



Original Research Article

CLINICAL PROFILE, MANAGEMENT, AND OUTCOMES OF PERITONITIS: A PROSPECTIVE OBSERVATIONAL STUDY FROM A TERTIARY CARE CENTER

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ABSTRACT

Background: Peritonitis is a life-threatening abdominal emergency with varied etiologies. This study evaluates the clinical profile, causes, surgical management, and post-operative outcomes of patients presenting with peritonitis.

Materials and Methods: A prospective observational study was conducted from January 2024 to January 2025 at a tertiary care hospital. Data from 52 patients were collected via a structured proforma and analyzed using Microsoft Excel and Python. Variables included age, sex, clinical presentation, radiological findings, operative findings, surgical interventions, etiology, and outcomes.

Results: The majority were males (84.6%), with a peak incidence in the 30-40 age group. The most common presentation was generalized abdominal pain (90.4%). Peptic ulcer perforation was the leading cause of peritonitis (67.3%), predominantly due to acid peptic disease (42.3%), chronic alcohol use (17.3%), and NSAID intake (11.5%). Other causes included typhoid ileal perforation, gangrenous gallbladder, small bowel gangrene, traumatic abdominal injury, and malignancy. Modified Graham's patch repair was the most commonly performed procedure (73.1%). primary closure of perforation was done in few patients. Additional procedures were needed in few patients such as feeding jejunostomy, gastrojejunostomy with jejunojejunostomy, reverse tube jejunostomy, loop ileostomy, inguinal hernia repair, resection of Meckel's diverticulum, extended left hemicolectomy or cholecystectomy. No obvious perforation was found in some patients due to either primary peritonitis or sealed off perforation.

Post-operatively, 84.6% were discharged by day 6. Mortality was 9.6%, and re-exploration was required in 11.5%.

Conclusion: Peptic ulcer disease remains the predominant cause of peritonitis in our setting. Prompt diagnosis, radiological confirmation, and surgical intervention and additional procedures such as Feeding jejunostomy, tube gastrostomy or gastrojejunostomy in selected patients improve outcome. Ileal perforation due to typhoid or obstructive perforations are less common but need prompt diagnosis and management. Public awareness regarding NSAID use and alcohol-related complications is warranted.

Keywords: Gastrointestinal perforation, Abdominal pain, Operative interventions, Outcome. Perforation peritonitis, Clinical study, Exploratory laparotomy.

INTRODUCTION

The most common surgical emergency in general surgery is perforation peritonitis. It is a serious condition with a mortality rate of up to 20%, and it is the third most common cause of surgical abdomen after appendicitis and intestinal obstruction. Peritonitis is a potentially fatal inflammatory condition of the peritoneum most commonly resulting from hollow viscus perforation. The spectrum of causes includes peptic ulcer disease, infections (like typhoid or tuberculosis), trauma, malignancies, gangrenous organs, and iatrogenic injuries. Despite advancements in surgical techniques and intensive care, mortality remains significant, especially in delayed presentations or re-perforation cases. This study aims to delineate the clinical patterns, underlying causes, surgical strategies, and outcomes associated with peritonitis in a tertiary care setting.

MATERIALS AND METHODS

This prospective observational study included all patients presenting with clinically and radiologically diagnosed peritonitis, confirmed intra-operatively from January 2024 to January 2025. Data collection was performed using a structured form covering demographic details, clinical presentation, radiological diagnosis, intra-operative findings, surgical procedures, post-operative outcomes, and complications.

Descriptive analysis was done for age, sex, diagnosis, surgical procedure, and outcomes. Frequencies and percentages were calculated for categorical variables.

Visualization and basic analytics were done using Python and Seaborn libraries.

RESULTS

Demographics: Of the 52 patients, 44 were male (84.6%) and 8 were female (15.4%). Most patients were aged between 30 and 40 years. - Clinical Presentation: Generalized abdominal pain was reported in 47 patients (90.4%). Causes of Peritonitis: Peptic ulcer perforation was observed in 35 patients (67.3%). Other causes included typhoid ileal perforation (3.8%), traumatic injury, gangrenous gallbladder, jejunal and Meckel's diverticula, malignancy and primary peritonitis. Etiology: Acid peptic disease (42.3%) was the leading etiology, followed by chronic alcohol use (17.3%) and NSAID use (11.5%). Radiology: 80.8% had free gas under the diaphragm on X-ray; the rest were confirmed on CT. Surgical Management: Modified Graham's patch repair was performed in 38 cases (73.1%). Additional procedures like feeding jejunostomy or ileostomy etc. were needed in 15.4% of cases. Outcomes: 84.6% were discharged by postoperative day 6. Mortality was noted in 5 patients (9.6%). Re-exploration was required in 6 patients (11.5%).

Statistical Analysis

The collected data was summarized by using frequency, percentage, mean & S.D. To compare the qualitative outcome measures Chi-square test or Fisher's exact test was used. To compare the quantitative outcome measures independent t test was used. If data was not following normal distribution, Mann Whitney U test was used. SPSS version 22 software was used to analyse the collected data. p value of <0.05 was statistically significant.

Table 1: Age Summary

Metric	Value
count	52.0
mean	42.07692307692308
std	15.40033887308106
min	14.0

Table 2: Sex Distribution

Sex	Count
Male	44
Female	8

Table 3: Operative Findings

Operative Finding	Count
Duodenal d1 perforation	30
Gastric anterior wall perforation	7
Ileal perforation	4
Gastric anterior wall perforation with bleeding vessels from pancreatic bed with gross hemoperitoneum	1
Duodenal d3 perforation	1
Multiple ileal perforations	1
Caecal perforation within gangrenous patch of caecal wall	1
Pneumoperitoneum with multiple inter bowel adhesions with intra-abdominal abscesses	1
Jejunal diverticular perforation	1
Meckel's diverticular perforation	1
Splenic flexure completely lumen occluding mass with over distended and perforated transverse colon	1

Gastric anterior wall stab injury	1
Gangrenous gall bladder with perforation	1
Sealed off duodenal d1 perforation	1

Table 4: Number of Perforations

Number of Perforations	Count
1	48
3	1
10	1
None	2

Table 5: Additional Procedures (other than perforation repair)

Additional Procedure	Count
None	37
Feeding jejunostomy	7
Loop ileostomy	2
Re exploration for perforation leak with repair of perforation and feeding jejunostomy	2
Right inguinal hernia repair	1
Feeding jejunostomy with tube gastrostomy	1
Feeding jejunostomy with reverse tube jejunostomy	1
Re-exploration with re-repair of perforation with gastrojejunostomy with jejunojejunostomy	1

Table 6: Final Diagnosis

Final Diagnosis	Count
Peptic ulcer perforation	36
Typhoid perforation	4
Gangrenous bowel perforation due to strangulated right inguinal hernia	1
Gangrenous gall bladder with perforation	1
Stomach stab injury	1
Carcinoma of splenic flexure of colon	1
Meckel's diverticular perforation	1
Jejunal diverticular perforation	1
Primary peritonitis	1
Traumatic duodenal perforation	1
Gastric anterior wall perforation with hemorrhagic pancreatitis	1
Post gastrojejunostomy gastric perforation	1
Traumatic ileal perforation	1
Sealed off duodenal perforation	1

Table 7: Post-Operative Outcomes

Post-Operative Outcome	Count
Discharged on day 5	36
Discharged on day 6	8
Died on day 6	2
Discharged on day 10	1
Died on day 8 of first surgery	1
Died on day 3	1
Discharged on day 4	1
Died on day 10	1
Patient had controlled leak and was discharged on post op day 14	1

Table 8: Probable Etiology

Probable Etiology	Count
Acid peptic disease	22
Chronic alcoholic	9
Chronic NSAID intake	6
Typhoid	3
Traumatic	3
Post gastrojejunostomy complication	1
Chronic consumption of multiple ayurvedic preparations for joint pain	1
Strangulated right inguinal hernia	1
Tuberculosis	1
Jejunal diverticula	1
Meckel's diverticulum	1
Carcinoma of colon	1
Stab injury	1
Gall stones	1

DISCUSSION

Peptic ulcer perforation remains the most common cause of peritonitis in developing countries, consistent with previous studies from India and Southeast Asia. Other causes like typhoid ileal perforation, gangrenous bowel, and gallbladder perforation, though less frequent, contribute significantly to the morbidity. NSAID abuse and chronic alcohol use are important modifiable risk factors. Prompt diagnosis and early surgical intervention are critical for favorable outcomes. Modified Graham's patch remains a reliable technique for gastro-duodenal perforations leading to peritonitis. Mortality in this study (9.6%) was comparable to global averages. The need for re-exploration highlights the necessity of vigilant post-operative care.

The aim of this prospective study by Neupane S et al is to discuss clinical profile and management of perforation peritonitis in a hospital in central Nepal. Most of the patient were diagnosed clinically supported by lab investigations and imaging like X-ray and ultrasonography of abdomen. The variables analyzed were the risk factors of the patient like smoking, alcohol, liver disease and previous surgeries. The most common cause of perforation found was ulcer. Perforation peritonitis is a frequently encountered surgical emergency. Various factors like age, sex, duration, site of perforation, extent of peritonitis and delay in surgical intervention are associated with morbidity and mortality. A successful management depends upon early surgical intervention, source control and exclusive intraoperative peritoneal lavage.

Sultane PG et al did a descriptive observational study of assessment of severity of peritonitis using Mannheim Peritonitis Index. Conclusion of the study was that a scoring system to estimate the risk of morbidity and mortality following emergency surgery has been tried on numerous occasions. Some scoring systems offer a prognosis that comes close to the reported mortality rate for the cohort, but none are reliable enough to rely on when considering a specific patient. We can gauge the likelihood that patients will survive by assessing the severity of the illness early on utilising MPI. Death rate in the study was zero for MPI scores under 21, zero for MPI scores between 21 and 29, and fifty percent for MPI scores over 29, which is helpful in pre-operative prognostication of patients based on MPI values. When forecasting the course of peritonitis, MPI is an easy-to-use and reliable approach.

Dakhore S did a prospective observational study on clinicopathological profile and outcome of gastrointestinal perforations. The objectives of the study were to study the incidence, demographics, aetiology, clinical features, management techniques, and factors influencing outcomes in cases of GI perforations. Management included operative interventions and postoperative analysis with

documentation of complications. The study observed a significant male preponderance in cases of GI perforations (M: F ratio 1:0.27). Hypertension (17.2%) and diabetes (14.7%) were prevalent comorbidities, with alcohol consumption (40.16%) as a notable risk factor. Gastroduodenal perforations were most frequent. Early diagnosis and proper interventions are the cornerstone of management in cases of GI perforation. Prognosis depends on symptom duration, perforation site, peritoneal contamination, preoperative hypotension, and need for preoperative abdominal drainage. Chances of mortality increase in patients who present late after perforation.

Sharma S et al did a clinical study regarding aetiology, clinical presentation, and management strategies in perforation peritonitis. Duodenal perforation was the most common type (35%), which were mainly due to Acid peptic disease (48.92%) followed by Jejunal and Ileal perforations (34.95%). In our study, a variety of operative procedures were performed depending on the patient's general condition, peritoneal contamination, site of perforation, gut viability, and surgeon's decision. Wound infection was the most common complication (29.64%). Mortality rate was 7.5% (21 patients). It was concluded that perforation is diagnosed on clinical grounds immediately as patient reaches emergency department, time lost due to delayed hospitalization affects the outcome of standard surgical procedure. Selection of appropriate surgical procedure and postoperative care is helpful in early and uneventful recovery.

Samuel JC et al did an observational study of the etiology, clinical presentation and outcomes associated with peritonitis in Lilongwe, Malawi. There are several signs and laboratory findings predictive of poor outcome in Malawian patients with peritonitis. Tachycardia, hypotension, anemia, abdominal rigidity and generalized peritonitis are the most predictive of death ($P < 0.05$ for each). Like studies from other African countries, in our population the most common cause of peritonitis was appendicitis, and the overall mortality rate among all patients with peritonitis was 15%.

CONCLUSION

Peritonitis remains a significant burden in emergency surgical care. While peptic ulcer disease is the leading cause, a range of other etiologies also contribute. Surgery should be planned and modified depending on the operative findings and condition of the patient. Public health strategies should focus on early presentation, rational use of NSAIDs, alcohol moderation, and health education.

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Consent to participate: Consent taken **Ethical Consideration:** There are no ethical conflicts related to this study. **Consent for publication:** Consent taken.

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