

Morbidity and Mortality due to Delay in Surgery of Jejunoileal Perforation

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ABSTRACT

Objectives: Objectives of this study were to correlate the outcome of surgery with delay in treatment after small intestinal perforation and assess the pattern of morbidities and mortality among cases with ileal perforation.

Study Design: Cross sectional comparative type of study was conducted.

Setting and Duration: South Surgical Ward Mayo Hospital Lahore from May 2005 to January 2006 and November 2006 to March 2007

Material and Methods: Patients who underwent exploratory laparotomy in emergency following spontaneous small intestinal perforation were studied. History was taken prior to surgical intervention. Start of abdominal pain from a localized area to the entire abdomen was taken as the lead point to divide the patient into 2 groups. Groups A were those who presented within 24 hours and Group B were those who presented after 24 hours. The variables studied included healing of the gut and start of the oral feeding, persistence of fever, presence or absence of the wound infection.

Surgical procedure carried out was described. Creation of a small intestinal stoma with mucus fistula was treated as morbidity. Other surgical options include resection and anastomosis or primary repair of the perforation. Follow-up information of the post surgical procedure was gathered up to 2 weeks after having discharged the patient. All this information was collected on a specially designed proforma. The statistical system used was SPSS version 10.

Results: 62 patients were studied. They were divided into 2 groups, before 24 hour presentation, after 24 hour presentation. 70% were male patients. Age ranged from 13-65 (mean 26.5Y) Ileal Perforation was found in 49 patients (79%) 7 of these patients expired. Jejunal perforation was found in 13(21%) patients. 2 expired. 9 out of a total of 62 expired (14%). 1 expired in Group (A). 8 expired in Group (B). Most common site of ileal perforation is 45 cm from ileocecal junction. Ileal perforation is much more common. Ratio is 4:1 with Jejunal perforation. 5 out of 8 expired in Group (B) presented after 100 hours of perforation. Ileostomy was made in 22 patients. 6 of these expired. As the time interval increased, morbidity and mortality increased quite significantly. Incidence of wound infection and persistence of fever in the post operative period increased as the time interval increased. Start of oral feeding is delayed. Requirement for ileostomy is increased.

Conclusion: Duration between small intestinal perforation and surgical intervention is the most important factor in these patients. As the duration increases, various morbidities and mortality indices are directly increased.

Key words: Peritonitis, small intestinal perforation, ileostomy wound dehiscence

INTRODUCTION

Hippocrates was the first to describe this lethal disease, the peritonitis. He described the patient's face in terminal diffuse peritonitis, still known as Hippocratic face. His description was: cold clammy extremities, sunken eyes, dry tongue, thready irregular pulse and drawn anxious face. With early diagnosis and treatment, this condition is rarely seen in modern surgical practice. In cases of perforation of the small bowel, operation must be carried out as soon as the patient is fit for anesthesia.

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Small intestinal perforation may be caused by tuberculous ulcer or typhoid ulcer. A mixed flora may also be seen. Onset is sudden. If peritonitis persists for weeks, chronic septic peritonitis ensues. In these cases, a fatal outcome is almost inevitable. Importance of early diagnosis cannot be overstressed, as successful treatment depends so much on the time factor.

In small intestinal perforation, the onset is sudden with acute severe abdominal pain, followed by general collapse and shock. Patient may improve temporarily only to become worse later as generalized toxemia occurs. Any delay in treatment of peritonitis produces more profound toxemia and

septicemia. Peritonitis can be acute or chronic, as seen in tuberculosis. Most cases of infective peritonitis are secondary to gastrointestinal diseases.

The topic that we have chosen is the peritonitis resulting from small intestinal perforation, especially highlighting the role of time factor in treatment on the final outcome of the patient. Since tuberculosis and typhoid fever are quite prevalent in our community so the surgical complications of these diseases are quite frequently encountered. Most common presentation is small intestinal perforation in these patients. Because of the overuse and misuse of the quinolones by the quacks in our society, sometimes typhoid bacilli are not isolated. Delay between surgery and intestinal perforation is a very important prognostic factor in such patients. As the time passes the morbidity and mortality are increased quite significantly. However the underlying pathology also plays an important role, as we found out that a young patient, who presented with ileal perforation, was a known case of pulmonary tuberculosis, and he subsequently expired, due to ARDS.

MATERIAL AND METHODS

Patients who underwent exploratory laparotomy in emergency following spontaneous small intestinal perforation were studied. Start of abdominal pain from a localized area to the entire abdomen was taken as the lead point to divide the patient into 2 groups. Groups A were those who presented within 24 hours and Group B were those who presented after 24 hours. The variables studied included healing of the gut and start of the oral feeding, persistence of fever, presence or absence of the wound infection.

Surgical procedure carried out was described. Creation of a small intestinal stoma with mucus fistula was treated as morbidity. Other surgical options include resection and anastomosis or primary repair of the perforation. Follow-up information of the post surgical procedure was calculated up to 2 weeks after having discharged the patient. All this information was collected on a specially designed proforma. The statistical system used was SPSS version 10.

RESULTS

Sixty two patients were studied. They were divided into 2 groups, before 24 hour presentation in group A and after 24 hour presentation in group B. 70% were male patients. Age ranged from 13-65 (mean 26.5Y) Ileal Perforation was found in 49 patients (79%) 7 of these patients expired Jejunal perforation was found in 13(21%) patients. 2 expired. 9 out of a total of 62 expired (14%).1 expired in

Group (A). 8 expired in Group (B). Most common site of ileal perforation is 45 cm from ileocecal junction. Ileal perforation is much more common. Ratio is 4:1 with Jejunal perforation. 5 out of 8 expired in Group (B) presented after 100 hours of perforation. Ileostomy was made in 22 patients. 6 of these expired. As the time interval increase, various morbidities and mortalities are increased quite significantly. Incidence of wound infection and persistence of fever in the post operative period are increased as the time interval increases. Start of oral feeding is delayed. Requirement for ileostomy is increased. Table describes the difference of mortality between the 2 groups of patients. Mortality differences have also been highlighted with reference to the underlying cause.

Duration of perforation and mortality

	Group A%	Group B%	Total cases
Total no	30(48.40)	32(51.60)	62
Male	19 (44.18)	24(51.60)	43
Female	11(57.89)	8(42.1)	19
Expired	1(3.33)	8(25)	9
Tuberculosis	16(50)	16(50)	32
Typhoid	4(13.33)	14(37.50)	18
Non specific	8(33.33)	4(12.5)	12
Tuberculosis expired	1(6.25)	2(37.50)	3
Typhoid expired	0	5(37.50)	5
Non specific expired	0	1(25)	1

Chi-square tests: Duration between perforation and Operation before 24 hrs Mortality Cross tabulation Count

Duration between perforation and operation	Mortality	No mortality	Total
Before 24 hours	1	29	30
After 24 hours	8	24	32
Total	9	53	62

Duration between perforation and operation	Ileostomy	No ileostomy	Total
Before 24 hours	4	26	30
After 24 hours	18	14	32
Total	22	40	62

P value calculated for mortality between the two groups of patients is 0.027 Which is statistically quite significant. Ileostomy with mucus fistula. Duration between perforation and Operation before 24 hours tabulation count. P value calculated for this variable is .003. this value is statistically significant.

DISCUSSION

The hypothesis that was made at the start of this research was that as the duration between perforation and operation increases, the morbidity and mortality are increased simultaneously. Out of a total of 8 patients expired, 7 were those who presented after 24 hours. Out of these 7, 5 presented after 100 hours of perforation. So we can clearly see that as the duration between perforation and operation is increased in patients of jejunoileal perforation, mortality rises markedly. Moreover these patients also have more incidence of morbidities like ileostomy, presence of wound infection, persistence of fever. The one patient that expired with earlier presentation i.e. before 24 hours was a thin emaciated young male, and was known case of pulmonary tuberculosis, and was using ATT quite irregularly. So, due to peritonitis, we had to operate him under compromised pulmonary functions. Later on, this patient underwent acute respiratory distress syndrome, and could not revive. So, underlying pulmonary pathology played a crucial part in his final outcome.

Therefore, it is recommended that in patients of small intestinal perforation; who present in emergency, operative intervention must be carried out as soon as the patient's general condition is improved. By early intervention, we never recommend the patient to be operated immediately after arrival in emergency. Patient must be adequately resuscitated first. These patients are dehydrated and have various electrolyte derangements. So in two to three hours, patient should be ready for surgery. There are various reasons attributable to delayed presentation.

First of all is the phobia of surgery that most of the general population has. Secondly, quacks are mainly responsible for this delay. Because pain is the main complaint which will bring these patients to hospital, this symptom is reasonably well controlled by the quacks. Moreover they also frequently use intravenous fluids. Quinolones are also used quite frequently. So, because of these various reasons, some of the patients report quite late. Even quite educated peoples have this habit of criminal negligence, which can cost them heavily.

Hence, our hypothesis of increase in morbidity and mortality due to delayed presentation is strongly supported by the facts and figures that we have obtained in our research project. We can't really do much in case of delay in presentation. But public awareness should be increased regarding generalized abdominal pain, tuberculosis and typhoid fever. It was also observed that most of these patients belonged to poor social class. They were

working in various small business corporations. They had to eat from bazaar for most of their day time. That was also a contributory factor for the prevalence of typhoid and tuberculosis that was seen in most of these patients. Quackery contributes a lot to the mortality and delay in presentation in these patients. Public awareness should be increased against these quacks; and quackery must be discouraged at both the national and personal level.

Outcome of ileostomy in cases of small bowel perforation was studied. In most of the patients, a single perforation was found at the antimesenteric border with mild to moderate peritoneal spoilage. Multiple perforations and gross peritoneal spoilage was found in patients who presented late. All of these patients were treated by creation of the small gut fistula, and it was found that morbidity and mortality are reduced dramatically with this approach. Similar to study, late presentation led to gross peritoneal spoilage, but in contradiction to this, however ileostomy was made in 16 out of 40 patients studied. 5 of these patients expired. (31.25%), this is quite higher as compared to 7.5% in that study.

In a study, 298 cases of proven typhoid ileal perforation were admitted and treated during 1966-1998. With the addition of ciprofloxacin along with metronidazole, there was a dramatic improvement in the out come and mortality reduced from 47.5% to 7%. The lag period showed definite correlation with mortality. Septicemia, wound infection, dehiscence, enterocutaneous fistula were the principal postoperative complications seen similar to the study that we have carried out.

In another study, ileostomy was said to be associated with more mortality as compared to the primary repair in patients of typhoid ileal perforation. What we have found out is that chances of patients undergoing primary repair are decreased markedly, as the duration of peritonitis increases (13/22 ileostomies in patients with delayed presentation).

However in another study, proximal ileostomy with closure of the perforation was recommended, especially in those patients who present with advanced peritonitis. It is quite similar to what we have seen that as the peritonitis gets prolonged, gut becomes more and more friable and it becomes difficult to repair it primarily.

Only 18% patients present within 24 hours, while 34% patients present after 72 hours. Complication rate was very high in late reporting as compared to those who present earlier. Ileostomy was made in those patients who presented late and better result was seen with this procedure. What we found out that if patients present quite late, then even ileostomy is associated with quite a higher mortality.

Common causes of ileal perforation are typhoid and tuberculosis. Simple repair can be performed in single perforation. In multiple perforations, friable gut is resected and in tuberculous patients, segmental resection is done followed by end to end anastomosis. Overall mortality is 9%. Various complications encountered are small gut fistula, wound dehiscence and incisional hernia. Typhoid and tuberculosis are similarly implicated quite commonly along with certain non specific infections with mixed are seen as the cause of small intestinal perforation.

Typhoid ileal perforation is still common in tropics. 50 patients were studied. Sex ratio was 4:1 in favor of males. Age range was 7-42 years, and mean age was 19.5 years. Late presentation, delay in operation, multiple perforations and drainage of copious amounts of pus and faecal material adversely affects the incidence of faecal fistula and mortality. So late presentation and delay in surgery are the two most important prognostic factors implicated in the final outcome of these patients.

CONCLUSION

The most important prognostic factor in patients of small intestinal perforation is late presentation, which prolongs the perforation operation interval. Mortality and morbidity indices are directly influenced in such patients. Moreover typhoid perforation, requiring early surgical intervention is still quite endemic in our region. We must educate general public on a mass level regarding preventive measures. These include safe drinking water, appropriate sewage disposal, and typhoid vaccination. Awareness should also be increased regarding generalized abdominal pain following high grade fever with rigors. Moreover, perforation and fistula formation along with structuring in suggestive of abdominal tuberculosis, particularly in a population which is already predisposed to tuberculous infection and is seen more commonly with delayed presentation.

In patients without advanced peritonitis excellent results can be achieved by whatever the type of surgery which utilized. However in patients presenting with advanced peritonitis, the outcome is associated with a much higher mortality and morbidity. As these patients usually have systemic involvement as well. The disease process already had affected renal, pulmonary systems as well as various other organs.

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