



A Comparative Study Of Closure of Duodenal Ulcer Perforations with Omental Plugging Versus Graham's Patch

KEYWORDS

Duodenal ulcer perforation, Graham's patch, Omental plugging.

Dr.M.Koti Reddy, M.S

Associate Professor, Dept. of General Surgery, Kurnool Medical College, Kurnool

Dr V.Muralikrishna, M.S*

Assistant Professor, Dept. of General Surgery, Kurnool Medical College, Kurnool. *Corresponding Author

Dr.P.Haricharan, M.S

Associate Professor, Dept. of General Surgery, Kurnool Medical College, Kurnool.

Dr.Y.D.S.N.Murthy, M.S

Postgraduate, Dept. of General Surgery, Kurnool Medical College, Kurnool

ABSTRACT Perforation of duodenal ulcer is a common abdominal surgical emergency causing peritonitis still takes a heavy toll of life. The surgical procedures are not free from drawbacks, especially while managing large perforations[>5mm]. Hence there is a need to compare closure of duodenal perforations by either Graham's patch or omental plugging. In this series 51 patients of duodenal perforation were studied during September 2013 to August 2015 at Government General Hospital, Kurnool, A.P.,. Two groups were selected randomly, one was treated with Graham's patch[25 cases] and other treated with omental plugging[26 cases]. Patients were followed for one month after surgery. In the group treated with Graham's patch, mortality was 13.3%, wound infection rate was 60%, biliary fistula rate was 30% and an average hospital stay was 12.8 days. Omental plugging was performed in 26 patients without any mortality, a biliary fistula of 3.23%, a wound infection of 9.68% and the average hospital stay was 12.48 days. Omental plugging is better than Graham's patch for closure of duodenal perforations.

BACKGROUND :

There are no significant changes in incidence or treatment of ulcer perforation despite the revolution in ulcer treatment that occurred with the discovery of the role of H.Pylori. Several operations have been proposed to compensate for duodenal perforation/tissue loss. None of them appears to be the best solution to the problem or gains wide acceptance. The reasons cited for disruption of duodenal closures are 1.high intraluminal pressure, 2.the tendency of duodenal mucosa to extrude through closures adding to the leakage, and 3.breakdown from autodigestive enzymes of pancreas and bile.

Perforation is one of the most catastrophic complications of peptic ulcer. It still assumes life-threatening dimensions, in spite of modern advances in surgical, anaesthetic and critical care facilities. A variety of surgical procedures have been advocated for the management of peptic perforation. However, these techniques are not devoid of drawbacks, especially while managing large perforations, delayed presentations, elderly age etc. Mortality rates of upto 18% have been reported while treating patients with risk factors by standard techniques. Hence, there is a need to find, evaluate and apply methods of managing catastrophes.

MATERIAL AND METHODS

This study was conducted on 51 patients admitted with perforated duodenal ulcer in Government General Hospital, Kurnool from September 2013 to August 2015. A detailed history of the patient was taken when the patient was stable. Critically ill patients were resuscitated and stabilized before history was obtained. To obtain appropriate epidemiological data regarding age, sex, occupation, clinical presentation, duration of symptoms, past history of chronic duodenal ulcer, investigations and mode of treatment the hospital records were also reviewed. This information was essential to evaluate the condition of the patient at

the time of admission, duration between perforation and surgery, mode of treatment patient received, post-operative complications and follow up of the patients for the period of one month.

The information was also essential to evaluate the efficacy of Graham's patch and omental plugging in case of closure of duodenal perforation. Patients were also followed to identify if they develop recurrence of symptoms of ulcer in order to know the effectiveness of operation. The data was also compared with other series to find out if their conclusions were true in our patients.

The patients with suspected duodenal perforations were examined thoroughly and baseline findings were recorded, repeated examination of the patients was done during resuscitation and till the diagnosis was confirmed. All of them were investigated with X-ray of erect abdomen, blood urea, serum creatinine etc. Pneumoperitoneum in X-ray abdomen indicated perforation of hollow viscus. Ultrasound imaging of the abdomen was done on all patients. They were studied and analysed for variables like age, sex, duration of perforation, general condition of the patient at the time of admission, site of perforation, size of perforation, type of surgery, postoperative complications, duration of hospital stay and outcome of the patient.

RESULTS :

Table 1: The age incidence

Age group (in years)	No. of cases	Percentage
11-20	3	5.88
21-30	8	15.69
31-40	10	19.60
41-50	8	15.67
51-60	6	11.76
>60	16	31.37

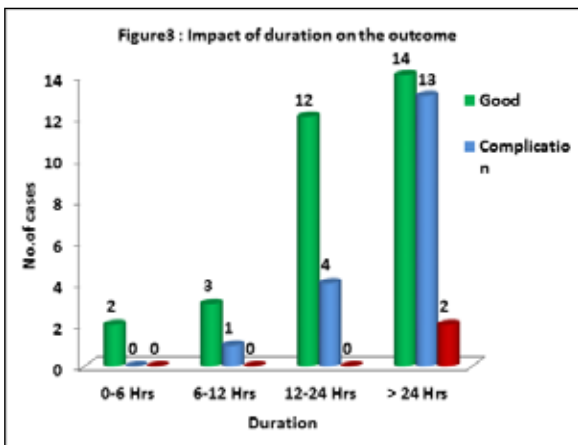
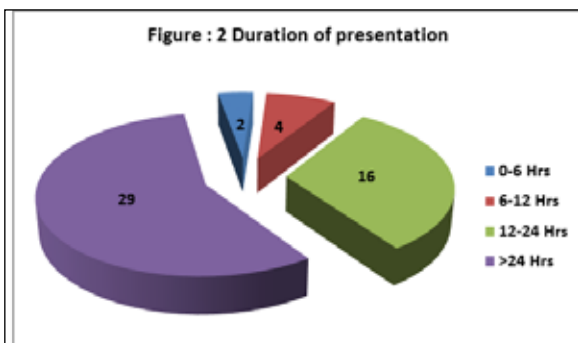
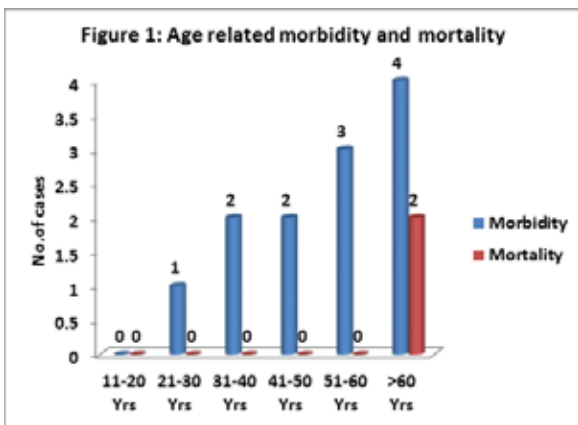


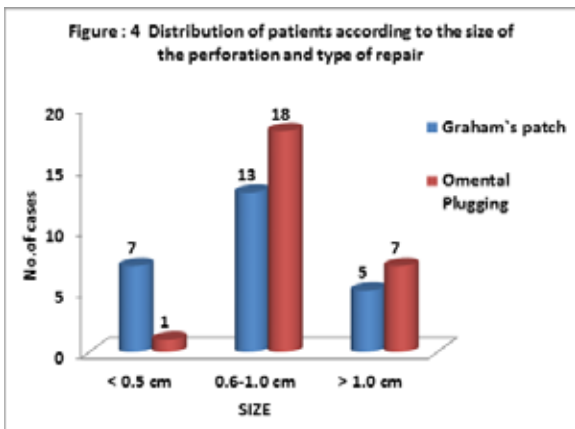
Table 2: Clinical findings at the time of admission.

Signs	No. of cases
Dehydration	39
Shock	15
Pallor	26
Distension of Abdomen	39
Tenderness	51
Rigidity	51
Absent bowel sounds	29

Table 3: Type of surgery with its postoperative complications

Complications	GRAHAM'S PATCH		OMENTAL PLUGGING	
	No of Cases	PERCENTAGE	No of Cases	PERCENTAGE
Wound infection	14	56%	2	7.69%

Bilious Fistula	1	4%	0	0
Pelvic abscess	1	4%	0	0
Death	2	8%	0	0



A gradual increase in incidence of duodenal perforation in the elderly age group was observed. Perforation was more common in males with male:female ratio of 9:1. It is more common in farmers. Its incidence in smokers and alcoholics is high. 59.02% of patients in our study had previous history of symptoms of peptic ulceration. Majority of patients (56.86%) presented late in the course of disease. The delay in presentation had significant impact on increased morbidity and mortality of the patients. The poorer the general condition of the patient the poorer was the final outcome. Most of these patients presented with abdominal pain, vomiting, distension, fever and shock. All the perforations were found in the anterior wall of the duodenum. The greater the size of perforation larger was the volume of peritoneal fluid. This observation is directly related to presentation with shock at the time of admission. A group of 25 and another of 26 patients were selected on random basis, one group was treated with omental plugging and another with Graham's patch. 31 patients had uneventful recovery in this series and 18 of them suffered from various complications, of which 2 patients expired. The most common postoperative complication was wound infection in 16, biliary fistula in 1 and pelvic abscess in 1 patient, which prolonged hospital stay. Two patients died on the 3rd and 5th postoperative days. They presented with septicemic shock and died from multiorgan failure. The average hospital stay was 13.92 days for omental plugging group and 18.84 days for Graham's patch. In this study of 51 patients, 2 patients died and 49 patients were followed for one month. They were kept on proton pump inhibitors with anti-H. pylori therapy.

DISCUSSION

The surgical mortality has decreased steadily and is about 5% (Sawyers et al, 1976). The peak age of incidence of duodenal ulcer perforation as per the studies done by M.C. Dandapat et al² is 20-40 years of age, Samuel J et al³ is 30-60 years of age, Ramesh C et al⁴ is 30-50 years of age, Kalpesh Jani et al⁵ is 30-50 years and Pavan Kumar V Koliwad et al⁶ is 30-60 years. In our study the perforated duodenal ulcer occurred more in the age group above 60 years. The male to female ratio in the present series is 9.2:1. The male preponderance is explained by increased stress of life and female sex hormones offering some protection against perforation as claimed by Debakey⁷ (1940), higher smoking and drinking. Most of the patients suffered from peptic ulcer earlier. Many patients reported late to the

hospital⁶. When operation was performed within 6 hours of onset of pain the mortality rate approached zero, from 6-12 hours the rate was 5-10%, 12-24 hours it was 25% or higher and on third day and after, operation is seldom successful⁶. Jani K et al⁵ found that omental plugging is a safe and reliable method of treatment for large perforations. Bharthi C Ramesh et al (1996) quoted that complication rate with the Graham's patch was 20% and mortality was 4%⁴. In our series 8% mortality was observed in the group treated with Graham's patch and no mortality in the patients treated with omental plugging.

31 patients recovered uneventfully and 18 patients suffered from various complications, of whom two cases expired in our study. Wound infection was the most common complication in 16 patients, biliary fistula in one and pelvic abscess in one, which prolonged hospital stay. Two patients died from septic shock and multiorgan failure. Tsugawa K et al reviewed three risk factors, preoperative shock, delay to surgery over 24 hours and co-morbidities and demonstrated progressive rise in the mortality rate with increasing number of risk factors (Hepatogastroenterology, 2001)⁸. Barazynski M et al reported age, presence of three or more co-existing diseases, delay in surgical treatment over 24 hours and septic shock as risk factors (1992)⁹. Boey John et al revealed preoperative shock, delayed operation (more than 48 hours) and concurrent medical illness as significant risk factors that increase mortality (1982)¹⁰. We observed that age, site and size of perforation, duration of perforation, preoperative shock are the risk factors. Late exploration (after 48 hours) carried a high mortality of 50% (Boey John et al, 1982)¹⁰ in the presence of gross contamination. The peritoneal soilage and duration of perforation are mentioned as risks (Donaldson, 1970)¹¹. Bharthi C Ramesh et al reported that 12% of patients reached the hospital in 12 hours, 40% reached in 24-48 hours and 24% after 48 hours⁴. Barazynski M et al found that 48.15% patients presented to hospital after 2 hours of perforation⁹. Fombellids J Dens et al (1998) identified three risk factors of immediate mortality as old age, elapsed time (>24 hours), and shock¹². Lawel OO et al reported 20% mortality rate in patients of late presentation (1998)¹³. In our series 56.86% patients reported to hospital after 24 hours and the mortality in patients who presented to hospital after 24 hours is 6.89%.

Svanes C reported higher mortality in the elderly¹⁴. Wysocki A et al reported that the age of a patient rather than the type of surgery influences the mortality rate and reported the mortality rate of 0.6% in <50 years age group, 15% in 50-60 years age group and 45.2% in >60 years age group (1998)¹⁵. The mortality in >60 years age group is 12.5% in our study.

CONCLUSION

A series of 51 cases of duodenal ulcer perforations were studied and analyzed. Of these 26 patients underwent closure of duodenal perforation by omental plugging and 25 patients underwent closure by Graham's patch. They were followed for one month. The perforations are more common after the age of 60 years. The male :female ratio is 9.2:1 (46 male, 5 female patients). Most of the patients were farmers with history of smoking, chewing tobacco and alcohol consumption. We observed 56% wound infection (14 patients), 4% duodenal fistula (1 patient), 4% pelvic abscess (1 patient) in patients treated with Graham's patch and 7.69% wound infection (2 patients), no duodenal fistula and pelvic abscess in patients treated with omental plugging in our study. The mortality in the patients treated with

Graham's patch was 8% and in those treated with omental plugging was nil. The average hospital stay in our series was 13.92 days for omental plugging group and 18.84 days for Graham's patch group. Omental plugging was found to be superior to Graham's patch for the closure of duodenal perforations of more than 0.5cm size.

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