# A STUDY ON CLINICAL ANALYSIS OF GASTRIC PERFORATIONS

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**ABSTRACT**

**BACKGROUND**

There is presently a widespread use of gastric antisecretory agents and eradication therapy, but the incidence of perforated peptic ulcer has changed little. Nowadays, however, there has been a considerable change in the epidemiology of perforated peptic ulcer in the Western world over the last two decades. This may be because of the fact that previously most patients were middle aged in the western world. This was not long back. In fact this condition was there two decades back with a ratio of 2:1 of male: female. With time, there has been a steady increase in the age of the patients suffering from this complication and an increase in the number of females, such that perforations now occur most commonly in elderly female patients. But in India most of the perforations occur in males. This may be due to consumption of alcohol and smoking habit that is commonly seen in the male counterpart. Non-steroidal anti-inflammatory drugs, especially aspirin appears to be responsible for most of these perforations. A sincere effort has been put in this study to understand and help a surgeon to identify the cases of gastric perforations and act immediately to ensure the safety of the patient before any tragedy occurs.

**METHODS**

The study was done in fifty cases that were admitted in the Andhra Medical College, Visakhapatnam, Andhra Pradesh from 01-04-2015 to 29-10-2015.

Out of this fifty, twenty five were female and twenty five were male.

The demographic and other details were taken from the patient's relatives or from the patient when the condition of the patient was stabilised.

**RESULT**

In the present study, majority of the cases were seen from the month of June to September. This may be pointing to the fact that majority of the peptic ulcers are seen in rainy season. Majority of the cases were admitted within six hours and majority of them were females. The signs which were significantly associated with the disease and were almost equally seen in both the sexes were pain, vomiting, fever and abdominal distension.

Drinking and smoking were strongly associated with the disease. Females were not involved in both. Dehydration, distension, tenderness and guarding were the signs that were significantly associated with the disease. Majority of the patients were having O blood group. Radiography was confirmatory as the gas bubbles were seen under the diaphragm in 100% of the cases. The post-operative complications were significantly lower except in patients with larger perforations.

**CONCLUSION**

The clinical analysis of gastric perforations has been strongly associated to the life style modifications. Drinking and smoking has been directly related. The genetic causes also play a role. This may be understood by the fact that majority had O blood group.

Proper diagnosis can be made by using the signs and symptoms that has been associated with the disease. This study has a lot of future. Study can be made in different regions of the country to properly understand the underlying plethora of causes that determine this horrible disease.

**KEYWORDS**

Study, Clinical, Analysis, Peptic Ulcers, Gastric Perforations.

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**INTRODUCTION:** The stomach develops from the foregut. Initially there will be a vertically directed fusiform dilatation. The posterior border overgrows the anterior border. Meanwhile due to rotation of stomach, the posterior border becomes right border which is also called greater curvature and the anterior border now forms the left border which is also called lesser curvature.

The function of the stomach is to act as a reservoir for ingested food. It also serves to break down foodstuffs mechanically and commence the processes of digestion before these products are passed on into the duodenum. The stomach mechanically breaks up ingested food and together with the actions of acid and pepsin, forms chyme that passes into the duodenum. In contrast with the acidic environment of the stomach, the environment of the duodenum is alkaline, due to the secretion of bicarbonate ions from both the pancreas and the duodenum. This neutralises the acid chyme and adjusts the luminal osmolarity to approximately that of plasma. Endocrine cells in the duodenum produce cholecystokinin, which stimulates the pancreas to produce trypsin and the gall bladder to contract. Secretin is also produced by the endocrine cells of the duodenum. This hormone inhibits gastric acid secretion and promotes production of bicarbonate by the pancreas.

The gastric mucous layer is essential to the integrity of the gastric mucosa. It is a viscid layer of mucopolysaccharides produced by the mucus-producing cells of the stomach and the pyloric glands. Gastric mucus is an important physiological barrier to protect the gastric mucosa from mechanical damage, and also the effects of acid and pepsin. Its considerable buffering capacity is enhanced by the presence of bicarbonate ions within the mucus. Many factors can lead to the breakdown of this gastric mucous barrier. These include bile, non-steroidal anti-inflammatory drugs (NSAIDs), alcohol, trauma and shock. Tonometry studies have shown that, of all the gastrointestinal tract, the stomach is the most sensitive to ischaemia following a hypovolaemic insult and also the slowest to recover. This may explain the high incidence of stress ulceration in the stomach.

There is presently a widespread use of gastric antisecretory agents and eradication therapy, but the incidence of perforated peptic ulcer has changed little. Nowadays, however, there has been a considerable change in the epidemiology of perforated peptic ulcer in the Western world over the last two decades. This may be because of the fact that previously most patients were middle aged in the western world. This was not long back. In fact this condition was there two decades back with a ratio of 2:1 of male:female. With time, there has been a steady increase in the age of the patients suffering from this complication and an increase in the numbers of females, such that perforations now occur most commonly in elderly female patients. But in India most of the perforations occur in males. This may be due to consumption of alcohol and smoking habit that is commonly seen in the male counterpart. Non-steroidal anti-inflammatory drugs, especially aspirin appears to be responsible for most of these perforations.

Over the centuries, there was little to offer the patient of acute abdomen beyond cupping, purgation and enemas, all of which did more harm than good. A detailed history with regards to the signs and symptoms of the patient, a meticulous examination, radiological and biochemical investigations help to arrive at a correct preoperative diagnosis.

Prolonged peptic ulcers may turn malignant and cause in the tear of mucosa and the submucosal structure.

Operative method is still the treatment of choice and simple closure of perforation is the method followed in most of the surgical centres. Campbell D[1] reported 7 deaths in 139 patients treated conservatively, a mortality rate of 5%. These results are better than those of surgical repair at the time than comparable to most present day series. Ulcer perforation was frequently treated by gastric resection in former days, whereas suture introduced in 1887, is the method of choice today.[2] Traditionally, traumatic and atraumatic perforations have been managed surgically[3]. However, in the last decade management has shifted towards a more selective approach.[4] If the condition is not diagnosed properly and not adequately treated, it progresses in a definite manner with a typical course and may lead to the death of the patient due to bacterial peritonitis in about 7-8 days.

In this study, a sincere effort has been put to understand the demographic patterns, to understand the underlying aetiology and to understand the effectiveness of the standard methods of investigation and treatment in use today.

**AIMS AND OBJECTIVES:**

1. To study the aetiology, pathogenesis, clinical features of duodenal perforation.
2. To study various medical and surgical modalities of treatment.
3. To study the complications in patients with gastric perforation.

**MATERIALS AND METHODS:** The study was done in fifteen cases that were admitted in the hospital from 01-04-2015 to 29-10-2015.

Out of this fifty, twenty five were female and twenty five were male.

The demographic and other details were taken from the patient's relatives or the patient when the condition of the patient was stabilised.

**Inclusion Criteria:** Aged between 30 and 40 years. This was done to nullify the age related adjustments that was required.

**Exclusion Criteria:**

- Age <30 and >40 yrs.
- Patients who were taking aspirin for other cardiovascular causes
- Patients who were undergoing chemotherapy.
- The diagnosis was made on clinical findings supported by investigations like plain X-ray Abdomen Erect posture. All cases were managed surgically and confirmation was made on the operation table only.

**RESULTS:**

| Month | Total Number of Cases | Males | Females | Significant Difference (P < 0.05) |
|---|---|---|---|---|
| Jan to May | 14 | 10 | 04 | Significant |
| June to September | 22 | 12 | 13 | Not |
| October to December | 14 | 03 | 08 | Significant |

***Table 1: Seasonal Incidence***

| Duration of Pain (Hours) | No. of cases | Males | Females | Significance of Association (P < 0.05) |
|---|---|---|---|---|
| 0-6 hours | 28 | 9 | 19 | Significant |
| 6-12 hours | 11 | 10 | 01 | Significant |
| 12-24 hours | 7 | 4 | 3 | Not |
| >24 hours | 4 | 2 | 2 | Not |

***Table 2: Duration of Symptoms***

| Symptoms | No. of Patients | Males | Females | Significance of Association (P < 0.05) |
|---|---|---|---|---|
| Pain abdomen | 50 | 25 | 25 | Significant |
| Abdominal distension | 25 | 09 | 16 | Significant |
| Constipation/ loose stools | Nil | Nil | Nil | Not |
| Vomiting | 27 | 17 | 08 | Significant |
| Fever | 48 | 23 | 25 | Significant |

***Table 3: Presenting Symptoms***

| Habits | No. of Patients | Males | Females |
|---|---|---|---|
| Alcohol only | 10 | 10 | Nil |
| Smoking only | 5 | 5 | Nil |
| Alcohol & Smoking | 10 | 10 | Nil |
| None | 25 | NIL | 25 |

***Table 4: Lifestyle of the Patient (Association with Smoking and Alcohol Consumption)***

| Signs | No. of Patients | Males | Females | Significance of association (p<0.05) |
|---|---|---|---|---|
| Dehydration | 50 | 25 | 25 | Significant |
| Distension | 25 | 09 | 16 | Significant |
| Tenderness | 50 | 25 | 25 | Significant |
| Guarding/rigidity | 49 | 25 | 24 | Significant |
| Obliteration of Liver dullness | Nil | Nil | Nil | Not |
| Absent bowel sounds | Nil | Nil | Nil | Not |

***Table 5: Presenting Signs***

| Blood Group | No. of Patients | Males | Females | Significance of association (p<0.05) |
|---|---|---|---|---|
| O+ve | 38 | 17 | 21 | Significant |
| A +ve | 4 | 03 | 01 | Not |
| B +ve | 08 | 05 | 03 | Not |
| AB +ve | Nil | Nil | Nil | Not |

***Table 6: Blood Group Association***

| Plain X- Ray Abdomen (Erect, GUD) | No. of Patients |
|---|---|
| Positive | 50 |
| Negative | 0 |

***Table 7: Confirmatory Investigation***

| Size in Cm | No. of Patients | Males | Females | Significance of association (p<0.05) |
|---|---|---|---|---|
| <0.5 cm | 41 | 21 | 20 | Significant |
| 0.6-1 cm | 07 | 01 | 05 | Not |
| >1 cm | 2 | 03 | 00 | Not |

***Table 8: Size Distribution***

| Complications | No. of Patients | Males | Females | Significance of association (p<0.05) |
|---|---|---|---|---|
| Smooth recovery | 44 | 19 | 25 | Significant |
| Bronchopneumonia | 00 | 00 | 00 | Not |
| Wound infection | 4 | 04 | 00 | Not |
| Wound dehiscence | 02 | 02 | 00 | Not |

***Table 9: Complication***

**DISCUSSION:** The classic presentation of perforated duodenal ulcer is instantly recognisable. The patient, who may have a history of peptic ulceration, develops sudden onset severe generalised abdominal pain due to the irritant effect of gastric acid on the peritoneum. Although the contents of an acid-producing stomach are relatively low in bacterial load, bacterial peritonitis supervenes over a few hours, usually accompanied by a deterioration in the patient's condition. Initially, the patient may be shocked with a tachycardia but pyrexia is not usually observed until some hours after the event. The abdomen exhibits a board-like rigidity and the patient is disinclined to move because of the pain. The abdomen does not move with respiration. Patients with this form of presentation need an operation, with- out which the patient will deteriorate with a septic peritonitis. This classic presentation of the perforated peptic ulcer is observed less commonly than in the past. Very frequently, the elderly patient who is taking NSAIDs will have a less dramatic presentation, perhaps because of the use of potent anti-inflammatory drugs (steroids). The board-like rigidity seen in the abdomen of younger patients may also not be observed and a higher index of suspicion is necessary to make the correct diagnosis. In other patients, the leak from the ulcer may not be massive. They may present only with pain in the epigastrium and right iliac fossa as the fluid may track down the right paracolic gutter. Sometimes perforations will seal owing to the inflammatory response and adhesion within the abdominal cavity, and so the perforation may be self-limiting. All of these factors may combine to make the diagnosis of perforated peptic ulcer difficult. By far the most common site of perforation is the anterior aspect of the duodenum. However, the anterior or incisural gastric ulcer may perforate and, in addition, gastric ulcers may perforate into the lesser sac, which can be particularly difficult to diagnose. These patients may not have obvious peritonitis.

An erect plain chest radiograph will reveal free gas under the diaphragm in an excess of 50 per cent of cases with perforated peptic ulcer, but CT imaging is more accurate.

The initial priorities are resuscitation and analgesia. Analgesia should not be withheld for fear of removing the signs of an intra-abdominal catastrophe. In fact, adequate analgesia makes the clinical signs more obvious. It is important, however, to titrate the analgesic dose. Following resuscitation, the treatment is principally surgical. Laparotomy is performed, usually through an upper midline incision if the diagnosis of perforated peptic ulcer can be made with confidence. This is not always possible and hence it may be better to place a small incision around the umbilicus to localise the perforation with more certainty. Alternatively, laparoscopy may be used. The most important component of the operation is a thorough peritoneal toilet to remove all of the fluid and food debris. If the perforation is in the duodenum it can usually be closed by several well-placed sutures, closing the ulcer in a transverse direction as with a pyloroplasty.

Simple closure or even nonoperative management is acknowledged to be most appropriate for patients who are markedly debilitated or in shock.[5,6,7,8]

Traumatic perforation has a wide range of presentation and is often associated with adjacent visceral injuries.

In the present study, majority of the cases were seen from the month of June to September. This may be pointing to the fact that majority of the peptic ulcers are seen in rainy season. One reason may be due to the consumption of more alcohol and cigarette smoking in these months due to rainy season. Extreme cold in some parts of India may be the reason for more consumption of alcohol and smoking.

Majority of the cases were admitted within six hours and majority of them were females pointing towards the severity of unbearable pain caused by this catastrophic event. The males were better tolerant. Some cases were admitted late. This may be due to the time required to transfer the patient from the peripheral villages to the tertiary hospitals.

The signs which were significantly associated with the disease and were almost equally seen in both the sexes were pain, vomiting, fever and abdominal distension.

Drinking and smoking were strongly associated with the disease. Females were not involved in both. This may be, however, untrue especially with the culture that we follow where women are not considered and believed not to take up these habits. Even if they did they would give us the false information. Other thing that might be the fact here is that majority of the females work in the kitchen for longer hours and carbon residues are ingested which may be acidic in nature and may indirectly cause peptic ulcers. Dehydration, distension, tenderness and guarding were the signs that were significantly associated with the disease. Majority of the patients were having O blood group. Radiography was confirmatory as the gas bubbles were seen under the diaphragm in 100% of the cases. Still CT was conducted to confirm the cases. The postoperative complications were significantly lower except in patients with larger perforations.

**CONCLUSION:** The clinical analysis of gastric perforations has been strongly associated to the lifestyle modifications. Drinking and smoking has been directly related. The genetic causes also play a role. This may be understood by the fact that majority had O blood group.

Proper diagnosis can be made by using the signs and symptoms that have been associated with the disease. This study has a lot of future. Study can be made in different regions of the country to properly understand the underlying plethora of causes that determine this horrible disease.

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