ORIGINAL PROF-957

PERFORATED DUODENAL ULCER

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ABSTRACT... shoaibkhan14@yahoo.com **Objective:** Perforated duodenal ulcer is a common surgical emergency. Controversy exists regarding simple closure of perforation or definitive surgery in emergency setting. The objective of the study is to see the result of simple closure of perforated duodenal ulcer followed by eradication of H. Pylori in young soldiers. **Design:** Descriptive and analytical. **Place and duration of study:** This study was carried out at CMH Kharian/CMH Rawalpindi between Jan 1998 to June 2002. **Subject and method:** Fifty three young soldiers presenting with perforated duodenal ulcer were included in the study. They were treated with simple closure of perforation followed by eradication of H. Pylori. These patients were followed up in OPD for two years. Depending upon their symptoms they were placed in different Visick grades. **Result:** Six patients (11.3%) were lost in followup and excluded from the study. Out of remaining forty seven patients thirty nine patients (82.5%) remained asymptomatic and did not require further treatment. Four patients (8.5%) required symptomatic treatment. Three patients (6.3%) required another course of omeprazole. One of them (2.1%) required vagotomy and gastrojejunostomy for gastric outlet obstruction. **Conclusion:** It was concluded that simple closure of perforation with H. Pylori eradication is a simple and safe procedure to treat this emergency.

INTRODUCTION

A peptic ulcer is a mucosal lesion of the stomach or duodenum in which acid and pepsin play major pathogenic role. It occurs due to an imbalance between the aggressive activity of acid and pepsin and the defense mechanisms that resist mucosal digestion[1]. Perforation is a known complication of duodenal ulcer[1,2,3]. More than 95 percent of duodenal ulcers occur in the first part of duodenum[4]. Perforation occurs in approximately 5-10 percent of patients with duodenal ulcer[1]. In approximately 50 percent of patients of duodenal ulcer perforation occurs without previous history of dyspepsia[5]. Mortality of perforated duodenal ulcer has declined from

40 percent to the present level of less than 10 percent, largely due to early diagnosis and treatment. After the diagnosis has been made, it is generally agreed that emergency surgery should be performed as soon as the patient has been adequately resuscitated[3]. There is however, considerable controversy over the surgery to be performed in emergency. The initial long term results of omental patch repair for perforated duodenal ulcer were unsatisfactory[5,6]. With better understanding of the pathogenesis of duodenal ulcer, it is clear that H. Pylori has an established role in more than 90 percent of these patients.

The recent advances in antiulcer therapy have shown that simple closure of perforation followed by eradication of H. Pylori is a simple and safe option in many centers[7]. The definitive operation for perforated duodenal ulcer is performed by few surgeons.

MATERIAL AND METHODS

This descriptive study was carried out in department of Surgery Combined Military Hospital Kharian and Combined Military Hospital Rawalpindi from Jan 1998 to June 2002. It included 53 young soldiers presenting with perforated duodenal ulcer in whom simple closure of perforation over an omental patch followed by eradication treatment of H.Pylori was performed.

Following patients were excluded from the study;

* Patients below 18 years and above 40 years
* Patients who were taking NSAIDs.
* Patients using steroids.
* Patients who previously had surgery for duodenal ulcer.

After receiving these patients in emergency department resuscitation was done. Patients were kept nil orally and nasogastric aspiration was performed. Baseline investigations including blood complete picture, urine analysis were ordered for further evaluation. X-Ray chest PA view or a left decubitus view (if the patient was unable to stand) was performed in all cases. Parenteral antibiotics including Injection cefuroxime sodium 750 mg, metronidazole infusion 500 mg and Inj gentamicin 80 mg were started before surgical intervention. History and preoperative findings were recorded on a prescribed proforma. After preoperative management all patients underwent emergency Laparotomy. Abdomen was opened through upper midline incision in all cases. Location and size of perforation were recorded.

Simple closure of perforation over anomental patch was done in all cases. At the end of procedure thorough peritoneal toilet with normal saline was performed. One drain was placed in the pelvis and second in right hypochondrium. Mass closure of the abdomen was done with Prolene 1/0 in all cases. Post operatively the patients were kept nil orally. Intravenous fluids and antibiotics were continued. Injection omeprazole 40 mg intravenously 12 hourly was also started. On the return of gut motility, nasogastric tube was removed and oral fluids were started. These patients were given therapy for eradication of H. Pylori as per following regimen.

Tablet clarithromycin 500 mg BD
Cap amoxicillin 1gm BD
Capsule omeprazole 20 mg BD

Tablet clarithromycin and cap amoxicillin were given for 10 days while capsule omeprazole was continued for 6 weeks.

Table I. Modified Visick Classification

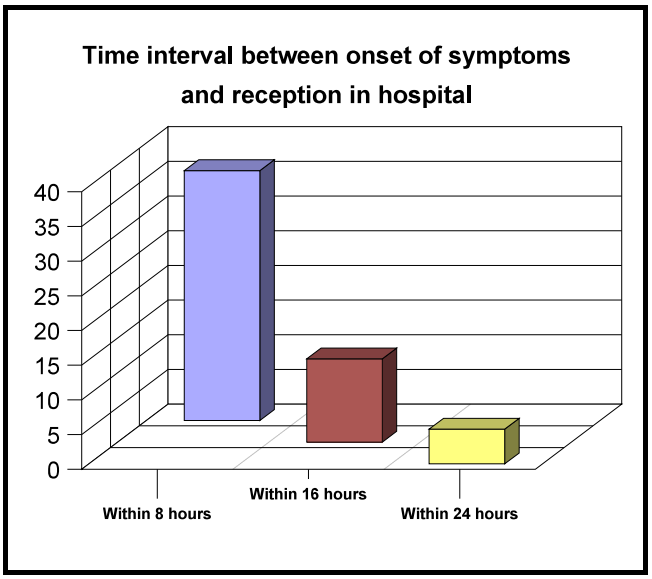
Grade I	No symptoms, excellent results
Grade II	Mild symptoms, good results
Grade III	Moderate symptoms, easily controlled by medication
Grade IV	Severe symptoms, requiring constant medication or re-operation.

On discharge from hospital all patients were given 6 weeks sick leave. They were advised to take medication and have regular followup in surgical OPD. They were called on monthly basis for initial 3 months and then at 3 months interval for next 9 months and finally on 6 months basis for the 2nd year. On these visits detailed history was taken and physical examination was performed. Upper GI endoscopy was done depending upon the

symptoms. These findings were recorded on a prescribed proforma. Overall results were graded by modified Visick classification Table I.

RESULTS

Mean age was 31.5 years (range 18 to 40 years). All patients presented within 24 hours of onset of symptoms. Thirty six patients (67.9%) reached hospital within 8 hours, twelve patients (22.6%) reached within 16 hours while 5 patients (9.4%) reported up to 24 hours (Fig 1).



The clinical presentations associated with perforation are shown in Table II. Pain abdomen and vomiting were main complaints while tachycardia, tenderness, guarding and rigidity of abdomen were main signs. All patients had perforation on the anterior surface of the first part of duodenum. Size of perforation ranged from 1.5 mm to 6 mm with mean of 4 mm. Oral fluids were started on average 3rd post-operative day (range 3-13 days). Forty six patients (86.7%) were discharged from hospital within one week while seven patients (13.3%) remained admitted up to two weeks.

Post operative complications were seen in seven patients (13.2%) as shown in Table III. Three patients (5.6%) developed wound infection. They were managed by removal of appropriate stitches and drainage of pus. Daily dressings and antibiotics were continued till wounds healed. One of the patients (1.8%) developed wound dehiscence at seventh post operative day. He was managed by emergency replacement of intestine into peritoneal cavity and application of tension sutures. Nasogastric aspiration, intravenous fluids and antibiotics were continued.

Table II. Clinical presentation and findings of perforated duodenal ulcer cases

Clinical picture	No of Pts	%age
Pain	53	100%
Epigastrium	14	36.6%
Right iliac fossa	10	18.8%
Whole abdomen	29	54.7%
Vomiting	9	16.9%
Fever	11	20.7%
Tachycardia	40	75.4%
Dehydration	28	52.8%
Tenderness	53	100%
Guarding	53	100%
Rigidity	53	100%
Absent bowel sounds	20	37.7%
Gas under diaphragm	40	75.4%
Ultrasound abdomen (free fluid)	13	25.4%

Two patients (3.7%) developed paralytic ileus while chest infection was seen in one patient (1.8%). They were treated conservatively. Patients who developed complications had prolong stay in hospital on the average 12 days.

FOLLOW UP

Forty seven patients (88.8%) were followed upto two years (average 23 months). Six patients (11.3%) did not report after initial few visits. They were excluded from the study.

On each visit patients were inquired about their

symptoms and examined as per protocol. Patients were placed in different Visick grades depending upon their symptoms as shown in Table IV. As all of our patients were serving soldiers who have to perform active military service, so on return from 6 weeks sick leave, they were placed in temporary medical category C (CEE) for three months as per Table V. Further follow up helped us in placement of these patients in the proper medical categories for their future employment. Thirty nine patients (82.9%) remained completely asymptomatic. They were placed in Visick grade-1. Four patients (8.4%) had mild symptoms. One of them (2.1%) had pain in laparotomy scar, while other three (6.3%) had gas flatulence and heart burns. They were given symptomatic treatment and were placed in Visick grade –II. Two patients (4.2%) started having moderate epigastric pain one year after the previous surgery for perforated duodenal ulcer. There was no history of vomiting or haematemesis. One had malena (2.1%). They were investigated and upper GI endoscopy showed recurrence of ulcer in one, while other showed evidence of gastritis. They were given another course of omeprazole for six weeks after which they become symptom free. They were placed in Visick grade –III.

Table III. Post operative complications

Complications	No of Pts	%age
Wound discharge/infection	3	5.6%
Wound dehiscence	1	1.8%
Chest infection	1	1.8%
Paralytic ileus	2	3.7%
Intra peritoneal abscess	0	0
Septicemia	0	0
Renal failure	0	0
Cardio pulmonary failure	0	0
Mortality	0	0

Two patients (4.2%) returned before scheduled visit after one year. One (2.1%) had severe epigastric pain with history of malena, while other had symptoms of gastric outlet obstruction. Both were admitted in hospital and investigated. Upper GI endoscopy confirmed ulcer recurrence in one patient (2.1%) who was given another course of cap omeprazole for 6 weeks with which his symptoms disappeared. Second patient (2.1%) had gastric outlet obstruction confirmed by investigations. He was counseled about his condition and advised truncal vagotomy with gastrojejunostomy. The procedure was performed about fourteen months after the previous operation for perforated duodenal ulcer. Both were placed in Visick grade-IV.

Table IV. Visick grading

Grading	No of Pts	%age
I	39	82.9%
II	4	8.4%
III	2	4.2%
IV	2	4.2%

Table V. Medical categories of military persons

Category	Disposal
AYE	Full duty
BEE	Avoid exercise, exertion
CEE	Static Job
DEE	Sick leave

Table VI. Disposal of patients according to their visick grading

Category	Visick grade	No of pts	%age
AYE	I	39	82.9%
BEE	II & III	6	12.7%
CEE	IV	2	4.2%

Military disposal of these patients i.e. placement in proper medical categorization was done keeping in view Visick grading. Patients with Visick grade I were placed in medical category 'A' (AYE). Patients in Visick grade II & III were placed in medical category 'B' (BEE) while Visick

grade IV patients were placed medical category `C` (CEE) as shown in Table VI.

DISCUSSION

The optimal surgical treatment for perforated duodenal ulcer has been controversial. In our study the mean age of patient was 31.5 years. This is comparable to study by Mihmanli et al[11] and audit by Mehboob et al[12.] In our study all patients reached hospital within 24 hours of onset of symptoms. All had a single perforation on the anterior surface of the first part of duodenum. The average size of perforation was 4mm. These findings are similar to audit by Mehboob et al[12] except for the time of arrival in hospital. In our study patients reported earlier because of the better system of evacuation and medical care in Military setup.

In our study free gas was seen under right dome of diaphragm in 40 patients (75.4%) This is comparable with international data[1,13]. The hospital stay of our patients was up to two weeks. This is better than that shown by Mehboob et al[12]. The reason could be that all of our patients were young soldiers who were otherwise in good health and had no co-morbid conditions.

We were able to follow up forty seven patients (88.8%). This is comparable to study by Jordan et al[14]. There was no mortality in our study as compared to a prospective study of perforated duodenal ulcers presenting in Hong Kong by Boey et al[15]. We did not have mortality because we included young soldiers who did not have co morbid illnesses, the initial resuscitation in the field by Medical Officer and better evacuation system.

In our study forty three patients, (91.4%) were graded in Visick grade I & II. We had two patients (4.2%) in Visick grade III. Our re-operation rate was 2.1%. The results are comparable to Jordan et al[14] and Ng et a1[16]. Three patients (6.3%) had recurrence of ulcer in our study which is similar to that seen by Jordan et al[14]. The re-operation rate is less than seen in study by Kulkarni et al[17] and Borman et al[18].

Due to better understanding of the pathogenesis of peptic ulcer it is clear that H. Pylori has an established role. In a study by Hunt et al[19] it was observed that 90 – 100% of duodenal ulcers are associated with H. Pylori infection. The prevalence of this organism in Pakistan is also very high as shown by Hameed et al[20]. According to Ng et al[16] H. Pylori as a risk factor appears to be more relevant in younger patient in whom acid reduction surgery with its associated complications is most undesirable.

In our study 91.4% of patients were in Visick grades I & II. The result is similar to study by Kate et al[21] which showed that eradication of H. Pylori after simple closure of perforated duodenal ulcer reduces the incidence of residual and recurrent ulcer. Similarly Kumar et al[22] found that H. Pylori was the only factor responsible for the persistence of ulcer following surgery. Tran et al[23] have concluded that in a country with a high prevalence of H. Pylori infection, acid reduction surgery is unnecessary in perforated duodenal ulcer treated by simple closure.

The remission rate in our study was 82.5% which is similar to that previously reported in uncomplicated ulcers after H. Pylori eradication by Van der Hulst et al[24] and Graham et al[25] and is comparable to that achieved by immediate proximal gastric vagotomy during emergency laparotomy by Sawyer et al[26].

So in the light of high prevalence of H. Pylori infection in our population and few recurrences of ulcer after eradication of H. Pylori, simple closure of perforation followed by eradication of H. Pylori is a safe procedure especially in young patients. Ulcer reduction surgery is unnecessary unless there are concurrent ulcer complications.

CONCLUSIONS

In the light of high prevalence of H. Pylori infection and few recurrences after eradication, the bacterium is likely to be related to duodenal ulcer perforation.

In young individuals presenting with perforated duodenal ulcer well in time, simple closure of perforation is simple and safe method to deal with this surgical emergency. This is followed by eradication of H. Pylori.

Clinical assessment should be good as gas under

diaphragm is seen in 75% of the patients.

If young patients without associated diseases are properly resuscitated and operated well in time then mortality can be reduced to minimum and morbidity to less than 8%.

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