*Original Article*

# Perforation of Gas Containing Hollow Viscus

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***ABSTRACT:***

***Background*** *Gastrointestinal perforation is one of the most common cause of acute abdomen and important surgical emergency.* ***Methods*** *A total 120 cases of gastrointestinal perforation were studied from December, 2017 to May, 2018 in Department of Surgery, Sher-E-Bangla medical college hospital, Barishal. it is a cross sectional observational study. Patients were selected randomly. Collected data were analyzed by SPSS and result was compared with previous similar studies.* ***Result*** *Abdominal pain was seen in all the cases. 38.33% of patients had vomiting, 48.33% complained of distension of abdomen and 64.17% with fever. Tenderness was seen in all the cases with localized tendernes in appendicular perforation. 80% of cases had guarding/rigidity with 48.33% patients presented with distension of abdomen. 72% of cases had gas under the Diaphragm with majority of them in peptic ulcer perforation and least in appendicular, volvulus, strangulated hernia and malignant cause of perforation.* ***Conclusion*** *Mortality in our study was 5.83% and was due to septicemia with older age group, delayed presentation to hospital and other associated co-morbidities being the additive factors.*

***Key words*** *: Perforation, Malignant, Volvulus.*

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## INTRODUCTION:

Gastro intestinal perforation is a common abdominal emergency faced by general surgeon.[1-2] Abdomen is a Pandora's Box and gastrointestinal perforation is one such condition to prove it. Perforation of hollow viscus due to different causes comprises the major portion of emergency surgical admissions and emergency laparotomies.[3-4] The diagnosis and treatment of gastro intestinal perforation remains main problem in our country. [5-6] Improved medical and surgical care has reduced this problem in North America and U.K., where vascular lesions and malignancies are predominant cause of perforations. In our country, peptic disease, typhoid, tuberculous and traumatic perforations are common.[7] The first clinical description of perforated peptic ulcer was made by Crisp in 1843. Smoking and use of non-steroidal anti-inflammatory drugs (NSAID) are important risk factors for perforation.[8] Especially these days, the inadvertent use of NSAIDS is one of the most common risk factors.[9] Perforation of the

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stomach, duodenum and small bowel form a considerable proportion of emergency work load than colonic perforation.[10-11] Perforation of the large intestine represent a major surgical challenge to the surgeons.[12-13] In developed societies common causes are diverticular disease and colonic carcinoma, where as in the developing countries infective conditions such as *amoebiasis* is important.[14] Perforation of the large intestine is a rapidly fatal condition, death being caused by sepsis from peritoneal contamination with various enteric pathogens both aerobic and anaerobic. Majority of patients present with sudden onset of abdominal pain. [15-17] A high index of suspicion is essential to diagnose visceral perforation early as significant morbidity and mortality results from diagnostic delay.[18-19] Thus, an interest is undertaken to find the etiological factors and clinical features, age and sex incidence and also to assess the common type of perforations and their presentations, operative mortalities and complications arising postoperatively.

**METHODS AND MATERIALS:**

It is a cross sectional observational study. A total of 120 patients of gastrointestinal perforations (that were within the exclusion and inclusion criteria) were studied from December, 2017 to May, 2018 in department of surgery (all 4 units), Sher-E-Bangla medical college hospital, Barishal. Patients who were not gave consent were excluded from the study. Clinical diagnosis of hollow viscus perforation is made based on history and physical examination which will be confirmed by investigations or by laparotomy.

Routine blood examination including complete hemogram, blood grouping and typing, HBsAg, blood urea, serum creatinine, serum electrolytes, serum and urinary amylase, serum albumin, routine urine examination and Random blood sugar were done for include the subjects. Erect abdomen X-ray to detect free gas under right dome of the Dsiaphragm (lateral decubitus Xray in unstable patients), Widal test was done in suspected enteric perforations, 4 quadrant abdominal paracentesis was done only in selected cases (just for confirmation in cases where X- ray showed no gas under the diaphragm), Ultrasonography of abdomen were also performed.

Intravenous antibiotics like Ceftriaxone, gentamycin/amikacine and metronidazole were used in all cases. Antibiotics were changed according to culture and sensitivity report. Laparotomy was done under general anesthesia. Incision was taken depending upon the suspected site of pathology and when not confirmed midline incision either upper or lower or right Para median incision was made.

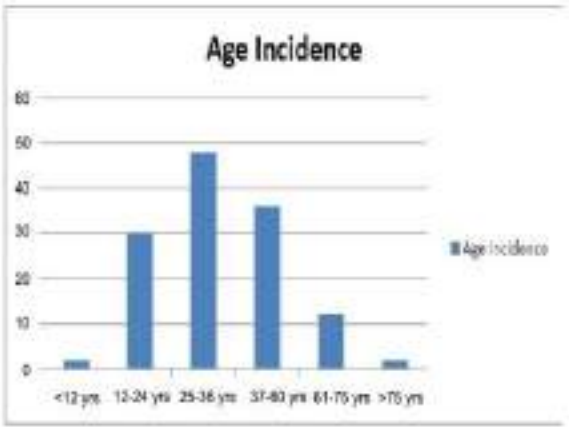
Viscera were inspected carefully, the site of perforation were identified and appropriate surgical procedure was performed. In gastric, terminal ileal and large gut perforation, biopsy were taken for histopathology. Peritoneal toileting with normal saline was done and peritoneal cavity was drained, postoperatively patients were put on continuous nasogastric suction, intravenous fluid and antibiotics. Vital signs and Urinary output were monitored, assessment of intake

and output and biochemical parameters etc. were done. Recovery of the patients was observed and any complications which occurred during the course were noted. Regular follow up of the patients were carried out.

**RESULTS:**

**Graph I Incidence of Age group (n=120)**

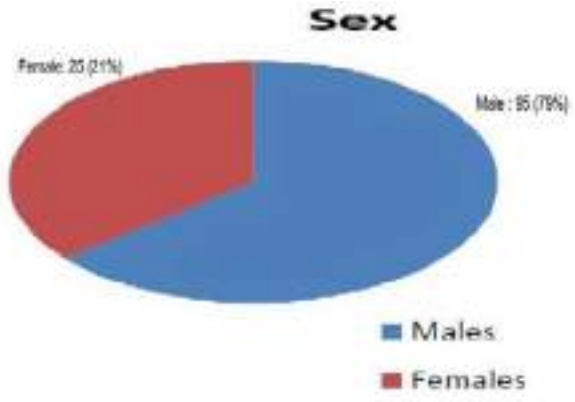
Most of the patients belonged to 25-36 years age group. The mean age was 31.1 years.




Graph I shows highest incidence of perforation was in 25-36 years age group and least in <12 years groups.

**Pie Diagram I Sex incidence (n=120)**

Males females ratio was 3.8:1




Pie Diagram I shows that total male patients were 95 (79%) and female were 25 (21%).

**Table I Symptoms of perforation (n=120)**

All the cases in our study complained of pain abdomen. Only 46 of 120 cases had vomiting (38.33%). Distension was seen in 58 cases (48.33%) and Fever in 77 (64.17%) which was moderate degree and not associated with chills and rigors

| Symptoms | Number Of Cases | Percentage |
|---|---|---|
| Pain Abdomen | 120 | 100 |
| Abdominal Distention | 58 | 48.33 |
| Vomiting | 46 | 38.33 |
| Fever | 77 | 64.17 |

Table I shows that different types of symptoms. Most common 2 symptoms were abdominal pain and fever.

**Table II Signs of perforation (n=120)**

100% of the patients had obvious abdominal tenderness, guarding and rigidity was seen in 96 (80%) patients and distention in 48.33%. Only 04 patients had abdominal tuberculosis with distention since 2 months. Bowel sound absent was 70.83% cases and 62.5% cases were dehydrated.

| Abdominal Signs | Number Of Patients | Percentage |
|---|---|---|
| Tenderness | 120 | 100 |
| Guarding/Rigidity | 96 | 80 |
| Distention | 58 | 48.33 |
| Absent of bowell Sounds | 85 | 70.83 |
| Dehydration | 75 | 62.5 |

Table II Shows that abdominal tenderness was most common sign of perforation e.g. 100%.

**Table III Distribution of Sites of Perforation (n=120)**

The most common site of perforation was the gastroduodenal region, which accounted for 73 cases. This was followed by terminal ileal perforations and the least common region was the sigmoid colon, where we had only one case which was due to malignancy.

| Site | Male | Female | Total |
|---|---|---|---|
| Gastric | 13 | 2 | 15 (12.5%) |
| Duodenal | 52 | 6 | 58 (48.33%) |
| Jejunal | 9 | 2 | 11 (9.16%) |
| Ileal | 19 | 15 | 34 (28.33%) |
| Caecum | 1 | 0 | 1 (.83%) |
| Sigmoid | 1 | 0 | 1 (.83%) |

Table III Shows that Duodenal site was most common site of perforation.

**Table IV Etiology of Perforation (n=120)**

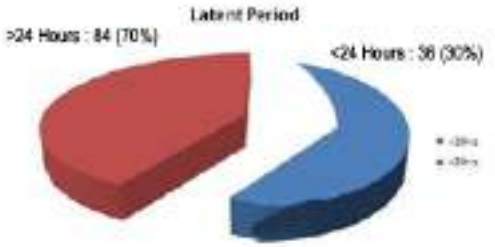
The most common etiological factor in the presentation of disease was peptic disease, which accounted for 60.83%. This was followed by traumatic perforation which accounted 15.83%. The least was a malignant cause of sigmoid colon perforation which accounted for only .83%.

| Etiology | Number of Cases | Percentage |
|---|---|---|
| Peptic | 73 | 60.83 |
| Typhoid | 18 | 15 |
| Tubercular | 04 | 3.33 |
| Appendicular | 01 | .8 3 |
| Traumatic | 19 | 15.83 |
| Iatrogenic | 02 | 1.66 |
| Obstructed/Strangulated Hernia | 01 | .83 |
| Malignant | 01 | .83 |
| Volvulus | 01 | .83 |

Table IV Shows that most common etiology was peptic ulcer perforation either duodenal or gastric. Traumatic perforation was in 2nd position.

**Pie Diagram II Latent period (n=120)**

Most of the patients presented to the hospital after 24 hours (70%) of onset of symptoms, predominantly being abdominal pain.




Pie Diagram II Shows that 70 % patients came to hospital after 24 hours of perforation.

**Table V Types of treatment (n=120)**

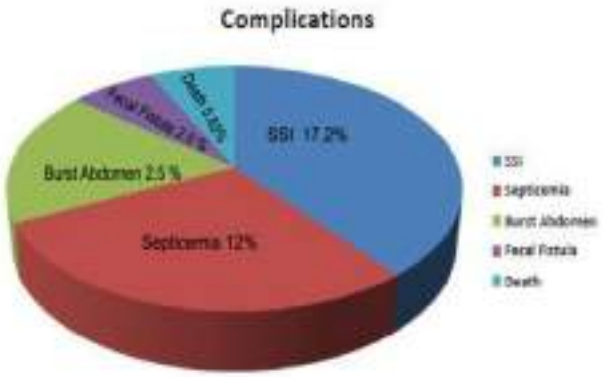
Patient with appendicular perforation was treated with simple appendectomy. Majority of the patients were operated of simple closure with or without omentopaxy. Resection anastomosis were done in 15.83% and loop ileostomy were 20%.

| Treatment | Number | Percentage |
|---|---|---|
| Appendectomy | 1 | 0.83 |
| Simple Closure | 71 | 59.16 |
| Resection Anastomosis | 20 | 15.83 |
| Hemi colectomy | 02 | 1.66 |
| Loop Ileostomy | 24 | 20 |
| Conservative Treatment | 02 | 1.66 |

Table V Shows different types of treatment.

**Pie Diagram III post-operative complications (n=120)**

Most common complication recorded in this study was SSI (17.2%) which was similar to that of respiratory infection/distress. Mortality in our study was 5.83% (7 cases) and was due to septicemia with older age group, delayed presentation to hospital and other associated co-morbidities being the additive factors.




Pie Diagram III shows that most common complication was Surgical site infection (SSI) e.g.17.2%

**DISCUSSION:**

Majority of the patients belonged to the age group of 25 to 35 years in most of the studies except Afridi et al, who reported majority of them were in the age group of 35 - 45 yrs.[20-22] Mean age in this study was 31.1 yrs. which was comparable to that of Yadav et al, who reported the mean age to be 33.9 yrs.[24] Males were seen to predominate in incidence in all the studies.[20-22] The highest male preponderance was noticed by Jhobta et al, where the ratio of male to female was 5.2:1, followed by Yadav et al where the ratio was 4.9:1.[24] Afridi et al showed ratio of 2.1:1 which was dissimilar to our study in which the ratio was 3.8:1.[2] The most common symptom in all the study groups was abdominal pain in general. In our study all

the patients (100%) had pain which was quite comparable to the other studies which reported the symptom to be the most common mode of presentation. Abdominal distention was quite predominant in the study by Yadav et al who reported 73.6% of patients.[24] Fever was the most common of all the symptoms (except pain abdomen) in our study. 77 of 120 patients (64.17%) gave a history of fever. The other studies showed a significant difference in the presentation of fever who reported quite less number of patients with fever as compared to this study. The graphic representation below will give a better idea of the symptom complex in the various studies taken here.[20-22] The site of perforation was one of the most important parameters of all the studies. Doraijan et al did a study in 1995, where he took 250 subjects for his study and he studied them according to sites of perforation, the etiology of perforation and the respective mortality.[7] Similar was the case with Khan et al, who studied these parameters in 54 patients in 2004.[13] The most common site of perforation was seen to be at the gastro-duodenal region due to the fact that most patients had predisposing acid peptic disease. The highest incidence of acid peptic disease is thought to be unnecessary use of NSAIDS and improper timing of meals in most patients. Also the incidence of H pylori infection is a major cause. In the recent times the discovery of PPIs and other antacids have reduced the incidence of perforations due to acid peptic disease. In this study we had 60.83% of patients having perforation at the gastro-duodenal region, which was not comparable to the studies by Doraijan et al (32%) and Khan et al (38.8%).[7,13] Perforations due to peptic ulcer disease were seen to be the most common cause of perforations consistently in all the studies except that of Doraijan et al who showed that the majority of the perforations were due to tuberculosis (66.9%).[7] This was similar with the studies by Jhobta et al, Afridi et al., and Yadav et al.[11,2,24] Surgical site infection (SSI) was commonly seen in the postoperative period which was common form of post-operative morbidity in this study. Also this complication was consistently common in rest of the studies as well, account to 17.2% of the patients in this study, 28% in the study of Jhobta et al and 20% in Afridi et al.[11,2] Sepsis or septic shock was seen in 12% of the patients in this study. Jhobta et al reported 17%, Afridi et al 20% and Yadav et al 5.2% of their patients having a septic shock in the post-operative period.[11,2,24] This study had a mortality rate of 5.83% that were mostly traumatic, which was quite less as compared to the other studies. Jhobta et al reported a mortality of 10% which was quite close with that of Afridi et al (10.6%), Yadav et al had a mortality rate of 13%.[11,2,24]

**CONCLUSION:**

Common cause of perforation was acid peptic disease and common site was duodeno-gastric region. Traumatic perforation is commonly seen in jejunum near duodeno-jejunal junction. Mortality was more in patients with delayed presentation and older age group with associated co-morbidities, and can be prevented by adequate preoperative resuscitation, better surgical skills and good post-operative care. Surgical treatment is the most definitive treatment for

perforation peritonitis and post-operative care remain extremely important in the better outcome of the patients.

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