



Original Article

Hollow Viscus Perforation: An Observational Study for Clinical Profile and Management from a Tertiary Care Centre

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ABSTRACT

Background: Hollow viscus perforation is a life-threatening surgical emergency associated with rapid progression to generalized peritonitis, sepsis, and multiorgan dysfunction if diagnosis or source control is delayed. Regional etiological patterns differ considerably, and data from Indian tertiary-care centres remain clinically relevant for operative planning and outcome assessment.

Methods: A prospective observational study was conducted in 20 patients with non-traumatic hollow viscus perforation managed at a tertiary-care general surgery unit in 1 year between May 2024 and May 2025. Demographic profile, presenting symptoms, operative diagnosis, procedure performed, postoperative complications, and duration of hospital stay were recorded and analysed descriptively.

Results: The most affected age group was 26–35 years (35.0%), and 80.0% of patients were male. Appendicular perforation was the most common etiology (40%), followed by gastric/duodenal ulcer perforation (35%). Abdominal pain was present in all patients, while nausea/vomiting occurred in 75.0%. The most frequently performed procedures were appendectomy (35%) and modified Graham's omental patch repair (30%). Postoperative wound infection was the commonest complication (45%), whereas 50.0% of patients had no postoperative complication. Most patients required 8–14 days of hospital stay (45.0%). One patient developed septic shock/multiorgan failure, corresponding to a mortality of 5% as reported in the thesis conclusion.

Conclusion: In this cohort, appendicular perforation and peptic perforation accounted for the majority of hollow viscus perforations. Young adult males were predominantly affected. Early diagnosis, resuscitation, and timely operative intervention were associated with low mortality, although wound morbidity remained substantial.

Keywords: hollow viscus perforation, peritonitis, appendicular perforation, peptic perforation, laparotomy, outcome.

INTRODUCTION

Hollow viscus perforation (HVP) remains one of the most important causes of acute surgical abdomen. Once a perforation occurs, the leakage of luminal contents into the peritoneal cavity initiates chemical and bacterial peritonitis, with progression to sepsis, electrolyte imbalance, paralytic ileus, and organ dysfunction if definitive treatment is delayed.

The clinicopathological spectrum of HVP varies by region. In high-income settings, colonic diverticular disease, malignancy, and iatrogenic perforations contribute substantially, whereas in many Indian centres appendicular, peptic,

typhoid, and tubercular perforations continue to be encountered. Knowledge of local patterns is therefore essential for early suspicion, rational empirical therapy, and operative preparedness.

Although cross-sectional imaging has improved diagnostic precision, the principles of management remain unchanged: prompt resuscitation, broad-spectrum antimicrobial therapy, and timely source control. Outcomes depend on patient factors, etiology, degree of contamination, and delay before surgical intervention.

The present study was undertaken to describe the demographic profile, etiological distribution, clinical presentation, operative management, and short-term postoperative outcomes of non-traumatic hollow viscus perforation in a tertiary care teaching hospital.

MATERIALS AND METHODS

This prospective observational study included 20 consecutive patients with suspected non-traumatic hollow viscus perforation managed in the Department of General Surgery of a tertiary care hospital from May 2024 to May 2025.

Inclusion criteria were age greater than 14 years and abdominal pain with localized or generalized peritonitis suggestive of perforation involving the stomach, duodenum, small bowel, appendix, or large bowel. Traumatic perforations, perforations of the abdominal esophagus, biliary tree, urinary bladder, and female genital tract were excluded.

All patients underwent clinical evaluation and routine laboratory investigations including complete blood counts, blood grouping and typing, renal function tests, serum electrolytes, and viral screening where indicated. Erect abdominal radiography was used to identify free gas under the diaphragm; lateral decubitus radiography, ultrasonography, and contrast-enhanced computed tomography were performed selectively. Widal testing was performed in suspected enteric perforation. During emergency laparotomy, the perforation site was identified, the procedure was tailored to operative findings, and edge biopsy specimens were sent for histopathology.

Patients were followed during the postoperative period for procedure type, complications, and duration of hospital stay. Data were summarised as frequencies and percentages because the primary objective of the study was descriptive.

RESULTS

Twenty patients with hollow viscus perforation were analysed. The highest proportion of patients belonged to the 26–35-year age group (35.0%), followed by 36–45 years (30.0%). Male patients accounted for 80.0% of the cohort. Mean age was reported in the thesis as 45 years, with an age range of 15–75 years.

Table 1. Demographic characteristics

Variable	n	%
14-25	4	20
26-35	7	35
36-45	6	30
46-55	1	5
>55	2	10
Male	16	80.0
Female	4	20.0

Appendicular perforation was the commonest etiology (40.0%), followed by gastric or duodenal ulcer perforation (35%). Ileal perforations due to typhoid, tuberculosis, and stricture/adhesions together contributed a further 20% of cases, while one patient had sigmoid perforation related to inflammatory bowel disease.

Table 2. Etiology and site of perforation

Etiology	Site	n	%
Appendicular perforation	Appendix	8	40
Gastric/duodenal ulcer	Stomach/duodenum	7	35
Typhoid perforation	Ileum	2	10
Tubercular perforation	Ileum	1	5
Gangrenous perforation due to stricture/adhesions	Ileum	1	5
Inflammatory bowel disease	Sigmoid colon	1	5

Abdominal pain was the universal presenting symptom. Nausea and vomiting were reported by three-fourths of patients. Fever, abdominal tenderness/guarding, and radiographic gas under the diaphragm were each documented in 55.0% of patients.

Table 3. Clinical presentation

Clinical feature	n	%
Abdominal pain	20	100
Nausea/vomiting	15	75
Fever	11	55
Constipation/obstipation	3	15
Abdominal tenderness/guarding	11	55
Abdominal distention	8	40
Obliterated liver dullness	7	35
Gas under diaphragm	11	55

The most common operations were appendicectomy (35%) and modified Graham's omental patch repair (30%). Diversion ileostomy or colostomy was performed in 20% of patients, usually for distal or contaminated pathology requiring fecal diversion.

Table 4. Operative procedures performed

Procedure	n	%
Open/laparoscopic appendicectomy	7	35
Modified Graham's omental patch repair	6	30
Resection and anastomosis	2	10
Diversion ileostomy/colostomy	4	20
Primary repair	1	5

Half of the patients had an uncomplicated postoperative course. Wound infection was the commonest adverse event and was seen in 45% of cases. Most patients stayed in hospital for 8–14 days (45.0%). The conclusion reports a mortality of 5%, corresponding to one patient with septic shock/multiorgan failure.

Table 5. Postoperative complications and duration of hospital stay

Parameter	n	%
Wound infection	9	45
Respiratory infection	2	10
Burst abdomen	1	5
Paralytic ileus	1	5
Septic shock/MOF	1	5
No complication	10	50
<7 days	7	35
8-14 days	9	45
>14 days	4	20

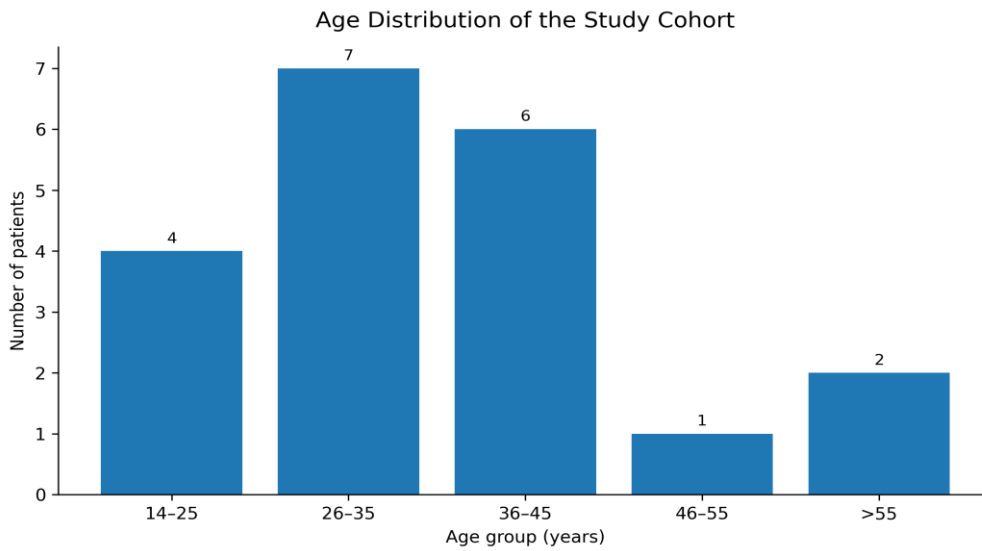


Figure 1. Age distribution of the study cohort

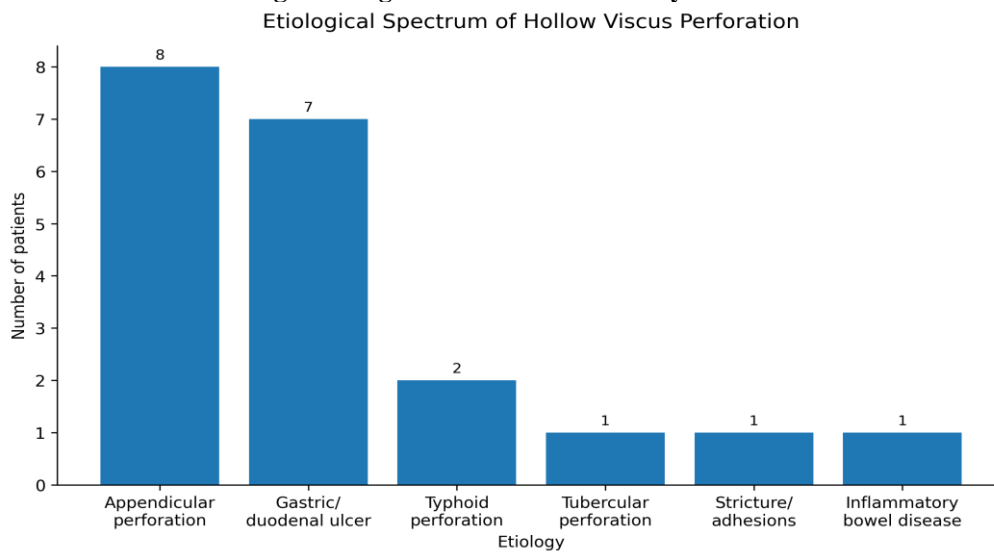


Figure 2. Etiological spectrum of hollow viscus perforation

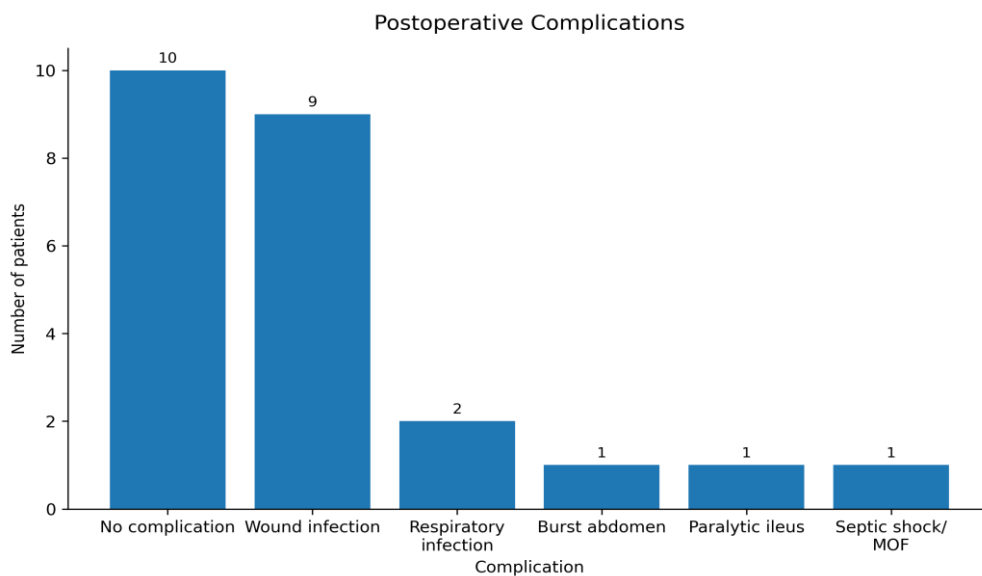


Figure 3. Postoperative complications

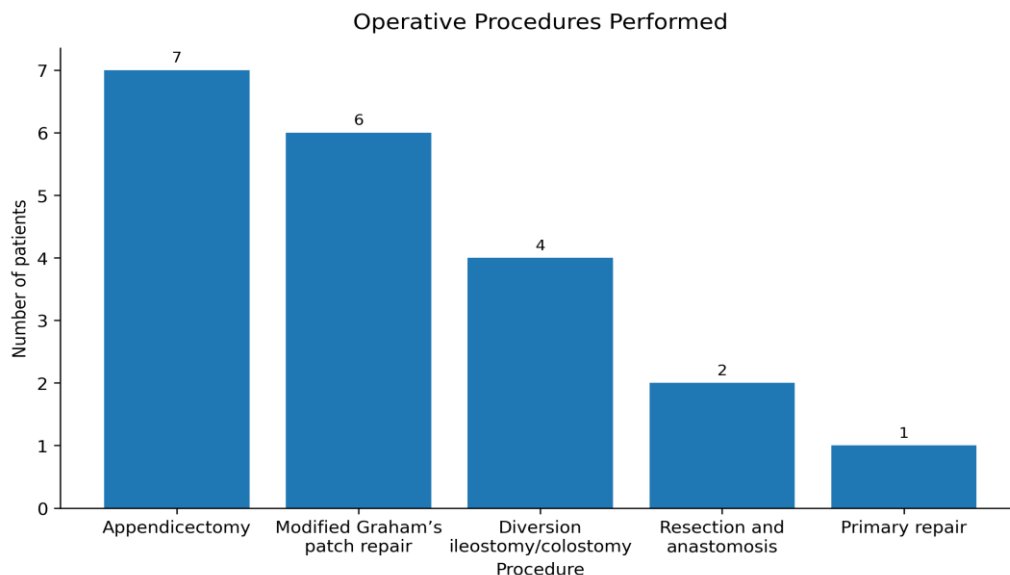


Figure 4. Operative procedures performed

DISCUSSION

The present study demonstrates that hollow viscus perforation in this setting predominantly affected young and middle-aged adults, with a marked male preponderance. This demographic pattern is comparable to the broad trends reported in Indian emergency surgery literature, where young males are more commonly exposed to smoking, alcohol, occupational stress, delayed care-seeking, and infective risk factors.

A notable finding of this cohort is that appendicular perforation constituted the largest etiological group, exceeding peptic perforation. This differs from classical descriptions in which gastroduodenal perforation dominated adult series, but it reflects the changing disease mix seen in many public-sector Indian hospitals, where delayed presentation of complicated appendicitis remains common. At the same time, the persistent contribution of typhoid and tubercular ileal perforation underlines the continuing burden of preventable infectious disease.

Abdominal pain was present in all patients, reaffirming its central diagnostic importance in acute perforation. The moderate frequency of gas under the diaphragm in this series is clinically expected, as free air is more consistently identified in gastroduodenal perforation than in contained, appendicular, or distal small-bowel pathology. Therefore, a normal plain radiograph cannot be used to exclude perforation when clinical suspicion is high.

The operative profile closely mirrored the etiological distribution: appendicectomy and Graham's patch repair together accounted for 70.0% of procedures. This indicates that most patients were amenable to definitive source control without extensive bowel resection. Nevertheless, the requirement for diversion or resection in a subset of patients shows that delayed presentation and distal bowel disease still create significant operative complexity.

Postoperative wound infection was the dominant complication. The rate is relatively high, but it is understandable in the setting of emergency surgery for contaminated peritonitis, where late referral, gross contamination, nutritional compromise, and infective etiologies all increase wound morbidity. Importantly, despite substantial wound morbidity, overall mortality was low in the thesis, suggesting that resuscitation, operative timing, and perioperative care were effective in preventing progression to fatal sepsis in most patients.

Taken together, these findings support a practical message: in resource-constrained but high-volume emergency units, outcomes in hollow viscus perforation can be kept favorable when diagnosis is prompt and surgery is not deferred. However, reducing wound complications and preventable infective causes remains an important area for quality improvement.

CONCLUSION

In this prospective hospital-based cohort, appendicular and peptic perforations accounted for the majority of non-traumatic hollow viscus perforations. Young adult males were predominantly affected. Abdominal pain was universal, and appendicectomy or modified Graham's patch repair was sufficient in most patients. Although postoperative wound infection was frequent, short-term survival was favorable, with a reported mortality of 5%. Early diagnosis, rapid resuscitation, and timely source control remain the key determinants of outcome.

Limitations

This was a single-centre descriptive study with a modest sample size. Inferential statistical analysis and risk-factor modeling were not available in the source thesis dataset. Long-term follow-up and quality-of-life outcomes were also beyond the study scope.

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