



## Original Article

## Frequency of Bleeding Duodenal Ulcer in Patients presenting with Upper Gastrointestinal Bleeding

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## ABSTRACT

Acute upper gastrointestinal bleeding is a well-known complication of peptic ulcers and erosions. The prevalence of Upper Gastrointestinal bleeding ranges from 48-160 patients per 100,000 people, with consistent reports of higher incidence among elderly and men. **Objective:** To determine the incidence of duodenal ulcer bleeding in patients admitted to the tertiary care hospital with bleeding from the upper gastrointestinal tract. **Methods:** The study included 270 patients, 20 to 70 years of age, of both sexes with upper gastrointestinal bleeding within 24 hours of symptom onset. A detailed interview and complete physical examination were performed. Endoscopic examination protocols were followed and accomplished within 48-hrs of the start of symptoms as bleeding. All of the above information, including age, sex and duodenal ulcer, was documented in a formerly designed proforma. The data were analyzed and entered in SPSS 22.0. **Results:** The mean age and SD were 54.5 + 10.54. 110 (40.74%) patients were 20-45 years old and 160 (59.25%) subjects were 46-70 years old. 190 (70.37%) patients were male and 80 (29.62%) females. While in this study duodenal ulcer was seen in 64 (23.70%) patients, 206 (76.29%) patients did not have duodenal ulcer. **Conclusions:** Upper Gastrointestinal bleeding is secondary to duodenal ulcers due to an increase in early readmissions over time, as observed in this local population, resulting in a higher incidence of duodenal ulcers in our local population.

## INTRODUCTION

Bleeding from the upper gastrointestinal tract is a communal symptom in medical institutions and gastroenterology clinics [1]. It has multiple causes that varies greatly in different geographic regions of the world [2]. Despite developments in treatment, upper gastrointestinal bleeding secondary to peptic ulcer remains a serious medical risk with significant mortality, morbidity and healthcare costs. The peptic ulcer disease is assumed to be reduced due to improvements in endoscopic techniques, decreased *Helicobacter pylori*

incidence and an increased use of acid-inhibiting drugs. However, advances in peptic ulcer treatment have not necessarily reduced the number of hospitalizations for upper gastrointestinal bleeding following peptic ulcer disease or the risk of adverse events, counting mortality. Conflicts in previous studies results can be clarified by various factors. Gastric ulcer epidemiology has evolved and is no longer driven by *H. pylori*. An aging population has increased use of non-steroidal anti-inflammatory drugs (NSAIDs), counting aspirin. This results in more frequent

bleeding from the upper gastrointestinal tract following peptic ulcer disease in the elderly people. The utmost communal symptoms are bloody vomiting in acute bleeding and melaena in cases which were chronic. It has been observed that duodenal ulcer is common in cirrhosis patients than in the over-all population [3]. In previous years, most bleeding in patients with cirrhosis was attributed to esophageal varices [4]. The widespread use of upper gastrointestinal endoscopy has shown that in many cases it can cause erosions, gastritis, or other injuries such as peptic ulcers, especially duodenal ulcers [5]. The prevalence of upper gastrointestinal bleeding ranges from 48-160 patients per 100,000 people, with consistent reports of higher incidence among elderly and men [6]. The acute upper gastrointestinal bleeding most communal reason is not varicose veins, and bleeding from peptic ulcer (PIU) accounts for 28% to 59% of cases [7]. Most peptic ulcer disease patients are successfully treated by H. pylori infection treatment and / or using suitable antisecretory therapy and avoiding NSAIDs usage [8]. In USA, triple therapy based on proton pump inhibitors (PPIs) is the recommended primary treatment for H. pylori infection. Peptic ulcers are defects in the lining of the duodenum or stomach that cover along the mucosal membrane [9]. The gastric and duodenal epithelial cells secrete mucus as a consequence of the cholinergic stimulation and epithelial lining irritation. The superficial part of the duodenal and gastric mucosa is in the gel layer form that is not-permeable to pepsin and acids. Other cells in the stomach and duodenum secrete bicarbonate, which helps buffer the acid near the mucosa [10]. Type E prostaglandins (PGEs) play a vital protective part as PGEs increase the secretion of both mucosal layer and bicarbonate [11]. The aim of the study was to govern the incidence of duodenal ulcer bleeding in patients admitted to the tertiary care hospital with bleeding from the upper gastrointestinal tract in order to determine the morbidity and mortality associated with duodenal ulcer in our local population. No comparable analysis has been performed at our facility in the previous 5-years, this analysis will provide the most up-to-date and latest information on the frequency of duodenal ulcer bleeding in upper GI bleeding patients. This study outcomes will be beneficial for other healthcare professionals and can be the reference for further studies.

## METHODS

270 total patients of both sexes, 20 to 70 years of age, selected by sequential sampling of improbable samples with bleeding from the upper gastrointestinal tract within 24 hours of symptom onset, were registered in the study. A comprehensive interview and complete physical

assessment were performed. Inclusion Criteria: All patients reporting upper gastrointestinal bleeding reporting within 24 hours of symptom onset, Patients aged 20-70, Patients of both sexes. Exclusion criteria: Patients with severe shock (BP 90/160), patients with coagulation disorders, recent myocardial infarction, severe respiratory disease, arrhythmias or unstable angina were omitted from the study. Hospital ethics committee approval and approval from CPSP REU department were obtained. A detailed interview and complete physical examination were performed. Endoscopic examination protocols were followed. Compulsory baseline tests, including complete blood count, were obtained; occult blood faeces, eggs / cysts; bleeding profile; hepatitis serology; ECG, abdominal ultrasound, X-ray chest at admission before the procedure. Patients were registered for endoscopic evaluation of the upper gastrointestinal tract after obtaining informed consent. Upper gastrointestinal endoscopy was accomplished within 48-hrs of the start of symptoms as bleeding. Local anesthesia of the throat was provided with a 4% xylocaine spray. The entire procedure was performed under the supervision of a gastroenterologist with at least five years of experience. All of the above information, including age, sex and duodenal ulcer, was documented in a formerly designed proforma. The data were analyzed and entered in SPSS 22.0. Means and S.D were calculated for quantitative variables such as size of the lesion and age. The frequency and percentages were calculated by gender and bleeding duodenal ulcer. Duodenal ulcer was graded with gender and age to determine the effect modification. The chi-square test was used after stratification, considering the P value <0.05 as significant. All results are presented in graphs and tables.

## RESULTS

The study was conducted on 270 patients at the Department of Gastroenterology at MTI-Lady Reading Hospital in Peshawar. The results are given below: - Mean and SD for age were  $54.5 \pm 10.54$ . 110 (40.74%) patients were 20-45 years old and 160 (59.25%) patients were 46-70 years old. 190 (70.37%) patients were male and 80 (29.62%) females. (Table 1).

Age Group	Frequency (%)
20-45 Years	110 (40.74%)
46-70 Years	160 (59.26%)
Total	270 (100%)
Gender	
Male	190 (70.37%)
Female	80 (29.62%)
Total	270 (100%)
Mean age	$54.5 \pm 10.54$ SDs

**Table 1:** Shows the patients demographic features (n=270)

While in this study duodenal ulcer was registered in 64 (23.70%) patients, 206 (76.29%) patients did not have duodenal ulcer. (Table 2).

Duodenal Ulcer	Frequency (%)
Yes	64 (23.70%)
No	206 (76.29%)
Total	270 (100%)

**Table 2:** Frequency and Percentages for Duodenal Ulcer (n=270)

Age and Gender was controlled through stratification and therefore can be seen at Table 3 and 4 respectively. Table 3 shows the incidence of duodenal ulcer with respect to the age; 14(5.18%) subjects out of 110 were found positive for duodenal ulcer in 20-45 years of age while 50(18.51%) patients out of 160 have duodenal ulcer in 20-45 years of age patients.

Age	Duodenal Ulcer	Frequency (%)	P Value
20-45 Years	Yes	14 (05.18%)	0.0004
	No	96 (35.55%)	
46-75 Years	Yes	50 (18.51%)	
	No	110 (40.74%)	

**Table 3:** Stratification of Duodenal Ulcer with Age (N=270)

Table 4 shows the incidence of duodenal ulcer with respect to the gender; 39(14.4%) male subjects out of 190 were found positive for duodenal ulcer while 25(9.25%) female patients out of 80 have duodenal ulcer.

Gender	Duodenal Ulcer	Frequency (%)	P Value
Male	Yes	39 (14.44%)	0.058
	No	151 (55.92%)	
Female	Yes	25 (09.25%)	
	No	55 (12.96%)	

**Table 4:** Stratification of Duodenal Ulcer with Gender (N=270)

## DISCUSSION

Bleeding from the upper gastrointestinal tract is a communal symptom in medical institutions and gastroenterology clinics. It has multiple causes that varies greatly in different geographic regions of the world. The utmost communal symptoms are bloody vomiting in acute bleeding and melaena in cases which were chronic. In this study, the mean age and SD were 54.5 + 10.54. 110 (40.74%) patients were 20-45 years old and 160 (59.25%) patients were 46-70 years old. 190 (70.37%) patients were male and 80 (29.62%) females. While in this study duodenal ulcer was registered in 64 (23.70%) patients, 206 (76.29%) patients did not have duodenal ulcer. In total, 20,006 upper GI endoscopies were accomplished in one study [12, 13]. Duodenal ulcer was diagnosed in 696 (3.5%) cases and bleeding symptoms were observed in 158 (22.7%) cases, mean and SD for age was 54.5 + 10.54 compared to this study. 110 (40.74%) patients were 20-45 years old and 160 (59.25%) patients were 46-70 years old. 190 (70.37%) patients were male and 80 (29.62%) females. While in this

study duodenal ulcer was seen in 64 (23.70%) patients, 206 (76.29%) patients did not have duodenal ulcer. Of these ulcers, 45 (6.5%) were graded as Forrest I and Forrest II was seen in 113 (16.2%) cases. Gastric ulcer was identified in 488 cases (2.5%), and symptoms of bleeding were observed in 61 cases (12.3%) in Fallah et al., study [14]. Compared to this study, where the mean age and SD was 54.5 ± 10.54, 19 patients (3.9%) have Forrest 1 grading and 41 patients (8.4%) had Forrest 2. The gastric ulcers incidence remained stable over time, while the duodenal ulcers incidence decreased [15, 16]. It has been observed that duodenal ulcer is common in cirrhosis patients than in the over-all population. In previous years, most bleeding in patients with cirrhosis was attributed to esophageal varices. The widespread use of upper gastrointestinal endoscopy has shown that in many cases it can cause erosions, gastritis, or other injuries such as peptic ulcers, especially duodenal ulcers. The prevalence of upper gastrointestinal bleeding ranges from 48-160 patients per 100,000 people, with consistent reports of higher incidence among elderly and men. The acute upper gastrointestinal bleeding most communal reason is not varicose veins, and bleeding from peptic ulcer accounts for 28% to 59% of cases. Most peptic ulcer disease patients are successfully treated by H. pylori infection treatment and / or using suitable antisecretory therapy and avoiding NSAIDs usage. In USA, triple therapy based on proton pump inhibitors (PPIs) is the recommended primary treatment for H. pylori infection [17, 18]. In this study, patients with bleeding duodenal ulcers had a worse prognosis than patients with bleeding gastric ulcers. Duodenal ulcers were associated with increased mortality, surgery, and admission rates [19, 20]. Bleeding from duodenal ulcers has been related with an augmented risk of mortality and surgery in some, but not all as shown in previous studies [21, 22]. Duodenal ulcers may be associated with a poorer prognosis as duodenal ulcers may be technically more difficult to manage; especially in the case of endoscopy performed in rural areas with little experience in the treatment of upper gastrointestinal bleeding secondary to peptic ulcer disease [6, 23].

## CONCLUSIONS

Upper gastrointestinal bleeding is secondary to duodenal ulcers due to an increase in early readmissions over time, as observed in this local population, resulting in a higher incidence of duodenal ulcers in our local population. The limitation of this study was the six-month period, which was too short to meaningfully assess the time trends in our local population.

## Conflicts of Interest

The authors declare no conflict of interest

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## REFERENCES

- [1] Farrukh S, Raja S, Junaid K, Sahibzada NM, Naseer A. Frequency of different causes of upper gastrointestinal bleeding using endoscopic procedure at a tertiary care hospital. *Causes of Upper Gastrointestinal Bleeding. Pakistan Armed Forces Medical Journal.* 2014 Sep; 64(3):410-413. Marcel
- [2] JM, Ernst JK, Bettina EH, Rob JT. Incidence of duodenal ulcers and gastric ulcers in a Western population: Back to where it started. *Canadian Journal of Gastroenterology.* 2009 Sep; 23(9):604-08. doi: 10.1155/2009/181059.
- [3] Farah S, Rizwan A, Muhammad A. Frequency of duodenal ulcer in cirrhosis of liver. *Pakistan Journal of Medical Health Sciences.* 2010 Jan; 4(1):56-60.
- [4] Budimir I, Stojisavljevic S, Nikolic M, Kralj D, Biscanin A, Kirigin LS, et al. Bleeding peptic ulcer: epidemiology, treatment and prognosis. *Acta Clinica Croatica.* 2017 Dec; 3(1):1007. doi: 10.20471/acc.2017.56.04.18.
- [5] Chey WD and Wong BC. American college of gastroenterology guideline on the management of helicobacter pylori infection. *The American Journal of Gastroenterology.* 2014 Aug; 102(8):1808-25. doi: 10.1111/j.1572-0241.2007.01393.x.
- [6] Sung JJ, Tsoi KK, Ma TK, Yung MY, Lau JY, Chiu PW. Causes of mortality in patients with peptic ulcer bleeding: a prospective cohort study of 10,428 cases. *The American Journal of Gastroenterology.* 2010 Jan; 105(1):84-9. doi: 10.1038/ajg.2009.507.
- [7] Quan S, Frolkis A, Milne K, Molodecky N, Yang H, Dixon E, et al. Upper-gastrointestinal bleeding secondary to peptic ulcer disease: Incidence and outcomes. *World Journal of Gastroenterology.* 2014 Dec; 20(46):17568-577. doi: 10.3748/wjg.v20.i46.17568.
- [8] Gralnek IM, Dumonceau JM, Kuipers EJ. Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. *Endoscopy.* 2015 Oct; 47(10):a1-a46. doi: 10.1055/s-0034-1393172.
- [9] al-Assi MT, Genta RM, Karttunen TJ, Graham DY. Ulcer site and complications: relation to Helicobacter pylori infection and NSAID use. *Endoscopy.* 1996 Feb; 28(2):229-33. doi: 10.1055/s-2007-1005433.
- [10] Frattaroli FM, Casciani E, Spoletini D, Poletti A, Nunziale A, Bertini L, et al. Prospective study comparing multi-detector row CT and endoscopy in acute gastrointestinal bleeding. *World Journal of Surgery.* 2009 Oct; 33(10):2209-17. doi: 10.1007/s00268-009-0156-6.
- [11] Lam KL, Wong JC, Lau JY. Pharmacological treatment in upper gastrointestinal bleeding. *Current Treatment Options in Gastroenterology.* 2015 Dec; 13(4):369-76. doi: 10.1007/s11938-015-0063-x.
- [12] Curdia-Goncalves T, Rosa B, Cotter J. New insights on an old medical emergency: non-portal hypertension related upper gastrointestinal bleeding. *Revista espanola de enfermedades digestivas.* 2016 Oct; 108(10):648-56. doi: 10.17235/reed.2016.4240/2016.
- [13] Lirio RA. Management of upper gastrointestinal bleeding in children: variceal and nonvariceal. *Gastrointestinal Endoscopy Clinics of North America.* 2016 Jan; 26(1):63-73. doi: 10.1016/j.giec.2015.09.003.
- [14] Fallah MA, Prakash C, Edmundowicz S. Acute gastrointestinal bleeding. *Medical Clinics of North America.* 2000 Sep; 84(5):1183-208. doi: 10.1016/s0025-7125(05)70282-0.
- [15] Pongprasobchai S, Nimitvilai S, Chasawat J, Manatsathit S. Upper gastrointestinal bleeding etiology score for predicting variceal and non-variceal bleeding. *World Journal of Gastroenterology.* 2009 Mar; 15(9):1099-104. doi: 10.3748/wjg.15.1099.
- [16] Straube S, Tramer MR, Moore RA, Derry S, McQuay HJ. Mortality with upper gastrointestinal bleeding and perforation: effects of time and NSAID use. *BMC Gastroenterology.* 2009 Jun; 9:41. doi: 10.1186/1471-230X-9-41.
- [17] Yavorski RT, Wong RK, Maydonovitch C, Battin LS, Furnia A, Amundson DE. Analysis of 3,294 cases of upper gastrointestinal bleeding in military medical facilities. *The American Journal of Gastroenterology.* 1995 Apr; 90(4):568-73.
- [18] Stabile BE and Stamos MJ. Surgical management of gastrointestinal bleeding. *Gastroenterology Clinics of North America.* 2000 Mar; 29(1):189-222. doi: 10.1016/s0889-8553(05)70112-6.
- [19] Cheung FK and Lau JY. Management of massive peptic ulcer bleeding. *Gastroenterology Clinics of North America.* 2009 Jun; 38(2):231-43. doi: 10.1016/j.gtc.2009.03.003.
- [20] Tiriveedhi K, Simon J, Cerulli MA. Does gastric lavage reduce the detection of Helicobacter pylori in the biopsy specimens? *Gastrointestinal Endoscopy.* 2007 Apr; 65(5):AB312. doi: 10.1016/j.gie.2007.03.756.
- [21] Boonpongmanee S, Fleischer DE, Pezzullo JC, Collier

- K, Mayoral W, Al-Kawas F, et al. The frequency of peptic ulcer as a cause of upper-GI bleeding is exaggerated. *Gastrointestinal Endoscopy*. 2004 Jun; 59(7):788-94. doi: 10.1016/S0016-5107(04)00181-6.
- [22] Elmunzer BJ, Young SD, Inadomi JM, Schoenfeld P, Laine L. Systematic review of the predictors of recurrent hemorrhage after endoscopic hemostatic therapy for bleeding peptic ulcers. *The American Journal of Gastroenterology*. 2008 Oct; 103(10):2625-32. doi: 10.1111/j.1572-0241.2008.02070.x.
- [23] Leaper DJ, Surgery JD Corson RCN Williamson (eds) 297×254 mm Pp 1660 Illustrated 2001 London: Mosby. *British Journal of Surgery*. 2002 Nov; 88(9):1269. doi: 10.1046/j.0007-1323.2001.01887.x