



## A Clinical Study on Duodenal Perforation in Rural Medical College and Hospital

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### Abstract

**Background:** Duodenal perforation is one of the most common surgical emergency. An acute perforation is estimated to occur in 2% to 10% of patients with duodenal ulcer. Perforation is one of the important complication of duodenal ulcer. Duodenal perforation currently accounts for approximately 75% of peptic ulcer perforation. Of note, the mortality rate for perforated ulcer is high in elderly and after gastric than after duodenal perforation.<sup>(1)</sup>

**Materials and Methods:** The study was based on the analysis of patient admitted in Rajah Muthiah Medical College with duodenal perforation. On admission, all patient were initially resuscitated and complete history was taken and examination done followed by radiological investigation. All the findings were recorded; the information obtained was tabulated and analyzed.

**Results:** duodenal perforation is common in 51-60 years age group. Perforation is common in smokers and alcoholics. The overall mortality accounts to 2%. More common in male. "O" blood group patients had higher incidence of perforation. perforation is common in low socioeconomic group. Surgical site infection was the most common postoperative complication.

**Conclusion:** peptic ulcer perforation is due to persistence of causative factor like alcoholism, smoking, injudicious use of NSAID, malnourishment. Incidence of perforation was more in male due to chronic alcoholism and smoking. Even in laparoscopic era, laparotomy with perforation closure is most commonly done procedure.

**Keywords:** Duodenal perforation, observational study.

## Introduction

The knowledge of perforation dates back to over 2000 years remote past when *sushruta* the great Indian surgeon described it as *parinamashula* giving the relation of food, pain, vomiting. Mural to first described duodenal ulcer at autopsy in 1688. Crisp described the symptomatology of perforated peptic ulcer. Hippocrates described the face of terminal peritonitis as Hippocrates fancies since 460BC<sup>(2)</sup>. Duodenum is the first, widest and most fixed part of small intestine. It is 10 inches in length, has no mesentery and partially covered by peritoneum. The most common cause of duodenal perforation is peptic ulcer disease with life time incidence of 10%<sup>(3)</sup>. Peptic ulcer disease is result of imbalance of acid secretion and mucosal defence mechanism. Gastrointestinal perforation constitutes the third most common cause of explorative Laparotomy as an emergency.<sup>(4)</sup> More than 90% of patients with peptic ulcer disease are infected with H.Pylori and those not associated with H.Pylori are due to alcoholism, smoking, non-steroid anti-inflammatory drugs, defective duodenal acid defense mechanism. Sudden sloughing of unsupported portion of floor of ulcer leads to perforation secondary to slow process of devascularization. Acute perforation can occur in acute and chronic duodenal ulcer. Perforation is common in anterior wall of duodenum due to spurting of gastric content on the anterior wall of duodenum.

Perforation progress in three stages:

1. Stage of peritonitis or primary stage- It occurs immediately after perforation and lasts for 6 hours. The symptoms arise due to irritation of peritoneum by escape of gastric and duodenal contents. This produces immediate reflex effect on circulatory and nervous system, commonly referred to as primary neurogenic shock.
2. Stage of reaction or secondary stage - The pain

which is most intense at the moment of perforation and during peritoneal irritation, tends to cease of at this stage due to dilution of irritants by peritoneal exudates. This stage is often referred to as stage of delusion.

3. Stage of bacterial peritonitis- pain is less severe, vomiting is frequent while hiccough may distress the patient. Due to sweating, vomiting and third space fluid loss and abdominal distention, dehydration and electrolyte depletion becomes more evident. The stage is characterized by Hippocrates fancies.

Symptoms of perforation are pain abdomen, abdominal distention, vomiting, fever. Signs include tenderness, guarding, rigidity, abdominal distention. Chest X-ray and X-ray abdomen erect demonstrates air under diaphragm. Ultrasound abdomen shows free fluid abdomen. Initially patient resuscitated followed by exploratory laparotomy. Simple perforation closure with omental patch closure is most commonly done procedure.

## Materials and Methods

This is a prospective study carried out in 50 patients admitted in department of general surgery in Rajah Muthiah Medical College, Chidambaram during the period of November 2018 to February 2020.

### Inclusion Criteria

All patients with duodenal ulcer perforation admitted during study period

Age 20 - 80 years

Non pregnant women

### Exclusion Criteria

Age less than 20 years and above 80 years  
Pregnancy

All patient suspected of hollow viscous perforation were initially resuscitated with intravenous fluids and iv antibiotics in casualty and admitted in emergency ward under surgical department. Detailed history of age, sex, residence, occupation,

socio- economic status, symptoms were recorded. History of alcohol intake, smoking, NSAID intake and co-morbidities were recorded. All routine blood investigation such as complete blood count, renal function test, blood grouping and typing, serum electrolyte, liver function test done. Ryle'S tube insertion and foley's catheterization done. After stabilising, patient was sent for radiological investigation and after confirmation patient was prepared and shifted to operation theatre for exploratory laparotomy based on finding patients were segregated and patient with only duodenal perforation were taken up for study. Biopsy was taken from the edges of perforation and sent for histopathology, staining.

### Observation

1. Maximum number of duodenal perforation was in the age group of 51-60 years.
2. Duodenal perforation was common males than females and male female ratio was 9:1
3. The most common etiology being acid peptic disease.
4. Alcoholics (84%) had higher incidence of perforation when compared to non-alcoholics (16%).
5. Smokers (80%) had higher incidence of perforation compared to non smokers (20%).
6. Incidence of perforation was common in low socioeconomic group followed by middle
7. Incidence of perforation was more common in cases with "o" blood group followed by "A" blood group, "B" blood group and "AB" blood group.
8. The most common symptom was abdominal pain (92%) followed by abdominal distention (70%), fever vomiting.
9. The most common sign was dehydration (86%) followed by tachycardia (72%), hypotension, pallor. This may be probably

due to third space fluid loss and reduced fluid intake due to abdominal pain.

10. Duodenal perforation was most common in laborers (44%) followed by farmers (28%), housewife (10%), student (10%). This is due to stress, H.pylori infection, malnutrition and decreased mucosal resistance.
11. The commonest hematological finding was anemia followed by leucocytosis.
12. Radiologically extraluminal air was seen on x-rays in 45 (90%) of study populations.
13. The commonest postoperative complication was surgical site infection followed by respiratory, dyselectrolytemia, burst abdomen.
14. All the duodenal perforation were seen in anterior aspect of D1.
15. 39(78%) cases were positive on giemsa staining of biopsy specimen
16. 35(70%) cases were positive for rapid urease test.

**Table A: Mortality Rate**

Total number of cases	50	100%
No of deaths in study	01	02%

Mortality rate - 2%

**Table B: Age Distribution**

Age	No of cases	Percentage
<20 years	02	04
21-30 years	08	16
31-40 years	04	08
41-50 years	12	24
51-60 years	14	28
61-70 years	07	14
71-80 years	03	06

**Table C: Gender Distribution**

Gender	Number of cases	Percentage
Male	45	90
Female	05	10

**Table D: Occupation**

Occupation	Number of cases
Farmer	14
Laborer	22
Housewife	05
Businessmen	04
Student	05

**Table E: Socio Economic Status**

Socio economic status	Number of cases	Percentage
Low	43	86
Middle	05	10
Upper	02	04

**Table E: Alcohol and Perforation**

Alcoholics	42	84%
Non alcoholics	08	16%

**Table F: Smoking and Perforation**

Smokers	40	80%
Non- smokers	10	20%

**Table G: Symptoms**

Symptoms	Number of cases	Percentage
Abdomen pain	46	92%
Abdomen distention	35	70%
Fever	26	54%
Vomiting	30	60%

**Table H: Signs**

Signs	Number of cases	Percentage
Dehydration	43	86
Tachycardia	37	74
Hypotension	30	60
Pallor	25	50

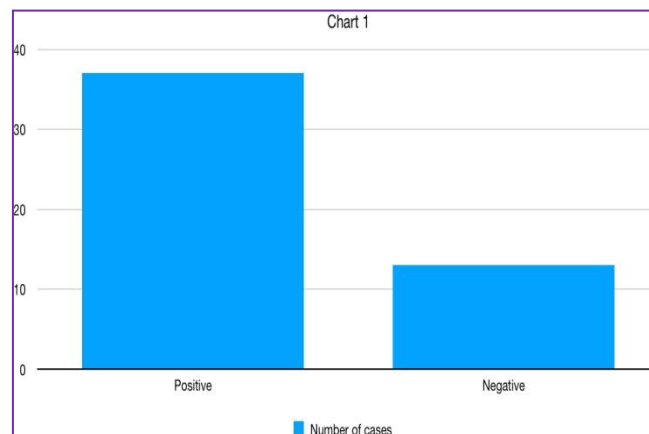
**Table I: Blood Group and Perforation**

Blood Group	Number of cases	Percentage
O	28	56
A	18	36
B	8	16
AB	6	12

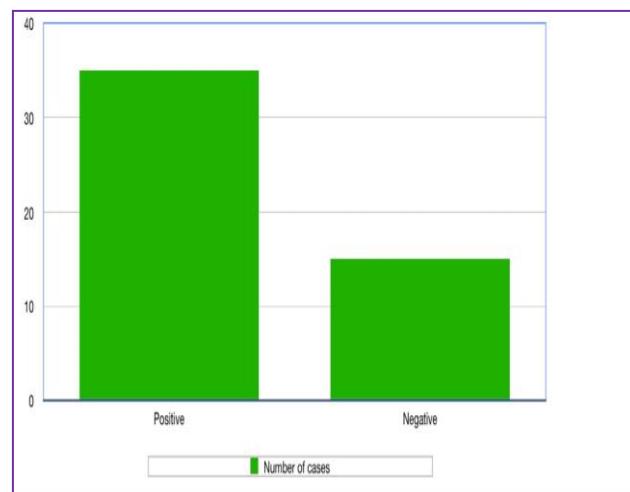
**Table J: Postoperative Complication**

Complications	Number of cases	Percentage
Wound infection	12	24%
Respiratory	10	20%
Dyselectrolytemia	08	16%
Sepsis	01	02%
Burst abdomen	02	04%
Bed sore	01	02%

**Graph-1: Giemsa Staining**



**Graph-2: Rapid Urease Test**



**Discussion**

In this study of duodenal perforation in Rajah Muthiah Medical College and Hospital in the period of July 2018- July 2020, the various etiological factors, adverse habits are taken into account and the various intra operative findings and complications of the patients are analyzed in the post operative period. These are summed up and compared with literature

studies. Incidence of duodenal perforation was more in males compared to females in a ratio of 9:1. Elderly people were more prone for duodenal perforation than younger and middle aged. In this series, perforation was common in cases with “O” blood group followed by “A” blood group, “B” blood group and “AB” blood group. Smokers had higher incidence of perforation than non smokers. Cigarette smoking have been mainly implicated as strong independent risk factor in pathogenesis of peptic ulcer disease and its complication.<sup>(5)</sup> The complication implicated in cigarette smoking are due to decrease healing, impairs response of healing, increases complications but the exact mechanism is not known<sup>(6)</sup>. Alcohol, tobacco and excessive smoking have been blamed as accessory cause of peptic ulcer. The influence of alcohol and tobacco in predisposing to perforation has been emphasized by author Parmar<sup>(7)</sup> and Al-Marsoumi.<sup>(8)</sup>

Perforation was common in laborers followed farmers, housewife, student. The most common presenting complaint was abdominal pain followed by abdominal distention. The most common sign dehydration followed by tachycardia. The mortality rate was 2% due to septic shock. The most common complication was wound infection. It has been estimated that more than 50% population is infected by H.pylori infection the most important factor responsible for peptic ulcer disease, so eradication of H.pylori can reduce the incidence of perforation.

### Conclusion

The incidence of hollow viscous perforation is on raise due to increase in addiction habits such as smoking, alcohol, injudicious use of non steroidal anti inflammatory drugs, malnutrition and stress. Thus, life style modification like abstinence from smoking and drinking alcohol can help reduce the disease burden.

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