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Original Research Article

A clinical study of the spectrum of gastro intestinal perforation peritonitis in a tertiary care centre

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ABSTRACT

Background: Acute abdomen is one of the most common causes of emergencies which present to surgeon. Gastrointestinal perforation is third most common cause for emergency explorative laparotomy. Most of the time when patient presents to the tertiary centre, it is by clinical examination and investigation a diagnosis of perforation is established. The objective of the study was to evaluate causes, signs and symptoms, various modalities of management and possible complications which develop in gastrointestinal perforations.
Methods: 50 patients with features of perforation were chosen using purposive sampling technique. Descriptive statistics was used for analysis. Detailed history was taken, physical examination and relevant investigations were done and correlated with intra operative and histopathology report wherever possible and followed up for complications.
Results: Duodenal perforation was the most common cause of perforation accounting for 32 out of 50 cases. Surgical site infection was common complication accounting for 14 out of 50 cases.
Conclusions: Surgery remains mainstay in all perforations.

Keywords: Perforation, Laparotomy, Peritonitis

INTRODUCTION

The most common cause of acute abdominal pain in gastrointestinal system relates to an inflammatory process in the stomach, small and large intestines and the pancreatic-biliary system.[1,2] Symptoms are often non-specific and are influenced by age of the patient, medications and co-existing diseases, for instance the intake of corticosteroids in an elderly individual with perforation may end up being a Damocle's sword over a surgeon just into his practice.[3]

The reaction of closed peritoneal cavity cleanly divided into various stages is a sincere effort on the part of the body to maintain as close an internal milieu as possible and the stage of a neglected perforation is culmination of victory of fear over this hope.[4,5]

Gastrointestinal perforation is the third most common cause for exploratory laparotomy as an emergency.[6,7] With the advances in the treatment of acid peptic disease the incidence of peptic ulcer perforation is on decline, giving a pseudo statistical boost to other hitherto unheralded causes like perforating lymphomas, spontaneous and iatrogenic perforations.[8]

The advent of laparoscopy and endoscopy has played a decisive role both in diagnosis and management of gastric and colo-rectal perforations.[9,10]

METHODS

A prospective observational study was done in AJ Institute of Medical Sciences over a period of 2 years from September 2017 to September 2019 on 50 patients presenting with features of hollow viscus perforation using non-probability purposive sampling technique and following were done: a complete detailed history, physical examination, relevant blood and radiological investigations. After that, patients were operated, pre-operative findings were correlated with intra operative and histopathology report wherever possible. Descriptive statistics was used for analysis.

Inclusion criteria

All patients above 15 years who were diagnosed to have perforation.

Exclusion criteria

Patients who were operated for perforations earlier.

Perforation was more common among manual labourers accounting for 72% of all perforations. The cause being analgesic use especially on an empty stomach, this was followed by housewives (8%) in whom dietary factors played a role.

RESULTS

On the basis of data obtained from 50 patients 43 (86%) were male patients and 7(14%) were females. Most perforations were seen in males in age group of 30-49 years (52%). Abdominal pain was seen in all the patients of which 60% of patients had epigastric pain, followed by 16% in right iliac fossa, this can be explained by the fact that in this study most patients had duodenal perforation due to which contents track down to right paracolic gutter. In our study it was noted that patients with duodenal and gastric perforation presented earlier (within 5 hours of onset of symptoms) than patients with jejunal or ileal perforation indicating that pain in duodenal and gastric perforation was more severe. Patients presented with symptoms as show in Table 1.

Table 1: Symptoms.

Symptoms	Percentage
Pain	100
Vomiting	80
Abdominal distension	68
Fever	20
Constipation	20

44 patients (88%) in this study were having non-traumatic perforation. 2 were due to iatrogenic trauma, 3 due to blunt injury and 1 due to penetrating injury.

17 patients (34%) had past history of medical illness like hypertension, diabetes mellitus, cardiac illness and pulmonary Koch's. 6 patients (12%) had past history of surgery.

On examination most of the patients were moderately built and nourished. 22 patients were dehydrated, 12 had pallor, 2 were icteric and 1 patient was in shock. 37 patients (74%) had pulse rate between 90-110 suggesting mild hypovolaemia. Tenderness was noted in all patients, with rigidity in 41 (82%) patients. Liver dullness was obliterated in 37 patients (74%). Non-obliteration of liver dullness may be due to adhesions formed due to some inflammatory pathology earlier. Bowel sounds were absent in 44 (88%) and remaining patients it was sluggish. On investigating 29 patients (58%) had haemoglobin >13%, could be due to haemoconcentration as most of them were dehydrated. In 10 cases (20%) haemoglobin was <10%. Total count was raised above 11,000 cells/mm^3 in 29 cases (58%) with predominant neutrophilia, serum protein was <5 mg/dl in 20 patients, 6 patients were in pre-renal type of acute renal failure (12%). Widal test was positive in 5 patients (10%). Gas under diaphragm was seen in 40 patients (80%). All the patients in this study demonstrated intraperitoneal free fluid with internal echoes in ultrasound. CECT abdomen was done in all patients of trauma to rule out other internal injuries and in 10 cases of non- traumatic perforation where there was doubtful diagnosis. All patients were kept nil per oral and started on intravenous fluids, antibiotics consisting of cefalosporins, aminoglycoside and anti-anaerobic drugs. A watch was kept on vital signs and abdominal girth. All patients were subjected to emergency exploratory laparotomy through midline incision under general anesthesia except one patient who was managed conservatively due to sealed off duodenal perforation. Peritoneal fluid was sent for culture in all non-traumatic cases. Sites of perforation and causes are descripted in Table 2-3.

Table 2: Sites of perforation.

Site of perforation	Percentage
Duodenum	64
Stomach	8
Jejunum	10
Ileum	14
Colon	2
Rectum	2

All duodenal perforations were closed by Roscoe Graham method by using omental patch except one patient who was managed conservatively as he was haemodynamically stable with sealed perforation which was confirmed by CECT abdomen and urograffin study. 1 patient with duodenal perforation >1.5 cms had leak on 4^{th} post op day and underwent re exploration with gastrojejunostomy and feeding jejunostomy, expired on 28^{th} post op day due to septicaemia. In gastric

perforations 4 were prepyloric, closed primarily with omental patch, 1 was pyloric (malignant) which was non resectable, so primary closure with gastro jejunostomy was done. In jejunal and ileal perforations all were closed primarily in a plane perpendicular to lumen & perforation axis, 2 patients underwent resection and anastomosis due to multiple or large perforations. One patient of ileal perforation was diagnosed to have ileal lymphoma (Non-hodgkins) who died later. One had rectal perforation due to carcinoma rectum which was non resectable, so primary closure with stoma was done. 2 had colonic perforation due to blunt injury, 1 in ascending colon for which temporary stoma was created, other in transverse colon for which resection anastomosis was done. In this study there were 6 cases of traumatic perforation of which 2 were iatrogenic, during open cholecystectomy and other while operating obstructed hernia, 4 cases were secondary to blunt injury. Polyglactin 910 suture was used for perforation closure in all cases. Edge biopsy from perforation was taken in all cases except traumatic cases.

Table 3: Etiology of perforation.

Etiology	Number of patients
Gastro Duodenal	
Acid peptic disease	37
Trauma	1
Malignancy	1
Small bowel	
Typhoid	5
Tuberculosis	0
Trauma	3
Malignancy	0
Colon	
Trauma	2
Malignancy	1

Table 4: Rate of complications.

Complications	Percentage
Surgical site infection	26
Residual abscess	4
Respiratory tract infection	2
Enteric fistula	8
Death	2

Post-operative management was done as per requirements like Ryle's tube aspiration, IV fluids, antibiotics and correction of electrolyte imbalance. Post-op complications are descripted in Table 4. Residual abscess was seen in two patients, in one case it was in pelvis which was drained per rectally and in other it was in sub hepatic space which regressed with antibiotics. In each case of surgical site infection, culture sensitivity was done and treated accordingly and 3 cases required secondary suturing. In 4 cases of enteric fistula 1 patient of duodenal perforation was re explored and feeding jejunostomy was done but expired on 28th post op day due to sepsis, other 3 cases of enteric fistula was managed conservatively with antibiotics and total parenteral nutrition and they recovered.

DISCUSSION

This study attempted to detail out various factors behind gastrointestinal perforation from a tertiary setting. Perforation peritonitis is frequently encountered surgical emergency in tropical countries like India, most commonly affecting young men in the prime of their life as compared to western studies where mean age is between 45-60 years.[11,12] In this study mean age was 35-49 years which is similar to other Indian studies.

Proximal gastrointestinal perforations were more common in this study, mainly duodenal which is similar to other Indian studies. But which is in sharp contrast to studies from developed countries like US, Greece, Japan in which distal GI perforations were common.

Our study showed acid peptic disease as common cause of perforation which is similar to other Indian studies. In this study most of the patients had history of intake of non-steroidal anti-inflammatory drugs (NSAIDS) which could be the cause of perforation in some patients mainly labourers who were taking analgesics which is similar to Parimala Devi et al and Laxmi Narayana et al studies which showed NSAID intake in perforation patients.[7,8] Noon et al from Texas studied 430 patients of GI perforation and found 210 cases of trauma, shows importance of trauma in developed countries. In our study we came across only 4 cases (8%) of traumatic perforation, on comparing with other Indian studies it is 33% in Laxminarayan et al and 14% in T Kempraj et al which is still low on comparison with western studies.

Major post-operative complication in this study was Surgical Site Infections (SSI) (28%) which is similar to Parimala Devi et al where SSI was 25%. Other Indian studies showed pneumonia as common post op complication. Mortality rate in our study was only 2%, might be due to small sample size, whereas mortality rate in other Indian studies were 14% and 8%.

Due to small sample size of our study it was not possible to find the common cause of mortality in gastro intestinal perforations.

CONCLUSION

In developing countries like India, gastroduodenal perforations are more common unlike West were distal GI perforations are common. Acid peptic disease and infections like typhoid are common cause of perforation in India unlike west where traumatic perforations are more common. This study also tells us that complications rate will be higher when there is delay in presentation and treatment and when patient is having co morbidities.

Important factors clearly deciding the fate of the patient with perforation peritonitis are early diagnosis, resuscitation with fluids and electrolyte balance, timely surgical intervention, appropriate use of antibiotics and eliminating the source of infection.

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