RISK FACTORS FOR POST OPERATIVE COMPLICATIONS IN PATIENTS OF PERFORATED DUODENAL ULCER

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ABSTRACT

Background: Perforation of peptic ulcer is a life threatening emergency and associated with increased surgical morbidity. **Objective:** To determine the risk factors of post postoperative complications in patients of perforated duodenal ulcer. **Methodology:** A cross sectional study was conducted at Surgical Department of Sheikh Zayed Hospital, Rahim Yar Khan and started on 12th February 2013 and completed in 6 months. Clinically, radiologically and surgically proven, 133 cases of the perforated peptic ulcer were included in the study through non probability consecutive sampling after taking informed consent. Possible predictors were recorded on admission as well as during surgery. Main outcome measures were postoperative complications which included respiratory tract infection, wound infection, and burst abdomen. Data was entered and analyzed by using SPSS version 14. **Results:** Age range of study subjects was 26-70 years. 80% of the patients were male and 20% female. 27.8 % of the cases had clinical features of shock at presentation. Majority of the cases 65% presented within 48 hours. Smoking was noted in 51.9% of the cases. 74% had no associated medical illness. In 96% of the cases the size of perforation was less than 1 cm. Amount of peritoneal Spillage was greater than 1 liter in more than half patients (62%). First part of the duodenum was the most common site of the perforation, which was present in 88% of the cases. Graham's omentopexy was done in 95% cases. 53 (40%) cases developed postoperative complications. 31 cases developed 1 complication each, 17 cases developed 2 complications each while 5 cases 3 complications each. The most common complication was respiratory tract infection which occured in 26 patients (19.6%). Most of the patients were discharged home between the 5th and 10th postoperative days. Those patients who presented in emergency after duration of 48 hours since onset of epigastric pain had very significant association with postoperative complication rate (p=0.0001). Other factor which showed significant association was shock at presentation (p-value= 0.004). **Conclusion:** Late presentation and presence of shock significantly influence the rate of development of post operative complications in patients of perforated duodenal ulcer. However, smoking and presence of medical illness failed to show significant association with postoperative complications.

Key words: Perforation, Duodenal ulcer, Complications, Predictors.

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INTRODUCTION

One of the frequent causes of emergency admission[1] is perforated peptic ulcer and unfortunately a life threatening condition.[1,2] The incidence of peptic ulcer perforation is on rise.[3] When this situation is dealt surgically it is associated with significant postoperative complications.[4] The common postoperative complications after perforated duodenal ulcer are cutaneous wound infections, respiratory complications including pneumonitis and acute exacerbation of chronic obstructive air way disease, burst abdomen, enterocutaneous fistula and death.[5] Incidence of these complications increases in presence of preoperative risk factors in patients of perforated duodenal ulcer.[6] The risk factors associated with increased incidence of postoperative complications in perforated duodenal ulcer are old age, smoking,[5] delayed presentation of patient after perforation, presence of septic shock[5] and concomitant medical diseases[5] like chronic obstructive air way disease, diabetes mellitus, hypertension, ischemic heart disease, pulmonary tuberculosis. The risk of developing postoperative complications is ranging from 25% to 30% in presence of these risk factors.[5,7,8,9,10] Duodenal ulcer perforation is common surgical emergency presented to surgical emergency department. So this study was carried out to assess the risk factors which result in increase incidence of postoperative complications in patients of perforated duodenal ulcer.

METHODOLOGY

This cross sectional study was conducted at the surgical department of Sheikh Zayed Hospital, Rahim Yar Khan. Study was started on 12th of February 2013 and was completed over six month period. 133 patients operated for perforated duodenal ulcer were included. Non probability consecutive sampling technique was used. The patient of 12 to 70 years of age having more than 24 hours history of epigastric pain, vomiting, absolute constipation, generalized abdominal tenderness and radiological

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evidence of duodenal ulcer perforation as free gas under dome of diaphragm were included as study subjects. All these patients were enrolled in study during exploratory laparotomy after confirmation of perforated duodenal ulcer and after taking written consent. Subjects with perforated peptic ulcer but who did not undergo surgical repair of the perforation, pregnant woman with peptic ulcer perforation and who has per-operative other gut pathology like intestinal tuberculosis, typhoid perforation, traumatic duodenal perforation and intra abdominal malignancy were excluded from the study.

Data was noted on predesigned proforma on risk factors like presence or absence of shock, smoking, associated medical conditions such as chronic obstructive airway disease, ischemic heart disease, hypertension, diabetes mellitus and duration of presentation as less than 48 hours and greater than 48 hours were noted. History suggestive of shock was defined as increased respiratory rate, cyanosis and altered state of consciousness in addition to history of oliguria. The diagnosis of perforation was made on clinical history, examination and presence of gas under diaphragm on X-Ray, but confirmed on exploratory laparotomy. Preoperatively, patients were resuscitated with intravenous fluids and Ryle's tube aspiration. They were started on intravenous ceftriaxone and metronidazole. All the procedures were performed by registrar having at least three years experience. The peritoneal spillage was sucked out and measured. The size of the perforation was noted. The perforation managed accordingly after peritoneal lavage with 3 liters of warm normal saline and peritoneal cavity was mopped thoroughly. Abdomen was closed by tension suture in all patients. Drain was placed accordingly. Postoperatively all patients were given triple regimen antibiotics, intravenous fluids, analgesics and nasogastric aspiration till bowel activity returned. Postoperative complications were noted within 20 days. These included respiratory tract infections, wound infection and burst abdomen. Patients were discharged varying from 5 to 14 days.

Data was entered and analyzed by SPSS version 14. The age and hospital stay (in days) was presented as mean and standard deviation. For analysis of categorical variables were presence or absence of history of smoking, shock, associated medical illness, type of illness (DM, HTN, IHD, COPD) and type of complications as respiratory tract infection, wound infection, burst abdomen was calculated in terms frequencies and percentages. 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. Chi-square test was applied to see the significant difference (P-value<0.05) between the group A and group B.

RESULTS

Regarding the age of the study subjects youngest was of 26 years while oldest was of 70 years. Mean age was 48.03 $\pm$ 12.1 years. Eighty percent of the patients were male. Majority of the cases presented within 48 hours. 27.8% of the cases had clinical features of shock at presentation, whereas, smoking was noted in 51.9 % of the cases.(Table I).

Table I: Risk Factors noted at admission

Risk Factors	No (%)
Shock	37(27.8%)
Smoking	69(51.9%)
Presence of associated medical illness	35(26.3%)
Duration of presentation	
< 24 h	86(64.7%)
> 24 h	47(35.3%)

Regarding the incidence of the associated medical illnesses, majority of the cases (74%) had no associated medical illness. COPD was noted in 19 patients. Hypertension was recorded in 6 while Ischemic Heart Disease and DM were present in 7 and 3 cases respectively. In 96% of these cases the size of perforation was less than 1 cm. Only 4% of the cases has perforation more than 1 cm. The peritoneal spillage was greater than one liter in 62% of cases and in 38% cases less than one liter. Regarding site of perforation, first part of duodenum was the commonest site which was present in 88% cases, 7% cases has perforation in pyloric region, Pre-pyloric perforation was recorded in 5% cases. Graham's omentopexy was done in 95% cases. Primary repair was done in 3% cases, whereas 2 % cases with larger perforation needed pyloric exclusion with gastrojejunostomy.

Patients were followed up in the wards for the development of post operative complications. Majority of the patients, 60 cases, developed no complication. 31 cases developed 1 complication each, 17 cases developed 2 complications each while 5 cases developed 3 complications each. The most common complication was respiratory tract infection which developed in 19% cases. The second most common complication recorded was wound infection 13%. 7% cases developed burst abdomen (Table II).

Table II: Frequency of post operative complications

Complications	No (%)
Respiratory tract infection	26(19.6%)
Wound infection	18(13.5%)
Burst Abdomen	9(6.8%)

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

Statistical analysis was done to assess the effects of different pre-operative and intra-operative factors on the development of the postoperative complications. The study subjects were divided in to two groups depending upon the absence and presence of the complications. The patients, who developed any of the complication, were included in group A, while those who did not develop any of the complications were included in group B. Cross tabulation was done; Chi-Square test (c-x^2) was used to assess the statistically significant difference between the two groups with reference to the factors under study. When analyzed for the duration of pain at presentation, there was a highly significant difference between the two groups (c-x^2=24.17, p=0.001). Complication rate was found quite high for the patients presenting after 48 hours rather than presenting within 48 hours of the development of the pain. Other factor which showed significant difference between the two groups for the development of complication included shock at presentation (c-x^2 = 8.224, p-value= 0.004). History of smoking (c-x^2 = .031, p-value= 0.86) and the presence of associated medical illness (c-x^2 = .000, p-value= 0.98) failed to show any significant association with postoperative complication. (Table III)

Table III: Duration of presentation in the Group A & B

	Group A No (%age)	Group B No (%age)	Total No(%age)	P. values
Duration of Pain				
<48 Hours	21 (40%)	65 (81%)	86 (65%)	0.001
>48 Hours	32 (60%)	15 (19%)	47 (35%)	
Total	53 (100%)	80 (100%)	133 (100%)	
Shock				
Present	22 (41%)	15 (19%)	37 (28%)	0.004
Absent	31(59%)	65 (81%)	96 (72%)	
Total	53 (100%)	80 (100%)	133 (100%)	
Smoking				
Present	27 (51%)	42 (52%)	69 (52%)	0.86
Absent	26 (49%)	38 (48%)	64 (48%)	
Total	53 (100%)	80 (100%)	133(100%)	
Medical illness				
Present	14 (26%)	21 (26%)	35 (26%)	0.98
Absent	39 (74%)	59 (74%)	98 (74%)	
Total	53 (100%)	80 (100%)	133 (100%)	

DISCUSSION

We feel that the limitations of our study must be mentioned before making a comparison and discussion. There is current trend of laparoscopic approach for repair of perforated duodenal ulcer. In contrast to the current trend of repair of the peptic ulcer perforation by laparoscopic approach,[4,8,9,10,11,12,13] the subjects in our study underwent open repair. In our most of the cases Graham's omentopexy was done as primary procedure for perforated ulcer. So, these results will mostly be applicable to open repair with Graham's omentopexy. Increased age is independent risk factor due to concomitant cardio respiratory diseases and is usually considered to be associated with increased risk of development of the post operative complication,[10,14] but in our study we did not compare the association of this factor with postoperative complication. Moreover, peritoneal spillage more than 1 liter was associated with different postoperative complications especially those complications which were noted in our study. As Sharma SS[5] 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.

The patients presenting after 48 hours in contrast to

those presenting before 48 hours of the development of the pain, were at greater risk of development of the postoperative complications, but a study,[15] 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. Late presentation as a risk factor has been reported in many studies.[16, 17] Shock has been reported as the poor predictor of the outcome,[5, 18, 19] because of its association with increased incidence and risk of postoperative complications.[20,21,22] Our results also showed that shock significantly (P=.004) influenced the rate of post operative complications. Smoking not only significantly influenced the rate of development of the complication but it was also found to be associated with increased risk of development of the complications.[21,22] In some studies rate of complication was equal in both smoker and non smoker[13] but in our study smoking did not significantly (p=0.860) influenced rate of postoperative complications. As reported in many studies,[5,13,16,22] associated medical illness is a determinant of the poor outcome but our study showed conflicting p value of 0.98 indicated that associated medical illness was not significant risk factor for postoperative complication in patients of perforated duodenal ulcer .

CONCLUSION

It may be concluded from the above mentioned findings that late presentation and history of shock significantly influence the rate of development of post operative complications in patients of perforated duodenal ulcer. However, smoking and presence of medical illness did not significantly influence post operative complication rate.

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