

# Surgical management of combined perforated and bleeding duodenal ulcer

SV Hosseini\*, B Sabet, M Amini

Gastroenterohepatology Research Center, Department of Surgery, Shiraz University of Medical Sciences, Shiraz, Iran

## Abstract

**Background:** Peptic ulcer is one of the most frequent diseases of the alimentary tract, while mortality from perforated peptic ulcer still remains high. We conducted this retrospective study to determine the adverse operative risk factors for perforated hemorrhagic peptic ulcers in Shiraz, southern Iran.

**Methods:** 896 patients with peptic ulcer were enrolled. A questionnaire was used to collect the data on age, gender, site of ulcer, presentation, endoscopic findings, type of peptic ulcer complications, method of treatment, surgical procedure, and results of the treatment.

**Results:** Complicated duodenal ulcer was 15% in period I, and 11.5% in period II ( $P>0.05$ ). The mean  $\pm$ SD of the age of the patients was  $42.7\pm 11$  years. The age of the patients with perforated duodenal ulcer was  $48\pm 12.5$  and in hemorrhagic patients  $37.4\pm 8.6$  years. Perforation with hemorrhagic duodenal ulcer in the first period was 1.2% and in second period, 0.2%. In the second period, simple closure was done in 29 (74%) patients, and in perforated DU cases, conservative management was done in 23 (56%) patients.

**Conclusion:** Although the number of complicated duodenal ulcer cases increased from period I to period II, complications of duodenal ulcer (Kissing disease) significantly decreased.

**Keywords:** Duodenal ulcer; Kissing ulcer; Epidemiology; Hospitalization

## Introduction

Peptic ulcer is one of the most frequent diseases of the alimentary tract. In various countries, its prevalence is estimated as 5-10% of the adult population.<sup>1</sup> The epidemiology, diagnostic and therapeutic approaches to patients with peptic ulcer perforation have been improved considerably in recent decades.<sup>2,3</sup> The incidence decreased during the last decade, reflecting either improved health care or a decreasing exposure to known risk factors.<sup>4</sup> On the other hand, mortality from perforated peptic ulcer still remains high due to more perforations in the elderly with severe illnesses.<sup>5</sup> In recent years, after marked advance in medical control of peptic

ulcer disease, elective operations of duodenal ulcer have disappeared but emergency surgery for perforated duodenal ulcer (DU) preserves its steady rate.<sup>6</sup> In most long-term studies, the incidence of bleeding peptic ulcer has been stable.<sup>7,8</sup> In these studies, the increase was remarkable in the older age groups.<sup>7,9</sup> Improvement of outcome in patients with bleeding peptic ulcer can be achieved by early detection of those patients at risk of adverse outcome. We conducted this retrospective study to determine the adverse operative risk factors for perforated hemorrhagic peptic ulcers in Shiraz, southern Iran.

## Materials and Methods

896 patients with peptic ulcer treated in the Internal Medicine Ward of Shiraz University of Medical Sciences between 1981 and 1997, in Fars Province, southern Iran were enrolled. A questionnaire was designed including questions on age, gender, site of

\*Correspondence: Seyed Vahid Hosseini, MD, Associate Professor of Department of Surgery, Gastroenterohepatology Research Center, Faghihi Hospital, Shiraz University of Medical Sciences, Shiraz, Iran. Tel: +98-711-2351073, Fax: +98-711-62621000, e-mail: [hoseiniv@sums.ac.ir](mailto:hoseiniv@sums.ac.ir)  
Received: June 27, 2007 Accepted: October 14, 2007

ulcer, presentation, and endoscopic findings, type of peptic ulcer complications, method of treatment, surgical procedure, and results of treatment. In order to detect the changes in parameters during observation, the 18-year period of the study was divided into two sub-periods of I (1981-1992) and II (1992-1997). In this study, the details of diagnostic and therapeutic measures were determined in 80 patients with complicated duodenal ulcer in the second period. The data were statistically analyzed, using SPSS software package, version 13. A P value less than 0.05 was considered significant.

**Results**

During 1981-1992 and 1992-1998, 896, 559 and 337 patients treated at the teaching hospitals affiliated to Shiraz University of Medical Sciences entered our study. Complicated duodenal ulcer was 15.2% in period I, and 11.6% in period II (P=0.13) (Table 1). The mean±SD age of the patients was 42.7±11. The age of patients with perforated duodenal ulcer was 48±12.5 and in the hemorrhagic patients 37.4±8.6 years. Perforation with hemorrhagic duodenal ulcer occurred in 1.2% of the patients and in the second period in 0.2%

(Table 1). Demographic data of complicated DU in the second period are presented in Table 2. The smoking rate in perforated and hemorrhagic DU in the second period was 23% and 10%, respectively. Abdominal pain was present in 74% of perforated DU cases in the second period and melena in 63.5% of hemorrhagic DU. Table 3 shows the clinical and paraclinical findings of complicated DU in the second period. Peritonitis was seen in 12.5% of the subjects. In the second period, simple closure was performed in 29 (74%) patients, and in perforated DU, conservative management was undertaken in 23 (56%) patients. Hemorrhagic DU was treated in 14.6% using truncal vagotomy (TV) and pyloroplasty. In 7.3%, TV and antrectomy and in 22%, TV with gastrojejunostomy was conducted. In perforated DU, TV was used with pyloroplasty and antrectomy in 5% of the patients, and with gastrojejunostomy in 2.5%. 13% of this group was treated with conservative management.

**Discussion**

Duodenal ulcer was recognized in late 17<sup>th</sup> century, and was first successfully operated in 1894.<sup>10,11</sup> The number of perforated ulcers, on the other hand, has

**Table 1:** Comparison of complicated DU between two periods

Periods	Perforated DU N (%)	Hemorrhagic DU N (%)	Kissing DU N (%)	Total N (%)
I: 1981-1992	85 (15.2)	138 (24.7)	7 (1.2)	559
II: 1992- 1997	39 (11.6)	41 (12.2)	1 (0.2)	337
Total 1981-1997	131 (14.6)	179 (20)	8 (0.9)	896

**Table 2:** Demographic variables of complicated DU in second period

Parameters	Perforated DU N (%)	Hemorrhagic DU N (%)	Total complications N (%)	Non-complicated
Sex				
Male	32 (46.2)	37 (53.6)	69 (86.2)	187 (86.2)
Female	7 (63.6)	4 (36.4)	11 (13.8)	70 (86.2)
Duration of symptoms				
<10 years	38 (52.7)	34 (47.3)	72 (90)	174 (86.2)
10-20 years	1 (25)	3 (75)	4 (5)	51 (86.2)
>20 years	0 (-)	4 (100)	4 (5)	33 (86.2)
Blood groups				
A	4 (40)	6 (60)	10 (12.5)	31 (86.2)
B	9 (39)	14 (61)	23 (29)	73 (86.2)
O	23 (56)	18 (44)	41 (51.2)	131 (86.2)
AB	3 (50)	3 (50)	6 (8.3)	22 (86.2)

**Table 3:** Clinical and preclinical findings of complicated DU in the second period

Parameters	Perforated DU N (%) n=39	Hemorrhagic DU N (%) n=41	Total N (%)
Clinical findings			
Abdominal pain	29 (74)	5 (12)	34 (42.5)
Melena	5 (13)	26 (63.5)	31 (39.4)
Hematochesia	4 (10)	24 (58.5)	28 (35)
Rectorrhagia	(-)	3 (7)	3 (4)
Orthostatic hypotension	5 (13)	9 (22)	14 (17.5)
Others	4 (10)	4 (10)	8 (10)
Hb levels			
<10 mg/dl	5 (13)	19 (46)	24 (30)
10-12 mg/dl	9 (23)	7 (17.5)	16 (20)
>12 mg/dl	25 (64)	15 (36.5)	40 (50)
Endoscopic findings			
Active ulcer without bleeding	5 (13)	26 (63)	31 (39)
Active ulcer with bleeding	0 (-)	12 (29)	12 (15)
Chronic ulcers	32 (82)	3 (8)	35 (44)
Others	2 (5)	0 (-)	2 (2)

slightly changed, and the mortality rate from perforated duodenal ulcers in older patients has increased.<sup>12-14</sup> In this study, the number of complicated duodenal ulcer cases hospitalized in 1992-1997 was more than those in the previous years. In Finland, the incidence of peptic ulcer perforation has not changed during the last 22 years.<sup>9</sup> In Turkey, emergency surgery for perforated duodenal ulcer preserves its steady rate.<sup>6</sup> In Greece, during 15 years, the emergency surgical homeostasis has reduced but the reduction in mortality was not significant.<sup>15</sup> In Germany, patients experienced more general complications and a higher mortality.<sup>1</sup> Many authors mentioned that until the implementation of treatment with H2 histamine receptor blockers, and the proton pump, the total number of patients hospitalized due to peptic ulcer considerably increased, whereas the number of admissions to hospital due to peptic ulcer complications declined to a minimum degree.<sup>15,16</sup> In this study, the number of kissing disease significantly decreased between the two periods, being related to implementation of better antiulcer drugs in Iranian patients, introducing omeprazol as a pump inhibitor in Iran

pharmacopoeia. In Denmark, the incidence of bleeding due to peptic ulcer was stable with 0.55 in 1993 and 0.57 in 2002, but perforated ulcer dropped from 0.14 to 0.08 during these years.<sup>8</sup> In almost all reports, hospitalization due to complicated DU, the mortality rate increased in older patients, beyond the overall trend of peptic disease.<sup>1,17</sup> In conclusion, however, the number of complicated duodenal ulcer increased from period I to period II, but hazardous complications of duodenal ulcer (Kissing disease) significantly decreased, being related to the improvement of health care during these years. Unfortunately, other factors such as increase in western diet among Iranians in the last decade indicate the steady rate of complicated DU over the last 16 years.

### Acknowledgements

The authors would like to thank Dr. D. Mehrabani, Miss Gholami and Mrs. Ghorbani at Center for Development of Clinical Research of Nemazee Hospital for editorial and typing assistance.

### References

- Schabowski J, Pitera J. Peptic ulcer among rural population in a selected region of south-eastern Poland. *Ann Agric Environ Med* 2004;**11**:323-7.
- Sillkivi T, Yang Q, Peetsalu A, Ohmann C. Perforated peptic ulcer: is there a difference between Eastern Europe and Germany? Copernicus study group and acute abdominal pain study group. *Langenbecks Arch Surg* 2000;**305**(5): 344-9.
- Thomopoulos KC, Vagenas KA, Vagianos CE, Margaritis VG, Blikas AP, Katsakoulis ES, et al. Changes in aetiology and clinical outcome of acute upper gastrointestinal bleeding during the last 15 years. *Eur J*

- Gastroenterol hepatol* 2004;**16(2)**:177-82.
- 4 Canoy DS, Hart AR, Todd CJ. Epidemiology of duodenal ulcer perforation a study on hospital admissions in Norfolk, united Kingdom. *Dig Liver Dis* 2002;**34(5)**:322-7.
  - 5 Chan WH, Wong WK, Khin LW, Soo KC. Adverse operative risk factors for perforated peptic ulcer. *Ann Academic Med Singapore* 2000; **29(2)**:164-7.
  - 6 Gyrleyik E. Changing trend in emergency surgery for perforated duodenal ulcer. *J Coll Physicians Surg Pak* 2003;**13(12)**:708-10.
  - 7 Tilvis RS, Vuoristo M, Varis K. Changed profile of peptic ulcer disease in hospital patients during 1969-1984 in Finland. *Scan J Gastroenterol* 1987;**22(10)**:1238-44.
  - 8 Lassen A, Hallas J, de Muckadell OB. Complicated and uncomplicated peptic ulcers in Danish country 1993-2002. Population -Based cohort study. *Am J Gastroentrol* 2006;**30**:945-53.
  - 9 Makela JT, Kiviniemi H, Ohtonen P, Laitinen SO. Factors that predict morbidity and mortality in patients with perforated peptic ulcers. *Eur J Surg* 2002;**168(8-9)**:446-51.
  - 10 Jordan PH, Hornby J. Perforated pyloroduodenal ulcers, long-term results with omental patch closure and parietal cell vagotomy. *Anal Surg* 1995;**221(5)**:479-488.
  - 11 Dean HP. A case of perforation of a chronic ulcer of the duodenum successfully treated by excision. *Br Med J* 1894;**1**:1014-1015.
  - 12 Kurata JH, Haile BM, Elashoff JD. Sex differences in peptic ulcer disease. *Gastroenterology* 1985;**88**:96-100.
  - 13 Negre J. Perforated ulcer in elderly people. *Lancet* 1985;**2**:1118-1119.
  - 14 Koo J, Ngan K, Lam SK. Trends in hospital admissions, perforation and mortality of peptic ulcer in Hong Kong from 1970-1980. *Gastroenterology* 1983;**84**:1558-1562.
  - 15 Everhart JE, Byrd-Holt D, Sonnenberg A. Incidence and risk factors for self-reported peptic ulcer disease in the United States. *Am J Epidemiol* 1998;**147**:529-536.
  - 16 Kemppainen H, Raiha I, Sourander L. Clinical presentation of peptic ulcer in the elderly. *Gerontology* 1997; **43**:283-288.
  - 17 Tonus C, Weisenfeld E, Appel P, Nier H. Introduction of proton pump inhibitors-consequences for surgical treatment of peptic ulcer. *Hepato-gastroenterology* 2000;**47**:285-290.