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A COMPARATIVE STUDY BETWEEN PRIMARY CLOSURE VERSUS PRIMARY CLOSURE PLUS DE-FUNCTIONING PROTECTIVE ILEOSTOMY IN NON-TRAUMATIC ILEAL PERFORATION AT GGH, GUNTUR

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ABSTRACT: Non-traumatic ileal perforation is still a common cause for obscure peritonitis in our set up. This study is focussed on evaluating a shift in favour of de-functioning protective ileostomy following primary closure that has been observed in recent years and to study its impact and to compare its outcome in terms of post-operative complications, hospital stay and mortality with primary closure perforation without a protective ileostomy. Ileostomy is not very much favoured in literature as a primary mode of treatment for ileal perforation. The literature is full of complications and management problems of ileostomy. The current study is a prospective study of fifty patients to GGH, Guntur with non-traumatic ileal perforation (Diagnosed preoperatively) during the period from August, 2013 to August, 2015. Peroperatively when ileal perforation was diagnosed, consecutive patients were entered into two groups: A and B, one with and the other without protective de-functioning ileostomy. Post-operative complications were encountered in varying proportions in both the groups. Faecal Fistula was the most dreaded complication. Primary closure of perforation is preferred only in clinically stable patients with a single perforation, healthy bowel with minimal soiling of the abdominal cavity. Although being bothersome, ileostomy is still a life-saving and damage-control surgical procedure. Though literature is full of complications and management problems of ileostomy, it should be recommended that ileostomy in these cases is only temporary and the extra time and cost of management is not more than the price of life saved.

KEYWORDS: SNT, FNAC, HPE.

INTRODUCTION: Ileal perforation is a frequently encountered surgical emergency in developing countries.^{1,2} Typhoid is the most common cause followed by tuberculosis, trauma and nonspecific enteritis.³ The disease has an abrupt onset and a rapid downhill course with a high mortality if not treated.⁴ Though surgery is accepted as a primary treatment, the choice of the procedure is controversial. Most series reporting simple closure of the perforation or resection and anastomosis in case of multiple perforations, as giving satisfactory results.^{5,6} But the dreaded complication of the above procedures is faecal fistula (12%) which is a life threatening with a high mortality.⁷ In view of this a shift in favour of a de-functioning protective ileostomy following primary closure of the perforation has been observed in recent years.⁸ The ileostomy protects the intestinal repair done in septic tissue and serves to reduce the risk of postoperative anastomotic dehiscence.⁹ This study is focussed on assessing the efficacy of de-functioning protective ileostomy following primary closure and to compare the outcome in terms of postoperative complications hospital stay and mortality with those cases where the primary closure is done without protective ileostomy.

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METHODS: The current study is a prospective study of 50 patients admitted to GGH Guntur with non-traumatic ileal perforation (Diagnosed per operatively) during the period from August, 2013 to August, 2015. All the patients admitted to hospital with acute abdomen were investigated thoroughly by ultrasound of abdomen, x-ray erect abdomen and abdominal-paracentesis. After the investigations, the patients who were diagnosed with peritonitis were subjected to laparotomy after proper resuscitation. Per-operatively, when ileal perforation was diagnosed, consecutive patients were entered into two subsequent groups viz., group A consisted of primary closure and de-functioning protective ileostomy and group B consisted of primary closure or resection and anastomosis alone without de-functioning ileostomy. They were followed up closely for postoperative complications like wound infections and dehiscence, faecal fistula and other stoma-related-complications, mortality rate and hospital stay. All the data was analysed by using mean values, standard deviation, standard error and chi square test/contingency table analysis. The values thus calculated were compared.

RESULTS: Post-operative complications were encountered in varying proportions in both the groups. Faecal fistula was the most dreaded fatal complication. The overall rate and incidence of complication is detailed in table below.

Complications	Group A (Loop ileostomy) n =25		Group B (Primary repair) n =25	
	No. of patients	Percentage	No. of patients	Percentage
Wound infection	06	24	15	60
Wound dehiscence	02	08	09	36
Skin excoriation	16	64	--	--
Ileostomy prolapsed	01	04	--	--
Ileostomy retraction	03	12	--	--
Electrolyte imbalance	05	20	01	04
Faecal fistula	-	-	10	40
Psychological symptoms	05	20	07	28
Deaths	04	16	11	44

Table 1: Post-operative complications in Group A and Group B

Complications overall were noted in 33% of patients in group A and 35% of patients in group B. (P value 0.808). The mean hospital stay for all patients was 17.4 days ranging from 1- 60days. The mean hospital stay for patients in group A was 12.6 days and for group B was 22.2 days. (P value 0.011) Overall mortality in the present study was 30% with 44% in group B compared to that of 16% in group A (P value 0.031).Overall psychological symptoms was seen in 24% of patients with 28% observed in group B and 20% in group A. (P value 0.508).

Outcome	Group A	Group B	P value	Significance
Hospital stay	12.6 days	22.2 days	0.011	Yes
Mortality	30%	44%	0.031	Yes
Psychological symptoms	20%	28%	0.508	No
Complications	33%	35%	0.808	No

Table 2: Statistical significance of the complications observed

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DISCUSSION: Most of the patients in study presented with features suggestive of peritonitis. Pain abdomen (100%), fever (66%) and vomiting (48%) were the commonest symptoms. Most common signs being abdominal tenderness (98%), guarding, rigidity (88%) and abdominal distension (48%). Chowdhury et al. and Abdul Gahfur Ansari et al. in their series also reported similar findings.^{10,11} Obliteration of liver dullness was seen in 40% of patients and absent bowel sounds in 64% of patients. Among 50 patients 20(40%) patients presented to the emergency room in shock. Dehydration was also present in 12(24%) patients. Pneumoperitoneum in chest and erect X-ray abdomen was seen in 43(86%) of patients in this study. A higher incidence of gas under diaphragm with a range from 75 to 82.5 percent is reported in some studies.¹² Few studies in literature have also reported a lower incidence of Pneumoperitoneum, the reasons could be due to adhesions around perforation, sealing of perforation and reabsorption of gases due to delayed presentation.¹² Widal test was significantly suggestive of typhoid in 24 out of 25 cases of typhoid. Most of the patients had a significant titre indicating a very recent infection by salmonella typhi. Widal was reported positive in 75.5% of cases by Jarett and in 73% by Vaidyanathan. Histopathological examination of either the resected specimen or the edge biopsy of the perforation was done in all the patients.

A report suggestive of typhoid was seen in 6 specimens. Diagnosis of tuberculosis was made in 5 cases and the rest showed features of non-specific inflammation with no conclusive diagnosis. Tuberculosis was diagnosed definitely by histopathology. The diagnosis of typhoid cannot be made more efficiently with histopathology. Though all the tests are complimentary in the diagnosis of typhoid, Widal is the most useful. It is easily available and is less susceptible to prior therapy when compared to blood culture. On laparotomy there was gross contamination of peritoneal cavity in most of the patients. Peritoneal cavity was found to contain copious quantity of pus and faecal material. Feculent peritonitis was seen in 20(40%) of cases whereas 30(60%) of cases presented with purulent peritonitis. Patients presenting with feculent peritonitis were those who presented late and were in shock. Late presentation may be owing to delayed referral of the patient or may be due to non-availability of efficient health care at patients' disposal as is seen in tropics. Most of the literature available report a single perforation in the terminal ileum.¹³ In present study a single perforation was noted in 39(78%) of cases. Two and more than two perforations were noted in 11(22%) of cases.

Chowdhury et al reported 41% of cases with single perforation, 33% with double perforation.¹¹ Most of the patients in this study had unhealthy and inflamed bowel adjacent to the perforation indicating the presence of ileitis. Out of the 50 cases studied only 14(28%) patients had a healthy bowel on laparotomy. Rest 36(72%) patients had a bowel which was inflamed and friable. Few patients had bowel which was liable to perforate at more than one site although a single perforation was noted at the time of surgery. Ileal perforation is best treated by surgery is universally accepted, but the exact nature of the surgical procedure remains controversial to date.

Surgery for ileal perforation is associated with a high morbidity. Of all the post-operative complications, faecal fistula remains the most dreaded with an incidence of around 12%.⁷ Reasons may be dehiscence of anastomotic or primary repair, synchronous impending perforation in adjacent inflamed bowel that has been missed at the time of initial surgery or development of metachronous perforation of diseased ileum during post-operative period.¹⁰ Faisal et al reported 6 cases of faecal fistula (FF) that resulted in death of all 6.⁸ Abdul Ghaffar et al reported 6 cases of FF that resulted in 4 deaths in his study.¹⁰ Tariq Farooq reported 2 deaths out of 4 cases of FF in his study.¹⁴ This complication though not specific to a given surgical technique, nevertheless is seen more commonly when a suture is applied in a septic tissue. All the above studies reported a higher incidence of post-

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operative FF where no de-functioning protective ileostomy was carried out, whereas none of the patients undergoing de-functioning protective ileostomy in the same study developed post-operative FF. This study also substantiates these findings.

FF developed in 10 out of 25 cases in group B where no protective ileostomy was done to protect the closure of perforation or end to end anastomosis. None of the patients in group A with protective ileostomy developed FF. 6 out of 10 patients of FF succumbed leading to a higher mortality in group B when compared to group A. Loop ileostomy does not provide complete de-functioning but temporarily protects a distal anastomosis. The aim of stoma was not so much to prevent a leak. Advocates of temporary faecal diversion argue that a loop ileostomy decreases the incidence and severity of sepsis following a leak from an anastomosis.¹⁵ Ileostomy is not very much favored in literature as the primary mode of treatment for ileal perforation. The literature is full of complications and management problems of ileostomy. The reported complication rates vary from 7% to 76% and this wide difference may be related with different time-points. The management of ileal stoma, is an intimidating task especially in public sector hospitals like ours with no arrangement for stoma care teams.¹⁵ In present study 24 out of 25 cases developed ileostomy specific complications such as skin excoriation (64%), ileostomy diarrhoea leading to electrolyte imbalance (20%), ileostomy prolapse (4%) and retraction of stoma (12%).

Wound infection was also noted in (24%) of patients. Ileostomy related complications were in accord with the various studies that reported similar complication rate.^{11,14,15,16,17} Patients in Group B also had higher morbidity. Wound infection (60%), wound dehiscence (36%), faecal fistula (40%) were the complications suffered by patients in Group B. As discussed earlier FF was the most dreaded complication with 10(40%) of cases being recorded among which 6 succumbed to death. Mean hospital stay for all the patients was 17.4 days, ranging from 1 to 60 days. Patients in group B had a very high mean hospital stay of 22.2 days, ranging from 5 to 60 days, whereas for patients in group A it was 12.6 days ranging from 1 to 25 days considering only the first admission. The longer duration of hospital stay in patients with group B was mainly due to the associated higher complication like wound dehiscence and FF.

In group A, patients with longer stay were those who had excessive skin excoriation and peristomal ulceration. Mean stay was found to be statistically significant with a P value of 0.011. The overall mortality rate in present study is 30%. The reported mortality after primary closure ranges from 7.9% to 31%. However most authors report a mortality of about 25%.¹⁶ In present study the mortality in group B was 44% as compared to 16% in group A. Patients in group B had a very high mortality, which was mainly due to the occurrence of post-operative FF in (40%) of cases. In group A there were 4 deaths out of 25 cases, and 3 out of 4 was in perioperative period, wherein patient succumbed mainly due to acute renal failure in one case and persistent hypotension and septic shock in other two.

One patient in group A succumbed to death after the closure of ileostomy during second admission due to faecal fistula, the reasons could be due to reperforation while releasing the adhesions of bowel from surrounding tissue or might be due to anastomotic leak. Patients in Group B (44%) had thrice the mortality when compared to Group A (16%) which was statistically significant with a P value of 0.031. Ileostomy is a social trauma to the patient due to faecal waste and its smell. It has an adverse effect on the quality of life as well. Few patients suffer from psychological symptoms as well.⁶ the symptoms worsen with the occurrence of ileostomy related complications like skin

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ulceration. In this study 5(20%) patients out of 25 cases had psychological symptoms in the form of depression, stopped speaking and eating properly.

All these patients gradually improved with time as the ileostomy matured and after they were explained about coming back to a normal life within short span after the closure of stoma. Most of the patients during the waiting period for second surgery were able to lead a normal social and routine life but they missed their work as they found it difficult to work with the stoma. On the contrary patients in group B although were not so significantly affected psychologically but still they suffered from some sort of depression due to prolonged hospital stay as a result of wound dehiscence and FF. psychological symptoms were seen in 7(28%) of cases. There was not much difference between two groups regarding psychological impact with a P value of 0.508 which was not significant statistically.

CONCLUSION: Temporary defunctioning protective ileostomy should be given priority over other surgical options especially in those moribund patients whose general condition is not good, have been partially treated and have lost many hours of precious time, have developed metabolic and hemodynamic instability, having inflamed and friable bowel with more than one perforation and massive faecal contamination of abdominal cavity. Primary closure of perforation is preferred only in clinically stable patients with a single perforation, healthy bowel with minimal soiling of the abdominal cavity. Although being bothersome, ileostomy is still a life-saving and damage control surgical procedure. Though literature is full of complications and management problems of ileostomy, it should be recommended that ileostomy in these cases is only temporary and the extra cost and cost of management is not more than the price of life saved.

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