

Evaluation Of Predictive Ability Of Boey's Scoring System For Mortality And Morbidity In Cases Of Perforated Peptic Ulcer

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Abstract-

INTRODUCTION-peptic ulcers are erosions in the gastric or duodenal mucosa that extends through the muscularis mucosae [13]. Ulcer perforation is among the common complications of PUD. H. Pylori is associated with 80-95 % of duodenal ulcers % 75% of gastric ulcers [13]. Lifetime prevalence of PUD in india is 8.8%. PPU is being a surgical emergency, is associated with significant mortality and morbidity even with surgical intervention. In this study we aimed at evaluating the role of Boey's scoring system in prediction of mortality and morbidity in patients of peptic ulcer perforation.

MATERIAL AND METHOD--this was a prospective randomised study where we observed 50 patients of perforated peptic ulcer. Each patients observed for vitals, risk factors and concomitant illnesses and was allotted a boey risk category based on the calculation of the factors of boey's scoring system.

RESULTS-PPU was more common in males with mean age of 51.18 years. Majority patients belonged to boey's risk score of 1 followed by score 0. First part of duodenum was the commonest site of perforation with majority of perforations being of size upto 5mm. Old age, shock at presentation, duration of perforation >24 hours, concomitant medical illness were associated with statistically significant morbidity and mortality. Chest infections and wound infections were the commonest morbidities. There was statistically significant association between morbidity and mortality with increasing boey's score. Overall morbidity was 59% and mortality was 10%.

CONCLUSION-Delay in management of more than 24 hours and presence of preoperative shock and concomitant medical illness were independent poor prognostic factors. The boey risk score served as a simple and accurate predictor of postoperative mortality and morbidity.

Key words- boey's score, PPU-perforated peptic ulcer, PUD- peptic ulcer disease

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I. Introduction

peptic ulcers are erosions in the gastric or duodenal mucosa that extends through the muscularis mucosae [13]. Ulcer perforation is among the common complications of PUD. H. pylori is associated with 80-95 % of duodenal ulcers % 75% of gastric ulcers [13]. Lifetime prevalence of PUD in india is 8.8% [13,4] The use of H2 receptor blockers & PPI in cases with peptic ulcers has led to decline in the number of elective surgical operations, while the prevalence of PUD has not changed, even increased [14].

PPU is being a surgical emergency, is associated with significant mortality and morbidity even with surgical intervention. Due to such prevalent mortality and morbidity it is needed to do a risk analysis of each patient by identifying certain prognostic factors which decide prognosis either directly or indirectly and ultimately help in predicting outcome.

there are many scales and scoring systems which have been described for peptic ulcer perforation based on clinical and biochemical parameters. Among these parameters are age, gender, duration at presentation, vitals at presentation such as blood pressure, urine output, presence of associated medical conditions, biochemical abnormalities in organ functions such as blood urea, serum creatinine, total leukocyte count, hemoglobin, albumin level. Many such scoring systems which have been described are boey's score, mannheim's peritonitis index (MPI), MODIFIED MPI, modified APACHE II, jabalpur scoring system and many more.

in our study we aimed at evaluating the role of Boey's scoring system in prediction of mortality and morbidity in patients of peptic ulcer perforation.

II. Material And Method

this was a prospective randomised study where we observed 50 patients of perforated peptic ulcer admitted at SMS medical college and hospital in department of general surgery. The study was approved by the college ethics committee.

INCLUSION CRITERIA- all cases of PPU in whom primary repair with omentoplasty was done

EXCLUSION CRITERIA- refused for surgery ,
malignancy and traumatic perforations ,
procedure other than primary repair was done

All cases of perforation peritonitis were clinically examined and diagnosed by combination of clinical examination and by detecting free air in the peritoneal cavity using x ray FPA . CT scan obtained wherever deemed necessary.

Data collected using predesigned proforma since the time of admission. Preoperative resuscitation, IV antibiotics & IV fluids were given to all patients. Laparotomy done using midline incision and modified graham's patch repair was done in all cases of this study.

III. Observations

the prognostic factors included in Boey's score can be readily identified prior to surgery. the Boey's score can assist in accurate & early identification of high risk patients with perforated peptic ulcer.

Total patents	50
Male:female ratio	46:4
Mean age	51.18 YEARS

Most patients were males(46 out of 50) with most belonging to age group of 41-60 years(table 1) and 14 among them were aged >60 years(table 2). Hypertension and COPD were the leading co-morbidities with 7 and 6 patients respectively (table 3).

Table 1. age wise distribution

AGE GROUPS (YEARS)	FREQUENCY	PERCENTAGE	MALE	FEMALE
10-20	03	06	02	01
21-30	07	14	07	00
31-40	03	06	02	01
41-50	10	20	09	01
51-60	13	26	13	00
61-70	08	16	07	01
71-80	03	06	03	00
>80	03	06	03	00
TOTAL	50	100	46	04

Table 2. distribution of risk factors and important clinical characteristics-

VARIABLES	FREQUENCY	PERCENTAGE
AGE >60 YEARS	14	28
ALCOHOL USE	10	20
NSAID USE	06	12
SMOKING	30	60
PNEUMOPERITONEUM ON X-RAY FILM	49	98
HYPOTRNSION SBP <90mmHg	20	40
DURATION>24 HOURS AT PRESENTATION	32	64
CHRONIC MEDICAL ILLNESS	13	26

Table 3. distribution of concomitant medical illnesses

MEDICAL ILLNESS	FREQUENCY	PERCENTATGE
COPD	06	12
HYPERTENSION	07	14
DIABETES MELLITUS	02	04

On Boey's risk stratification 19 patients had boey's score 1 followed by 12 in score 0. Morbidity when compared to score 0 ,was statistically significant as the score increased (table 4). Whereas size and site of perforation were not related to increasing morbidity and mortality(table 5,6). Most perforations were observed at D1 and were of ≤ 5 mm in size(table 5,6).

Table 4. boey's risk stratification

BOEY'S SCORE	FREQUENCY	PERCENTAGE	MORBIDITY(p<0.01)	MORTALITY(p>0.05)
0	12	24	03	00
1	19	38	09 (p<0.05)	01 (p>0.05)
2	10	20	09 (p<0.01)	01 (p>0.05)
3	09	18	08 (p<0.01)	03 (p<0.05)
TOTAL	50	100	29	05

Table 5. distribution based on size of perforation

Size(mm)	Frequency	morbidity	Mortality
Upto 5 mm	36	20 (p>0.05)	03 (p>0.05)
>5 mm	14	09	02

Table 6.distribution based on site of perforation

Site	Frequency	Morbidity	Mortality
D1	36	21 (p>0.05)	4 (p>0.05)
All other sites	14	08	1

Morbidity and mortality were significant in patients of >60 years of age as well as in patients presenting late (>24 hours after onset of pain) and with shock (SBP<90 mmHg) at presentation (table 7,8,9) and in patients with concomitant medical illness also(table 10).

Table 7.distribution among age groups

Age	Frequency	Morbidity	Mortality
<60 years	36	17	02
>60 years	14	12 (p<0.05)	03 (0.05)

Table 8.distribution according to shock at presentation

Blood pressure	Frequency	Morbidity	Mortality
<90 mmHg	20	15 (<0.05)	04 (<0.05)
>90 mmHg	30	14	01

Table 9.distribution according to duration at presentation

Duration at presentation	Frequency	Morbidity	Mortality
<24 hours	18	04	00
>24 hours	32	25 (p<0.05)	05 (p<0.05)

Table 10.distribution according to associated concomitant medical illness

COMORBITIES	Frequency	Morbidity	Mortality
PRESENT	13	11 (p<0.05)	05 (p<0.001)
ABSENT	37	18	00

Among post operative complications chest infections were most common followed by wound infection (table 11). Association of chest infections with old age was statistically significant so was the association of chest infection with mortality (table 12 &13). Association of boey,s score with mortality was not significant but it's association with morbidity was statistically significant(table 15). Table 16 compares findings of present study with another similar study by Agarwal A et al.

Table 11.distribution of post operative morbidities

COMPLICATION	FREQUENCY	PERCENTAGE
CHEST INFECTION	22	44
WOUND INFECTION	12	24
WOUND DEHISCENCE	02	04
INTRA ABDOMINAL COLLECTION	01	02
LEAK	02	04

Graph 1.depicting distribution of various morbidities among boeys risk groups-

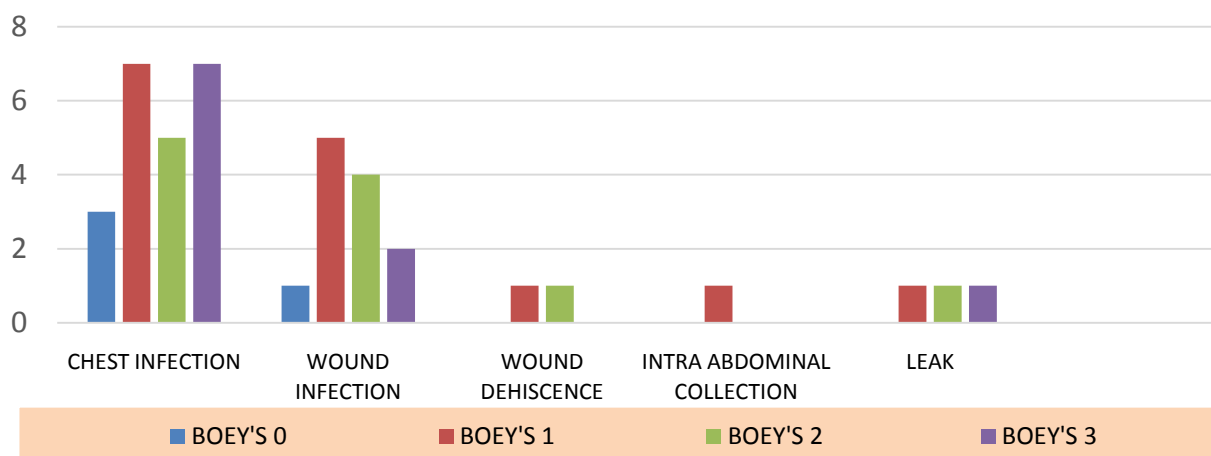


Table 12.distribution of mortality among patients with chest infections-

CHEST INFECTION	FREQUENCY	MORTALITY	p value
PRESENT	22	05	<0.001
ABSENT	28	00	
TOTAL	50	05	

Table 13.association between chest infections and age >60 years

CHEST INFECTIONS		Infection present	p value
AGE > 60 YEARS	14	13	<0.001
AGE < 60 YEARS	36	09	
Total	50	22	

Table 14.association among mortality and old age (>60 years) & chest infection-

	MORTALITY	CHEST INFECTIONS	p value
AGE >60 YEARS	03	13	>0.05
AGE <60 YEARS	02	09	
	05	22	

Table 15.association between boey's score, mortality and morbidity-

BOEY'S RISK SCORES	MORTALITY	Adjusted odds ratio for mortality	MORBIDITY	Adjusted odds ratio for morbidity	TOTAL PATIENTS IN EACH GROUP
SCORE 0	0	-	3	-	12
SCORE 1	1	-	9	2.7	19
SCORE 2	1	2	9	27	10
SCORE 3	3	9	8	24	09
p value	>0.05		<0.01		

Table 16-Statistical association of various parameters with mortality and morbidity-

	Present study	Agarwal A et al
Site of perforation	Not significant ,p>0.05	Not significant ,p>0.05
Size of perforation	Not significant ,p>0.05	Not significant ,p>0.05
Old age (>60 years)	Significant	Significant
Shock at presentation	Significant	Significant
Duration at presentation >24 hours	Significant	Significant
Presence of concomitant medical illness	Significant	Not significant

IV. Discussion

The peptic ulcer perforation was more common in males in our study. Similar findings has been noticed by other investigators [5,6,7,8]. The average age of patients in our study was 51.18 years and about half of the patients (23) belonged to the age group of 40-60 years. In our study the most common site of perforated peptic ulcer was first part of duodenum followed by pre pyloric region and body of stomach. Other investigators

[5,8,11,9] have also reported first part of duodenum to be the most common site .However in few studies. Lohsiriwat V et al [12] and Gulzar JS et al [10] the most common site of perforation was pre pyloric region.

Table 17: comparison among various studies-

Authors/ investigators/ study	Most common sites of perforation
Present study	D1>PP>BODY
Agarwal A. et al	D1>PP>BODY
Dr A. Afee Asma et al	D1>STOMACH
Gulzar JS et al	PP>P>D1
Mehmat Y et al	D1>PYLORIC
Shah dhruba et al	D1>BODY>JUXTAPYLORIC
Lohsiriwat et al	PREPYLORIC
Boey J et al [8]	D1
Siu WT et al [11]	D1

Most perforations were of size less than upto 5 mm. Mehmat Y at al[1] had similar observations ,89 patients out of 128 had perforations <5mm and they also observed a statistically significant associations between size > 5mm and mortality (p value <0.001). Shah dhruba Narayan[2] observed a median size of 6.5mm whereas Agarwal A. et al[5] observed a mean size pf 0.9mm. Gulzar JS et al [10] had perforation between the size of 5mm to 10mm in all 50 patients.

Maximum patients belonged to Boey's score 1 followed by score 0 risk groups in present study. Similar observations were made by Agarwal A et al[5] while Gulzar JS et al [10] and Shah Dhruba Narayan [2] had maximum patients in score 0 followed by score 1.

20% patients had history of alcohol abuse while 12% had history of NSAID use. 60% patients were smokers. Associated concomitant medical illness were present in 13 patients in the form of COPD, diabetes mellitus and hypertension.

Among the post operative morbidities chest infections and wound infections were the leading complications which can be attributed to the emergency contaminated type of surgery performed for perforated peptic ulcer. Agarwal A et al [5] also observed similar results, 21.1 and 20.5% patients developing chest and wound infections respectively. Gulzar JS et al[10] also observed chest infections in 30% of its patients operated for PPU. He observed a chest infection prevalence of 10, 21.4, 54.5, 80% in Boey's risk score of 0,1,2 and 3 respectively which was statistically significant (p=0.004). Dr A. Afee Asma et al observed a 36% morbidity, surgical site infection being the most common followed by pulmonary complications.

Table 18.comparing distribution of various postoperative complication observed in various studies-

	Presnt study	Agarwal A. et al [5]	Gulzar JS et al [10]	Mishra, Sharma, Raina et al [3]	Shah dhruba Narayan [2]	Dr A. AfeeAsma et al [9]
Total complications	29/50	79/180	19/50	51/140	32/50	22/61
Chest infection	22	38	15	25	These 3 were the leading morbidities along with fever	06
Wound infection	12	37	14	12		15
Wound dehiscence	02	10	10	18		05
Intra abdominal collection/ abscess	01	9	-	13	-	-
Leak	02	12	03	06		
Other	-	-	-	MODS -13 UGI bleed -01	-	External biliary fistula -2

Chest infections were more in patients aging >60 years (table 12) and the association was statistically significant although the association of chest infection in patients>60 years and mortality was not significant statistically (table 13). Septicemia and multi organ failure were the leading cause of mortality in present study. Mean duration of hospital stay was 8 days.

V. Conclusion

In our study peptic ulcer perforation was more common in males and maximum number of patients belonged to age group of 41-60 years. The most common site of perforation was first part of duodenum followed by prepyloric region and stomach. Perforated peptic ulcer is a serious condition requiring emergency surgical management and even after surgery it has a high mortality and morbidity. The overall morbidity rate was 59% in our study. The chest infections and wound infections were the leading morbidity postoperatively as the surgery being emergency contaminated type. The mortality rate was 10% overall and the most common cause was sepsis followed by multi organ failure. Delay in management of more than 24 hours and presence of

preoperative shock and concomitant medical illness were independent poor prognostic factors. The boey risk score served as a simple and accurate predictor of postoperative mortality and morbidity.

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