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CLINICAL CHARACTERISTICS AND MANAGEMENT APPROACHES OF PERFORATION PERITONITIS AT TERTIARY CARE CENTRE IN NORTH BIHAR

Surgery

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ABSTRACT

Introduction: Perforative peritonitis is a critical surgical emergency, primarily affecting men in their 30s-50s in tropical regions like India. This study aims to evaluate the clinical characteristics, causes, surgical approaches, and outcomes of perforation peritonitis at a tertiary care center in North Bihar. **Materials And Methods:** A prospective observational study was conducted at DMCH, Bihar, from August 2023 to January 2025. 70 patients with gastrointestinal perforations were included after applying exclusion criteria. Detailed clinical assessments, diagnostic tests, and surgeries were performed, followed by monitoring for complications and outcomes. **Results:** Peptic ulcer perforation was the most common (45.71%), followed by appendicitis (22.85%) and enteric perforation (12.85%). Pneumoperitoneum was noted in 72% of cases. Postoperative complications occurred in 62.86%, with wound infection being most frequent (28%). **Conclusion:** Peptic perforations were the most prevalent. Early intervention and appropriate surgical management are crucial, as delayed treatment led to higher complication rates, including mortality due to septicemia.

KEYWORDS

GB (Gall bladder), USG(Ultrasound), CT(computed Tomography)

INTRODUCTION

Perforative peritonitis is a leading surgical emergency in general practice, particularly in tropical countries like India, where it mainly affects men aged 30-50 years (1). Unlike Western studies, most patients present late after attempting self-treatment (2), displaying generalized peritonitis with fecal and purulent contamination, often accompanied by septicemia (3,4). Diagnosis is typically made through clinical evaluation and imaging, including abdominal ultrasound and chest/abdominal X-rays. Despite advancements in surgery and medical care, managing perforation peritonitis remains challenging. Prognosis depends on factors such as age, treatment delay, cause of perforation, and complications. Early diagnosis and intervention are essential for better outcomes, but expert care is critical.

This study at DMCH, Bihar, India, evaluated the frequency of perforation peritonitis in relation to age, sex, and risk factors such as smoking, alcohol use, and medications. It assessed the prevalence by anatomical site and etiology, intraoperative findings, repair methods, and analyzed postoperative complications, mortality, and morbidity linked to different surgical approaches.

MATERIAL AND METHODS

Study Design: Prospective observational study on gastrointestinal perforations was conducted at DMCH, Laheriasarai, BIHAR, India, from 1st August 2023 to January 2025.

Inclusion Criteria:

- The study included all cases diagnosed with peritonitis resulting from perforation of any part of the gastrointestinal tract, as identified during clinical examination and surgery.

Exclusion Criteria:

- Patient who has not given consent.
- Cases of primary peritonitis
- Patients with anastomotic dehiscence
- History of recent abdominal surgery

Methodology

From August 1, 2023, to January 2025, 100 patients were analyzed, and 70 were selected after applying exclusion criteria. The study was approved by the Ethical Committee, and patient consent was obtained before data collection and statistical analysis.

A detailed history was taken, focusing on dyspepsia, fever, bowel habits, chronic conditions, and over-the-counter medication use. Personal history, including smoking and alcohol use, was also recorded. A general examination assessed dehydration, vital signs, and abdominal findings such as distension, rigidity, and tenderness. Rectal examination was performed to check for bulges or tenderness, and other body systems were examined for complications.

Investigations included routine blood tests, chest and abdominal X-rays to detect pneumoperitoneum, and abdominal ultrasonography to rule out other pathologies. Widal test and histopathological examination of biopsy samples were done in relevant cases.

Based on clinical findings, surgical treatment was determined, with all patients undergoing peritoneal toileting and at least one abdominal drain placement. Procedures included omental patch closure, simple closure, appendectomy, resection. Postoperatively, patients were monitored for complications, morbidity and mortality and follow up at 1, 3, and 6 months. Data were analyzed using statistical methods to assess outcomes.

RESULTS

Perforation peritonitis most commonly occurs in the 4th and 5th decades, with a mean age of 37 years and male predominance. Most patients (87%) present with generalized peritonitis and peritoneal contamination. Patient ages range from 12-78 years, with the most common age group being 21-30 years. The main causes are peptic (mainly duodenal) ulcers, followed by appendicular and enteric perforations. Traumatic cases include jejunal and ileal perforations, along with tubercular and other rare causes like empyema gallbladder and malignancy.

Table 1 Etiology Of Perforation

Etiology	Number	percentage
Peptic gastric ulcer	10	14.28
peptic duodenal ulcer	22	31.42
Appendicitis	16	22.85
Enteric	9	12.85
Trauma	5	7.14
Tubercular	4	5.71
Empyema gallbladder	1	1.42
Obstruction d/t malignancy	1	1.42
Diverticulosis of jejunum	1	1.42
Diverticulosis of colon	1	1.42

Appendicular perforation is common in 21-30 years, peptic in 41-60 years, enteric and tubercular in 21-40 years, and malignant perforation in those over 60 years.

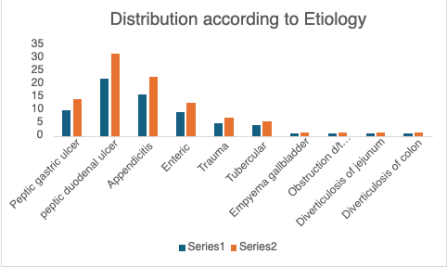

Table 2 Symptoms relation to Etiology

Etiology	Pain	Vomiting	Distension	Fever	Altered bowel habbits
Peptic gastric ulcer	10	8	4	6	2
peptic duodenal ulcer	22	10	18	2	0
Appendicitis	16	8	0	15	2
Enteric	9	5	5	6	4
Tubercular	4	3	4	4	2
Trauma	5	3	5	0	0
Empyema gallbladder	1	1	0	1	0
Obstruction d/t malignancy	1	1	1	1	1
Diverticulosis of colon	1	1	1	1	1
Diverticulosis of jejunum	1	1	1	1	0

Thirty percent of patients presented within 2 days, and 33.3% within 24-48 hours. All had abdominal pain, with over 70% experiencing vomiting, 52.8% fever, and 55.7% abdominal distension. Only 17% had altered bowel habits, with 1 case of obstipation due to malignancy. Appendicular perforation presented with localized right iliac fossa pain, gallbladder perforation with right hypochondrial pain, and peptic perforation with epigastric pain and vomiting. Enteric perforation commonly presented with pain, vomiting, altered bowel habits, and fever.

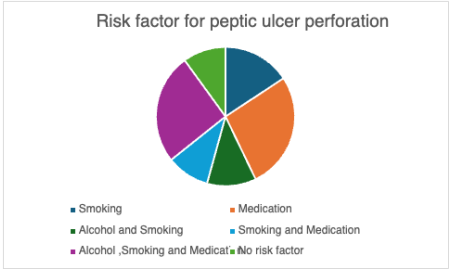

Table 3 Abdominal Signs In Relation To Etiology

Etiology	Tenderness	Guarding/Rigidity	Distension	Palpable mass	Reduced bowel sound
Peptic gastric ulcer	10	10	6	0	8
peptic duodenal ulcer	22	18	18	0	20
Appendicitis	16	10	6	4	8
Enteric	9	9	7	0	9
Tubercular	4	3	4	2	4
Trauma	5	3	5	0	5
Empyema gallbladder	1	1	1	1	1
Obstruction d/t malignancy	1	1	1	1	1
Diverticulosis of colon	1	1	1	0	1
Diverticulosis of jejunum	1	1	1	0	1

100% patients had tenderness,>80% had guarding and rigidity and >70% had distension. Distension is commonly observed in distal site perforation. Palpable mass seen (20%)4 case of appendicular perforation 2case of tubercular,1 of malignancy and empyema each.

Table 4 Distribution according to Investigation and surgical procedure

Investigations	percentages
Leukocytosis	40%
Anemia	36%
Pneumoperitoneum on x ray	72%
Hyponatremia (Na+ <125mmol/L)	20%
Hypokalemia (K+ <3mmol/L)	12%
S.creatinine(>1.5)	10%
Urine sugar	9%

Surgical procedure	Percentage
Primary repair	10%
Primary repair +omental patch	45%
Primary repair +Ileostomy	11%
Resection and anastomosis	7.14%
R&A+ Exteriorization	2.44%
Appendicectomy	12%
Caecostomy	1.42%
Cholecystectomy	1%

X-ray abdomen erect showed pneumoperitoneum in over 70% of cases, with others diagnosed via ultrasound and CT. All patients received peritoneal toilet; 45% underwent simple closure with omental patch, while others had various procedures, including appendicectomy and cecostomy.

Table 5 Post Operative Complications

Complication	Number	Percentages
No complication	26	37.14%
Wound infection	20	28.57%
Wound Dehiscence	11	15.71%
Paralytic ileus(>2days)	8	11.42%
pulmonary complication	3	4.28%
Inta-abdominal abscess	2	2.85%
Total	70	100%

37.14% of patients had no postoperative complaints. Wound infection was most common, followed by wound dehiscence and intra-abdominal abscess. Mortality occurred in one case due to septicemia and MODS.

DISCUSSION

In our study of 70 cases, peptic perforation was the most common, accounting for 45.71%, followed by appendicular perforation (22.85%), enteric perforation (12.85%), traumatic perforation (7.14%), tubercular perforation (5.71%), and 1.42% each of perforations due to empyema gallbladder, malignancy, jejunal diverticulosis, and colon diverticulosis.

The highest incidence of perforation, regardless of pathology, occurred in the 21–30 year age group. Peptic ulcer had a higher incidence in the 41–50 year age group, which is consistent with studies by Sillakivi T et al(5). Enteric perforations were most common in the 2nd decade, similar to the findings of ARK Adesunkunmi et al(6). Abdominal pain, vomiting, and fever were the predominant symptoms, with pain being present in 100% of cases, similar to studies by Kachroo et al(7). and J C Baid et al(8). A recent history of fever, abdominal pain, and previous typhoid infection were key indicators for diagnosing enteric fever perforation. NSAIDs, smoking, and alcohol are major risk factors for peptic ulcer perforation, as noted by Torab FC(9).

Pneumoperitoneum is a key sign of hollow viscera perforation, but its absence does not rule out perforation. In our study, pneumoperitoneum was seen in 72% of cases, which is in line with the studies by T Kempraj et al(10) and MC Dandapat et al(11).

All patients underwent laparotomy, with the incision planned based on the perforation site. Peritoneal toileting and bowel screening for perforation were performed. For peptic ulcer perforation, simple repair with an omental patch was done. Typhoid perforation cases involved trimming the edges and simple closure with diverting ileostomy. 16 out of 18 appendicular perforation cases underwent appendicectomy. Four patients had phlegmon formation and abscesses, requiring peritoneal toilet and interval appendicectomy. Postoperative complications developed in 62.86% of patients, with wound infection being the most common (28%), similar to Jhobta et al(4). Intra-abdominal abscesses were managed with ultrasound-guided aspiration. Mortality occurred in one patient due to septicemia and MODS, primarily due to delayed presentation and intervention. Poor general condition, anemia, and hypoproteinemia contributed to postoperative complications and mortality.

CONCLUSION

In our study of 70 cases, peptic perforation was the most common (45.71%), followed by appendicular (22.85%), enteric (12.85%), and traumatic (7.14%) perforations. The highest incidence occurred in the 21–30 year age group. Symptoms included abdominal pain (100%),

vomiting, and fever. Pneumoperitoneum was observed in 72%. All patients underwent laparotomy and peritoneal toileting. Postoperative complications occurred in 62.86%, with wound infection being most common (28%). Mortality was 1 due to septicemia and MODS, linked to delayed intervention.

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