

## A STUDY ON PATIENTS WITH PEPTIC ULCER PERFORATION WITH RESPECT TO AETIOLOGY AND FACTORS AFFECTING OUTCOME OF MANAGEMENT

Yeganathan Rajappan<sup>1</sup>, Nagarajan Veerasamy<sup>2</sup>, Mahalakshmi Ashokkumar<sup>3</sup>, Manimaran Thangavelu<sup>4</sup>, Anandan Kanthan<sup>5</sup>

<sup>1</sup>Associate Professor, Department of General Surgery, KAPV Govt. Medical College, Trichy.

<sup>2</sup>Post Graduate Student, Department of General Surgery, KAPV Govt. Medical College, Trichy.

<sup>3</sup>Assistant Professor, Department of General Surgery, KAPV Govt. Medical College, Trichy.

<sup>4</sup>Assistant Professor, Department of General Surgery, KAPV Govt. Medical College, Trichy.

<sup>5</sup>Post Graduate Student, Department of General Surgery, KAPV Govt. Medical College, Trichy.

### ABSTRACT

#### BACKGROUND

Perforation peritonitis is one of the commonest surgical emergency encountered by surgeons. The aim of the study is to provide an overview of aetiological factors causing peptic ulcer perforation and the factors affecting the outcome of management.

#### MATERIALS AND METHODS

This study was conducted at Mahathma Gandhi Memorial Hospital, Trichirapalli, between December 2014 and August 2015. This study included 81 cases of Peptic ulcer perforation who are managed with laparotomy or peritoneal drainage, were studied retrospectively for the factors causing peptic ulcer perforation, site of perforation, surgical management, complications and outcome and factors influencing outcome of management. Data analysed done by using SPSS 17 software with appropriate statistical test.

#### RESULTS

The incidence of Peptic ulcer perforation at MGM Hospital has been worked out to be <1% (0.74%). Peptic ulcer perforation is commonly seen in 5<sup>th</sup> decade of life; 65% of the cases in the age group of 25 to 55 years. The youngest patient was 15 years old and the oldest 70 years old. Male:Female ratio is 9:1. More commonly seen in people who are having blood group "O" constituting 49% of the total. Past history of peptic ulcer was present in 73% of cases of perforation; 65.4% of the cases are addicted to chronic smoking and 66.7% of the cases are addicted to alcohol; 94% were taking mixed diet. Family history of peptic ulcer was present in 32% of the cases of duodenal ulcer perforation; 94% patients consume diet with plenty of chillies and spices. Out of 73% of cases with past history of duodenal ulcer, 80-85% of patients had taken medical treatment with antacids and H2 receptor blockers, proton pump inhibitors drugs irregularly. Diagnosis was made on clinical history and physical examination of abdomen and aided by plain X-ray abdomen in erect posture, which showed pneumo-peritoneum in 96.3% of cases of duodenal ulcer perforations. Obliteration of liver dullness was present in 80% to 86% of cases; 48.5% of the cases of perforated ulcer were in shock at the time of admission. The size of perforation is less than 5 mm in 13/81 cases. In only 9/81 cases the size was more than 10 mm, in 59/81 of cases the size was 5 to 10 mm. The site of perforation in 77 cases is on the anterior wall of first part of duodenum, 4 cases showed perforation at pylorus/Gastroduodenal junction. History of taking NSAID is an important aetiological factor in our study, persons having this history showed perforations of related larger size and higher incidence of death. In 96.3% of the cases, the operative procedure adopted is simple closure of the perforation with live omental patch. The longer the time interval between perforation of peptic ulcer and the operation, morbidity and mortality is high. Postoperative complications are seen more in cases with comorbid conditions like Diabetes Mellitus, Hypertension, Old age, Ischaemic heart disease. Average duration of stay in hospital after surgery in this study is 13.4 days. At MGM Hospital, Trichy in 81 cases of Peptic ulcer perforation studied from December 2014 to August 2015, the mortality rate is 13.5%.

#### CONCLUSION

Smoking, Alcohol intake, Stress and NSAID intake, Blood group has significant association with peptic ulcer perforation. Out of 81 patients studied, 11 deaths occurred and the mortality rate is 13.5%. Duration between onset of perforation and management is the most significant predictor for mortality. Associated comorbid conditions have significance in secondary outcomes, but does not show significant association to death.

#### KEYWORDS

Perforation, Peritonitis, Causes, Omentoplasty, Outcome.

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Corresponding Author:

Dr. Yeganathan Rajappan,

Associate Professor,

General Surgery,

KAPV Govt. Medical College, Trichy.

E-mail: dryeganathan@gmail.com

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#### INTRODUCTION

Peptic ulcer perforation is one among the common surgical emergency.<sup>[1,2,3]</sup> faced in Southern India, mainly due to rice and spicy food intake. The peptic ulcer incidence is in raise in the era due to excess stress, alcohol intake, and varied and advanced investigative procedures easy access to health care facilities and better documentation. Now-a-days much news

are getting put forth regarding treatment of peptic ulcer and its complication.

Aetiological factors in India differs from that in Western Countries.<sup>[3,4,5]</sup> Commonly seen in younger age group with mean age 38 years.<sup>[6,7,8]</sup> Perforation peritonitis of all cause, most common in proximal GI tract.<sup>[9,10,11,12]</sup> Peptic ulcer perforation is the single largest cause for perforation. Perforation peritonitis has a slightly higher incidence in distal GI tract in West.<sup>[13-15]</sup> Infection is the second commonest cause followed by malignancy in India.<sup>[16]</sup> Western countries malignancy followed by infection are the causes.<sup>[17,18]</sup> Overall, mortality in Perforation peritonitis is 6–27%.<sup>[19]</sup> Mortality after surgery for PPU is between 6 and 10%.<sup>[20]</sup> There are four main factors which can increase this mortality rate even up to 100%.

These are age >60 years, delayed treatment (>24 h), shock at admission (Systolic BP <100 mmHg) and concomitant diseases.<sup>[21,22]</sup> Also, gastric ulcers are associated with a two-to-threefold increased mortality risk.<sup>[21,22]</sup> Boey's score which is a score based on scoring factors as shock on admission, confounding medical illness and prolonged perforation has been found to be a useful tool in predicting outcome.<sup>[23]</sup>

## MATERIALS AND METHODS

**Study Place:** Mahatma Gandhi Memorial Hospital and KAPV Govt. Medical College, Trichy.

**Duration of Study:** December 2014 to August 2015.

**Study Design:** Prospective Study.

**Ethical Committee:** Institutional Ethical Committee, KAPV Govt. Medical College. Approved on December 2014.

### Inclusion Criteria

Age group between 13 and 70 years. All sex group Male:Female and Trans genders. Patients with past history of Peptic ulcer now with features of peritonitis. Patients with Radiological evidence of perforation.

### Exclusion Criteria

Suspected or proven cases of preop or postop malignancy. Iatrogenic perforation-scopy/laparotomy. Traumatic perforations. Patients with peritonitis with no radiological evidence of perforation.

### Data Collection and Methods

Patients admitted with features of peritonitis at Mahatma Gandhi Memorial Hospital, Trichy, were included in the study. History evaluation with structured questionnaire along with Biochemical, Radiological analysis done. Clinical features will be noted for all patients by using structured questionnaire and the patients will be followed up after management for outcome and complications. I have selected 81 cases of Peptic ulcer perforation admitted and managed in our Hospital during this period. Surgical management is done by Open Laparotomy and Perforation closure. Since Laparoscope facility is not available in Emergency theatre, all surgical management is done by open method.

### Analysis Plan

Data analysed done by using SPSS 17 software with appropriate statistical test. Factors taken into account for predisposing cause are Sex, Age, History of Peptic ulcer, Family History, Blood Grouping, Smoking, Alcohol intake, NSAID intake, Stress, Steroid intake, Diabetes Mellitus, Hypertension, Bronchial Asthma, Ischaemic Heart Disease, Duration of Perforation. Factors taken into account in Outcome of

Management: Healed and discharged, Death, Paralytic Ileus, Wound infection, Wound dehiscence, Burst Abdomen, Sinus or fistula, Residual abscess, DVT, Pulmonary Basal Atelectasis.

## RESULT

A general survey of Aetiology and Pathogenesis of Acute Peptic Ulcer Perforation has been made. A detailed study and analysis of the Peptic ulcer perforations during the period from December 2014 to August 2015, about 81 cases from MGM Hospital and KAPV Govt. Medical College has been made; 81 cases of Peptic ulcer perforations in the prospective study are hereby presented for the purpose of dissertation. The incidence of peptic ulcer perforation at MGM Hospital has been worked out <1% (0.74%). Peptic ulcer perforation is commonly seen in 5<sup>th</sup> decade of life, 65% of the cases in the age group of 25 to 55 years. The youngest patient of peptic ulcer perforation was 15 years old and the oldest patient was 70 years old. It is predominantly seen in male population. Male:Female ratio is 9:1. Peptic ulcer perforation is more commonly seen in people who are having blood group "O" constituting 49% of the total.

Risk Factors	Yes (Percent)	No (Percent)
Smoking	53 (65.4%)	28 (34.6%)
Alcohol	54 (66.7%)	27 (33.3%)
NSAID intake	16 (19.8%)	65 (80.2%)
Steroid intake	4 (5%)	77 (95%)
Stress	12 (14.8%)	69 (85.2%)

**Table 1: Risk Factors of the Study Subjects**

Past history of peptic ulcer was present in 73% of cases of duodenal ulcer perforation; 65.4% of the cases are addicted to chronic smoking and 66.7% of the cases are addicted to alcohol; 94% were taking mixed diet. Family history of peptic ulcer was present in 32% of the cases of duodenal ulcer perforation; 94% patients consume diet with plenty of chillies and spices. Out of 73% of cases with past history of peptic ulcer, 80-85% of patients had taken medical treatment with antacids and H2 receptor blockers, proton pump inhibitors drugs irregularly. In all the cases, the diagnosis was made on clinical history and physical examination of abdomen and aided by plain X-ray abdomen in erect posture which showed pneumoperitoneum in 96.3% of cases of duodenal ulcer perforations. Obliteration of liver dullness was present in 80% to 86% of our cases; 48.5% of the cases of perforated peptic ulcer were in shock at the time of admission.

Duration of Perforation Pain	No. of Patients	Percentage
1 day	9	11.1%
2 days	46	56.8%
3 days	16	19.8%
4 days	9	11.1%
5 days	1	1.2%

**Table 2: Duration of Onset of Perforation Pain**

### Primary Outcome

Death	Frequency	Percentage
Yes	11	13.5%
No	70	86.5%
<b>Total</b>	<b>81</b>	<b>100%</b>

**Table 3: No. of Deaths in the Study Subjects**

## Secondary Outcomes

Outcomes	Yes	No
Discharged with good healing	70	11
Wound Infection	30	51
Wound Dehiscence	10	71
Paralytic ileus >3 days	9	72
Sinus fistula	1	80
Burst abdomen	2	72
Residual abscess	7	74
DVT	1	80
Pulmonary Basal Atelectasis	19	62

**Table 4: Outcomes of the Study Subjects**

## STATISTICAL RESULTS

As the number of risk factors increases the mortality also increases and it is statistically significant with P-value 0.04 and Chi square for trend value 4.1. There is a significant association between number of days of onset of perforation pain with death showing Chi square for trend value 44.4, P-value 0.000, Degree of freedom 4. In this study, there is no statistically significant association ( $p > 0.05$ ) between diabetes mellitus, hypertension and death. Among the various risk factors, only NSAID intake showing significant association ( $p < 0.006$ ) between death and other risk factors are not statistically significant. Among the various risk factors, NSAID intake showing statistically significant association with secondary outcomes and for the smoking and alcohol intake there is no statistically significant association with secondary outcomes.

There is statistically significant association ( $p < 0.05$ ) between Diabetes mellitus and secondary outcomes. Chi-square value - 16.1, Degree of freedom - 3, P value - 0.001. In this study, there is statistically significant association ( $p < 0.05$ ) between hypertension and secondary outcomes with Chi-square value - 14.2, Degree of freedom - 3, P value - 0.003.

## DISCUSSION

Incidence of perforated peptic ulcer to total number of admissions in Surgical Department is less than 1% (0.74%). Incidence of Perforated peptic ulcer related to number of surgical emergency operated is 14.8%. This incidence has been showing a trend of gradual decrease 2004 - 18.7%, 2008 - 16.1%. This might be due to increased awareness of peptic ulcer, better compliance of H2 antagonists, proton pump inhibitors and H. Pylori eradication management. Improved facilities in peripheral centers may also be a cause for decrease in incidence of peptic ulcer perforation cases along with increase in number of private hospitals in the vicinity.

Surgical emergencies done in KAPV Govt. Medical College Hospital between December 2014 and August 2015. Total cases 537 of which acute appendicitis 231, intestinal obstruction 96, perforated peptic ulcer 81, blunt injury abdomen 37, others 102. Peptic ulcer perforation is the third commonest emergency surgery done in this institution. There is significant Male preponderance to Peptic ulcer perforation in our study. Out of 81 total cases, Male 73 and Female 8 cases. Male:Female ratio is 9:1. Ezra Steiger et al 2.5:1, Auram M. Cooperman et al - 10:1.<sup>[24]</sup> Youngest patient - 15 years. Oldest patient - 70 years. Most common - Fifth Decade; 25 - 55 years - 65% of cases. A.K. Dev, S. Paul, N. Bhattacharjee, J. Roy Choudary Peak Incidence is 46 - 55 years.<sup>[25]</sup> Incidence of Peptic ulcer and Peptic ulcer perforation is common in Blood group "O" individuals; 49% of cases studied during the period

December 2014 to August 2015 in our hospital with Peptic ulcer perforation belong to "O" positive.

Plenty of other studies also showed O positive individuals more prone for Peptic ulcer disease [25, 26]; 73% of patients had previous history of peptic ulcer (59/81); 27% of patients do not have history of peptic ulcer (22/81); Erza Steiger et al<sup>[24]</sup> 30-50% cases does not have past history; 65.4% of cases are habituated to smoking with duration 5-25 years; 66.7% of cases habituated to alcohol intake; 94% of cases were taking mixed diet; 14.8% of cases giving history of stress. Rice is the staple diet in this region and all persons used to take spicy and consume chilies in their diet. Use of plenty of spicy and chilly ingredients in the diet along with smoking and alcohol intake predisposes to chronic peptic ulcer and precipitates perforation; 19.8% of persons had previous history of NSAID intake. Though NSAID intake is not a major predisposing factor in our region, as per many previous studies by S. H. Kulkarni et al and Dr. A. Y. Kashirsagar.<sup>[26]</sup> they remain main predisposing factor in Western countries, around 44%. Family history present in 32% of cases in our institution in this study. Out of patients with history of peptic ulcer, 80-85% took treatment for ulcer with drugs like Proton pump inhibitors, H2 Antagonists, Antacids. Faulty patient's compliance seems to be an important factor in non-healing ulcer leading to perforation.

Diagnosis made by Detailed history, Clinical examination, Plain X-Ray Abdomen Erect/Lateral Decubitus position. Pneumoperitoneum seen in 78 out of 81 cases on first X-ray; 3 cases initially showed no air under Right dome of Diaphragm. After pushing 50-100 mL air through Ryles Tube air found visible under right dome of diaphragm. Operative findings: Peritoneal fluid, less than 500 mL in 5 cases, more than 500 mL in 76 cases. Size of perforation, less than 0.5 cm in 13 cases, 0.5 to 1 cm in 59 cases and more than 1 cm in 9 cases. Site, Duodenum in 77 cases and Gastric in 4 cases; 77 cases treated with Laparotomy, closure of Perforation with live omental patch, Peritoneal toileting given, bilateral or unilateral flanks drain kept; 4 cases initially treated with bilateral flanks drain due to poor general condition, of which one case improved from shock, hence laparotomy and closure of perforation after 2 days, other three cases died of irreversible shock.

## Post-Operative Complications

Complication	This Study	Akdevroy Choudry, <sup>[25]</sup>
Wound Infection	37	18
Prolonged Ileus	11	7
Wound Dehiscence	12	3
Pelvic Abscess	9	5
Basal Atelectasis	23	5

**Table 5: Complications of Management**

Most cases had superficial wound infection, which healed spontaneously after draining by removal of few stitches; 12 of the cases with infection progressed to wound dehiscence and of which two cases went for burst abdomen, which was managed with tension suturing, other cases with wound dehiscence secondary suturing was done. All the cases healed well with prolonged hospital stay. Time elapsed between onset of perforation and treatment is the single most important factor in the prognosis. Time elapsed is less than 24 hours in 9

cases, 24 to 48 hours in 46 cases, more than 48 hours in 26 cases. Average hospital stay in alive cases is 13.7 days. Prolonged hospital stay in cases with wound dehiscence and burst abdomen, which extended to a maximum of 28 days.

### Mortality

	Male	Female	Overall
This Study	13.7%	12.5%	13.5%
AK Dev, Roy Choudry. <sup>[25]</sup>			5%
SK. Kulkarni, AY. Kshirsagar. <sup>[26]</sup>			7.5%

**Table 6: Mortality Rate**

Mortality in our study is 13.5%, which is slightly higher than other Indian studies. This might be due to delay in admission after onset of perforation pain and more number of patients admitted with shock at presentation.

### CONCLUSION

Smoking, Alcohol intake, Stress and NSAID intake, Blood group has significant association with peptic ulcer perforation. Duration between onset of perforation and management is the single most significant predictor for mortality. Associated comorbid conditions have significance in secondary outcomes, but do not show significant association for mortality.

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