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A Clinical Study of the Etiology of Ileal Perforation and Its Surgical Management in a Tertiary Care Hospital

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Abstract: Ileal perforation is a common complication of Typhoid in developing countries other causes includes tuberculosis, trauma, and enteritis. Non-traumatic perforation is a challenge for surgeons because of considerable morbidity and mortality. This study tried to evaluate the etiology and clinical outcomes of surgical management for all the cases of non-traumatic ileal perforation. This prospective cross-sectional study was conducted in the Department of General Surgery, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Inclusion criteria were all the patients above 15 years undergoing surgery for ileal perforation. Excluded patients were those with appendicular perforations, peritonitis, and traumatic perforations. Based on the inclusion and exclusion criteria of 21 male and 17 female patients were included in the study. A thorough clinical examination of the patient including vital signs, abdominal distension, guarding and tenderness was done and noted. The laboratory investigations included Hemoglobin, BT & CT, and serum creatinine. Chest X rays, ECG, Blood culture and WIDAL tests were done to diagnose patients with typhoid. Results: In the present study out of 22 male patients 17 were diagnosed with typhoid perforation and 5 were a non-specific perforation. In the 17 females, 15 were diagnosed with typhoid perforation and 2 were non-specific perforations. The surgical approach for the management included primary closure in the total of 25 (64.10%) male and female patients followed by Ileostomy in 8 (20.51%), Ileo Transverse Anastomosis in 4 (10.26%) and resection anastomosis in 2 (5.12%) of cases. Conclusion: Within the limitations of the present study it can be concluded that typhoid ileal perforations are common in the group of patients reaching our hospital. The operative treatment for intestinal perforations should be based on several factors including operative findings. Early surgery with skilled surgeons and good postoperative care will result in reduced morbidity and mortality.

Keywords: Ileal perforation, surgical management, Tertiary Care Hospital.

INTRODUCTION

Ileal perforation is a common presentation seen in surgical clinics across tropical countries the most common cause of which being typhoid fever. In developed countries, the common causes of ileal perforations include malignancy, trauma, and mechanical etiology, in the order of frequency [1]. The ileal perforations are an important cause of significant morbidity and mortality in spite of advances in surgical treatments [2]. Typhoid fever is becoming a major health problem in developing countries due to lack of availability of clean drinking water [3]. The global health burden of typhoid and its impact on the resources of poor countries has been well documented. It has been estimated that more than 33 million cases of typhoid fever occur annually causing approximately 500,000 deaths [3-5]. It has been estimated that around 1% of the population up to the age of 17 years in India yearly suffers once from this disease. Most of the cases are from rural populations and now with the emergence of multi-drug resistant strains there is an increase in the number of complications related to this disease [6]. Intestinal hemorrhage is a common complication of typhoid fever and intestinal perforations continues to be the reason for high morbidity and mortality in typhoid cases [7]. Hemorrhage and perforations occur in terminal ileum secondary to necrosis of Peyer's patches after 2-3 weeks of onset of disease. The rate of perforations varies from 0.8% to 18% and the rate of mortality due to typhoid intestinal perforations has been reported to range from 5% to 62% [7]. The general clinical presentation of the patients with typhoid perforations include the history of fever, abdominal pain associated with tenderness, rigidity and guarding. In the majority of cases, the patients come late to the hospital when purulent or fecal peritonitis with septicemia has already developed. There are numerous modalities of surgical treatments for ileal perforations ranging from conservative management suggested by Huckstep including a simple closure of the perforation, placement of an omental patch, segmental or wedge resection with anastomosis [8, 9]. The decision to repair

and primarily restore the bowel continuity depends on a number of factors that includes the number and size of perforations. The primary restoration of bowel continuity has a risk of an anastomotic leak or fecal fistula formation while ileostomy prevents the ill effects of the leak but other complications may be encountered which may become difficult to handle. Under such circumstances, the treating surgeon with his technique surgical skill and experience manages the cases. With this background, we in the present study tried to evaluate the etiology and management of ileal perforations present to our tertiary care hospital and record the final outcomes including complications.

MATERIALS AND METHODS

This prospective cross-sectional study was conducted in the Department of General Surgery, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical committee permission was obtained for the study. A written consent was obtained from all the patients included in the study. Inclusion criteria were all the patients above 15 years undergoing surgery for ileal perforation. Excluded patients were those with appendicular perforations, peritonitis, and traumatic perforations. Based on the inclusion and exclusion criteria of 21 male and 17 female patients were included in the study. A complete history of the patients was obtained with reference to the presence of fever, pain, and abdominal distension. A thorough clinical examination of the patient including vital signs, abdominal distension, guarding and tenderness was done and noted. Patients were also examined with reference to Cardiovascular, Respiratory and Nervous system. The laboratory investigations included Hemoglobin, BT & CT, and serum creatinine. Chest X rays, ECG, Blood culture and WIDAL tests were done to diagnose patients with typhoid. In patients were resection was done were examined histopathologically. All the patients underwent laparotomy under general anesthesia and intraoperative examination was done with regard to number, site, and size of perforations. Based on the operative presentation the patients were treated with one of the following methods, Primary closure, ileostomy, Ileo Transverse Anastomosis or resection anastomosis. The closure and anastomosis were done with 3-0 vicryl for inner layers and outer layers with silk sutures. For those diagnosed with typhoid, the antibiotics were continued for up to 10 days. The patients have followed up post surgery for 6 months for the presence of any complications.

RESULTS

The present study included 22 male and 17 female patients the most common age group of involved cases in both male and female patients was 20-25 years contributing to 28.21% of the cases followed by 15-19 years having 23.07% of cases, the next was 26-20 years of age having 20.51% of cases in the study and 31-35 with 15.38% of the cases in the study shown in table-1.

Table-1: Age and Sex wise distribution of the cases included in the study

Age Group (years)	Male	Female	Total	Percentage
15-19	5	4	9	23.07
20-25	6	5	11	28.21
26-30	5	3	8	20.51
31-35	2	4	6	15.38
36-40	4	1	5	12.83
Total	22	17	39	100

The most common clinical signs of the patients included in the study were Tenderness and guarding seen in 100% of cases distension of abdomen was seen in 94.87% of the cases. Dehydration was found in 46.15% of the total cases and shock was seen in 15.38% of cases shown in table-2.

Table-2: Showing the clinical signs of the patients included in the study

Clinical Signs	Male	Female	Total	Percentage
Tenderness	22	17	39	100
Guarding	22	17	39	100
Distension of Abdomen	22	15	37	94.87
Dehydration	11	8	18	46.15
Shock	4	2	6	15.38

The common symptom for seeking medical attention by the patients was the abdominal pain in all 100% of cases and fever was seen in 51.28% of cases, vomiting in 23.07% of cases, constipation, and diarrhea in 23.07 and 7.7% of cases respectively shown in table-3.

Table-3: Clinical symptoms in the patients included in the study

Symptoms	Male	Female	Total	Percentage
Abdominal Pain	22	17	39	100
Fever	11	9	20	51.28
Vomiting	5	4	9	23.07
Constipation	2	1	3	7.7
Diarrhea	6	4	10	25.64

In the present study out of 22 male patients, 17 were diagnosed with typhoid perforation and 5 were the non-specific perforation. In the 17 females, 15 were diagnosed with typhoid perforation and 2 were non-specific perforations. The surgical approach for the management included primary closure in a total of 25 (64.10%) male and female patients followed by Ileostomy in 8 (20.51%), Ileo Transverse Anastomosis in 4 (10.26%) and resection anastomosis in 2 (5.12%) of cases presented in table-4.

Table-4: Surgical management of the cases involved in the study

Surgical Management	Male	Female	Total (%)
Primary closure	14	11	25 (64.10)
Ileostomy	4	4	8 (20.51)
Ileo Transverse Anastomosis	3	1	4 (10.26)
Resection Anastomosis	1	1	2 (5.12)
Total	22	17	39 (100)

There were very few complications in the patients involved in the study a total of 6 out of 22 patients in male developed complications 4 of which were due to wound infection and 1 each as a result of anastomotic leakage and wound dehiscence in female out of 17 only 4 reported with complications out of which 2 were due to wound infection and 1 due to anastomotic leakage and no cases of fecal fistula were found. All the cases were managed appropriately and no morbidity or mortality was recorded in table-5.

Table-5: Complications in the patients included in the study

Complications	Male	Female
Wound Infection	4	2
Anastomotic Leakage	1	1
Wound Dehiscence	1	0
Fecal Fistula	0	0
Total	6	3

DISCUSSION

The most common cause of ileal perforation in the present study was typhoid infection seen in 82.05% of cases and non-specific perforations were found in 17.95% of cases. Out of 7 non-specific cases, 5 had fever and chills when reported to the hospital however tests were not suggestive of typhoid. In our study, we found the common age group of involvement with ileal perforation was from 20-25 years. In a similar study by Sitaram V *et al*., [10] found the common age of presentation in 2nd and 3rd decade of life. Talwar S *et al*., [11] found the common presentation of ileal perforations between 21- 30 years of age agreeing with the results of our study. The majority of patients in the present study were male 22 out of total 39 cases and 17 were female cases. Studies done in this area have generally found the male preponderance in ileal perforation similar to our study [12, 13]. Clinical examinations of the subjects in the present study revealed tenderness, guarding, and distension of abdomen. Chest X-rays were performed to detect hollow viscus perforation. The presence of free gas under the diaphragm was seen on x-rays in the majority of cases of typhoid perforation. Pneumoperitoneum was seen in 81.25% of cases similar reporting have been found in other studies [14-16]. Typhoid intestinal perforation was diagnosed based on clinical examination, laboratory investigations, and x rays and intraoperative findings of peritonitis and perforation on the antimesenteric border of the bowel. Fever and abdominal pain were reported in all cases in the present study. Abdominal pain in all 100% of cases and fever was seen in 51.28% of cases, vomiting in 23.07% of cases, constipation, and diarrhea in 23.07 and 7.7% of cases respectively. A study by Sudhir Bhamre *et al*., [17] found fever and abdominal pains in 100% of cases of ileal perforation similar findings have been reported by other studies done in this field [18-20]. The present study showed no mortality in the case studied which in comparison to previous studies is an important improved outcome in India [21-23]. There could be several factors contributing to it. The fact that improved diagnostic facilities leading to faster treatment and availability of antibiotic therapy in the perioperative period have overall contributed to better outcomes. However, it is important to note that there should be

some mechanism by which the patients are referred to the tertiary care hospital early on slightest doubt of perforation by primary care physicians. Nowadays rapid availability of ambulances has to lead to the early seeking of care by specialists which have contributed to the improved outcomes.

CONCLUSION

Within the limitations of the present study, it can be concluded that typhoid ileal perforations are common in the group of patients reaching our hospital. The operative treatment for intestinal perforations should be based on several factors including operative findings. Early surgery with skilled surgeons and good postoperative care will result in reduced morbidity and mortality.

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