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Study on the effects of early enteral nutrition following gastrointestinal surgery

General Surgery

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ABSTRACT

Objective: to study effects of early enteral nutrition following gastrointestinal surgeries

Methods: this is a prospective study of sixty six patients undergoing gastrointestinal surgeries in which 33 patients(group A) , who had early feeding within 48 hrs were compared with other 33 patients(group B) who had delayed feeding after appearance of bowel sounds and passage of flatus. Their demographical statistics were recorded, along with their clinical presentation , preoperative vitals , their post operative vitals, appearance of bowel sounds, passage of flatus and stool, post operative complications and duration of hospitals etc and analysed using biostatistics. **Results:** Mean time for appearance of bowel sounds was 44 hours in group A and 70 hours in group B($p<0.05$). Mean time for passage of flatus in group A was 55 hours and 90 hours in group B($p<0.05$). Mean duration of hospital stay in group A was 7.18 days and 9.45 days in group B ($p<0.05$). **Conclusion:** Early enteral nutrition after gastrointestinal surgeries is well tolerated, helps in early resolution of ileus and shorten hospital stay.

INTRODUCTION:

Patients who undergo gastrointestinal surgery are at risk of nutritional depletion from inadequate nutritional intake; both preoperatively and postoperatively, the stress of surgery and subsequent increase in metabolic rate. Gut anastomosis is one of the frequently performed surgeries in both emergency and elective setup. As conventional practice following gut anastomosis, patients are kept "NIL BY MOUTH" till bowel sounds return. During this time period, patient remains with nasogastric tube for decompression of stomach and providing rest to the gut.

Recently great emphasis has been paid on early enteral feeding within 6 to 48 hrs after operation. However in post-operative period, sometimes nutrition of the patient is maintained by TPN. Except being of high cost, TPN has its own complications like infection, metabolic disturbances and immunological disturbances. Ideas behind early enteral feeding are as follows:

(1) Gut recovers from dysmotility within 24 to 48 hours in case of stomach & colon while 4 to 6 hours in case of small bowel.[1,2]

(2) It prevents translocation of bacteria or virus by maintaining integrity of gut mucosa which may become atrophied if gut remains in rest.[3,4,and5]

(3)Many patients remain malnourished before operation; they are predisposed to more postoperative complications.[6,7]

(4) Starvation reduces the collagen content in the scar tissue and diminishes the quality of healing,[8] whereas feeding reverses mucosal atrophy induced by starvation and increases anastomotic collagen deposition and strength.[9]

So, on the basis of above ideas, this study was done to evaluate advantages of early feeding in gastrointestinal surgeries..

MATERIAL AND METHODS:

This prospective case series was carried out in a surgical unit of medical college hospital between march 2015 and November 2016. The study trial comprised patient undergoing various gastrointestinal surgeries Group A patients were allowed oral feeds within 48 hours, varying upon surgeries where group B patients were kept nil by mouth in post operative period and were allowed orally only on appearance of bowel sounds and passage of flatusIn all the cases a detailed clinical study was taken followed by clinical examination and relevant investigations. In post operative patients, oral sips (30ml/hr) were started usually after 24 hours of surgery. In case of vomiting or abdominal distension the volume was decreased and noted down. Timely appearance of bowel sounds, passage of flatus and stools were recorded in all the patients. Post operative complications in the form of infection, burst abdomen, anastomotic leak were recorded too.

OBSERVATION:

Mean Age of patients in group A was 41.1years and those in group B was 38.6 years. This difference was not statistically significant ($P>0.05$). While comparing sex distribution among cases in both groups, the difference was not statistically significant either . Bowel sounds appeared in 36 hours in 30 (90%) of group A patient whereas in only 16 (50%) of patients of group B. Mean time for appearance of bowel sounds was 44 hours in group A and 70 hours for group B(BAR GRAPH 1) . This difference was statistically significant . Mean time for passage of flatus was 55 hours in group A patients and 90 hours in group B patients, this difference was statistically significant too.

Out of 33 patients of group A, 5 patients (15.15%) developed post operative nausea and vomiting and in group B, 3 patients (9%) developed post operative nausea and vomiting(BAR GRAPH 2). By applying chi square test difference is not found to be significant ($P=0.45067$). The leakage rates of gastrointestinal anastomosis in group A and group B were 0% and 3% respectively which is not significant either. The rates of wound infection in group A and group B are 6.06% and 15.15%(BAR GRAPH 3). The rate of wound infection is higher in group B than that of group A. By applying chi square test difference is not found to be statistically significant($P>.05$). In group A 7 & in group B 6 patients develop abdominal distension(BAR GRAPH 4). By applying chi square test difference is not found to be significant($P>.05$). In group A one and in group B three patients developed burst abdomen(BAR GRAPH 5).By applying chi square test difference is not found to be statistically significant($P>.05$). The mean duration of post operative hospital stay in group A and group B were 7.18 &9.45 days respectively(BAR GRAPH 6). By applying unpaired t test difference is found to be very statistically significant ($P<.0.05$). Mortality in both the groups were comparable without any

significance. In study group A , 1 patient died post operatively and in group B ,2 patient died .

DISCUSSION:

After gastrointestinal surgery the patients in early enteral feeding group were fed within 48 hour of surgery while delayed group were initiated on feeds after auscultation of bowel sounds & passage of flatus. The mean age of the patients in group A was 41.1 and 38.6 years in group B and was comparable(P=0.5140) .In group A 9.1% and 12.1% in group B were females. In respect to gender there was no significant difference between male to female ratio(P=0.689 In our study majority of the cases of both the groups underwent modified Grahm's patch repair, enteric anastomosis for closure of stoma (ileostomy/ colostomy), malignancy of gut requiring resection and anastomosis of stomach, small gut , and large gut.

Oral feed was started within 48 hours but usually after 24 hours in study group A.. It was well tolerated in 85% of the cases. In remaining 5 cases, oral sips was withheld and was followed gradually.The tolerance to oral feed in the present study is comparable to results of other previous studies. In the present study, bowel sounds appeared in a significantly shorter time ,44 hours, in study group as compared to 70 hours in group B .This was statistically significant (P<0.05) Patient in group A passed flatus in 55 hours which is significantly less than those in control group which was 90 hours this is comparable to other studies done in past.

In the study,15% of patients in group A and 9% patients in group B complained of nausea and vomiting after the start of oral feeds which was comparable between the two groups. The incidence of nausea and vomiting, although not statistically significant(0.4506) ,was more in group A as compared to group B .study by Malhotra A & Mathur AK, Dorai et al have similar finding[11].study by Lewis[10] SJ et al showed significant more vomiting in early fed group.

In the present study 7 patients in group A & 6 patients in group B developed abdominal distension but result was not significant (P=0.756). in contrast study by Jiang w et al showed significant less abdominal distension in early fed group[23]. 1 case (3%) in group B who had post operative leak is managed conservatively.

In the present study 2 cases (6.06%) in group A and 5 cases (15.15%) in group B had wound infection which was not statistically significant (p<0.05). The results of meta analysis of 11 studies by Lewis et al have also shown that incidence of wound infection, although not statistically significant , is less in early fed group (p=0.074)[14]. the same findings have been observed in present study. Moore et al, Kudesk et al also found higher incidence of wound infection in delayed feeding group but in their study result was significant(p<0.05).

In the present study 1 patient in group A(3%) & 3(9.09%) patients in group B have burst abdomen. Result is not significant.In the present study 3% cases in group B and no cases in group A had anastomotic leak. In group B, case of intestinal leakage was managed conservatively as it formed controlled external fistula without any features of sepsis. This result is similar to study by Olang Collins ogutu, Dorai et al &s Difronjo et al(0% vs. 3-10%).

In the present study the mean duration of postoperative hospital stay was 7.18 days in group A and 9.45 days in group B and the difference was statistically significant(p<0.05). Duration of hospital stay in present study is comparable with the previous studies(Difronjo et al). One significant observation made by all these workers including present study is that post operative hospital stay is significantly shorter in group A cases as compared to group B cases . It is possibly due to the fact that early feeding helps in early bowel movements , faster recovery, less post operative complications , leading to early discharge from hospital et al .

CONCLUSION:

The following inferences can therefore be drawn from this study:

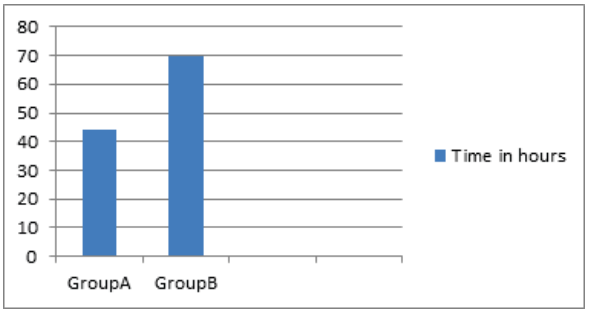
1) Early enteral feeding is safe in immediate postoperative period after major gastrointestinal surgery.

2) Early feeding helps in early resolution of ileus.

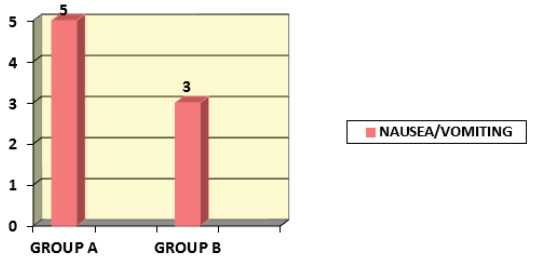
3) Mean duration of post operative hospital stay is lower in early enteral feeding

4) The rate of wound infection is lower in early enterally fed group.
Hence it is safer to advocate early enteral feeding which reduces morbidity of the patient significantly.

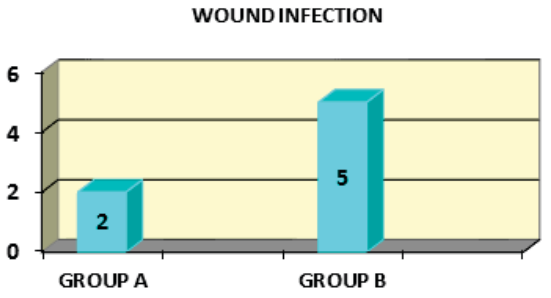
BAR GRAPH 1: BOWEL SOUNDS



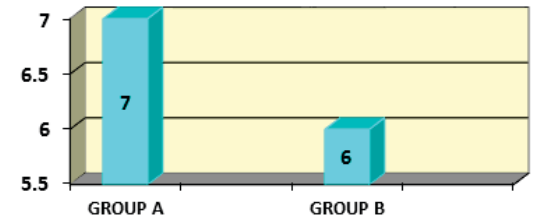
BAR GRAPH 2: NAUSEA AND VOMITING



BAR GRAPH 3:WOUND INFECTION



BAR GRAPH 4:ABDOMINAL DISTENSION



BAR GRAPH 5:BURST ABDOMEN

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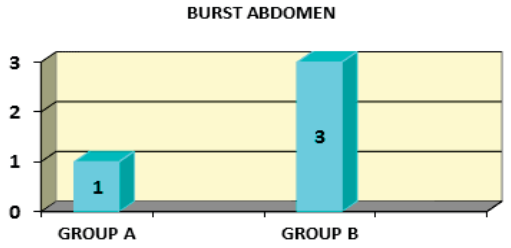
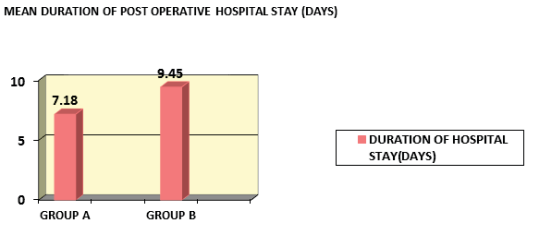


BAR GRAPH 6:



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