

FACTOR RESPONSIBLE FOR HIGHER COMPLICATION RATE IN PATIENTS OPERATED FOR PERFORATED PEPTIC ULCER

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ABSTRACT

Background: Perforation of peptic ulcer is a life-threatening emergency and associated with marked post surgical morbidity. **Objective:** To enlist the predictors of the postoperative morbidity in surgically treated patients of perforated peptic ulcer. **Methods:** A cross sectional study was conducted at Surgical Departments of Allied & DHQ Hospital Faisalabad. Clinically and radiologically suggestive but surgically proven, 60 cases of the perforated peptic ulcer were included in the study. Possible predictors were recorded on admission as well as during surgery. Postoperatively, patients were taken care of and followed up for the development of complication till the time of discharge. Depending upon the presence/ absence of the post operative complications, patients were divided into two groups. Data was entered and analyzed by using SPSS version 11. **Results:** In our study, age ranged from 24-80 years. 26.7 percent of the cases had clinical features of shock at presentation. Smoking was noted in 47 percent of the cases. In 97% of the cases, the size of perforation was less than 1 cm while more than half of the cases had amount of peritoneal spillage more than 1 Litre. The most common complication was wound infection. Most of the patients were discharged home between the 7th and 10th postoperative days. Age more than 40 and male sex (p-value < 0.147) were not found to be associated with increased risk of development of the post operative complication. Complication rate was found to be quite high for the patients presenting after 72 hours of the development of the pain (p=0.006, OR=9.3). Other factors which showed significant difference between the two groups for the development of complication included shock at presentation (p-value= 0.032), history of smoking (p-value= 0.002) and the presence of associated medical illness (p-value= 0.01). **Conclusions:** Late presentation, history of smoking, presence of shock at the time of presentation and presence of the associated medical illness significantly influence the rate of development of post operative complications.

Key words: perforation peptic ulcer, complications, predictors

INTRODUCTION

Perforation of peptic ulcer is a life-threatening situation and a frequent cause of emergency admissions.^{1,2} When this emergency is dealt surgically, it is associated with significant mortality and morbidity.³ Currently used risk stratification strategies are better predictors of mortality than morbidity.^{4,5} The mortality rate has decreased remarkably by the use of H-2 blockers but the morbidity is still the same, may be because of the reason that we are still not sure about the morbidity determinants.^{5,6} It is a common observation that postoperative morbidity related with perforated peptic ulcer leads to longer hospital stay and more frequent hospital visits and admissions affecting patient's over all health and hospital costs. Consequently, it is quite

appropriate to recognize the determinants of the postoperative morbidity so that the surgeons may well predict the postoperative complications, and plan a better management beforehand. Present study was conducted to enlist the predictors of prospective morbidity in surgically treated patients of perforated peptic ulcer.

MATERIAL & METHOD

This study was conducted at Surgical Departments of Allied & DHQ Hospitals Faisalabad. Study was started on 1st June 2008 and was completed over a period of six months. 60 patients of perforated peptic ulcer who underwent surgical treatment were recruited for study by purposive sampling. Subjects who had other gut pathologies like intestinal tuberculosis or typhoid perforation were excluded from the study. The variables measured on admission included age, sex, duration of pain, history suggestive of shock, history of smoking and presence of associated medical condition/s like Chronic Obstructive Pulmonary Disease (COPD), Ischemic Heart Disease (IHD), Hypertension (HTN), Diabetic Mellitus (DM) and Pulmonary Tuberculosis(TB). History suggestive of shock was defined as increased respiratory rate, cyanosis and

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altered state of consciousness in addition to a history of oliguria. Preoperatively, patients were resuscitated with intravenous fluids, Ryle's tube aspiration and blood transfusion were done, where indicated. They were started on IV ceftriaxone and metronidazole. The diagnosis of perforation was made on clinical history, examination and presence of gas under diaphragm on X-ray but was confirmed only on exploration. Before performing surgical intervention however, a fully informed consent was sought from the patient or the next of kin. The patients who underwent surgical treatment, the abdomen was opened with a midline incision. The peritoneal spillage if any was sucked out and measured. The size of the perforation was noted. Then the perforation was closed by Graham's omentopexy. After irrigating with at least 3 liters of warm normal saline, the peritoneal cavity was mopped thoroughly and abdomen was closed as it is done routinely in emergency. The decision to keep a drain was based on the degree of peritoneal spillage, which was estimated by measuring the amount of fluid in the suction bottle aspirated from opening the peritoneum till the stage of peritoneal lavage. The morbidity determinants measured during operation were the amount of peritoneal spillage and the size of perforation. All patients postoperatively received intravenous fluids, triple regimen antibiotics and Ryle's tube aspiration till the return of intestinal motility. Postoperative complications were noted till the patient was found fit enough to be discharged varying from 5 to 14 days. These included wound infection, burst abdomen, hematemesis, enterocutaneous fistula and intraperitoneal abscess. Proforma was used for the data collection and SPSS version 11 was used for data analysis. Descriptive statistics were applied to determine the minimum age, maximum age and mean age. Frequencies were noted for age, sex, duration since onset of pain at presentation (<24 hours, 24-48 hours, > 48 hours), presence or absence of history of smoking, presence or absence of shock, presence/absence of associated medical illness and type of illness (DM, HTN, IHD, COPD), size of perforation (<1 cm, > 1cm), amount of peritoneal spillage (<1L, > 1L), type of perforation (DU, pyloric, pre pyloric) type of procedure (Graham's omentoply, primary closure, pyloric exclusion with gastro jejunostomy) number of complication (None, one,

two and three) and type of complication (wound infection, burst abdomen, hematemesis, enterocutaneous fistulae, intraperitoneal abscesses). Hospital stay was noted in terms of minimum, maximum and average, in days. After noting the characteristics of the study subjects and postoperative complications, subjects were divided into group A and group B depending upon the presence or absence of postoperative complications. Frequencies of different determinants were noted in both groups and chi-square test was applied to see the significant difference (P-value <0.05) between the group A and group B. OR (Odd's Ratio) was calculated to note the association of different determinants with risk of development of complications.

RESULTS

Regarding the age of the study subjects minimum age was 24 years while maximum age was 80 years. Most of the patients were older than 40 years of age. Mean age was 46.08 years. Two peaks were observed, one at the age of 45 and the other at the age of 60.

Eighty percent of the patients were male. Majority of the cases presented within 48 hours. Very few cases had duration of pain >72 hours.

26.7 percent of the cases had clinical features of shock at presentation, whereas, smoking was noted in 47 percent of the cases. Regarding the incidence of the associated medical illnesses, majority of the cases (43 cases) had no associated medical illness. COPD was noted in 8 patients. HTN was recorded in 4 while IHD and DM were present in 2 and 3 cases respectively. (Figure I)

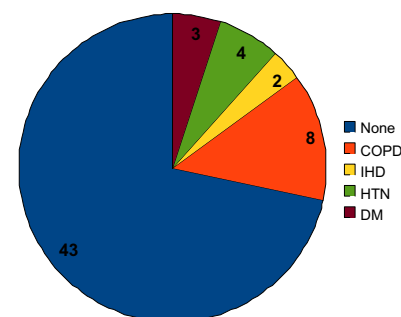


Figure I: Number of cases with associated medical illnesses

In almost 97% of the cases the size of perforation was less than 1 cm. Only 2 cases had perforation more than 1 cm. Regarding the peritoneal spillage, more than half of the cases had amount more than 1 Litre.

Amount more than 1 L was recorded in 34 cases. 1st part of the duodenum was the most common site of perforation, which was present in 52 cases. 5 cases had perforation in pyloric region. Pre-pyloric perforation was recorded in 3 cases. For the duodenal ulcer perforation, Graham's omentopexy was done in 51 cases. 1 case with larger perforation needed pyloric exclusion with gastrojejunostomy. Cases of pyloric and pre-pyloric perforation underwent primary closure (9 cases).

Patients were followed up in the wards for the development of certain post operative complications. Majority of the patients, 36 cases (60%), developed none of the complications. Fourteen cases developed 1 complication each, 8 cases developed 2 complications each, while only 2 cases developed 3 complications each.

The most common complication was wound infection which developed in 33 % of the cases. 10 cases developed intraperitoneal abscesses, 5 developed burst abdomen and one developed enterocutaneous fistulae. None of the patients developed haematemesis. (Table II)

Table I: Complications

Wound infection	20(33.3%)
Intraperitoneal Abscesses	10(16.7%)
Burst Abdomen	5(8.3%)
Enterocutaneous Fistulae	1(1.7%)
Haemetemesis	0(0%)

Most of the patients were discharged home between the 7th to 10th postoperative day. Average hospital stay was 8.75 days. Minimum hospital stay was 5 days while maximum was 14 days.

Statistical analysis was done to assess the effects of different pre-operative and intra-operative predictors on the development of the postoperative complications. (Table II)

No significant difference (Chi-square = 1.25, p-value= 0.25, OR 1.9) was noted between the two groups (Age <40 vs age > 40) in development of the post operative complications. Similarly, sex was not found to be the factor causing statistically significant difference between the group A and B. (Chi-square = 2.100, p-value= 0.147, OR 0.391).

Table II: Statistical analysis of the predictors

Variables	Group A (Complications)	Group B (complications)	Total	Chi-Square Value	P value	OR
Age	<40	18	22	1.25	0.25	1.9
	>40	6	14			
	Total	24	36			
Sex	M	17	31	2.10	0.147	0.391
	F	7	5			
	Total	24	36			
Duration of pain at presentation	>72 H	6	2	7.60	0.006	9.3
	<48 H	9	28			
	Total	15	30			
Shock	Present	10	06	4.60	0.032	3.57
	Absent	14	30			
	Total	24	36			
H/O Smoking	Present	17	11	9.38	.002	5.51
	Absent	7	25			
	Total	24	36			
Medical illnesses	Present	11	6	6.03	0.01	4.23
	Absent	13	30			
	Total	24	36			
Size of perforation	> 1 cm	02	0	3.1	0.07	infinite
	<1 cm	22	36			
	Total	24	36			
Amount of peritoneal spillage	> 1L	16	18	1.62	2.02	2
	<1 L	8	18			
	Total	24	36			

When analyzed for the duration of pain at presentation, there was a highly significant difference between the two groups (Chi-square = 7.60, p=0.006). Complication rate was found to be quite higher for the patients presenting after 72 hours rather than within 48 hours of the development of the pain (OR=9.3). Other factors which showed significant difference between the two groups for the development of complication included shock at presentation (Chi-square = 4.60, p-value= 0.032, OR=3.57), history of smoking (Chi-square = 9.38, p-value= 0.002, OR=5.51) and the presence of associated medical illness (Chi-square= 6.03, p-value= 0.01, OR 4.23). Regarding the risk factors noted pre-operatively like the size of the perforation (Chi-square=3.1, p= 0.07, OR= infinite) and amount of peritoneal spillage (Chi-square= 1.628, p=0.202, OR= 2), no significant difference was noted.

DISCUSSION

Recently there is trend of repair of the peptic ulcer perforation by laparoscopic approach^{3,7,8}, however the subjects in our study underwent open repair. Moreover, the procedure done in most of the cases was Graham's omentopexy. So, these results will mostly be applicable to open repair with Graham's omentopexy.

Increased age is usually considered to be associated with increased risk of development of the post operative complication.⁹⁻¹³ But in our study age more than 40 was not found to be associated with increased risk of development of the post operative complications. This has also been reported by Sharma SS et al. in a recent study.⁴ Although, they mentioned that the reason for the difference possibly had been the lesser number of patients older than 60. In our study this may not be the reason as the number of the patients older than 60 was 16. In our study, sex was not the determinant of the postoperative complications. This factor has not been studied by others for as a risk factor. A local study mentioned that late presentation was not a poor predictor of the outcome as it had not been associated with increased risk of development of the complication but our study showed that patients presenting after 72 hours in contrast to those presenting within 48 hours of the development of the pain, were at greater risk of development of the postoperative complications.¹⁴ Late presentation as a risk factor has been reported in many studies.^{15,16}

Shock has been reported as predictor of poor outcome^{4,17} because of its association with increased incidence and risk of postoperative complications. Our study showed the similar results. Smoking not only significantly influenced the rate of development of the complications but it was also found to be associated with increased risk of developing them. As reported by many studies^{4,18}, associated medical illness is a determinant of the poor outcome, our study also depicted that associated medical illness was associated with increased risk of development of complications.

No significant difference was noted between the two groups when analyzed for the size of the perforation and amount of peritoneal spillage. Size of perforation (>1cm) is of special concern because of two reasons. Firstly, we had only two

patients with size of perforation (> 1 cm) and both of them developed complications but as the number of the patients was too less, no statistically significant difference was found. Secondly, Odd's ratio was found to be infinite because there was no patient with out complication having size greater than 1cm. We feel that these results need further evaluation in a larger study. Recent studies also do not have consensus on this issue.^{4,19}

As Sharma Ss⁴ reported that abdominal distension indicates the amount of peritoneal spillage in cases of the peptic ulcer and that it is statistically, biologically and clinically meaningful predictor of the risk and number of postoperative complications, we evaluated the amount of the peritoneal spillage as a risk factor. But in our study, statistical analysis failed to prove any association between the spillage >1L and the post operative complications.

CONCLUSION

Our study revealed that late presentation, history of smoking, presence of shock at the time of presentation and presence of the associated medical illness significantly influence the rate of development of post operative complications in patients operated for perforation peptic ulcer.

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