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Original Research Article

Clinical study and management of hollow viscus perforation of abdomen

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ABSTRACT

Background: Gastrointestinal perforation is a common abdominal emergency having a high morbidity and mortality. Surgery plays an important role in the management of perforation. Gastrointestinal perforation is a common abdominal emergency having a high morbidity and mortality.
Methods: 100 cases of hollow viscus perforation of the abdomen have been studied prospectively in detail during the period from May 2010 to July 2012. Cases were selected randomly from admissions in Government Mohankumaramangalam Medical College Hospital, Salem, Tamil Nadu, India. Clinical diagnosis of hollow viscus perforation confirmed by investigations or by laparotomy performed.
Results: The results obtained in the present study were analysed: Among hollow viscus perforation duodenal ulcer perforation was common (52 out of 100 cases). Next being appendicular perforation. Age group of 20-40 years were affected mainly. Males are affected more than females. Signs and symptoms of acute abdomen like acute abdominal pain vomiting fever may present tachycardia, hypotension, abdominal tenderness guarding\rigidity with obliteration of liver dullness and absence of bowel sounds and absolute constipation were predominant signs.
Conclusions: GI hollow viscus perforations cause significant morbidity and sometimes mortality. Hollow viscus perforation is the common cause of acute abdomen needing immediate effective surgical attention. A proper early diagnosis and adequate treatment can prevent complications. Surgical approach depends on the site, size, age of perforation and number of perforations.

Keywords: Abdominal emergency, Morbidity, Mortality

INTRODUCTION

Gastrointestinal perforation is a common abdominal emergency having a high morbidity and mortality.[1] Missed diagnosis and late intervention are frequent causes of increased morbidity and mortality especially in patients who survive the initial phase of insult.[2] Diagnosis and treatment of gastrointestinal perforation remains a formidable problem in our country. A great majority of perforation of stomach and duodenum are due to complications of peptic ulceration. Perforation of large intestine represents a major surgical challenge to the clinician.[3] Since it is a rapidly fatal condition death being caused by sepsis from peritoneal contamination with various pathogens both aerobic and anaerobic. Main aims of treatment are to control sepsis, to minimise contamination and treat the underlying cause.[4] Surgery plays an important role in the management of perforation. The structure of the hollow viscera is more fragile than parenchymatous organ and even minor degrees of trauma can cause serious injury.[5] This clinical study was undertaken to find the age and sex incidence and

etiological factors and clinical features of different types of perforations. It also assesses the common type of perforations and its presentations, complications arising post operatively and finally to analyse the prognosis in our setup from the basis of present study.

Aim of the study

- To present the problem of hollow viscus perforation due to various causes.
- To study the age, sex incidence and clinical features of hollow viscous perforations.
- To find the commonest type of perforation in our study.
- To review the postoperative complications.
- To assess the prognosis of each type of hollow viscous perforations.

METHODS

100 cases of hollow viscus perforation of the abdomen have been studied prospectively in detail during the period from May 2010 to July 2012. Cases were selected randomly from admissions in Government Mohankumarmangalam Medical College Hospital, Salem, Tamil Nadu, India. Clinical diagnosis of hollow viscus perforation confirmed by investigations or by laparotomy performed.

Investigations done were:

- Urine routine examinations including albumin, sugar deposits.
- Blood routine examinations including Hb%, total count and differential count.
- X ray abdomen erect view to detect free gas under diaphragm.
- Widal test was done in suspected enteric perforation.

In all cases close monitoring of vital signs and preoperative correction of fluid and electrolyte imbalance was done. Ciprofloxacin and metronidazole were used in all cases. Antibiotics were changed according to culture and sensitivity report. Explorative laparotomy was done under general anaesthesia in all cases. Right paramedian incision, upper midline or lower midline incision was made depending on the suspected site of perforation.

Viscera were inspected carefully, the site of perforation located and appropriate surgical procedure was performed. Peritoneal toilet with normal saline was done and peritoneal cavity was drained. Postoperatively patients were put on continuous naso gastric aspiration intravenous fluids and antibiotics. Vital signs were monitored.

Assessment of intake and output was done. Recovery was observed in the patients and any complications which occurred during the course were noted.

RESULTS

The results obtained in the present study were analyzed as follows.

Table 1: Age distribution.

Age	No. of patients	Percentages
<20	14	14%
21-40	45	45%
41-60	31	31%
>60	10	10%
Total	100	100%

Maximum number of patients (45) were in the age group of 20 to 40 years.

Table 2: Sex distribution.

Sex	No. of patients	Percentage
Male	77	77%
Female	13	13%
Total	100	100%

In present study there were 77 male patients (73%) and 13 female patients (13%).

Table 3: Site of perforation.

Site	No. of cases	Percentage
Duodenal ulcer	52	52%
Gastric ulcer	10	10%
Appendicular perforation	16	16%
Meckel's diverticulum	4	4%
Typhoid perforation	14	14%
Traumatic		
Jejunum	1	1%
Ileum	3	3%
Total	100	100%

Most common site of perforation was duodenal ulcer perforation (52%) next was appendicular perforation (16%) with gangrene of ileum (14%). No of patients who had traumatic injury of abdomen was 4% -among which 3 ileal perforation and 1 jejunal perforation. Meckels diverticulum was found in 4 patients. Duodenal ulcer perforation was in the first part of duodenum and was common in males. Among the male patients 49 had duodenal ulcer perforation, 9 had gastric perforation, 13 had appendicular perforation and 4 had Meckel's diverticulum perforation (Table 4).

Table 4: Relation between sex and site of perforation.

Sex	Du.	Gastric	App.	Meck	Jej.	Ileum
Male	49	9	13	4	1	10
Female	3	1	3	-	-	7
Total	52	10	16	4	1	17

Table 5: Duration.

Duration	No. of patients	Percentage
0-12 hours	30	30%
13-24 hours	60	60%
25-48 hours	6	6%
49-72 hours	4	4%
Total	100	100%

About 90% patients presented within 24 hours and 60 out of 90 patients presented within 13 to 24 hours of the onset of symptoms in this study.

In duodenal ulcer perforation history of drug intake was the common etiology. Gastric ulcer perforation common etiology was alcohol intake/smoking. Typhoid fever was the common etiology in ileal perforation (Table 6).

Table 6: Etiology and site of perforation.

Etiology	Duodenal	Gastric	Ileal	Jejunum	App.
Nontraumatic					
Drug intake	28				
Alcohol intake/smoking	20	8			
Typhoid			9		
TB			5		
Meckel's			4		
Idiopathic	4	2			16
Ascaris lumbricoides			1		
Traumatic			2	1	

Table 7: Sign and symptoms.

Symptoms and signs	No. of patients
Fever	95
Pain abdomen	98
Vomiting	86
Distension	95
Constipation	7
Diarrhoea	7
Tenderness	
Right iliac fossa	20
All quadrants	80
Guarding	100
Liver	20
Spleen	3
Obliterated liver dullness	68
Free fluid	68
Bowel sound absent	70
Air under diaphragm	75
Fluid levels	25
Diagnostic paracentesis +ve	40
Blood Widal	9

In the present study all the patients with duodenal ulcer perforation presented with all signs mentioned above. Gas under the diaphragm were present in 100% and 4 quadrant aspiration were positive in all cases (Table 7). All cases of appendicular perforation presented with symptoms of abdominal pain, vomiting and fever but there was no gas under the diaphragm. In ileal perforation due to typhoid, fever was the main symptom. Hypotension is the main sign. All cases were positive for gas under the diaphragm and Widal test.

Table 8: Diagnosis and surgical procedure.

Diagnosis	Surgical procedure adopted	No. of patients
Duodenal ulcer	Closure of perforation with omentum and peritoneal lavage	52
Gastric	Closure of perforation with omentum and peritoneal lavage	10
Ileal perforation with gangrene of the terminal ileum	Excision of 1.5 feet of terminal ileum with ilio transverse end to side anastamosis with peritoneal lavage	2
Jejunal and ileal perforation due to penetrating / blunt injury	Ilio ileal end to end anastamosis, jejunal proximal end to end anastamosis	3
Meckel's diverticulum	Diverticulectomy with end to end ileal anastamosis	4
App. Perforation	Appendicectomy with peritoneal lavage	16

Patients included in this study were managed according to the standard measures. Preoperative resuscitation in cases of shock and correction of electrolyte abnormality were carried out in all patients. After preoperative treatment all cases were subjected to laparotomy and the primary cause was identified and treated accordingly.

Complications

8 cases had wound dehiscence which healed with secondary sutures, no major morbidity was noted.

Mortality

No mortality noted in present study.

DISCUSSION

GI hollow viscus perforation constitute one of the important cause of abdominal pain in adults. Duodenal ulcer perforation was the most common cause.[6] Duodenal ulcer perforation is common in the first part of duodenum and most common in males. The other causes of GI hollow viscus perforations were acid peptic disease, enteric fever, amoebic colitis, appendicular perforation, trauma, malignancy, tuberculosis, iatrogenic injuries which constitute major portion of emergency surgical admissions. Majority of traumatic perforations are caused by road traffic accidents.[7] Early diagnosis and emergency explorative laparotomy improves outcome. The high incidence of duodenal ulcer perforation is due to alcoholism, smoking and incomplete treatment of *H. pylori*.[8] NSAID abuse also plays a major role in duodenal ulcer perforation. Irrespective of the pathology of perforation the maximum incidence were in males aged between 20-40 years. Enteric fever perforations are common in second week of the disease and are treated by simple closure of the defect if the defect is small. Tubercular perforations involving the ileocaecal junction are treated by right hemicolectomy. For appendicular perforation emergency appendicectomy with peritoneal lavage is sufficient.[9] Nowadays iatrogenic perforations are common due to minimally invasive or endoscopic procedures. The incidence of perforation due to upper GI scopy was 1.2%.[10] Perforations of the proximal region is most common in india and that of distal perforation is common in the western countries.[11]

CONCLUSION

This is a prospective randomized study consisting of 100 cases of hollow viscus perforation of abdomen selected from surgical units of Government Mohankumarmangalam Medical College Hospital, Salem, Tamil Nadu, India from May 2010 to July 2012. All case of this study group were subjected to pre operative standard investigations and after pre operative resuscitative measures exploratory laparotomy were performed and after identifying site of perforation suitable standard surgical procedures adopted. The results obtained in the present study were analyzed:

- Among hollow viscus perforation duodenal ulcer perforation was common (52 out of 100 cases). Next being appendicular perforation
- Age group of 20-40 years were affected mainly
- Males are affected more than females
- Signs and symptoms of acute abdomen like acute abdominal pain vomiting fever may present tachycardia, hypotension, abdominal tenderness guarding\rigidity with obliteration of liver dullness and absence of bowel sounds and absolute constipation were predominant signs
- Hollow viscus perforation is the common cause of acute abdomen needing immediate effective surgical attention.
- In this study except for wound dehiscence in 8 cases which needed secondary suturing no major morbidity noted.
- No mortality noted in the present study.

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