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## Investigation of non-traumatic origins and clinical treatment of widespread peritonitis

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### Abstract

**Background:** When various stressors activate local mediator cascades in the abdominal cavity, the result is an inflammatory reaction known as peritonitis. Thus, the peritoneal layer may become inflamed due to bacterial, viral, or chemical causes. When the mucosal barrier loses its integrity, gastrointestinal or genitourinary bacteria might leak into the peritoneal cavity and cause secondary peritonitis.

**Methods:** Cross sectional observational study was performed. All patients admitted and treated for perforation secondary to non-traumatic hollow viscus perforation in surgical units of Department of Surgery, Mahavir Institute of Medical Sciences, Vikarabad, Telangana, India, during the period of September 2016 to August 2017.

**Results:** In the current study, the most prevalent age group was 40–60 years old (49.9%). The primary etiological cause identified is stomach perforation, followed by perforations in the appendix and duodenum. Abdominal discomfort was the most common symptom in this study, occurring in 100% of the cases. In this study, 100% of the cases showed guarding or stiffness. The majority of the cases required an average hospital stay of 10–19 days. The death rate was discovered to be 16.6%.

**Conclusion:** The age at which a small intestinal perforation occurred in our study ranged from 23 to 80 years old. The majority of cases required a hospital stay of ten to nineteen days. The primary complaints that the patient presented with were stomach pain, vomiting, fever, and distension. NSAIDs, alcohol, tobacco, and smoking were risk factors for perforations.

**Keywords:** Duodenal perforation, ileal perforation, peritoneal cavity, peritonitis, appendicular perforation, genitourinary bacteria

### Introduction

In a surgeon's practice, gastric perforations are a frequent emergency that nonetheless have a significant morbidity and death rate <sup>[1]</sup>. In surgical practice, peritonitis, or "inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein," is a frequently encountered condition. A perforated bowel or the entry of a chemically irritating substance, like gastric acid from an ulcer, can introduce an infection into the ordinarily sterile peritoneal milieu, leading to peritonitis <sup>[2-5]</sup>.

The site of the hole and the causative causes differ greatly. The diagnosis of a case's genesis may be misled by the various ways in which it presents. There is a rise in stomach and small intestine perforations <sup>[6]</sup>. Upper GI tract ulceration and related consequences are becoming more common in western cultures due to the growing number of older people and the accessibility of potent NSAIDs. Two major risk factors for perforation are the use of non-steroidal anti-inflammatory medicines and smoking. Perforation typically occurs in the third or fourth decade, with a preponderance of men, and the global epidemiological trend varies <sup>[7]</sup>. Tropical nations continue to have a different spectrum of etiology for perforation than their western counterparts. In the west, the incidence is declining, but in certain other countries, it has been rising. It has been suggested that stress may be the reason <sup>[8,9]</sup>.

A small intestinal perforation has a significant risk of both morbidity and death. Nonetheless, the prevalence of small intestinal perforation and its associated mortality have decreased since the advent of medications such as cephalosporin, amoxicillin, chloramphenicol, and more recent generation fluoroquinolones <sup>[10-13]</sup>. Anterior ulcers in the duodenum typically perforate, while posterior ulcers bleed. Ileum distal to typhoid ulcers has perforations <sup>[14,15]</sup>.

Ileum, proximal colon, and peritoneum are other common areas affected by tuberculosis. Immunosuppression, alcoholism, smoking, chewing tobacco, and inadequate care of enteric fever are the primary risk factors. Controlling sepsis and treating the underlying cause are the primary goals of treatment. In order to treat perforations, surgery is crucial [16-19].

### Materials and Methods

An observational cross-sectional study was conducted from September 2016 to August 2017, all patients treated for perforation related to non-traumatic hollow viscus perforation in surgical units of Mahavir Institute of Medical Sciences, Vikarabad, Telangana, India. After obtaining a full medical history, each patient underwent a comprehensive clinical examination. Following a laparotomy, patients are monitored to learn about any complications, rates of morbidity, and death. At the time of admission, the general condition was monitored by recording the patient's pulse, blood pressure, respiration rate, and level of hydration. Operational results were noted. All necessary surgical interventions are documented, and patients are monitored for any complications following surgery. The proforma will be followed when studying each case.

### Inclusion criteria

- Age group : 20-80 years
- All patients presented with generalized peritonitis of non-traumatic causes.

### Exclusion criteria

- Cases of traumatic perforative peritonitis.
- Cases with previous history of abdominal surgeries.

### Results

60 patients presenting to Kamineni institute of medical sciences, Narketpally with generalized peritonitis secondary to non-traumatic hollow viscus perforation were studied.

**Table 1:** Distribution of cases according to age group

(n=60)		
Age (years)	Number of cases	Percentage
20-30	10	16.66
31-40	7	11.66
41-50	14	23.33
51-60	16	26.66
61-70	9	15
71-80	4	6
TOTAL	60	100

The most common age group was 40-60 yrs (49.9%) in the present study.

**Table 5:** Distribution of cases according to type of surgery performed

(n=60)		
Surgery	Number of Cases	Percentages
Simple closure with graham's Patch	32	53.3
Resection with end to end Anastomosis and loop ileostomy/end colostomy	10	16.6
Resection of terminal ileum (5 cms) with caecectomy with loop Ileostomy and end colostomy	1	1.67
Appendectomy with drainage	15	25
Cholecystectomy with drainage	2	3.33
Total	60	100

**Table 2:** Distribution of gender according to etiology

Causes	Males		Females		Total	
	No.	%	No.	%	No.	%
Duodenal ulcer perforation	7	14.58	2	16.66	9	15
Gastric ulcer Perforation	20	41.66	3	25	23	38.33
Caecal perforation	3	6.25	0	0	3	5
Ileal perforation	5	10.45	0	0	5	8.33
Appendicular Perforation	8	16.66	7	58.34	15	25
Colonic Perforation	3	6.25	0	0	3	5
Gall bladder perforation	2	4.16	0	0	2	3.34
Total	48	80	12	20	60	100

In this study, 12 patients (20%) were female and 48 cases (80%) were male. The primary etiological cause identified is stomach perforation, followed by perforations in the appendix and duodenum.

**Table 3:** Distribution of cases according to symptoms

(n=60)		
Symptoms	Number of cases	Percentages
Pain abdomen	60	100
Vomiting	40	66.6
Distension of abdomen	30	50
Constipation	57	95
Diarrhea	4	6.6
Fever	32	53.3

Abdominal discomfort was the most common symptom in this study, occurring in 100% of the cases. Constipation (95%) was the next most common symptom, followed by vomiting (66.6%) and abdominal distention (50%).

**Table 4:** Distribution of cases according to signs

(n=60)		
Signs	Number of cases	Percentage
Guarding/rigidity	60	100
Tenderness	60	100
Distension	35	58.3
Obliteration of liver dullness	56	93.3
Bowel sounds absent	60	100
Bowel sounds sluggish/present	0	0
Tenderness on digital rectal examination	35	58.3

In this study, 100% of the cases showed signs of guarding or rigidity. In every instance (100%) at the pertinent quadrant, tenderness was present. In 93% of patients, liver dullness was completely eradicated. In every instance, there are no bowel sounds. On DRE, distension and soreness were discovered in (58%) of the patients.

32 instances (53.3%) in our study received mental patches for basic closure. Ten instances (16.6%) had end-to-end colostomy/end-to-end anastomosis resection. Fifteen instances (25%) had drainage and appendectomy. Two

instances (3.33%) had drainage during cholecystectomy. One patient (1.66%) had a cecectomy, loop ileostomy, and end colostomy together with a 5 cm resection of the terminal ileum.

**Table 6:** Distribution of cases according to complications

(n=60)		
Complications	Number of patients	Percentage
Wound infection	15	25
Dehiscence	8	13.3
Burst abdomen	2	3
Ec fistula	3	5
Systemic complications	12	20

In this study the commonest complication were wound infection (25%) and systemic complications (20%) followed

by wound dehiscence (13.3%), burst abdomen (3%), ECfistula (5%).

**Table 7:** Distribution of cases according to duration of hospital stay

Duration of hospital stay (days)	Simple closure with grahams patch (33 cases)	Resection anastomosis with loop ileostomy or colostomy (9 cases)	Resection with cecectomy (1 case)	Appendectomy with drainage (15 cases)	Cholecystectomy with drainage (2 cases)
<10	3	0	1	12	0
10-19	21	3	0	3	1
20-30	9	4	0	0	0
>30	0	2	0	0	1

Most of the cases had duration of 10-19days of hospital stay

**Table 8:** Distribution according to type of surgery and outcome

Type of surgery performed	Cured		Expired		Total	
	No.	%	No.	%	No.	%
Simple closure with grahams patch	31	62	3	3	34	56.6
Resection with end to end anastomosis and with loop ileostomy or colostomy	4	8	5	50	9	15
Resection of terminal ileum (5 cms) with cecectomy with loop ileostomy and end colostomy	0	0	1	10	1	1.6
Appendectomy with Drainage	14	28	0	0	14	23.3
Cholecystectomy With drainage	1	2	1	10	2	3.3
Total	50	100	10	16.6	60	100

**In this study**

Ases had a straightforward Graham's patch closure, which was linked to a 9% mortality rate. Nine instances received end-to-end anastomosis and loop ileostomy or colostomy resection; this procedure was linked to a 55.5% death rate. A 28% cure rate was linked to the appendectomy and drainage performed on 14 instances. 100% of the cases had their terminal ileum (5 cm) removed, along with a cecectomy, loop ileostomy, and end colostomy. Patients had cholecystectomy with drainage, which was linked to a 50% death rate.

**Discussion**

**Table 9:** Mean age group

Authors	Years	Mean age in years
John Boey <i>et al</i>	1978-1981	48.80
Navez B <i>et al</i>	1990-1995	49
Present study	2016-2017	47.07

The most common age group was 40-60yrs (49.9 %) in the present study, in which the mean age group is around 47yrs, which in comparison to other studies is much similar [20, 21].

**Table 10:** Gender incidence

Authors	Gender		Male-female ratio
	Male	Female	
John Boey <i>et al</i>	158	26	6:1
Navez B <i>et al</i>	110	121	0.9:1
Present study	48	12	4:1

In the present study higher incidence was seen in male population with m: f ratio of 4:1. The results of the present

study are compared with the study done by other authors as shown in the above table.

**Table 11:** Causes of generalized peritonitis

Causes	Navezb <i>et al</i> (n=231)	Present study (n=60)
Perforated peptic ulcer	69(29.8%)	33(55%)
Appendicular perforation	91(39.39%)	15(25%)
Colon perforation	35(15.15%)	5(8.33%)
Small bowel perforation	30(12.98%)	5(8.33%)
Biliary peritonitis	6(2.59%)	2(3.33%)

Peptic ulcer perforation, which occurred in 33 patients in this study (23 gastric ulcer perforations and 10 duodenal ulcer perforations), was the most common cause of peritonitis. This is because people in this area have a propensity of consuming highly spicy cuisine, NSAIDs, smoking, and alcohol [22-24].

### Conclusion

One of the most significant surgical emergencies is peritonitis. The most frequent initial sign of non-traumatic perforation peritonitis is abdominal pain, which is followed by vomiting, distension of the abdomen, and constipation. An erect abdominal x-ray and an abdominal USG are excellent diagnostic tools for non-traumatic perforation peritonitis. Using primary closure of the perforation was the most popular technique. For bowel perforation, resection and anastomosis are also performed. In cases of peptic ulcer perforation, final surgery is not necessary due to the availability of efficient medicines that reduce acid. Peptic ulcer perforation is the most frequent cause of perforation peritonitis, followed by duodenal and appendicular perforations.

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### Conflict of Interest

No

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