

Study of Different Surgical Management And Their Complication Rates in Ileal Perforation

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Abstract:

Introduction: Ileal perforation is a common cause of acute abdomen in developing countries like India. Common causes of ileal perforation are: Typhoid fever, Trauma, Tuberculosis, Iatrogenic and other causes. **Objective:** To analyse the modality of surgery having least complications in different groups of ileal perforation.

Material and Methods: Total 60 patients were taken in this study with diagnosis of ileal perforation. Three groups of patients were made depending on duration and number of perforation.

GROUP A- 17 Patients having single perforation and duration of perforation less than 24 hours.

GROUP B- 18 Patients having single or multiple perforation and duration of perforation 24 to 72 hours

GROUP C- 25 Patients having multiple or single perforation and duration of perforation more than 72 hours

In each group, three modalities of surgeries primary closure, primary closure with ileotransverse anastomosis and ileostomy was done. Complications rate among different modalities of surgery was compared and best modality for each group was determined.

Conclusion :

In group A primary closure was best modality with least complication rate.

In group B primary closure of ileotransverse anastomosis was best modality with least complication rate.

In group C ileostomy was best modality with least complication rate.

Keywords: Ileal perforation, surgical management, typhoid

Date of Submission: 02-08-2017

Date of acceptance: 18-08-2017

I. Introduction

Correct interpretation of acute abdominal pain is one of the most challenging demands faced by any treating physician. Since proper therapy often requires proper diagnosis because most catastrophic events may forecast the subtlest of symptoms and signs. The most obvious of acute abdomen may not require operative intervention and the mildest of abdominal pain of recent onset requires early and thorough evaluation with specific attempts at accurate diagnosis. Ileum is the important viscus that occupies the abdominal cavity and typhoid fever is the main culprit that causes non traumatic small intestinal perforation. These perforations most commonly affect young population in their prime of life. Majority of cases manifest late with established peritonitis and varying degree of septicemia[1]. Even after 70 years of independence the standard of health, sanitation and hygiene is very low in urban as well as rural population especially in Jharkhand India. There is high incidence of tropical diseases of all kinds including infection and infestation of bowel, which are almost endemic and which remain one of the major health hazards in this region. The enteric fever, abdominal tuberculosis and helminthic infestations are many a time responsible for perforation of ileum. Anaemia, hypoproteinemia, avitaminosis and poor physical health because of poor dietary intake make the situation even worse and the population is quite unable to tolerate the various complications of the said disease.

Abdominal tuberculosis which is endemic is encountered in surgical emergency quite often and with variable surgical manifestations. Incidence of tubercular perforation of the gut has been reduced in comparison to past may be due to availability of potent antituberculous drugs though the overall incidence of abdominal tuberculosis has not gone down. Majority living in rural areas have poor access to the hospitals and clinicians. The background of malnutrition, poor health, low immunity make the condition more worse and the patient is more prone to post operative complications or high mortality. “ The importance of an early diagnosis and prompt management of rupture of intestine cannot be exaggerated”-LORD MOYNIHANS(1928). He further emphasized “ delay of an hour in any case means that the chances of recovery by operation are thereby lessened”. Perforative peritonitis resulting from non traumatic ileal perforation is one of the fairly common

emergency problems faced by general surgeons. It is caused by diverse etiological factors and is associated with high morbidity as well as mortality. Precise diagnosis is some times difficult pre-operatively[2].

Although such perforations are a worldwide problem, the incidence is much higher in developing countries like African and Asian countries including India. It ranked 5th among abdominal emergencies at the university hospital of Ibadan.(Cole,1964)

Among traumatic cases, road traffic accident is the most common cause in world and may be regarded as disease which has reached pandemic proportion. In this violent world the incidence of ileal perforation due to civil and military violence, industrial and domestic accidents is also in increasing trend. Whatever may be the cause each perforation invariably leads to peritonitis. The pathogenesis of which depends on several factors such as the anatomic site of perforation, the composition of leaking fluid, the type and the load of bacterial contamination, the nutritional and immunological status of the host and also on age of the patient, associated medical illness and the interval between perforation and its treatment. Early diagnosis and proper management is the sheet anchor of success in saving such patients. Diagnostic difficulties have been reported in all series and have been thought to contribute to delayed treatment and high mortality. Surgery after resuscitation is the treatment of choice in almost all cases of perforation. The operation depends upon the general condition of the patient, the type of perforation and the status of the adjoining bowel segment.

The objectives of surgical intervention are:

1. Removal of all infected and toxic material
2. Closure of perforation and elimination of toxic material or bypass of obstruction if any
3. Peritoneal drainage apart from definite medical treatment³.

The various surgical options are:

1. Drainage of peritoneal cavity
2. Simple closure
3. Wedge resection and closure
4. Resection –Anastomosis
5. Ileotransverse colostomy
6. Ileostomy

II. Material And Methods

Source of Data: In this study 60 patients were taken who were admitted at R.I.M.S, Ranchi in Department of Surgery with diagnosis of perforation.

Investigations done were:

1. Routine investigations
2. plain x-ray of abdomen erect view
3. Ultrasound of abdomen
4. CT-Scan of abdomen

Patients were grouped in 3 groups on the basis of duration of perforation and number of perforations:

Group A- 17 Patients having single perforation and duration of perforation less than 24 hours.

Group B- 18 Patients having single or multiple perforation and duration of perforation 24 to 72 hours

Group C- 25 Patients having multiple or single perforation and duration of perforation more than 72 hours.

Various modalities of surgeries performed in each group:

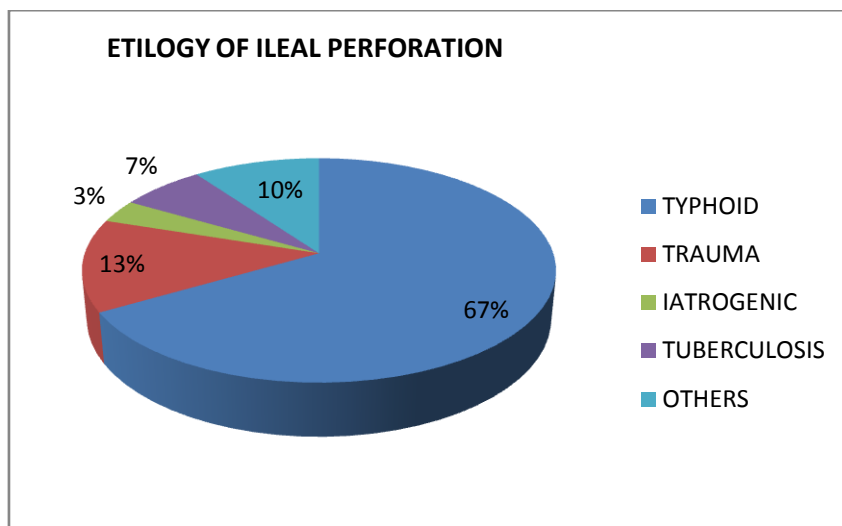
- A. Primary closure of perforation
- B. Primary closure of perforation with ileotransverse anastomosis
- C. Ileostomy

Following surgery each group was observed for following complications:

1. Stitch infection
2. Wound dehiscence
3. Burst abdomen
4. Fecal fistula
5. Chest infection
6. Malnutrition
7. Death

III. Results And Discussion

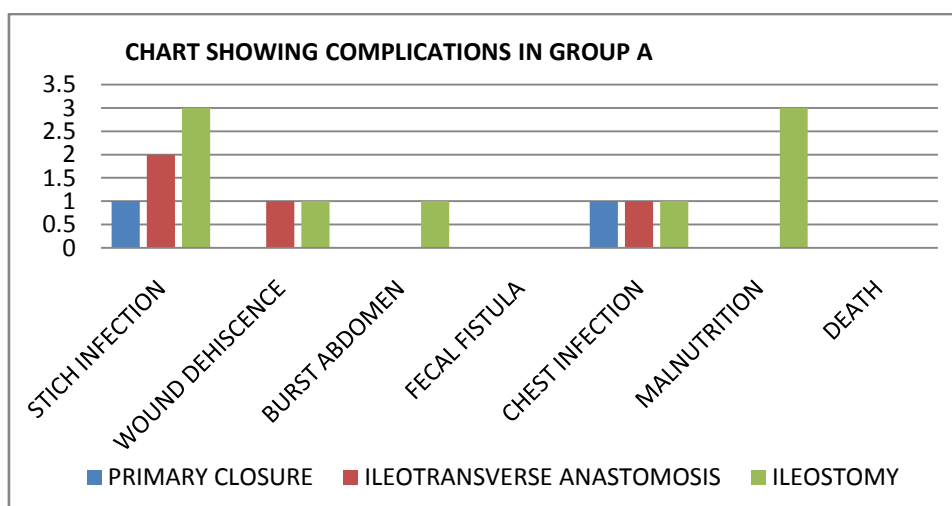
Out of 60 patients of ileal perforation, 40 were due to typhoid fever, 8 patients had traumatic ileal perforation, 4 patients diagnosed as tuberculous abdomen, 2 patients had iatrogenic perforation(following dilatation and evacuation), 6 patients had other causes.



Out of total 60 patients the most common cause of ileal perforation in this study was Typhoid fever which accounted for 66.6% of total patients. According to the study of karmakar et al typhoid perforation accounts for 56.6% of perforations. the commonest cause of ileal perforation in tropics is typhoid fever[2,4,5]. Second most common cause in this study was trauma which measures to 13%. According to karmakar et al traumatic bowel perforation may be the result of increased industrialization[2]. In this study tubercular ileal perforation was 7%. The intestinal tuberculosis continues to be a frequent problem in developing countries. S. Talwar et al have found 19% of non traumatic small bowel perforation in 308 patients were due to intestinal tuberculosis.[6]. Incidence of iatrogenic ileal perforation in this study was 3.3%. The rate of bowel perforation as a complication of induced abortion has been reported in literature to range from 5% to 18% of all abortion related complications[7,8,9]. 10% of cases in this study were due to other causes. This includes mechanical causes secondary to a distal obstruction such as hernias, bands, volvulus, intussusception and obstructing growths. Mechanical causes are one of the commonest causes of bowel perforation in the western world. These were responsible for 18 out of 76 cases of small bowel perforation as reported by chaikof[10].

Table Showing Complications In Group A Patients

Complication	Primary Closure	Ileotransverse Anastomosis	Ileostomy
1. Stitch Infection	1(17%)	2(33.33%)	3(50%)
2. Wound Dehiscence	0	1(17%)	1(17%)
3. Burst Abdomen	0	0	1(17%)
4. Fecal Fistula	0	0	0
5. Chest Infection	1(17%)	1(17%)	1(17%)
6. Malnutrition	0	0	3(50%)
7. Death	0	0	0
Total Patients With Complication	1(17%)	2(33%)	3(50%)



Complications in group A patients who underwent primary closure of perforation are:

Stitch infection:17%, wound dehiscence:0%, burst abdomen:0%, fecal fistula:05%, chest infection:17%, malnutrition:0%, death: 0%. Total patients with complication were 33%.

Complications in group A patients who underwent primary closure of perforation and ileotransverse anastomosis are

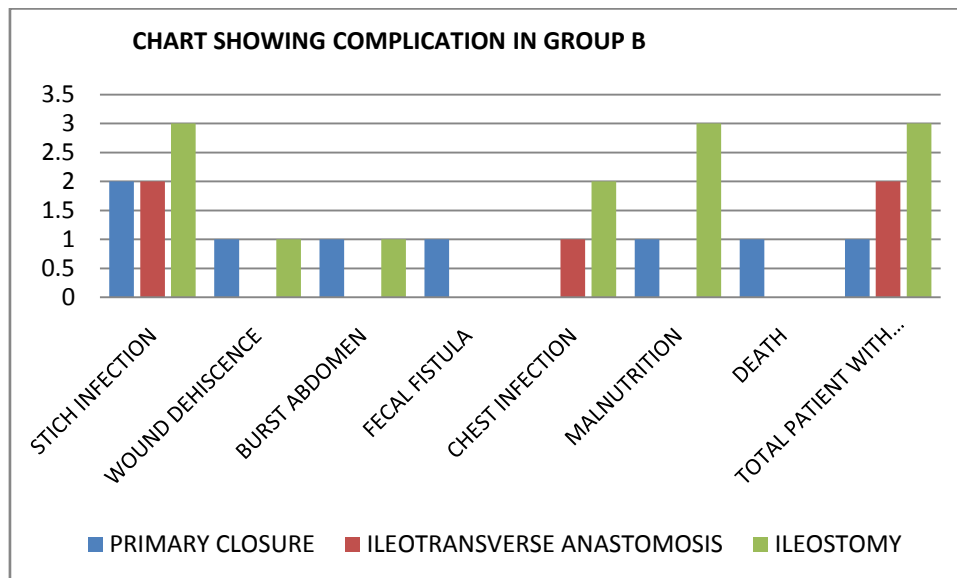
Stitch infection:33.33%, wound dehiscence:17%, burst abdomen:0%, fecal fistula:0%, chest infection:17%, malnutrition: 0%, death: 0%. Total patients with complication were 33%.

Complications in group A patients who underwent ileostomy are :

Stitch infection:50%, wound dehiscence:17%, burst abdomen: 17%, chest infection:17%, malnutrition:50%, death 0%. Total patients with complication were 50%. The treatment of the perforation depends upon the general condition of the patient and condition of the bowel. Primary closure of the perforation can be considered safe if the patient has presented early and the bowel is healthy[17]. Talwar and sharma reported that mortality was least with early primary closure[11,12].

Table Showing Complications Group B Patients

Complication	Primary Closure	Ileotransverse Anastomosis	Ileostomy
1. Stitch Infection	2(33.33%)	2(33%)	3(50%)
2.Wound Dehiscence	1(17%)	0	1(17%)
3. Burst Abdomen	1(17%)	0	1(17%)
4. Fecal Fistula	1(17%)	0	0
5. Chest Infection	1(17%)	1(17%)	2(33.33%)
6. Malnutrition	1(17%)	0	3(50%)
7. Death	0	0	0
Total Patients With Complication	3(50%)	2(33.33%)	3(50%)



Complications in group B patients who underwent primary closure of perforation were:

Stitch infection:33.33%, wound dehiscence: 17%, burst abdomen: 17%, fecal fistula: 17%, chest infection:17%, malnutrition: 17%, death: 0%. Total patients with complication were 50%.

Complications in group B patients who underwent primary closure of perforation and ileotransverse anastomosis were :

Stitch infection: 33.33%, wound dehiscence:0%, burst abdomen:0%, fecal fistula: 00%, chest infection: 17%, malnutrition: 0%, death: 0%. Total patients with complication were 33.33%.

Complications in group B patients who underwent ileostomy were :

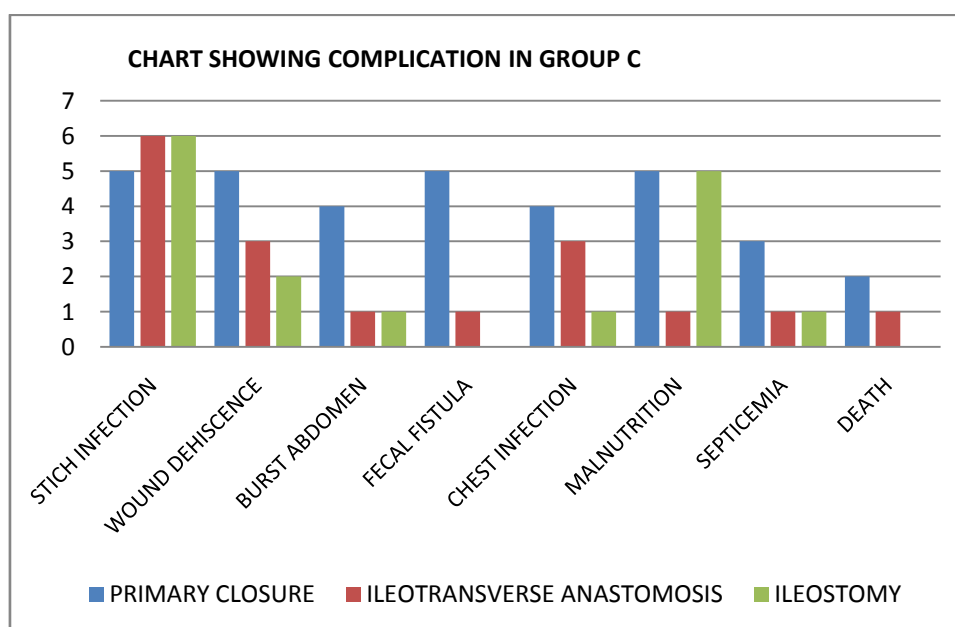
Stitch infection: 50%, wound dehiscence: 17%, burst abdomen: 17%, chest infection: 33.33%, malnutrition: 50%, death: 00%. Total patients with complication were 50%.

Closure of the terminal ileum and end to side ileotransverse colostomy was recommended by Eggleston. Higher incidence of complications were seen in patients treated by simple closure when compared to ileotransverse

colostomy[13]. Lizzaralde recommended ileotransverse colostomy to decrease complication. Ileotransverse colostomy helps by diverting the faecal stream from diseased ileum and decreases the risk of complications[14].

Table Showing Complications In Patients Of Group C

Complication	Primary Closure	Ileotransverse Anastomosis	Ileostomy
1. Stitch Infection	5(62.50%)	6(75%)	6(75%)
2. Wound Dehiscence	5(62.50%)	3(37.50%)	2(25%)
3. Burst Abdomen	4(50%)	1(12.50%)	1(12.50%)
4. Fecal Fistula	5(62.50%)	1(12.50%)	0
5. Chest Infection	4(50%)	3(37.50%)	1(12.50%)
6. Malnutrition	5(62.50%)	1(12.50%)	5(62.50%)
7. Septicemia	3(37.50%)	1(12.50%)	1(12.50%)
8. Death	2(25%)	1(12.50%)	0
Total Patients With Complication	5(62.50%)	6(75%)	6(75%)



Complications in group C patients who underwent primary closure of perforation are:

Stitch infection: 62.50%, wound dehiscence: 62.50%, burst abdomen: 50%, fecal fistula: 62.50%, chest infection: 50%, malnutrition: 62.50%, death: 25%, septicemia: 37.50% . Total patients with complication were 62.50%.

Complications in group C patients who underwent primary closure of perforation and ileotransverse anastomosis

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Stitch infection: 75%, wound dehiscence: 37.50%, burst abdomen: 12.50%, fecal fistula: 12.50%, chest infection: 37.50%, malnutrition: 12.50%, death: 12.50%, septicemia: 12.5%, Total patients with complication were 75%.

Complications in group C patients who underwent ileostomy:

Stitch infection: 75%, wound dehiscence: 25%, burst abdomen: 12.50%, chest infection: 12.50%, malnutrition: 62.50%, death: 0%, septicemia: 12.50%, Total patients with complication were 75%.

Bitar et al recommended exteriorization of suture line which prevents contamination of the peritoneal cavity in case of leak. Santillana recommended exteriorization in moribund patients. If fistulae form they invariably heal on conservative management[5,15]. Ileostomy is the suggested procedure for patients in a critical general condition with severe peritonitis[16]. Primary closure of the perforation can be considered safe if the patient has presented early and the bowel is healthy, otherwise exteriorization of the affected bowel as a loop ileostomy is a safer option. If there is a long segment of bowel that is diseased or there are multiple perforation resection with either primary anastomosis or exteriorization may be considered. Once biopsy confirms the diagnosis of tuberculosis of the bowel anti tubercular therapy is mandatory[17].

IV. Conclusion

In group A patients of ileal perforation, looking at the complication rates for three surgical methods used in this study, this can be concluded that primary closure of perforation is the best modality of surgery with least complication rates in this group of patients. In group B patients complications rate in primary closure of perforation with ileotransverse anastomosis and ileostomy are better than primary closure of perforation. But ileostomy requires surgery in two settings and is associated with increased morbidity. Hence based on above observation this can be concluded that surgical modality of choice in group B patient is primary closure of perforation with ileotransverse anastomosis. In the view of above observation in group C patients, though the complication rates were almost equal among ileostomy and primary closure of perforation with ileotransverse anastomosis but mortality was nil in ileostomy. Hence based on above observation this can be concluded that ileostomy is the surgery of choice in group C patients with better outcomes.

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*Dr. Kumari Madhu. "Study of Different Surgical Management And Their Complication Rates in Ileal Perforation." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.8 (2017): 51-56