

A retrospective study of perforation peritonitis over 3 years (534 cases) in a tertiary care hospital in Eastern India.

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Abstract

Background

In Eastern part of India peritonitis due to perforation of hollow viscus constitutes one of the major causes of emergency laparotomies. The **objective** of the study was to highlight the spectrum of perforation peritonitis regarding the age, gender & causes of perforation per operatively.

Materials and Methods

Over a period of three years (July 2016 to July 2019) - **534 cases** in terms of age, gender and per-operative findings were studied retrospectively at Medical College & Hospital, Kolkata. This study is **retrospective** (from hospital records), **demographic** and **observational**.

Results

The most common cause of perforation in our series was peptic perforation (184 cases) followed by ileal perforation (166 cases). The overall mortality was 21 in no. comprising 3.93% of the cases.

Conclusion

Both upper & lower gastrointestinal perforations comprise of a significant load of hollow viscus perforation from this study.

Background

The management of peritonitis (one which forms a major chunk of surgical emergencies) in spite of advances in surgical techniques, antimicrobial therapy and intensive care support, continues to be highly demanding, difficult and complex. The spectrum of etiology of perforation continues to be highly variable & there is paucity of data from India regarding its etiology, prognostic indicators, morbidity and mortality patterns [2]. Our study was designed to observe the spectrum of perforation peritonitis in terms of etiology, management, outcome & demography as encountered by us at Medical College & Hospital, Kolkata.

Patients and methods

A retrospective analysis of patients of perforation peritonitis was done over a period of three years (July 2016-July 2019) at Medical College & Hospital, Kolkata.

Inclusion criteria

All cases with spontaneous peritonitis as a result of perforation of any part of gastrointestinal tract and lower urinary tract at the time of surgery were included in the study.

Exclusion criteria:-

1. Traumatic perforative peritonitis.
2. Perforative peritonitis due to anastomotic dehiscence.
3. Re-explorations (Re-laparotomies) in the same patient due to complications of anastomotic leak, intra-abdominal collection or wound dehiscence.

All cases were studied in term of **age, gender, religion** and **per-operative findings**. Data was collected from operation theatre records & ward records regarding the complications & outcome.

All patients following a clinicoradiologic diagnosis of perforation peritonitis were adequately resuscitated before undergoing exploratory laparotomy in emergency setting. At surgery the source of contamination was sought and controlled. The peritoneal cavity was irrigated with

8-10 litres of warm normal saline and a drain was placed in the most dependent position. The abdomen was closed with continuous No.1 non-absorbable polypropylene suture in a single layer. All the patients who had gross intraperitoneal contamination and had presented to us after 48 hours were routinely given tension sutures during abdominal closure. Although all patients received appropriate perioperative broad spectrum antibiotics, the drug regimen was not uniform.

Results

A total of 534 patients were studied from July 2016-July 2019. Mean age was **36.8 years** (range from **12 to 86 years**) with majority of patients being males (74.9%).

Acid peptic disease was the most common cause of gastro-duodenal perforations (90%), whereas typhoid/ enteric fever was the most common cause of small bowel perforations (45%) followed by tuberculosis (22%) and trauma (15%)- (Table 2).

251 of 504 cases developed postoperative complications- (Table 3). The morbidity rate in our study was significantly higher in patients with intestinal perforations (68%) compared to those with gastro-duodenal perforations (47%). In perforated small bowel patients, the presenting complaints were higher in contrast to patients with gastro-duodenal perforations.

Table 3. Postoperative Complications

The overall mortality rate in our study was 10% (Table 3) with septicemia associated with MOSF (multi organ system failure) being the most common cause of death in 30 cases (59%), followed by respiratory complications in 12 (20%), acute myocardial infarction in 3(6%), pulmonary embolism in 2(4%) and anastomotic leak in 4(8%) cases. Factors contributing to mortality were advanced age, perforation presenting after 24-48 hours and pre-existing respiratory comorbidity.

Discussion

Perforation peritonitis is a frequently encountered surgical emergency in tropical countries like India, most commonly affecting young men in their prime as compared to the studies in the West [3], where the mean age is between 45–60 years. In majority of cases the

presentation to the hospital is late with well established generalized peritonitis with purulent/fecal contamination and varying degrees of septicemia. The signs and symptoms are typical and it is possible to make a clinical diagnosis of peritonitis in most of the patients, which can further be confirmed with suitable radiological investigations.

The perforations of proximal gastrointestinal tract were six times more common as compared to perforations of distal gastrointestinal tract, as has been noted in earlier studies from India [1], which is in sharp contrast to studies from developed countries like United States [4], Greece [5] and Japan [6], where distal gastrointestinal tract perforations were more common.

Not only the site but the etiological factors also show a wide geographical variation. Khanna et al [7] from Varanasi studied 204 consecutive cases of gastrointestinal perforation and found that over half (108 cases) were due to typhoid/enteric fever. They also had perforations due to duodenal ulcer (58), appendicitis (9), amoebiasis (8) and tuberculosis (4). These figures show the importance of infection and infestation in third world nations which is also reflected in the high incidence of typhoid and tubercular perforations in our study.

At the other end of the spectrum, Noon et al [8] from Texas studied 430 patients of gastrointestinal perforations and found 210 cases to be due to penetrating trauma, 92 due to appendicitis and 68 due to peptic ulcer. This highlights the importance of trauma as an important etiological factor in developed countries. However, the increased incidence of gastrointestinal perforations due to blunt trauma in the present series (9%) and 21% in another study by Bose et al [9] from PGIMER Chandigarh, may be due to high speed road traffic accidents on national highways near Chandigarh.

Duodenal to gastric ulcer ratio was 7:1 in the present series and 15:1 noted in an earlier study from India [1]. Contrary to this the ratio is 4:1 in studies from United Kingdom [10] and United States [11].

There were 51 (10%) deaths within 30 postoperative days, which is comparable with other published series [10-12] despite delay in seeking treatment. This was probably because of lower mean age (which is a factor determining mortality) of patients in our study. The main cause of death in the present series of patients was septicemia (59%). Therefore

contamination is a crucial consideration in patients with peritonitis and increased mortality being closely related to infection. So by early surgical intervention, we succeed in preventing further contamination by removing the source of infection though the end result will also depend upon the general host resistance and the antibiotic sensitivity of the organism [13].

The major cause of postoperative morbidity were respiratory complications (28%) e.g. pneumonia, atelectasis, pleural effusion or ARDS, wound infection (25%), septicaemia (18%) and dyselectrolytemia (17%), which are preventable causes and should be detected early and treated aggressively. Unacceptably high incidence of abdominal wall disruption (9%) in the present series was multifactorial due to delayed presentation, gross contamination of peritoneal cavity, septicemia and faulty method of abdominal closure as majority of our patients were operated by resident surgeons who were still early on their learning curve.

To conclude, the spectrum of perforation peritonitis in India continues to be different from its western counterpart with duodenal ulcer perforation, perforating appendicitis, typhoid/enteric perforation and tubercular perforations being the major causes of generalized peritonitis. The increasing incidence of hollow visceral injuries due to blunt abdominal trauma is a diagnostic dilemma for the surgeons and warrants early recognition and prompt treatment to avoid major morbidity and mortality.

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Table 1

Preoperative Data

Parameter (n = 534)

Age (Years)

<50 Years 429 (80.33%)

>50 Years 105 (19.66%)

Sex

Male 400 (74.91%)

Female 134 (25.09%)

Table 2

Operative data

Parameter

(n-534)

Site of perforation (n = 534)

Duodenal 90(16.85%)

Gastric 94(17.60%)

Jejunal 31(5.80%)

Ileal 166(31.09%)

Appendicular 101(18.91%)

Colonic 47(8.80%)

Others 05(0.94%)

Etiology

Acid peptic disease 170(31.83%)

Malignancy 40(7.49%)

Typhoid 53(9.93%)

Tuberculosis 36(6.74%)

Intussusception & volvulus	23(4.31%)
Diverticulosis	28(5.24%)
Inflammatory	138(25.84%)
Miscellaneous	25(4.68%)

Operative intervention (in ileal & jejunal perforations) (n=197) :

Primary repair or Resection with anastomosis	69(35.02%)
Resection without anastomosis (Ileostomy with mucus fistula / Hartman's procedure)	128(64.97%)

Table 3

Postoperative Complications

Complication	n = 169
Abdominal collection	10(5.91%)
Wound infection	36(21.30%)
Pulmonary complications	35(20.71%)
Dyselectrolytemia	29(17.16%)
Septicemia	24(14.20%)
Acute renal failure	14(8.28%)
Burst abdomen (wound dehiscence)	12(7.10%)
Anastomotic leak	10(5.91%)
Deep vein thrombosis	12(7.10%)
Cardiac complications	51(13.18%)

Death (out of 534 cases excluding the cases with complications) = 21 cases (3.93%)