

Comprehensive Study of Hollow Viscus Perforation and its Management

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Abstract

Background: Acute abdomen is a serious surgical emergency that if not treated properly may lead to significant morbidity and sometimes mortality since historic times. The abdomen is a Pandora's Box. Hollow viscus perforation is one of the most common causes of acute abdomen. Evaluating patients who have hollow viscus perforation remains one of the most challenging and resource-intensive aspects of acute surgical care. Missed diagnosis and late intervention are frequent causes of increased morbidity and mortality, especially in patients who survive the initial phase of insult. Physical examination findings are sometimes unreliable for several reasons. 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

Objectives: To study the pattern of hollow viscus perforation

I) To study most common age and sex involved

II) To study the most common causes for Hollow viscus perforation in our set up.

III) To evaluate various modalities of treatment available with aim to reduce mortality and morbidity.

Materials: This Study has been undertaken in cases in Emergency Department from 1-5-2015 to 1-5-2016 presenting with hollow viscus perforation of age group 15 TO 75 Yrs in Chengalpattu govt. medical college and hospital. Results compared with previous studies.

Results: The most likely person to have hollow viscus perforation is a healthy middle aged adult male. Most of the perforation was in the duodenum (45%)... Common infective causes includes appendicitis 20%, followed by enteric and tuberculosis 14%

Conclusion: Even after the introduction of proton pump inhibitors, the incidence of perforations resulting from acid peptic disease is still high. Early recognition of perforation, prompt surgical intervention, good post-operative care, recognition of co-morbid conditions and management of complications would reduce morbidity and mortality. Mortality was 6.2%.

Keywords: Hollow viscus, perforation, management, mortality, treatment modalities

I. Introduction

Acute abdomen is a challenging condition in emergency surgical services which if not treated properly may lead to significant morbidity and sometimes mortality¹. Hollow viscus perforation is one of the most common causes of acute abdomen. GI perforation constitutes the third most common cause for explorative laparotomy as an emergency². Mortality of secondary peritonitis was as high as 90% in the early 20th century and is still 30-50% despite advances in antibiotics, surgical technique, radiographic imaging, and resuscitation therapy. Evaluating patients who have hollow viscus perforation remains one of the most challenging and resource-intensive aspects of acute surgical care. Missed diagnosis and late intervention are frequent causes of increased morbidity and mortality, especially in patients who survive the initial phase of insult³. Even with the advent of drugs against acid peptic disease, the incidence of peptic ulcer perforation is high. Physical examination findings are sometimes unreliable for several reasons. 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 support⁴

The hollow abdominal viscera, including the gastrointestinal tract, the urinary bladder, are injured by the same types of blunt forces as are the parenchymatous abdominal viscera, but the traumatic lesions which are produced and the complication which ensue, are characteristic and dependent on their anatomic structure and exposed position in the abdomen.⁵ The stomach, duodenum and contracted urinary bladder are fairly well shielded by the skeleton or by their position in relation to other structures, but the intestine and the distended

urinary bladder are protected only by the anterior abdominal wall and are therefore vulnerable to violence applied to the lower abdomen. The structure of the hollow viscera is much more fragile than that of the parenchymatous organ and serious injury may be inflicted on them by a comparatively slight degree of violence⁶.

Objectives of this study:

- To study the pattern of hollow viscus perforation
- To study most common age and sex involved
- To study the most common causes for hollow viscus perforation in our set up.
- To evaluate various modalities of treatment available with aim to reduce mortality and morbidity.

II. Materials And Methods

Duration of Study- 1 year (May 2015 – May 2016).

Population to be Studied- Minimum of 80cases.

Study Group- 15 TO 75 Yrs. age group.

Study Setting- Accident & Emergency ward, Department of General Surgery, Chengalpattu Medical College and Hospital, Chengalpattu.

Inclusion Criteria

All patients presenting with features of perforation peritonitis were included in the study

1. Patients presenting with history of recent assault by blunt and heavy object over abdomen.
3. Road traffic accident with suspected hollow viscus injury.
4. Patients with penetrating/stab/gun shot injuries.

Exclusion Criteria

- Patients of pediatric age group

Materials to be used

- Blood Analysis: Haemoglobin, Bleeding Time, Clotting Time.
- Serial hematocrit value.
- Urine Analysis.
- X ray chest and abdomen.
- Four quadrant aspiration of abdomen.
- Diagnostic peritoneal lavage.
- Intravenous Contrast studies.
- Ultrasound abdomen.
- Computed Tomography (CT) scan.

III. Results

Males more affected than females, 2: 1.1 comparable with other studies, age incidence 21 -35 Nitin aggarwal et al , Yadhav et al in their study have also reported similar incidence

Table 1.

Site of perforation	No of cases	%
First part of duodenum	36	45
Gastric	16	20
appendicular	16	20
Jejunal	6	7.5
Ileum	5	6.25
Colon	1	1.25

The most likely person to have a hollow viscus Perforation is a healthy middle aged adult male. Most of the hollow viscus perforation were due Gastro -Duodenal ulcer (38cases). Concomitant with alcoholism and analgesic abuse (14 cases) and post traumatic 19 and malignancy 1 and infectious cause (enteric) 5 cases. Appendicular 16. Most common site of hollow viscus perforation was First part of duodenum 36 cases, followed by gastric perforation 16 cases, jejunal perforation 6 cases, appendicular perforation16, ileal perforation 5 cases and colonic perforation 1.

Vani et al in their study found 40% perforation in duodenum,, where as Nitin aggarwal in his study mentions relatively higher incidence of small bowel perforations Yadhav ET reported in their case study of 77

cases also concurs with ileal perforation, but their study focused on associated peritonitis. Durairajan et al and many other studies on Hollow viscus perforation have also similar findings that incidence is more in duodenum

Out of the total 16 gastric perforations, 10 were located in lesser curvature, 2 in the pre-pyloric region, and 4 in the body of the stomach. A biopsy was taken in all patients out of whom one showed evidence of malignancy. All patients were treated with the simple closure of the defect after freshening of the ulcer margins.

All patients with duodenal perforation 36 cases were treated with Modified Graham's Live omental Patch repair and through wash given.

In Ileal and jejunal perforations, ileal more commonly due to enteric associated peritonitis, and TB peritonitis, where as traumatic perforation following blunt injury had jejunal perforations more commonly found. Nawal kishore et al in their study ileum was the common site 46%

Yadhav and Garg in their study found 26% of small bowel perforations due to typhoid, followed by tuberculosis 10.3%, in our study the incidence was 13.75%.

Colon perforation only one case comparatively rare Yadhav had reported 3.5% in his study, the major causes include malignancy, volvulus and following colonoscopy

Complications		
Respiratory	29	38%
Wound infections	19	24%
Dyselectolema	11	14%
Septicemia	6	8%
Burst abdomen	2	2.5%
Anastamotic leak	1	1.5%
Death	5	4%

Most common complications include respiratory 36%, wound infections 24% dyselectrolema 14% septicemia 8% burst abdomen 2.5% All patients responded well with significantly reduced morbidity. With 2 cases of burst abdomen, 10 cases of residual sub hepatic and pelvic intra peritoneal abscess and 1 case of anastamotic leak with fecal fistula which responded well and closed after 4 weeks. 5 patients died due to delayed presentation and septicemia and Multi organ dysfunction

IV. Discussion

Perforation of the hollow viscus is one of the commonest surgical emergencies. Though perforations in proximal region is more common in developing world, distal perforation more common in western world⁷ It has wide geographical variation also.

The study encompasses a data of pattern perforation of hollow viscus, clinically diagnosed by physical examination, confirmed by various investigations available including X-ray abdomen erect, USG, CT SCAN, during a period of 1 year. Majority of the traumatic perforation, caused by RTA.⁸ Early diagnosis and intervention improves outcome. Acceleration and deceleration mechanism cause hollow viscus perforation in RTA.

Most common of hollow viscus perforation was duodenal Perforation⁹. Most cases were diagnosed early and managed systematically with nil intra op deaths and good post operative outcome. The high incidence of DU perforations may be due to ineffective or incomplete treatment of H.Pylori, even triple therapy not helpful., alcoholism, and smoking¹⁰ NASID abuse also plays a major role in DU perforation. DU perforations commonly found in first part just lateral to vein of Mayo. Size of the Du ulcers rarely greater than 1 cm. In patients who are found to be unfit for surgery, like septic shock flank drainage, fluid replacement, electrolyte balance, and high antibiotics helps.¹¹ Similarly some patients admitted late, with X ray erect abdomen showing air under diaphragm, clinically soft abdomen, indicating sealed perforation, managed conservatively and recovered especially young patients. This study we considered only operated cases. Gastric perforations are relatively less frequent. It follows gastric ulcer, or malignancy.¹² Biopsy and omental patch closure, sufficient in majority of the cases, some cases need regular follow up by endoscopy¹³ Gastric perforations closed after trimming the edges, closed with silk/vikryl.

Hollow viscus injuries usually managed well, without complications, unless they are diagnosed early, or the closure fails, patient in risk of septicemia, Entero cutaneous fistula, multi organ failure.

The management of non traumatic ileal perforation mostly depend on per operative findings. It depends on etiology, operative delay, operative findings to prevent post operative complication specially fistula¹⁴ Traumatic perforations usually closed following thorough peritoneal leavage., infective cases with multiple ulcers in distal ileum may need resection anastomosis.

Appendicular perforation cases, luminal obstruction leads to perforations., if not intervened¹⁵ perforation most often happen in patients referred from small hospital after delay in diagnosis.

Emergency appendectomy with supportive measures usually sufficient. Per operatively if found to be abscess, simple drain with interval appendectomy may be ideal procedure.

V. Conclusion

Hollow viscus Perforation is a more serious and life endangering to patient and more difficult and challenging to surgeons. Thorough knowledge on diagnosis and management of these cases improves the confidence levels of the surgeons thereby cases can be managed much more effectively. Thorough understanding of patterns of disease and early diagnosis, resuscitation and timely surgical intervention helps the surgeon in managing these cases and save precious human life. In our study of 80 patients we found that Duodenum specifically the first part is the commonest site, and the most common cause being peptic ulcer. Morbidity and mortality related to delayed diagnosis, better prognosis in early intervention

References

- [1]. Langell JT, Mulvihill SJ. Gastrointestinal perforation and the acute abdomen. *Med Clin N Am* 2008;92:599-625.
- [2]. Kellog LC. A treatise on peptic perforations. *Surgery* 1939;6:524-30.
- [3]. Dhikav V, Singh S, Pande S, Chawla A, Anand KS. Non-steroidal drug-induced gastrointestinal toxicity: Mechanisms and management. *JACM* 2003;4:315-22
- [4]. Donovan AJ, Berne TV, Donovan JA. Perforated duodenal ulcer: An alternative therapeutic plan. *Arch Surg* 1998;133:1166-71.
- [5]. Beniwal US. Comparative study of operative procedures in typhoid perforations. *Indian J Surg* 2003;65:172-6.
- [6]. Fontana D, Webster GD, Wier J. Approach to management of lesser curvature gastric perforations. *Scott Med J* 1958;3:238-49.
- [7]. Nitecki W. Colonoscopic injuries. *Asian J Surg* 1997;20:283-86
- [8]. R.Espinosa et al Traumatic and non traumatic perforation of hollow viscera *Surf.clin.north.Am* 1997 ;dec 77(6)1291-304
- [9]. Rao D.C.M. Gastro intestinal perforations A study of 46 cases
- [10]. Janet M.Torpt et al Peptic ulcer disease *JAMA* 2012;307(12)1329
- [11]. 11.Gupta et al Peritonitis- The eastern experience *World journal of emergency surgery*;2006 April26;1:13
- [12]. Dorairajan et al Peritonitis in in India, A decade experience *Tropicl gastro enterology*,1995;16:13-38
- [13]. Mathew Fracer LEEMAN et al The management of perforated gastric ulcers *International journal o surgery*,May23 volume11 ,issue4, page322-24
- [14]. Rauf A.Wani et al Non traumatic ileal perforation *World journal of emergency surgery*2006;1:7 DOI 10.1186/1749-79422-1-7
- [15]. Frederick et al *JAMA SURGERY* july2,2014doi;10.1001/jamasurg.2014.77