

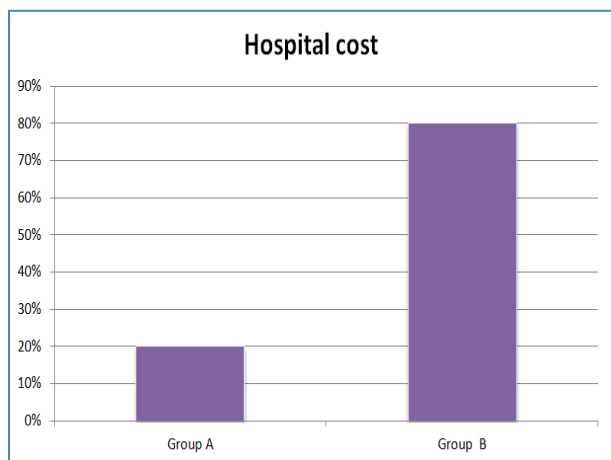
NON PANCREATIC COMPLICATIONS	GROUP A (ENTERAL )	GROUP B (PARENTERAL)	TOTAL
PARALYTIC ILEUS	2	6	8
ARDS	2	2	4
RENAL FAILURE	0	0	0
HYPOCALCEMIA	0	1	1
SHOCK	0	0	0
MORTALITY	0	0	0
HYPOALBUMINAEMIA	1	5	6
INFECTION	2	4	4
HYPERGLYCAEMIA (BLOOD GLUCOSE > 200mg/dl)	1	6	7
CENTRAL LINE RELATED	0	2	2
DIARRHOEA	5	0	5

Acute pancreatitis causes complications like peripancreatic fluid collection , shock, hypocalcaemia, pancreatic necrosis, pleural effusion, multiple organ failure, septicaemia and ascites. Incidence of complications like paralytic ileus, acute respiratory distress syndrome, hypoalbuminaemia ,septicaemia and hyperglycaemia is more commonly observed in group B taking early parenteral nutrition compared to group A on early enteral nutrition. There is no mortality in both groups in present study. Incidence of pancreatic complications like peripancreatic fluid collection, pancreatic necrosis, ascites and pleural effusion is also more common in group B.

**Table 5: Day of Tolerating Oral Diet**

TOLERATING ORAL DIET	GROUP A (ENTERAL) 25 patients	GROUP B (PARENTERAL) 25 patients	TOTAL
0 – 3 DAY	11 (44%)	0	11
4 – 5 DAY	11( 44%)	8(32%)	19
6 – 10 DAY	3(12%)	16(64%)	19
>10 DAY	0	1(4%)	1

Patients of group A tolerate soft diet earlier than group B patients. In study 11 patient of group A start tolerating soft diet within 3 days compared to no patient from group B. 88% of group A became on soft diet within 5 days while only 32% patients of group B tolerated soft diet within 5 days. So patients of group A discharged earlier than patients of group B which reduces hospital cost and morbidities



**Graph 1: Hospital Cost in Group A and Group B**

Hospital cost of group A patients are 4 times lower than group B patients. Compliance of patients also better in group A. Group A needs nasogastric tube, oral preparations but in Group B who needs central line and parenteral nutrition preparations

#### Discussion:

Acute pancreatitis can lead to serious local and systemic complications, such as pancreatic necrosis, pancreatic infection, multiple organ failure, and SIRS. Many studies on nutrition have supported a shift from TPN to enteral nutrition for patients with pancreatitis because of fewer complications and lower mortality.[9] Moreover, some studies also indicated that the timing of EN should start as early as possible compared with conventional parenteral nutrition.[10,11] However, whether early EN is better than delayed EN in acute pancreatitis remains controversial. Proposed mechanism for this clinical improvement suggests that intestinal feeding maintains the integrity of the intestinal mucosal barrier against translocation of bacteria and toxins [12]. Moreover, in contrast to total parenteral nutrition, enteral feeding appears to modulate the acute phase response and maintain visceral protein metabolism, suggesting inhibition of the splenic cytotoxic response [13]. Several controlled studies that compared enteral with parenteral nutrition in acute pancreatitis have shown that enteral feeding is well tolerated and has clear advantages over parenteral feeding, especially for reduction of septic complications, more rapid resolution of toxicity and stress caused by the disease, greater ease of management, and cost reductions by 3–4 fold [14]. More recent studies have confirmed the advantages of enteral nutrition over parenteral, with respect to tolerability, safety and reduction of septic

complications [15]. The results of this study confirmed previous reports in the literature, especially those from recent years, ie, that enteral nutrition is perfectly viable and safe for treatment of severe acute pancreatitis, free from additional pancreatic stimulation, and clearly advantageous in all aspects when compared to parenteral nutrition. However, a deficiency of this study is small sample size. Therefore, studies with larger sample sizes should be done to better define the role of enteral nutritional support in the treatment of severe acute pancreatitis. This study demonstrated that enteral nutritional support is safe and effective when compared to parenteral support. There was no difference between the groups based on general complications; however, the group that received enteral nutrition presented with fewer septic complications.

#### Conclusion:

Nutrition plays a key role in the treatment of acute pancreatitis. When patients food intake is impaired, an adapted nutritional support is required early in the management of the disease in order to decrease the mortality and morbidity. Compared to parenteral nutrition enteral nutrition has been shown to have a greater clinical benefit in patients with acute pancreatitis reducing the risk of developing both, pancreatic infection and multiple organ failure. The international guidelines recommend that enteral nutrition in acute pancreatitis can be administered via either oral or nasogastric route but the choice of administration route should not delay the nutritional support. Early enteral feeding decrease the incidence of infective and non pancreatic complications ,decreases duration of hospital stay, patients tolerating soft diet earlier in early enteral feeding group compared to early parenteral feeding group. Cost of treatment is also less in enteral feeding . So in acute pancreatitis early enteral feeding is superior to early parenteral feeding.

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