

CLINICAL STUDY AND MANAGEMENT OF BENIGN GASTROINTESTINAL PERFORATIONS

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ABSTRACT

INTRODUCTION

Peritonitis due to gastrointestinal perforation is one of the commonest surgical emergencies encountered by a general surgeon. (1,2) Mortality and morbidity is still very high despite early diagnosis and intensive management. This study is aimed to find common causes of perforations, its presentations, mode of investigations and treatment done and outcome of patients.

METHODS

Case records of all patients, in exclusion and inclusion criteria, who were admitted in emergency surgical ward with suspected GI perforation and peritonitis were included in study and diagnosis confirmed by either investigations preoperatively or by laparotomy and results analysed over a period of 16 months.

RESULTS

GI perforations due to benign causes are most common causes of peritonitis, of which gastroduodenal perforations are commonest followed by appendicular perforation closely followed by infective perforations.

CONCLUSION

Benign causes of upper gastroduodenal perforations are common causes of peritonitis (2,3). Mortality increases with delay in presentation and treatment. Abdominal signs like guarding rigidity are present in majority of cases. X-ray erect abdomen was effective in detecting perforation in majority of cases. Surgery is the treatment in all cases of perforation.

KEYWORDS

Upper GI Perforation, Peritonitis, Guarding, Rigidity.

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INTRODUCTION: Gastrointestinal perforation with peritonitis,^(1,2,3,4) a common abdominal emergency treated by general surgeon. It is a common dictum that abdomen is a Pandora's Box and gastrointestinal perforation is one such condition to prove it. Perforation of a hollow viscus from wide variety of causes comprises the major portion of emergency surgical admissions and emergency laparotomies.

The diagnosis and treatment of gastrointestinal perforation remains main problem in our country.⁽⁵⁾ Improved medical and surgical care has reduced this problem in North America and the UK, where vascular lesions and malignancies are predominant cause of perforations,⁽⁶⁾ while in our country, peptic ulcer disease, typhoid, tuberculosis and appendicular perforations are common causes of acute abdomen.⁽³⁾

Perforation of the stomach, duodenum and small bowel form a considerable proportion of emergency workload than colonic.^(2,3,4) In developed societies, most common causes are the perforation of diverticular disease and colonic

carcinoma, where as in the developing countries infective conditions such as typhoid and appendicular perforations are predominant. Perforation of the large intestine is a rapidly fatal condition, death being caused by sepsis from peritoneal contamination with various enteric pathogens both aerobic and anaerobic. Majority of patients present with sudden onset of abdominal pain. A high index of suspicion is essential to diagnose visceral perforation early as significant morbidity and mortality results from diagnostic delay.

Thus, a study is undertaken to find the aetiological factors and clinical features, age and sex distribution and also to assess the common type of perforations and their presentations, operative modalities, complications arising postoperatively and to come to a conclusion which can influence management of such patients.

AIMS & OBJECTIVES: The aim of the study was to evaluate the clinical spectrum and the management of benign causes of gastrointestinal perforations.

The objectives of the study were to evaluate:

- All the cases of gastrointestinal perforations that were seen during the period of study and to include those that fitted in the project's inclusion criteria.
- Age and sex related incidence.
- Symptoms and clinical signs.
- Various sites of perforations.

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- Role of various clinical parameters and investigations aiding early diagnosis.
- Possible complications which develop postoperatively.

Study Design: A retrospective analysis of patients who were admitted at Osmania General Hospital with peritonitis with suspected GI perforations were carried out over a period of 16 months.

MATERIALS AND METHODS: This study is based on analysis of all the cases of gastro-intestinal perforations that presented to us, of which 130 cases of benign causes of gastrointestinal perforation that fitted in the inclusion and exclusion criteria.

Clinical diagnosis of hollow viscus perforation was made based on history and physical examination which was confirmed by investigations or by laparotomy formed the basis of selection of cases.

The investigations done in the cases selected for study were the following:

1. Routine blood examinations including CBP, Blood group; HIV, HBsAg, blood urea, serum creatinine, serum electrolytes.
2. Urine examination.
3. Erect abdomen X-ray.
4. Widal test in suspected enteric perforations.
5. 4 quadrant abdominal paracentesis was done only in selected cases.
6. Ultrasonography and CECT Abdomen if needed.

Inclusion Criteria: All patients with signs and symptoms of peritonitis with suspected gastrointestinal perforation and are willing for management in our hospital are included in this study after taking informed written consent.

Exclusion criteria:

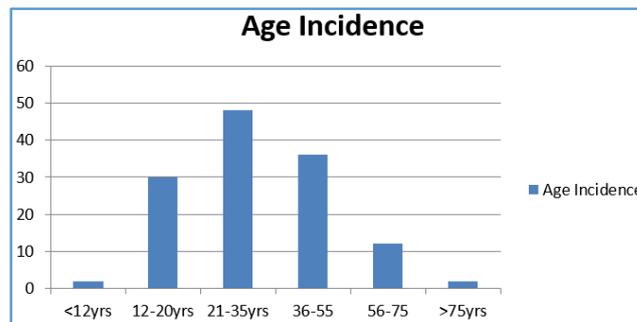
1. Perforations due to malignancy.
2. Perforations of the oesophagus.
3. Idiopathic causes of perforation.

OBSERVATION AND RESULTS:

Age Group Incidence: A total of 130 patients of gastrointestinal perforations (that were within the exclusion and inclusion criteria) were studied from May 2013 to September 2014. The youngest patient was 11 yrs. (Appendicular perforation) and oldest was 81 yrs. (Iatrogenic Gastric perforation). Most of the patients belonged to 21-35 yrs. age group. The mean age was 29.2 yrs.

Age group	Number	Percentage
<12 yrs.	02	1.54
12-20 yrs.	30	23.1
21-35 yrs.	48	36.9
36-55 yrs.	36	27.7
56-75 yrs.	12	9.23
>75 yrs.	02	1.54

Table 1

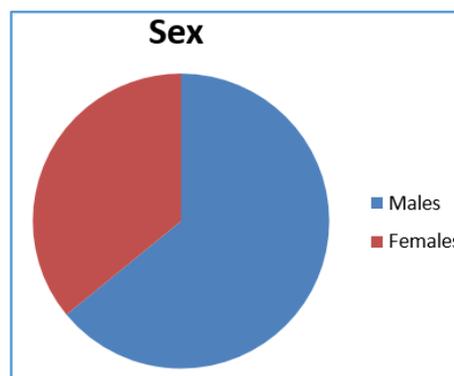


Graph 1

Sex Incidence: Males out-numbered females with a ratio of 1.7:1

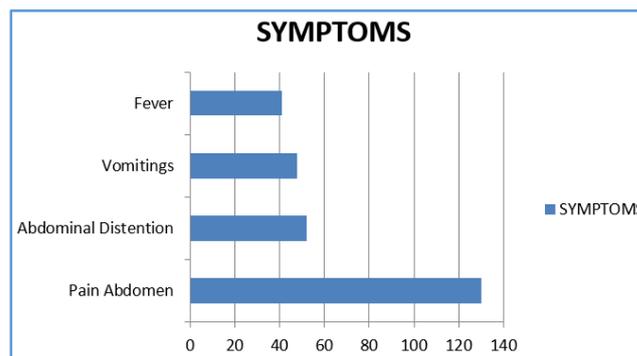
Sex	Number
Males	82
Females	48

Table 2



Graph 2

Symptoms: All the cases in our study complained of pain abdomen. Only 48 of 130 cases had vomiting (36.9%). Distension was seen in 52 cases (40%) and Fever in 82 (63.1%) which was of moderate degree and not associated with chills and rigors.



Graph 3

SIGNS: 100% of the patients had obvious abdominal tenderness, guarding and rigidity was seen in 104 (80%) and distension in 47.7%. Only one patient with abdominal tuberculosis who had distension since 2 months had visible engorged veins.

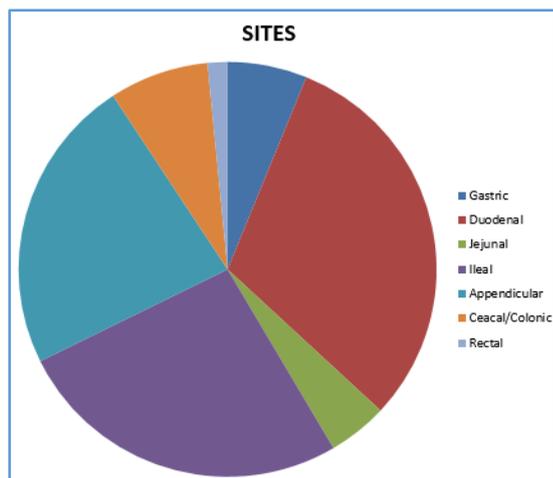
Abdominal signs	Number of patients	Percentage
Tenderness	130	100
Guarding/Rigidity	104	80
Distension	62	47.7
Absent Abdominal Sounds	92	70.8
Engorged Veins	02	1.54

Table 4

Investigations: Presence of gas under the diaphragm has been a hallmark of hollow viscus perforation but absence of this does not exclude the possibility of the perforation. This sign is visualised in about 64% of the cases in our study. Widal was positive in all the patients who had typhoid perforations, which accounted for about 10.8% of the patients.

CECT abdomen was done in patients in whom the diagnosis was inconsistent with that of other investigations and signs.

Site of Perforation: The most common site of perforation was the gastroduodenal region,^(3,7) which accounted for 48 cases, followed by appendicular perforations and the least common region was the rectum, which was due to insertion of an object into the rectum.



Graph 4

Aetiology of Perforation: The most common aetiological factor in the presentation of disease was peptic disease, which accounted for 32.31% of the cases. This was followed by appendicular which accounted 24.6%. The least was an iatrogenic cause of gastric perforation due to an unskillfully done endoscopy, which accounted for only 1.54% of the cases.

Aetiology	Number of cases	Percentage
Peptic	42	32.31
Typhoid	14	10.8
Tubercular	20	15.4
Appendicular	32	24.6

Traumatic	08	4.6
Iatrogenic	02	1.54
Obstructed/Strangulated Hernia	04	3.1
Caustic Ingestion	04	3.1
Volvulus	04	3.1

Table 5

Treatment given: All the patients with appendicular perforations were treated with appendectomy. Majority of the patients had a simple closure with or without an omental patch.

Treatment	Number	Percentage
Appendectomy	32	24.6
Simple Closure	60	46.1
Resection Anastomosis	24	18.5
Hemicolectomy	10	7.7
Conservative Treatment	06	4.6

Table 6

Post-operative Complications: Most common complication was SSI (16.9%) and respiratory infection/distress. Mortality in our study was 3.1% and was due to septicaemia with older age group, delayed presentation to hospital and other associated comorbidities being the additive factors.^(2,3,5)

Complication	Number	Percentage
Surgical Site Infection	22	16.9
Septicaemia/Shock	16	12.31
Respiratory Distress	22	16.9
Burst Abdomen	10	7.7
Faecal Fistula	04	3.1
Death	04	3.1

Table 7

DISCUSSION: GI perforations constitute significant number of surgical emergencies in day to day emergency practice especially in a tertiary care center. Mean age in this study was 29.2 yrs.

Males were seen to predominate in incidence in our study. The most common symptom in patients with acute abdomen is pain abdomen, and this is the most common mode of presentation in our study. In this study, 62 of 130 patients (47.7%) had abdominal distension. This study had only 48 patients who gave the symptoms of nausea/vomiting. Fever was the most common of all the symptoms (except pain abdomen) in our study. 82 of 130 patients (63.1%) gave a history of fever.

Most of the patients in this study presented to us after 24 hrs. of start of pain abdomen. 58.5% of them presented after 24 hrs. and 41.54% presented before 24 hrs. of onset of pain abdomen. It was seen that the patients who presented within 24 hrs. of onset of pain abdomen, the course of preparation of patients being less than 6–12 hrs. post admission, the intraoperative difficulty was less and

clear cut. Also in the patients who presented within 24 hrs., the postoperative period was quite uneventful and the recovery was fast and morbidity was comparatively quite low as well. The most common site of perforation was seen to be at the gastroduodenal region due to the fact that most patients had predisposing acid peptic disease. The highest incidence of acid peptic disease is thought to be unnecessary use of NSAIDS and improper timing of meals in most patients. Also the incidence of *H. pylori* infection is a major cause. In the recent times, the discovery of PPIs and other antacids have reduced the incidence of perforations due to acid peptic disease. In this study, we had 36.92% of patients having perforation at the gastroduodenal region.

The next common site was the small bowel. Large bowel perforations which also included the caecum were not common due to benign causes. This study had only 4 patients (6.15%) who had a large bowel perforation.

In this study, we had one patient having a rectal perforation which was due to foreign body insertion in the rectum.^(6,8)

Appendicular perforation was also predominant in this study, where 32 of 130 (26.4%) patients presented with an appendicular perforation.

Overall summary in relation to the above comparisons is that tubercular perforations have been going down the last decade due to early and effective diagnosis.⁽⁹⁾ Peptic perforations still remain a major cause of concern, even after the advent and judicious use of antacids and PPIs. The reason in this study being, chronic alcoholism, improper timing of meals, excessive use of NSAIDS and also intake of black, strong coffee and tea on an empty stomach.

This study showed 32.31% patients had perforations due to peptic disease which was the most common cause of perforation.

Typhoid perforations were mostly seen in the small bowel, which accounted for quite a large number of patients who were on empirical therapy for typhoid. Widal was positive in all the patients. In this study, perforations due to typhoid were next to those of tuberculosis, which accounted for about 10.8% of the patients.⁽⁵⁾

The study had two cases of perforation due to strangulation of bowel in a longstanding hernia, one of them being an incisional and the other paraumbilical hernia.

Trauma was another cause of perforation in the study which accounted for 4.6% of the patients.^(8,10)

Presence of gas under the diaphragm has been a trademark of hollow viscus perforation but absence of this does not exclude the possibility of the perforation⁽¹¹⁾. This sign is visualised in about 64% of the cases in our study. Ultrasound abdomen is readily available, noninvasive investigations but it gives only indirect evidence of perforation through presence of intra-abdominal gas, free fluid with echogenicity suggestive of perforation. Widal was positive in all the patients who had typhoid perforations, which was in 14 patients and accounted for about 10.8% of the patients.⁽¹²⁾

CECT abdomen was done in those patients in whom the diagnosis was inconsistent with that of other investigations and was confirmative for the diagnosis.

Most patients were treated by simple closure of the perforation, with or without a Graham's omental patch.⁽¹²⁾ 60 patients (46.1%) had just simple closure. Duodenal perforations were also managed by a Graham's omental patch after a simple closure and all the 8 cases of gastric perforations were also treated by a feeding jejunostomy. Simple closure was also the major mode of treatment as compared with the other aforementioned studies as well.

Simple appendectomy was the next most common mode of treatment in this study due to the fact that this study had a large number of patients presenting with appendicitis complicated with perforation. 24.6% of the patients in this study had a simple appendectomy for a perforation with or without the placement of an abdominal drain.

Resection and anastomosis was done in 18.5% of the patients in this study. Resection anastomosis was carried out in patients who had multiple perforations of the bowel or where the strangulated bowel was gangrenous and non-viable.

The most common mode of presentation of a complication in all the studies was a simple surgical site infection to a major wound dehiscence. The present study had 16.9% of the patients who had SSIs, which was the most common post-operative complication.^(13,14)

Burst abdomen was seen in 7.7% of the patients in this study. Burst abdomen was subsequently treated with re-closure after the surgical site infection subsided. Respiratory infection and distress was also commonly seen in the postoperative period which was the second most common form of post-operative morbidity in this study.

CONCLUSION: A study of 130 cases of benign causes of gastrointestinal perforation was done which were picked up randomly.

- Benign causes of gastrointestinal perforation constitute one of the most common and important surgical emergency.⁽¹⁴⁾
- Most common age group involved is in 2nd, 3rd and 4th decade of life with a mean age of 29.2 yrs.
- Male preponderance was seen. The male to female ratio was 1.7:1.
- The time lapse between onset of pain and presentation at the hospital was greater in the >24 hrs. group with 58.5% of the patients presenting after 24 hrs.
- Peptic ulcer perforation (32.31%) is the major cause of gastrointestinal perforation⁽³⁾ followed by appendicular (26.4%), tubercular (15.4%) and typhoid (10.8%).^(3,7,14)
- Abdominal pain was seen in all the cases. 36.9% of patients had vomiting, 47.7% complained of distension of abdomen and 63.1% with fever. Tenderness was seen in all the cases with localised tenderness in majority of appendicular perforation.

80% of cases had guarding/rigidity with 47.7% patients presented with distension of abdomen.

- 71% of cases had gas under the diaphragm with majority of them in peptic ulcer perforation and least in appendicular perforation.
- Simple closure with omental patch was the operative procedure done for all cases of peptic ulcer perforation and appendicectomy for appendicular perforation.^(11,15,16) Half of patients with typhoid perforation were treated with perforation closure in two layers and remaining half were treated with resection and end-to-end anastomosis.
- Most common complication in this study was SSI (16.9%), followed by respiratory infection/distress. Mortality in our study was 3.1% and was due to septicaemia with older age group, delayed presentation and other associated comorbidities.
- Pain and vomiting were the major symptoms and tenderness with guarding/rigidity being the predominant sign.⁽³⁾
- Mortality was more in patients with delayed presentation and older age group with associated comorbidities, and can be prevented by adequate preoperative resuscitation, better surgical skills and good post-operative care.
- Finally, surgical treatment is the most definitive treatment for perforative peritonitis patients and post-operative care remains extremely important in the better outcome of the patients.⁽⁷⁾

REFERENCES:

1. Taylor BA. Spontaneous perforation of the gastrointestinal tract. In: *Gastrointestinal emergencies*. Gilmore Ian T, Robert Shields London, WB Saunders Company 1992;1st edn:359-379.
2. Nair SK, Singhal VS, Sudhir Kumar. Non traumatic intestinal perforation. *Ind J Surg* 1981;43(5):371-378.
3. Munro A. Perforated peptic ulcer in emergency abdominal surgery. Jones Peter F, Krukowski Zygmunt H, Youngson George G. ed, Chapman and Hall Medical 1998;3rd edn:163-176.
4. Jordan Paul H, Charles Morrow. Perforated peptic ulcer in abdomen. *The Surgical Clinics of North America* 1988;68(2):316-331.
5. Sharma L, Gupta S, Soin AS, et al. Generalized peritonitis in India-The tropical spectrum. *Surg Today* 1991;21(3): 272-277.
6. Lundy J, Sherlock P, Kurtz R, et al. Spontaneous perforation of the gastrointestinal tract in patients with cancer. *Am J Gastroenterol* 1975;63(6):447-450.
7. Huttunen R, Kairaluoma MI, Mokka RE, et al. Nontraumatic perforations of the small intestine. *Surgery* 1977;81(2):184-188.
8. Maleki M, Evans WE. Foreign body perforation of the intestinal tract. *Arch Surg* 1970;101(4):475-477.
9. Sherman S, Rohwedder JJ, Ravikrishnan KP, et al. Tuberculous enteritis and peritonitis. *Arch Intern Med* 1980;140(4):506-508.
10. McPherson RC, Karlan M, Williams RD. Foreign body perforation of the intestinal tract. *Am J Surg* 1957;94(4):564-566.
11. Turner WW, Thompson WM, Thal ER. Perforated gastric ulcer a plea for management by simple closure. *Arch Surg* 1988;123(8):960-964.
12. Udai Singh Beniwal, Dinesh Jindal, Jagdish Sharma, et al. Comparative study of operative procedures in typhoid perforations. *Ind J Surg* 2003;65(2):172-176.
13. Archampong EQ. Operative treatment of typhoid perforation of the bowel. *Br Med J* 1969;3(5665):273-276.
14. Nadkarni KM, Shetty SD, Kagzi RS, et al. Small bowel perforations. *Arch Surg* 1981;116(1):53-57.
15. Christiansen J. Perforated duodenal ulcer managed by-simple closure versus closure and proximal vagotomy. Prospective study of 50 cases. *Br J Surg* 1987;74(4):286-287.
16. Kim JP, Oh SK, Jarrett F. Management of ileal perforation due to typhoid fever. *Ann Surg* 1975;181(1):88-91.