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A study of early enteral feeding after surgical treatment of bowel perforation

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Abstract
Introduction: Gut anastomosis is one of the commonly performed surgeries which is carried out in elective set up as well as in emergency setup. Conventionally the practice of following Gut anastomosis in the patients need to be kept Nil by Mouth until the returning of the bowel sounds. Clinical studies says that while starvation is responsible for diminishing the quality of healing, feeding on the other hand, tends to reverse the mucosal atrophy which is being induced due to starvation and furthermore maximizes the deposition and strength of anastomotic collagen [2] and the anastomotic leaks along with lower rates of infection helps in shortening the duration of hospital stay and that further reduces the cost of treatment.
Materials and Methods: Study will be conducted on 64 patients of bowel perforation, requiring exploratory laparotomy, attending the surgical OPD and emergency of TMMC&RC, Moradabad. Relevant clinical examination, pre-op and intra-operative finding will be noted. Role of enteral feeding timing in operated cases of Bowel perforation will be observed. Post-operatively patients will be observed for timing of first oral feeding. Patients will be assessed in two groups according to timing of feeding i.e. within 72 hours and after 72 hours. Patients will be assessed in terms of Length of hospital stay, Biochemical parameters changes, Post-operative complications.
Results: Post-operative observations and results were recorded and analyzed for post op albumin, length of hospital stay and complications like leakage, vomiting.
Conclusion: This study has been performed for increasing the knowledge of the influence of early nutrition therapy in regards to the post op complications and focusing on the short duration of hospital stay for the cases of Bowel perforation.

Keywords: enteral feeding, surgical treatment, bowel perforation, Gut anastomosis

Introduction
Gut anastomosis is one of the commonly performed surgeries which is carried out in elective set up as well as in emergency setup. Conventionally the practice of following Gut anastomosis in the patients need to be kept NIL BY MOUTH until the returning of the bowel sounds. Throughout this period the patient is provided with a nasogastric tube for decompression of their stomach and in order to provide rest to the Gut [1].
Research works & clinical studies says that the initiation of feeding early is definitely an added advantage. While starvation is responsible for diminishing the quality of healing, feeding on the other hand, tends to reverse the mucosal atrophy which is being induced due to starvation and furthermore maximizes the deposition and strength of anastomotic collagen [2] and the anastomotic leaks along with lower rates of infection helps in shortening the duration of hospital stay and that further reduces the cost of treatment.

Materials and Methods
A prospective, observational study will be conducted on 64 patients of bowel perforation, requiring exploratory laparotomy, attending the surgical OPD and emergency of TMMC&RC, Moradabad. Duration of the study was from Dec. 2019 to Oct. 2021.

Inclusion Criteria
All patients, age between 18-70 years undergoing emergency or elective exploratory laparotomy for bowel perforation.

Exclusion Criteria
- Patients with previous history of any medical co-morbidity.
- Patients having stomas.
- Post-op patient on ventilator support.

- Patient refusal to give written and informed consent.
- All malignant perforation.
- Re-laparotomies following anastomosis.
- Pregnant females.
- Any patient who develop intra-op or early post-op complications.

Methodology

All the relevant patients coming to surgery OPD and TMU emergency will be included in study based on inclusion and exclusion criteria. Relevant clinical examination, pre-op and intra-operative finding will be noted. Role of enteral feeding timing in operated cases of Bowel perforation will be observed. Post-operatively patients will be observed for timing of first oral feeding. Patients will be assessed in two groups according to timing of feeding i.e. within 72 hours and after 72 hours. Patients will be assessed in terms of:-

- Length of hospital stay
- Biochemical parameters changes
- Post-operative complications

Result

Sixty four patients, included in the study were divided into two groups, group A and group B. Maximum number of patients was in age ranging from 30 to 45 years, Male 40 and Females 24, reported in OPD and emergency. Among which maximum number of patients was diagnosed Duodenum ulcer perforation 68.8% in group A and 46.9% in group B (Table 1). Other diagnosis are appendicular perforation, ileal perforation, incarcerated inguinal hernia with bowel perforation, jejunal perforation.

Table 1

Diagnosis	Group A		Group B	
	Frequency	Percentage	Frequency	Percentage
Appendicular perforation	1	3.1	0	0
Duodenal perforation	22	68.8	15	46.9
Ileal perforation	9	28.1	12	37.5
Incarcerated inguinal hernia with perforation	0	0	1	3.1
Jejunal perforation	0	0	4	12.5

Group A demonstrated a higher risk of complications such as leakage, vomiting as compare to group B (Table 2). However, these differences were not statistically significant.

Table 2

Post op complications	Group A		Group B	
	frequency	percentage	Frequency	Percentage
Leakage	6	18.8	5	15.6
Vomiting	10	31.3	5	15.6

Table 3

Post op Albumin (mean value)	Group A	Group B	P value
	2.849	2.768	0.745

Table 3 shows the difference between group A and group B in terms of post operative biochemical parameters which was statistical not significant. The mean duration of hospital stay was lower in group A patients compare to group B which was statistically significant (Table 4).

Table 4

Hospital Stay (mean value)	Group A	Group B	P value
	16.22	20.25	0.001

Discussion

The frequency distribution of the cases according to the division of gender show that in group A most of the study subjects were Male which accounted for 53.1 % and for group B the percentage of male got increased to 71.9 % and stayed as the majority. Similar to these results, the researchers Kaur *et al*., did notice that in their study the number of males were also greater than the number of females and the values were 62.3% for the first group and 74.3% in the second group [3].

As per the diagnosis of the Representation of frequency distribution, according to the diagnosis of the patients it was noticed that in group A most of the patients were possessing DU which was 68.8 % and this type of

diagnosis is also same for the patients of group B where the percentage was 46.9 %. The distribution of frequency according to the anastomotic leak shows that in group A as well as in group B the maximum of the study subjects were found in the negative portion rather than the leakage portion. The frequencies were 81.3 % and 84.4 % respectively. Representations of the frequency as for the vomiting of the patients show that both in group A as well as in group B vomiting was not present which accounted for 68.8 % in group A and increased to 84.4 % in group B. Similar to our results, Minard *et al*., noticed that in their study vomiting was again not present in 91% of the cases but contrastingly Pupelis *et al*., Found that the differences between vomiting present and not present was not much significant in their study as there was a minor difference of 6.5 % between the two groups [4, 5].

The representation of the mean value of the cases as for the Post OP Albumin of the four has shown that the mean value was 2.84 for group A whereas it was much lower in group B with the value of 2.76. The maximum value was 4.1 and 4.0 and the minimum value was 1.1 and 1.8 respectively in group A and group B.

The number of days of hospital stay was also important in the study and the records show that the mean time of hospital stay for group A was lower than that of group B and the values were 16.22 and 20.25 respectively. The maximum number of days for group A was 26 and the minimum number of days was 8 whereas for group B the maximum number of days was 28 and the minimum number of days was 10. Peck *et al*., even noticed that the mean duration of the hospital stay gets reduced after the treatment and in their study it was having a value of 18.39 [6]. This reduced length of hospital stay can be attributed to faster recovery after early feeding. The basic concept behind this is The collagen content in the scar tissue gets reduced due to starvation and it further lowers down the quality of healing. On the other hand the mucosal atrophy which was induced by starvation gets reversed due to feeding and it maximizes the deposition and strength of anastomotic collagen [7].

Other studies have demonstrated that The secretion and reabsorption of the gut needs about 7 liters of fluid everyday irrespective of their oral intake. Thereafter providing ‘rest to gut’ along with ‘protecting the anatomic site’ is also based on a false notion [7, 8].

With feeding the integrity of gut mucosa is maintained, thus preventing the bacterial translocation [7, 9]. Early enteral feeding can be considered to be safe rather than the conventional methods. The results have shown that the rate of vomiting are much lower post the treatment when early feeding is being done. In the early enterally fed group the sounds of intestinal peristaltic is being observed to be earlier and also reduces the duration of the hospital stay becomes higher when they are fed early. Besides decreasing the rate of the complications, early enteral feeding is being considered to be beneficial for achieving the balance of nitrogen as early as possible and also helps in maintaining the weight while being compared with the conventional process of feeding.

However some more studies are being required for confirming the feasibility as well as the safety of the early feeding for the emergency moments. We believe that this study is going to be helpful for the clinicians as well as surgeons in order to track down the details.

Summary

This study has been performed for increasing the knowledge of the influence of early nutrition therapy in regards to the post op complications and focusing on the short duration of hospital stay for the cases of Bowel perforation. the results of this study has shown that early enteral feeding is helpful in reducing the cases of infection significantly for the patients bearing the surgeries which also keeps on reducing the duration of the hospital stay. Thus, it can be believed that early enteral feeding is definitely effective as well as safe for the patients experiencing Bowel perforations. However further research is needed in this field to highlight the various prospects of early feeding after bowel anastomosis at a larger scale.

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