

## A Comparative Study of PULP Scoring Vs JABALPUR Prognostic Scoring in Predicting out Come in Patience with Peptic Ulcer Perforation

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**Abstract:** This is a prospective analytical study done in a group of 50 patients with perforative peptic ulcer Government Rajaji Hospital, Madurai. The objective of the study is to analyze the two scores, PULP score and JABALPUR score. Study compares the positive predictive value and reliability of the prediction of the two scores. PULP scores overwhelms JABALPUR score there by making it a more simple, reliable and feasible scoring system.

**Keywords:** Peptic ulcer perforation, mortality prediction, pulp score, Jabalpur score

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### I. Introduction

Peritonitis is a condition causing inflammation of serosal membranes found lining the abdominal cavity and organs. Clinical picture of patients with perforated peptic ulcer can be blurred by some vague clinical features, most PPU patients can present with exaggerated symptoms and signs of peritonitis and even sepsis. Variations in the course of presentation and delay in diagnosis at admission to the hospital may potentially cause worsening of symptoms and deterioration of the clinical status, with dreadful outcome. Still there is high risk for morbidity (20-50%) and mortality (3-40%) are encountered in surgically managed PPU patients. About one in every five patients with PPU present with features of sepsis and by a skilful preoperative status of the patients' severity grade, appropriate management can be proceeded to achieve a good outcome. Currently, the ASA score and the Boey score are more frequently used in patients with PPU. Though the AS score is a surgical risk score it is not only for PPU patients in particular. A major limitation in scoring systems is their dependence on sophisticated investigations. Such investigations may not be easily available in developing countries. Therefore a simple prognostic scoring system which can be easily used in developing countries is needed. The aim of the study is to compare the predictive accuracy of two scoring systems namely the Jabalpur scoring system and Peptic Ulcer Perforation scoring system (PULP) in predicting the mortality and morbidity of patients with perforative peritonitis. The reason behind choosing these two scoring systems is that the variables used can be easily calculated with the available investigations in Government hospitals.

### II. Aims And Objectives

- To calculate and compare the positive predictive value of Jabalpur scoring system and Peptic Ulcer Perforation scoring system (PULP) for each of these patients.
- Compare standard cut offs for predicting mortality with cut offs obtained in the study
- To calculate the discriminatory power of each index by plotting Receiver operator Characteristic Curves
- To determine the reliability of prediction and sharpness of prediction.

### III. Materials And Methods

It is a prospective study. All patients with peptic perforation will be subjected to this study. Various parameters will be assessed and scoring hence done. The predicted results will then be compared with the observed results over a follow up of 30 days and the accuracy of each system determined. Minimum of 50 patients were studied. All patients admitted with the features of peritonitis studied. Required data collected on the basis of complaints of the patient.

### IV. Methodology

To determine and compare the accuracy of the Jabalpur score and PULP score in predicting mortality, Receiver Operating Characteristics (ROC) curve was used. The ROC curve was constructed using Statistical Package for Social Sciences (SPSS) version 20.0. The cutoff point was determined from the ROC curve.

## **V. Observations And Results**

### **Discriminatory Ability and Cut off Points**

Discriminatory ability or accuracy was analyzed using ROC and Area under Curve was calculated

### **Cut Off Point for PULP Score**

ROC analysis was done to identify the best cut off for PULP score. The cutoff point that was determined by using ROC curve for Jabalpur score is 4.50. Using the cut of 4.50 the sensitivity and specificity values of Jabalpur score in predicting mortality is 90% and 72.5% respectively.

### **Cut Off Point for JABALPUR Score**

ROC analysis was done to identify the best cut off for Jabalpur score. The cutoff point that was determined by using ROC curve for Jabalpur score is 4.50. Using the cut of 4.50 the sensitivity and specificity of Jabalpur score in predicting mortality is 90% and 72.5% respectively.

## **VI. Discussion**

Receiver operator characteristic curves were drawn to calculate the discriminatory ability of the two scores. The ROC Curves are graphs plotted between sensitivity and specificity. The Area Under Curve for each of the scores were calculated for different cut off points and the cut off at which maximum AUC was obtained was chosen. The area under the curve for Jabalpur score is 0.863 with 95% confidence intervals 0.756 and 0.969. The area under the curve for PULP score being 0.951 with the 95% confidence intervals 0.886 and 1.017. PULP Score has the maximum area under the curve of 95% compared to the Jabalpur score with 86%. So this shows that the PULP Score has an upper hand over the Jabalpur score in predicting the number of patients who are going to die of perforative peritonitis.

## **VII. Conclusion**

Peptic ulcer perforation constitutes about 16% of the total emergency surgeries. Though Mortality due to peptic perforation increases with age, presence of prior co morbid diseases also plays a significant role. Males are more affected when compared to females. Increase in the duration between perforation and surgery also plays a significant role. Mortality rate in our study was about 20%. Early diagnosis and prompt management of the shock also improves the prognosis of the patient. Both methods, taking into account of simple investigations. Scores used, are simple both scores can be carried out in peripheral settings also, as there is no need of sophisticated measures.

PULP score apart from taking into account of all variables like vital measures, age, serum creatinine levels and time from perforation to operation, that are even included in the Jabalpur score, also pays significance to the other vital information of the past history. This inclusion has improved both the AUC and Positive predictive values of the PULP score. To conclude though none of the scores provides an exact prediction of the mortality rate of the two scores. The PULP score overwhelms the Jabalpur score thereby making it a more simple, reliable and feasible scoring system.

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