IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 5 Ver. 2 (May. 2018), PP 48-52
www.iosrjournals.org

Study of Surgical Management of Small Bowel Perforation

DrChanda Ramanachalam[1], DrJ. Samba Siva Rao[2], DrN. Ram Kishan[3]
[1]*M.S. [General Surgery] Assistant Professor in Dept. of General Surgery, Siddhartha Medical College/ Govt. General Hospital, Vijayawada, A.P., India*
[2]*M.S. [General Surgery] Associate Professor in Dept. of General Surgery, Siddhartha Medical College/Govt. General Hospital, Vijayawada, A.P., India*
[3]*Post Graduate in Dept. of General Surgery, Siddhartha Medical College/Govt. General Hospital, Vijayawada, A.P., India*
**Corresponding Author: Dr J. Samba Siva Rao*

Abstract: *The aim of the present study is to evaluate various causes, clinical features of small bowel perforations along with various surgical procedures and corresponding outcomes intheir surgical management.Patients and methods: This hospital based prospective study includesfifty patients diagnosed with small bowel perforation and admitted to surgical wards at Siddhartha Medical College and Govt. General Hospital, Vijayawada from January 2016 toMay 2017. Results: Pain abdomen was the most common presenting symptom in small bowel perforation followed by vomiting, abdominal distension, fever and constipation. X-ray erect abdomen, USG abdomen and CECT abdomen in selected cases are very useful investigations for diagnosis ofsmall bowel perforation.The most common cause of small bowel perforation was Ileal perforation. Typhoid illness was the most common cause of ileal perforation.Resection and anastomosis was the most common procedure employed. The most common complication in this series was surgical site infection. Mortality rate in our study was 12%.*

Keywords:*Small bowel Perforation; Surgical Management; Ileal perforation; Resection anastomosis.*

Date of Submission: 20-04-2018 Date of acceptance: 07-05-2018

I. Introduction

Perforation of the small bowel especially terminal ileum is a common abdominal emergency faced by the general surgeon. Small bowel perforations are relatively uncommon in western societies except in regions where typhoid, tuberculosis and parasitic infestation are endemic.[1] The preeminent complication of typhoid is perforation seen in 3rd week, where the ileum is the main site of perforation. [2]

The perforated viscus challenges the surgeon's skill and his knowledge of pre-operative, intra-operative and post-operative care of the severely ill surgical patient. [3] Majority of the patients present with sudden onset of abdominal pain. A high index of suspicion is essential to diagnose hollow viscus perforation early as significant mortality and morbidity results from diagnostic delay. Surgery plays an important and definitive role in the management of intestinal perforations. Evaluation and management of gastro intestinal perforation provide some of the most challenging experiences for a surgeon with the advent of new technology. This study is undertaken to find out the age and sex incidence, etiological factors, clinical features and various surgical procedures for small bowel perforations and their complications in our setup.

II. Aims And Objectives

• To study various causes of small bowel perforations.
• To study various clinical features of small bowel perforations.
• To study various surgical procedures & their outcome.

III. Materials And Methods

3.1 SOURCE OF DATA:This study includes fifty patients diagnosed with small bowel perforation and admitted to surgical wards at Siddhartha Medical College and Govt. General Hospital from January 2016 to May 2017.Only patients who underwent surgery were included.

3.2 STUDY DESIGN AND METHODOLOGY:Hospital based prospective study. The data was collected by purposive sampling with respect to their age and sex. A detailed clinical history was taken for all these patients with an emphasis on the presenting complaints. A thorough physical examination was done, vital signs were recorded. Presence of guarding, rigidity, rebound tenderness, liver dullness obliteration was looked for in all

patients. Absent or decreased bowel sounds were also recorded. An Erect Abdomen X-ray was done for all patients to particularly look for presence of free gas under diaphragm.All patients were operated upon after adequate resuscitation.Patients were subjected for laparotomy with incisions depending on the probable site of perforation. The surgical procedures undertaken were recorded. Patients were followed up in the post operative period to know the post operative complications, morbidity and mortality rates. The data wasanalysed to find the usefulness of clinical features and investigation for the diagnosis. Analysis was done using Chi-square test and student't' test.

3.3 INCLUSION CRITERIA:

- Patients between 12 years and 70 years of age
- Patient willing to participate in study and given informed consent
- Patients presenting with Small bowel perforation

3.4 EXCLUSION CRITERIA:

- Immunocompromised patients and patients suffering from malignancies
- Patients < 12 years of age
- Patients managed conservatively (non-surgically).

IV. Observations And Results

This hospital based prospective study includes Fifty Patients diagnosed with small bowel perforation and admitted to surgical wards at Siddhartha Medical College and Govt. General Hospital from January 2016 to May 2017.

Table 1: Demographic Profile of Patients in Present Study

AGE IN YEARS	MALE		FEMALE		TOTAL	
	No.	%	No.	%	No.	%
12-20	6	15.4	4	36.4	10	20.0
21-30	17	43.6	4	36.4	21	42.0
31-40	12	30.7	2	18.2	14	28.0
41-50	3	7.7	-	-	3	6.0
>50	1	2.6	1	9.0	2	4.0
Total	39	100.0	11	100.0	50	100.0
Mean ± SD	30.42±9.68		24.80±7.75		28.90±9.19	

The maximum numbers of cases were in the age group of 21-30years accounting for 42 percent. A major part of the study group was males (78%) whereas females accounted for 22% of cases.

Table 2: Presenting symptoms of Patients in Present Study

PRESENTING SYMPTOM	NUMBER	%
Pain	49	98.0
Vomiting	40	80.0
Distension	28	56.0
Constipation	17	34.0
Fever	20	40.0

Pain abdomen was the presenting symptom in almost all cases under study followed by vomiting (80%), distension of abdomen (56%) and fever (40%). Constipation accounted for 34% of cases.

Table 3: Examination Findings of Patients in Present Study

PHYSICAL EXAMINATION	NUMBER	%
Guarding andRigidity	43	86.0
Rebound Tenderness	39	78.0
Distension	28	56.0
Obliteration of Liver Dullness	24	48.0
Absent/Diminishedbowel sounds	38	76.0
Per Rectal Tenderness	5	10.0

In the present study majority of cases had guarding and rigidity at presentation (86%) followed by rebound tenderness (78%).

Table 4: Post-Operative Diagnosis

POST-OPERATIVE DIAGNOSIS	NUMBER (N=50)	%
Ileum Perforation		
Typhoid	22	44.0
Tuberculosis	14	28.0
Traumatic	5	10.0
Ischemic Bowel Disease	3	6.0
Jejunum Perforation		
Traumatic	3	6.0
Ischemic Bowel Disease	3	6.0

Ileal perforation was the most common cause of small bowel perforation accounting for 88% of cases. Typhoid perforation accounts for 50% ofileal perforations whereas tubercular perforations constitute 32% of ileal perforations. With respect to jejunal perforations, only traumatic and ischemic bowel disease were the etiological factors in our study sample.

Table 5: Types of Surgical Procedures Performed

TYPE OF SURGICAL PROCEDURES	NUMBER (N=50)	%
Resection & End –End Anastomosis in 2 layers	32	64.0
Resection & End –End Anastomosis in 1 layer	2	4.0
Simple closure in 1 layer	14	28.0
Simple closure in 1 layer with Omental patch	2	4.0

The incision was midline abdominal incision in 44 patients (88%), Right paramedian in 3 cases (6%) and McBurney's incision in 3 cases (6%). 3 cases were diagnosed as appendicular perforation and abdomen was opened by McBurney's incision and per operatively diagnosed as ileal perforation. The incision was extended & converted to Rutherford- Morrison muscle cutting incision.

Table 6: Post-Operative Complications

POST-OPERATIVE COMPLICATIONS	NUMBER (N=50)	%
Surgical site infection	18	36.0
Wound dehiscence	5	10.0
Burst Abdomen	2	4.0
Entero cutaneous fistula	1	2.0
Mortality	6	12.0
No complication	18	36.0

The most common complication in this series was surgical site infection which accounted for 18 cases (36%). Enterocutaneous fistula was managed by re-laparotomy, resection of gangrenous bowel and end-end anastomosis done in 2 layers. We came across 6 deaths in the present study (12%).

FOLLOW UP

The patients were followed up for a period of 2 months and the complications were noted. 4 patients were lost to follow-up. At the end of 2 months,surgical site infection was persisting in 1 case (2.4%). The patient was managed with regular dressings under antibiotic coverage coupled with improvement of general condition by improving haemoglobin % and high protein diet.

Table 7: Complication Status with Time during Follow up

Post-Operative Complications	Up to one week (n=50)	15 days (n=43)	30 days (n=42)	60 days (n=40)
Surgical site infection	18	14	10	1
Wound Dehiscence	5	4	-	-
Burst Abdomen	-	2	-	-
Enterocutaneous fistula	1	1	1	-
Mortality	6	-	-	-
No complication	20	22	31	39
Lost to follow up	-	1	2	4

V. Discussion

Table 8: ComparativeMean Age Distribution of Patients in Present Study with various researchers

AGE IN YEARS	D.C.M.RAO Et Al.,1984[5]		OUR STUDY	
	No.	%	No.	%
<20	12	26.0	10	20.0
21-40	23	50.0	35	70.0
41-60	11	24.0	5	10.0
Total	46	100.0	50	100.0

The maximum numbers of cases were in the age group of 21-40years accounting for 70 percent in our study and are comparable to D.C.M.Rao Et al.[5], 1984 study which shows a maximum incidence in the same age group (50%).

Table 9: Comparison of sex ratio of patients in present study with various researchers

SEX	D.C.M.RAO.ET AL.,1984[5]	M.C.DANDAPUTET AL.,1991[6]	OUR STUDY
MALE	43	304	39
FEMALE	03	36	11
RATIO	14.3:1	8.4:1	4:1

There is a male predominance in our study accounts for 4:1 and is comparable to D.C.M.Rao. et al.[5],1984 (14.3:1) & M.C.Dandaput et al.[6],1991 (8.4:1).

Presenting complaints: Anorexia, fever, abdominal pain and distention were the most common symptoms in WaqarAlam Jan et al, 2002 study which was comparable to our findings.

Physical findings:In the present study majority of cases had guarding and rigidity at presentation (86%), rebound tenderness (78%), absent bowel sounds were in 76% cases, distension of abdomen (56%), obliteration of liver dullness (48%) and per rectal tenderness (10%).

Incision: The most common incision preferred in our study was midline abdominal incision in 88% of cases, whereas Right Para median incision (66%) was the most common incision in WaqarAlam Jan et al, 2002 study.

Complications: The most common complication in this series was surgical site infection which accounted for 18 cases (36%). S.K.Nair et al[7], 1981 reported surgical site infection as their most common complication in 26 cases (52%).

Table 10: Various Studies Showing Comparison of Mortality Rates in Small Bowel Perforations

STUDY	YEAR	MORTALITY
Prasad et al	1975	20%
Vadianadan et al	1986	10%
J.M.Eustche et al	1983	30%
Our Study	2017	12%

The mortality in our study was 12% and is comparable to Vadianadan et al, 1986 and less than Prasad et al, 1975 (20%), J.M.Eustche et al[8] 1983 (30%).

VI. Summary

1. Males are affected 4 times more than females.
2. Age groups between 21 and 40 years are most commonly affected.
3. Pain abdomen is the most common presenting symptom in Small bowel perforation followed by vomiting, abdominal distension, fever and constipation.
4. X-ray Erect abdomen, USG abdomen and CECT abdomen in selected cases are very useful investigations for diagnosis of small bowel perforation.
5. In our study, the most common cause of small bowel perforation was Ileal perforation, most commonly due to typhoid illness.
6. Resection and anastomosis was the most common surgical procedure employed. Simple closure of perforation in one layerwasalso done in few cases.
7. Surgical site infection was the most common post-operative complication.

References

[1]. Taylor BA. Gastro intestinal emergencies. Glimore Ian T, Robert Shields. Spontaneous perforation of the gut.1st edition. WB Saunder company: 1992:359-79

[2]. Sleisenger and Fordtran. Gastro intestinal and liver disease pathophysiology, diagnosis and management. Hamer Davidson H, Sherwood. L. Gorbach. Infectious diarrhea and bacterial food poisoning. 7th edition. WB Saunder company: 2002:1882-85,1889 1901.

[3]. William Schumer and Sheldono Burman. The perforated viscus, diagnosis and treatment in surgical emergencies. Nyhus Lloyd, The surgical clinics of North America 1972;52(1): 231-38.

[4]. R. Scott Jones. Courtney M. Townsend Jr. Trauma. Sabiston. Textbook of surgery. 17th ed, Vol.1, Pg. 819-820, Saunders. 2004.

[5]. Rao D C M, J C Mathur, D Ramu, M Anand. Gastrointestinal perforations –A study of 46 cases. Ind J Surg, Feb 1984; 94-96.

[6]. Dandapat M.C et al. Gastrointestinal perforation –Review of 340 cases. Ind J Surg, 1991; 53 (5): 189-193.

[7]. Nair S.K, V.S Singhal and Sudhir Kumar. Non-traumatic intestinal perforation. Ind J Surg, 1981; 43 (5): 371-78.

[8]. Eustache J, Kreis DJ. Typhoid Perforation of the Intestine. Arc Surg. 1983; 118(11): 1269–1271. doi:10.1001/archsurg.1983.01390110027007

[9]. Afridi et al. Spectrum of perforation peritonitis in Pakistan: 300 cases Eastern experience. World Journal of Emergency surgery 2008; 3: 31.

DrChanda Ramanachalam "Study of Surgical Management of Small Bowel Perforation."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 5, 2018, pp 48-52.