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Original Research Article

Clinical evaluation, management and outcome of hollow viscus perforations

Anjaneya T.*, Vilas Crithic H. V.

Department of General Surgery, M S Ramaiah Medical College, Bangalore, Karnataka, India

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***Correspondence:**
Dr. Anjaneya T.,
E-mail: ganadakatte@yahoo.com

ABSTRACT

Background: Gastrointestinal perforation is the third most common cause for exploratory laparotomy as an emergency. With the advent of drugs against acid peptic disease the incidence of peptic ulcer perforations is on decline. The advent of laparoscopy and endoscopy has played decisive role in the diagnosis and management of gastric and colorectal perforations. Aim of the study is to study the clinical outcome, surgical management and postoperative complication of peritonitis secondary to hollow viscus perforation.
Methods: This was prospective study of 50 cases. All patients admitted and treated with perforation secondary to Hollow viscus perforations in surgical wards of M S Ramaiah Medical College, Bangalore, during the period of April 2016 to October 2017. Patients with peritonitis secondary to hollow viscus perforation admitted was evaluated and the diagnosis was made.
Results: Out of 50 patients, most were male patients between 30-50 years age group. Duodenal ulcer perforation led the list. 4 were gastric, 37 were duodenal, 3 were jejunal, 6 cases were ileal. However colonic perforations were not observed. Wound infection leads the list of postoperative complications with faecal leak and burst abdomen following residual abscess. Almost all perforations were treated surgically.
Conclusions: It was thought that with the introduction of better H_2 receptor blockers and proton pump inhibitors, incidence of peptic perforations would decrease. Early recognition of perforations, prompt surgical intervention, adequate drainage, recognition of co-morbid conditions and complications would help in reduction of morbidity and mortality.

Keywords: Hollow viscus perforations, Secondary peritonitis, Management

INTRODUCTION

Perforation of a hollow viscus from wide variety of causes comprises the major portion of emergency surgical admissions and emergency laparotomies.[1,2] Perforation of the stomach, duodenum and small bowel is on the increase and likely to form a considerable proportion of emergency workload than colonic perforation. The great majority of perforation of stomach or duodenum are complication of peptic ulcers.[3] Successful treatment requires a thorough understanding of anatomy, microbiology, pathophysiology of the disease process and in depth knowledge of the therapy, including resuscitation, antibiotics, source control, and physiologic support.[4] The ruptured or perforated viscus challenges the surgeon's skill as technician and his knowledge of pre-operative, per-operative and postoperative care of the severely ill surgical patients.[5] This study was done to find the age, sex, etiological factors and clinical features of different types of perforations and to study the common type of

perforations and its presentations, complications post operatively.

Aim of the study was to study the clinical outcome, surgical management and postoperative complications of peritonitis secondary to hollow viscus perforation.

METHODS

This was prospective study of 50 cases. All patients admitted and treated with perforation secondary to hollow viscus perforations in surgical wards of M S Ramaiah medical college Bangalore, during the period of April 2016 to October 2017. Patients with peritonitis secondary to hollow viscus perforation admitted was evaluated and the diagnosis was made with history, clinical features and in some cases X-ray abdomen erect posture to support the diagnosis.

Inclusion criteria

Inclusion criteria were all patients having peritonitis secondary to hollow viscus perforation.

Exclusion criteria

Exclusion criteria were all cases with peritonitis secondary to oesophageal perforation and reproductive tract perforation.

Statistical analysis

Data are presented as percentage, ratio and proportions as appropriate. Descriptive analysis was used for the study.

RESULTS

This study was done on the basis of data obtained from 50 cases in M S Ramaiah Medical College. Predominantly there were male patients of 41 cases (82%) than female- 9 cases (18%). Most common were in age group 30 to 39 years.

Table 1: Age and sex distribution.

Age (in years)	Male	Female
0-9	0	0
10-19	0	0
20-29	5	4
30-39	12	3
40-49	10	2
50-59	8	0
60-69	6	0
>70	0	0
Total	41	9

Pain abdomen was a universal symptom. Generalised pain abdomen was seen in 43 (86%) cases, followed by lower quadrant in 5 cases (10%) and epigastrium pain seen in 2 cases (4%). Radiation of pain to right iliac fossa was seen in 5 cases (10%). Blunt injury was seen in only 1 case. 14 patients were treated with anti-ulcer medications. 3 patients with duodenal ulcer perforation were treated with Nonsteroidal anti-inflammatory drugs. Liver dullness was obliterated in 28 patients (56%). Bowel sounds were either sluggish or absent in most cases.

Table 2: Duration of symptoms.

Duration	
Maximum	5 days (duodenal perforation)
Minimum	1 day
Mean	3 days

Table 3: Character of pain.

Characters of pain	No. of cases (%)
Burning	34 (68)
Dull Ache	5 (10)
Spasmodic	1 (2)

Table 4: Sign and symptoms.

Signs and symptoms	No. of cases (%)
General abdominal distension	40 (80)
Vomiting	25 (50)
Raised temperature	28 (56)
Fever with chills	3 (6)
Dehydration	20 (40)
Shock	2 (4)
Tenderness	50 (100)
Tenderness with rigidity	20 (40)

Investigations: Total count was raised above 11,000 cell/mm3 in 32 (64%) patients with predominant neutrophilia. 8 (16%) patients were in pre-renal type of acute renal failure. Widal test was positive in 1 patient. Altered liver function was found in 2 patients. Gas under the diaphragm was seen in 41 patients (82%). Ultrasound was done in 9 patients where other tests were inconclusive.

Table 5: Sites of perforation.

Sites of perforation	No. of cases (%)
Acute gastric perforation	3 (6)
Acute duodenal perforation	35 (70)
Acute jejunal perforation	3 (6)
Acute ileal perforation	4 (8)
Appendicular perforation	5 (10)

Complications

Burst abdomen was seen two cases, tension suturing was done.

Residual abscess

Three cases, one pelvic abscess drained per rectally. Rest regressed with antibiotics.

Figure 1: Gastric perforation.

Figure 2: Duodenal perforation.

Table 6: Based on etiology.

Etiology		No. of cases (%)
Gastric ulcer perforation	Benign	3 (6)
	Malignant	0
Duodenal ulcer perforation		35 (70)
Typhoid		1 (2)
Trauma		1 (2)

Wound infection

Six cases. In each case culture and sensitivity was done and three cases required secondary suturing.

Lower respiratory tract infection

Two patients developed features of basal pneumonia.

Enteric fistula

There were two cases. One case was of duodenal ulcer perforation, which presented 4 days after symptoms of peritonitis. Closure leaked which was re-explored and a jejunal patch was placed with a gastrostomy and a feeding jejunostomy. Patient developed burst abdomen and died on 28th postoperative day.one case of enteric perforation and was managed conservatively and leak settled.

***Deaths*:** There were three deaths recorded in the study.

***Toxaemia, cachexia*:** Duodenal perforation with leak, died on 28th postoperative day.

***Septicaemia*:** Ileal perforation on 8th postoperative day was seen.

ARDS with septicaemia: 4th postoperative day in duodenal ulcer perforation.

Table 7: Diagnosis and surgical procedure.

Diagnosis	Surgical procedure adopted	No of patients	%
Gastric ulcer perforation	Closure of perforation with omentum and peritoneal lavage	5	10
Duodenal ulcer perforation	Closed using Roscoe Graham method using a pedicle omental graft to plug the perforation	34	68
Jejunal and ileal perforation	Closed in one layer interrupted vicryl sutures in a plane perpendicular to the lumen and perforation axis.	3	6
	Underwent resection and anastomosis.	3	6
Appendicular perforation	Appendicectomy along with burying of base	5	10

DISCUSSION

There were 50 patients in the study conducted over a period of one and a half years. In our study males (82%) outnumbered females (18%). Maximum number of patients between 30-50 yrs age group (82%). The male preponderance has been uniformly reported especially from the developing world, with wide variation of 3.3:1

to 9:16.[6,7] In Dilip et al study males were 88.54% as compared to 11.46% females and majority i.e. 34.4% fell in the age group of 30-49 yr.[8]

Gastroduodenal ulcer perforation (76%) led the list of highest incidence, followed by small bowel (14%) and then appendicular (10%). In Dilip et al study most common sites of perforation were gastro duodenal (80.25%), followed by small bowel (14.02%), appendicular (3.82%), colonic (1.27%) and rectal perforation (0.64%).[8] Velappan et al also found 52 cases (52%) having duodenal ulcer perforation followed by appendicular perforation (16%).[9] Pain noticed in 100% patients, vomiting in 50%, and abdominal distension in 80% cases. In Dilip et al study pain was noticed in 100% cases, vomiting in 52.2%, and abdominal distension in 36.3% cases.[8]

In our study 82% of patients had gas under the diaphragm. Velappan et al study showed gas under diaphragm in all patients (100%) while in Ramachandra et al study 72% of patients had gas under the diaphragm.[9,10]

Complication

Wound infection (12%), lead the list of postoperative complications with residual abscess (6%) following behind faecal fistula (4%) and burst abdomen (4%). In Dilip et al study wound infection lead the list of postoperative complications (71.7%), followed by fecal fistula (4.7%), burst abdomen (1.35%), intraperitoneal abscess (1.35%).[8] Mortality rate was 8% and compared to Dilip et al study with mortality rate of 5.7%.[8] The study by Agrawal et al of 260 cases reported overall mortality of 10%.[11] Ramachandra et al had a mortality rate of 14%.[10] In our study 6 cases (12%) developed wound infections and 2 (4%) patients developed respiratory complications as postoperative complication. The most common postoperative complication in Thirumalagiri et al study was lower respiratory tract infections.[12]

CONCLUSION

A study of 50 cases of acute gastro-intestinal perforations showed that duodenal perforations were maximum. All perforations were treated surgically with simple closure and in the case of gastroduodenal perforations it was to secure closure and secure adequate drainage.

There were few complications like wound infections, residual abscess and burst abdomen and there were 3 postoperative deaths due to varied medical and surgical causes. Earlier the presentation better is the prognosis and also probability of early discharge and lower medical co-morbidity.

This study began with preconceived notion that with the introduction of better H_2 receptor blockers and proton pump inhibitors, the incidence of peptic perforations would be low and incidence of rarer perforations (colonic, iatrogenic, jejunal and ileal) would be higher. There were a few rare cases of perforations in the study, but incidence of peptic perforations is still high. This could be due to the fact that most of the patients were from lower economic strata.

Early recognition of perforation, prompt surgical intervention, adequate drainage, recognition of co-morbid conditions and complications would help reduce morbidity and mortality. Surgery remains the mainstay in all perforations.

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