

A Prospective Clinical Research on the Surgical Treatment and Perioperative Consequences of Peritonitis Related to Hollow Viscus Perforation

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Abstract

Aim: Surgical management and perioperative complications of peritonitis secondary to hollow viscus perforation in a tertiary care centre, Bihar, India

Methods: This prospective study conducted in the Department of Surgery, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India, for 18 months, 100 patients with generalised peritonitis secondary to hollow viscus perforation were included in the study. Patients with primary bacterial peritonitis, peritonitis due to post-op leak and patients with immuno-deficiency were excluded from the study.

Results: Peptic ulcer disease was most common cause with 36% incidence, followed by idiopathic cause with 28% incidence, typhoid with 13% incidence, malignancy 12%, appendicular perforation 7%, followed by trauma 4%. Commonest site of perforation was found to be gastric 23%, followed by duodenal and ileal 15% each, large bowel 10%, appendicular 7%, jejunal 6%. After initial resuscitation, primary closure was done in 51 (51%) cases. Resection and anastomoses was done in 18 cases (18%). Resection and diversion in 24 (24%) cases Appendicectomy was done in 7 (7%) cases. Patients were followed up for 30 days and assessed with regular follow up. The mortality rate was 6 (6%), with complication rate of 72 (72%). 22 (22%) patients didn't have any complications. Most common complication being wound infection in 41 patients (41%), followed by abdominal dehiscence in 12 (12%), paralytic ileus in 12 (12%), bronchopneumonia in 19 (19%), fecal fistula in 10 (10%), abdominal abscess in 7 due to anastomotic leak (7%).

Conclusion: Hollow viscus perforation being most common surgical emergencies, surgical outcomes and its related complications depends on age, general condition, site, co-morbidities and aetiologies with difference in pathophysiology of tropical countries compared to western world.

Keywords: peritonitis, perforation, peptic ulcer

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Introduction

Peritonitis is defined as inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Peritonitis can be classified as primary (hematogenous dissemination), secondary (due to perforation or trauma), or tertiary (persistent or recurrent infection after adequate initial therapy). Primary peritonitis is most often spontaneous bacterial peritonitis (SBP) caused by chronic liver disease. Secondary peritonitis is by far the most common form of peritonitis encountered in clinical practice. Tertiary peritonitis often develops in the absence of the original visceral organ pathology. Perforation peritonitis is one of the common surgical emergencies encountered in Tertiary care Centre. Despite the advances in surgical techniques, Antimicrobial therapy, intensive care support, management of secondary peritonitis continues to be difficult and challenging[1]The gold standard treatment in suspected bowel perforation is exploratory laparotomy. Endoscopic, laparoscopic and laparoscopic assisted surgeries are now increasingly performed instead of conventional open laparotomy. The peritoneal contamination with gastrointestinal contents as a result of perforation results in peritonitis. The pathogens involved in secondary peritonitis differ in proximal to distal GI tract. Gram positive organisms predominate in upper GI tract perforation whereas gram negative is more predominant in distal GI tract perforation. The lower GI perforation peritonitis is more in Western counterpart. The gastro duodenal perforation is decreasing because of advent of proton pump inhibitor and Helicobacter Pylori eradication treatment in the management of acid peptic disease. But the duodenal ulcer perforation is one of the life threatening complications in chronic peptic ulcer disease[2,4]The patients coming to our hospital are from rural areas and belong to low socioeconomic status. Late presentation leads to high rates of morbidity

and mortality. Initially increased incidence of acid peptic disease was thought to be one of the main reason for increased incidence of gastric/duodenal perforations in the western world[5,6] But with the advent and judicious use of proton pump inhibitors, incidence of acid peptic disease came down. Still, among the gastro intestinal perforations taken overall, gastric and duodenal perforation is the major cause for peritonitis secondary to hollow viscus perforation[7,8]

Material and methods

This prospective study conducted in the Department of Surgery, Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India, for 18 months, after taking the approval of the protocol review committee and institutional ethics committee.

Inclusion criteria

Patients with generalised peritonitis secondary to hollow viscus perforation

Inclusion criteria

Patients with primary bacterial peritonitis
Peritonitis due to post-op leak and patients with immuno-deficiency

Methodology

100 patients with generalized peritonitis secondary to hollow viscus perforation were evaluated. Data related to their gender, diagnosis, operative procedure they underwent and the peri-operative complications in first 30 days were studied. Appropriate descriptive statistical analysis done using SPSS 25.0 software.

Results

A total 100 patients with generalized peritonitis secondary to hollow viscus perforation were included in the present study. 40% patients were in the age group of 20-40 years, with 77% males and 23% females.

Peptic ulcer disease was most common cause with 36% incidence, followed by

idiopathic cause with 28% incidence, typhoid with 13% incidence, malignancy 12%, appendicular perforation 7%, followed by trauma 4% (Table 2).

Commonest site of perforation was found to be gastric 23%, followed by duodenal and ileal 15% each, large bowel 10%, appendicular 7%, jejunal 6% (Table 3).

Table 1: Surgical outcome

Outcomes	No.	%
Complications	72	72
Death	6	6
Recovery without complication	22	22

Table 2: Etiology

Etiology	No.	%
Acid peptic disease	36	36
Typhoid	13	13
Malignancy	12	12
Trauma	4	4
Appendicular perforation	7	7
Idiopathic	28	28

Table 3: Site of perforation

Site	No.	%
Gastric	23	23
Duodenal	15	15
Jejunal	6	6
Ileal	15	15
Appendicular	7	7
Large bowel	10	10

After initial resuscitation, primary closure was done in 51 (51%) cases. Resection and anastomoses was done in 18 cases (18%). Resection and diversion 24 (24%) cases Appendectomy done was 7 (7%) cases. Patients were followed up for 30 days and assessed with regular follow up.

The mortality rate was 6 (6%), with complication rate of 72 (72%) (Table 1). 22 (22%) patients didn't have any complications. Most common complication being wound infection in 41 patients (41%), followed by abdominal dehiscence in 12 (12%), paralytic ileus in 12 (12%), bronchopneumonia in 19 (19%), fecal

fistula in 10 (10%), abdominal abscess in 7 due to anastomotic leak (7%) (Table 4).

Mortality was seen mostly between 50 to 80 (5 deaths=83.33%) years of age. Out of 6 mortalities, 3 had uncontrolled diabetes, 2 had COPD with history of chronic smoking. 1 patient was of 46 years of age had alcoholic liver disease. In comparison of complication with site of perforation, patients with ileal perforation who had diversion stoma had higher rate of wound infection of 57%. Patients with appendicular perforation had least incidence of wound infection 10%. Post operative ileus was common in large bowel perforation.

Table 4: Complications

Complications	No.	%
Wound infection	41	41
Abdominal dehiscence	12	12
Abdominal abscess	7	7
Paralytic ileus	12	12
Broncho pneumonia	19	19
Fecal fistula	10	10

Discussion

Peptic ulcer disease stands as major cause of perforative peritonitis in India now, compared to previous studies where infection has a major role in aetiology with typhoid as cause in 13% [9,12] Distal gastric perforation was more common followed by duodenal perforation [13,14]

Incidence of malignancy presenting as hollow viscus perforation was also increasing with incidence rate of 12% in

present study [15] Infective aetiology was more common in female patients [16]

Previous studies in the west showed generalised peritonitis secondary to hollow viscus perforation was common in younger age group [17,18] But in studies of tropical countries it was common in 4th-5th decade [5,19,23] In this study, mean age group being 46.53 years with incidence more in males than females. All the mortalities had respiratory complications and could not be revived. Comparison given in Table 5

Table 5: Comparison with previous study

Name of series	Common age group in decades	Gender more affected	Common etiology	Common cause of mortality
Ucchedd ⁵	3rd-4 th	Male	Peptic ulcer	Delay in treatment
Svanes ¹⁹	3rd-4 th	Male	Peptic ulcer	Delay in treatment
Kohli ²⁰	4th-5 th	Male	Peptic ulcer	Sepsis
Bhatt ²¹	4th-5 th	Male	Peptic ulcer	Respiratory complications
Kapoor ²²	4th-5 th	Male	Peptic ulcer	Respiratory complications+sepsis
Kshirsagar ²³	4th-5 th	Male	Peptic ulcer	Respiratory complications+sepsis
Present study	4th-5 th	Male	Peptic ulcer	Respiratory complications

Conclusion

Hollow viscus perforation being most common surgical emergencies, surgical outcomes and its related complications depends on age, general condition, site, co-morbidities and aetiologies with difference in pathophysiology of tropical countries compared to western world. Increase in rate of malignancies is also noted.

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