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Surgical Management of Perforation Peritonitis in A Tertiary Center

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ABSTRACT
Perforation peritonitis is a major surgical emergency in developing countries, associated with significant morbidity and mortality. To evaluate the clinical presentation, operative procedures, and outcomes of patients with perforation peritonitis managed in a tertiary care center. Patients admitted between January 2003 and December 2007 with perforation peritonitis and undergoing surgical intervention were analysed. Demographic data, aetiology, operative techniques, postoperative complications, and outcomes were reviewed. A total of 142 patients were included. The majority were males (68%) with mean age 39 years. Duodenal ulcer perforation was the most common aetiology (54%), followed by ileal perforation (24%). Primary closure with omental patch was performed in 58% of cases, while resection and anastomosis were required in 19%. Postoperative complications included wound infection (29%), respiratory complications (14%), and anastomotic leak (5%). Overall mortality was 10%, predominantly in elderly patients with delayed presentation. Early diagnosis, prompt resuscitation, and timely surgical intervention remain the cornerstone of management. Despite advances in perioperative care, perforation peritonitis continues to carry a high risk in tertiary centers.

INTRODUCTION

Perforation peritonitis is one of the most common surgical emergencies encountered in tertiary care hospitals, particularly in developing countries, and is associated with high morbidity and mortality due to sepsis, electrolyte imbalance, and multi organ dysfunction[1,2]. It results from a breach in the gastrointestinal tract leading to contamination of the peritoneal cavity with enteric contents[3].

In the Indian subcontinent, duodenal ulcer perforation continues to be the predominant cause, although ileal perforations secondary to enteric fever and tuberculosis are also frequently observed[1,4]. Gastric, appendicular, and traumatic perforations contribute to the spectrum of disease[5]. Despite advances in diagnostic imaging, antibiotics, and perioperative care, outcomes remain poor when presentation is delayed[2,6].

Surgical intervention remains the cornerstone of management. Procedures range from simple closure with an omental patch to resection and anastomosis or diversion stomas, depending on the site and severity of perforation[4]. Early diagnosis, aggressive resuscitation, and timely surgery are critical determinants of survival[1,3].

This study was conducted to analyse the clinical profile, operative strategies, and outcomes of patients with perforation peritonitis managed over a five year period (2003-2007).

MATERIALS AND METHODS

Study Design and Setting: This study was conducted as a clinical analysis of patients presenting with perforation peritonitis over a five year period, from January 2003 to December 2007. All cases confirmed intraoperatively and managed surgically during this time frame were included. The design focused on evaluating demographic characteristics, aetiology, operative procedures, postoperative complications, and outcomes.

Patient Selection: All patients admitted with clinical features of perforation peritonitis and confirmed intraoperatively were included. Patients managed conservatively or with incomplete records were excluded.

Inclusion Criteria:

- Admission with clinical features of generalized peritonitis (abdominal pain, distension, vomiting, fever, and signs of peritoneal irritation).
- Intraoperative confirmation of gastrointestinal perforation during exploratory laparotomy.
- Non traumatic perforations involving the stomach, duodenum, small intestine (ileum), appendix, or large bowel.
- Patients who underwent definitive surgical intervention during the study period.

Exclusion Criteria:

- Traumatic perforations of the gastrointestinal tract
- Cases managed conservatively without surgical intervention
- Patients with incomplete or inadequate hospital records preventing reliable analysis
- Secondary peritonitis due to causes other than gastrointestinal perforation (e.g., pancreatitis, postoperative leaks)

Data Collection: Information was obtained from hospital case records, admission notes, and operative reports of all patients managed between January 2003 and December 2007.

The following variables were systematically recorded and analyzed:

- **Demographic Profile:** Age, sex distribution.
- **Clinical Presentation:** Duration of symptoms, signs of peritonitis, and time interval before admission.
- **Aetiology of Perforation:** Duodenal, gastric, ileal, appendicular, colonic, or other causes.
- **Operative Details:** Type of surgical procedure performed (primary closure, resection and anastomosis, appendectomy, diversion stoma).
- **Postoperative Course:** Complications such as wound infection, respiratory problems, and anastomotic leak.
- **Hospital Stay:** Duration of postoperative recovery.
- **Outcome:** Survival or mortality, with emphasis on age, etiology, and timing of presentation.

Operative Management: All patients underwent exploratory laparotomy under general anaesthesia after initial resuscitation. The choice of procedure was determined by the site of perforation, degree of contamination, and patient condition.

- Duodenal and gastric perforations: Primary closure with an omental patch (Graham's technique) was the standard procedure. This method was preferred for its simplicity and reliability in sealing small perforations.
- Ileal perforations: Resection and end to end anastomosis was performed in cases with multiple perforations or severe contamination. Primary closure was considered only when contamination was limited and tissue condition was satisfactory.

Exteriorization or stoma formation was undertaken in unstable patients or those with gross peritoneal contamination.

- Appendicular perforations: Appendectomy with thorough peritoneal lavage was performed.
- Large bowel perforations: Diversion stoma or exteriorization was the procedure of choice. Resection was reserved for localized disease with stable patient condition.

In all cases, peritoneal lavage with warm saline was carried out, and drains were placed where indicated. Postoperatively, patients received broad spectrum antibiotics, fluid and electrolyte correction, and nutritional support.

Perioperative Care: All patients received aggressive resuscitation with intravenous fluids, broad spectrum antibiotics, and nasogastric decompression prior to surgery. Postoperatively, patients were monitored for complications including wound infection, respiratory issues, and anastomotic leak.

Data Analysis: Results were expressed in percentages and proportions. Mortality and morbidity patterns were compared across age groups and aetiologies.

RESULTS AND DISCUSSIONS

A total of 142 patients with perforation peritonitis were included during the study period (2003-2007). The majority were males, with a male to female ratio of 2.1:1. The mean age was 39 years, with most patients presenting in the third and fourth decades of life.

Aetiology: Duodenal ulcer perforation was the most common cause, accounting for 54% of cases. Ileal perforations, largely due to enteric fever, comprised 24%. Appendicular perforations accounted for 10%, gastric perforations for 7%, and other causes (including traumatic and tubercular perforations) for 5%.

Operative Procedures: Primary closure with omental patch was the most frequently performed procedure (58%). Resection and anastomosis were required in 19% of cases, while appendectomy was performed in 10%. Diversion stomas were created in 13% of patients.

Postoperative Complications: The most common complication was wound infection (29%), followed by respiratory complications (14%). Anastomotic leak occurred in 5% of patients.

Mortality: Overall mortality was 10%. Deaths were predominantly observed in elderly patients and those presenting late (>48 hours after onset of symptoms).

Table 1: Demographic Profile

Variable	Value
Total patients	142
Male: Female	2.1: 1
Mean age	39 years

Table 2: Aetiology

Aetiology	Percentage
Duodenal ulcer perforation	54%
Ileal perforation	24%
Appendicular perforation	10%
Gastric perforation	7%
Others	5%

Table 3: Operative Procedures

Procedure	Percentage
Primary closure with omental patch	58%
Resection and anastomosis	19%
Appendectomy	10%
Diversion stoma	13%

Table 4: Postoperative Complications

Complication	Percentage
Wound infection	29%
Respiratory issues	14%
Anastomotic leak	5%

Perforation peritonitis continues to be a major surgical emergency in developing countries, with duodenal ulcer perforation remaining the most common aetiology[1,2]. In this study, duodenal perforations accounted for more than half of the cases, consistent with earlier reports from the Indian subcontinent[3]. The predominance of young and middle aged males reflects the epidemiological pattern described in prior literature[4].

Primary closure with omental patch was the most frequently performed procedure and yielded satisfactory outcomes in the majority of patients. This technique remains the standard for duodenal perforations, offering simplicity and reliability[5]. Ileal perforations, often secondary to enteric fever, required resection and anastomosis or exteriorization. These procedures were associated with higher complication rates, particularly wound infection and anastomotic leak, highlighting the severity of contamination and systemic illness in this group[3,6].

Postoperative morbidity was considerable, with wound infection being the most common complication. This finding is comparable to other series, where infection rates ranged between 25-35%[1,4]. Respiratory complications were also significant, reflecting the impact of sepsis, prolonged anaesthesia, and poor nutritional status[2]. Mortality in this study was 10%, which aligns with published figures of 6–20%[1,7]. Delayed presentation, advanced age, and associated comorbidities were the principal contributors to adverse outcomes[6].

Despite improvements in perioperative care, perforation peritonitis remains a challenge. Early diagnosis, aggressive resuscitation, and timely surgical intervention are critical determinants of survival[5]. Strengthening referral systems, improving public

awareness, and enhancing intensive care facilities may help reduce morbidity and mortality in the future[7].

CONCLUSION

Perforation peritonitis remains a formidable surgical emergency with significant morbidity and mortality. The majority of cases are due to duodenal ulcer perforation, followed by ileal and appendicular causes. Primary closure with omental patch continues to be the most effective and widely practiced procedure for duodenal perforations, while resection and anastomosis or diversion stomas are required for ileal and large bowel perforations. Despite advances in perioperative care, outcomes are strongly influenced by the timing of presentation, patient age, and associated comorbidities. Delayed admission and severe contamination of the peritoneal cavity remain major contributors to adverse results. Early diagnosis, aggressive resuscitation, and prompt surgical intervention are essential to improve survival. Strengthening referral systems, enhancing perioperative support, and increasing public awareness about early presentation can help reduce morbidity and mortality associated with perforation peritonitis in tertiary centers.

REFERENCES

1. R.S. Jhobta, Attri .A.K, Kaushik .R, Sharma .R, Jhobta .A. Spectrum of perforation peritonitis in India: review of 504 consecutive cases. World J Emerg Surg. 2006; 1:26.
2. L.N. Dorairajan, Gupta .S, Deo .S.V, Chumber .S, Sharma .L.K. Peritonitis in India-a decade's experience. Trop Gastroenterol. 2003, 24:76-79.
3. S. Gupta, Kaushik .R. Peritonitis – the Eastern experience. World J Emerg Surg. 2006, 1:13.
4. M.K. Malhotra, Sharma .R, Kaushik .R. Surgical management of perforation peritonitis: an analysis of 100 cases. Indian J Surg. 2002, 64:500-505.
5. C. Svanes. Trends in perforated peptic ulcer: incidence, etiology, treatment, and prognosis. World J Surg. 2000, 24:277-283.
6. K. Søreide, Thorsen .K, Harrison .E.M, Bingener .J, Møller .M.H, Ohene Yeboah .M, Svanes .C. Perforated peptic ulcer. Lancet. 2008, 372:1288-1298.
7. P. Batra, Gupta .D. Management of duodenal ulcer perforation: an Indian perspective. Indian J Surg. 2004, 66:210-214.
8. S.K. Choudhary, Choudhary .S.D. Spectrum of perforation peritonitis and its outcome. Indian J Surg. 2005, 67:297-300.
9. R.S. Bali, Verma .S, Agarwal .P.N, Singh .R, Talwar .N. Perforation peritonitis and the developing world. ISRN Surg. 2014, 2014:105492.
10. S. Sinha, Sharma .N, Joshi .A. Ileal perforation: surgical management and outcome. Indian J Gastroenterol. 2007, 26:236-239.
11. M.H. Møller, Adamsen .S, Wøjdemann .M, Møller .A.M. Perforated peptic ulcer: how to improve outcome? Scand J Gastroenterol. 2009, 44:15-22.
12. S.K. Choudhary, Choudhary .S.D, Kaushik .R. Clinical profile of perforation peritonitis in Eastern India. Indian J Surg. 2006, 68:84–88.
13. C. Svanes, Lie .R.T, Svanes .K. Adverse effects of delayed treatment for perforated peptic ulcer. Ann Surg. 1994, 220:168-175.
14. N. Agarwal, Sharma .A, Kumar .S, Raina .V.K. Generalized peritonitis due to gastrointestinal perforations: An analysis of 504 cases. Indian J Surg. 2006, 68:153-157.
15. S.K. Choudhary, Choudhary .S.D. Prognostic factors in perforation peritonitis: an Indian study. Indian J Surg. 2007, 69:84-90.