

Simple Closure of Duodenal Ulcer Perforation Short Term Complications and Mortality

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ABSTRACT

Objective: The aim of this study was to observe short term complications and frequency of mortality after simple closure.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Department of Surgery Sandeman provincial Hospital Quetta from April 2018 to April 2019.

Materials and Methods: A 40 cases for an appropriate statistical analysis. Patient selection was done by keeping the inclusion and exclusion criteria. After initial resuscitation patients were operated and perforation closed by simple closure and thorough peritoneal toilet done. Post-operatively all the patients were given I/V antibiotic, analgesic plus H. pylori eradication therapy for seven days.

Results: The highest age incidence was in 30 – 40 years range with male to female ratio of 7:1. The post-operative complication seen after simple closure observed.

Twenty-six (67.5%) patients developed complications which have pneumonia, wound infection, urinary tract infection, thrombophlebitis and leakage. These patients recovered with further treatment. Simple closure is best, when the etiological factors like NSAIDs, cigarette smoking is avoided. At the same instance H. Pylori eradication therapy should be administered to the H. Pylori infection positive patients to prevent recurrence of ulcer in a long term follow up.

Conclusion: Pperforated duodenal ulcer had highest age incidence of 3rd decade with male female ratio of 7:1. Pperforations were repaired by simple closure. The closure of perforation by omental patch is thought to be the procedure of choice but simple closure of ulcer perforation with thorough peritoneal toilet especially in anterior wall duodenal ulcer perforation has successful results.

Key Words: Peptic duodenal ulcer, perforation, simple closure

Citation of article: Achakzai MI, Sasoli N, Tareen I, Abdul Sadiq, Wali S, Hussain A. Simple Closure of Duodenal Ulcer Perforation Short Term Complications and Mortality. Med Forum 2021;32(5):108-112.

INTRODUCTION

Peptic ulcer disease is defined as discontinuity in the inner lining of the duodenal and gastric epithelial wall (meanwhile high level of pepsin is essential in addition to acid requirements)^{1,2,3}

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Received: November, 2020

Accepted: February, 2021

Printed: May, 2021

Helicobacter pylori and non-steroidal anti-inflammatory drugs, Aspirin and steroid have been known as a most important risk factor for the causation of gastroduodenal ulcer.²

History presumably begins with the identity of the duodenum perforation by to Cheng in 1984 once he found a duodenal perforation in a preserved body of 167 BC in China.³

Perforation is one of the serious and potentially fatal complication of peptic ulcer and its high morbidity, mortality.⁴ In the United States, almost 5 million cases of are peptic ulcer, 500,000 new cases are reported each year and 15,000 deaths annually⁵.

However, an epidemiological change that is increase in age, and increase in the number of female patents has been occurred. And common site of perforation is anterior wall of first part of duodenum. Nonsteroidal inflammatory drugs appear to be responsible for most of these perforations. Helicobacter Pylori has less role in perforations compared to nonsteroidal inflammatory drugs.⁶

The classical pattern of presentation is rare. Patient may have history of symptoms of chronic peptic ulcer with

sudden onset of generalized abdominal pain. With the passage of time patient develops bacterial peritonitis and there is fever, Tachycardia, hypotension, abdominal pain, tenderness and board like rigidity.⁷ X-ray chest shows free gas under right dome of diaphragm in 50% of cases. Ultrasound sound, CT scan and diagnostic peritoneal lavage are helpful in diagnosis and differentiation from acute pancreatitis.⁸ With the advent of newer agents to suppress the gastric acid secretion the number of elective surgical procedures declined.⁹ However, the number of patients with peptic ulcer disease who sustain life threatening complications has not shown a corresponding decline. Over the last decade the discovery of *Helicobacter pylori* in peptic ulcer disease and advancement in minimal invasive surgery have further changed the surgical management of these complications.^{10,11}

Various modalities of treatments for perforated duodenal ulcer over the years are medical, simple closure, closure by omental patch, serosal patch technique, jejunal pedicle graft, partial gastrectomy and finally the possible addition of proximal gastrojejunostomy. Today surgery is restricted mostly to the complications of duodenal ulcer. In the presence of risk factors and lack of expertise there is a need to define the type of surgery which can reduce morbidity and mortality.¹² Usually these perforations can be closed primarily and does not present problem of surgical management except in cases of large defects (> 2.5cm) which can be closed by omental patch. Thorough peritoneal toilet and simple closure is sufficient in large majority of cases and definitive ulcer surgery is no longer justified inpatients presenting in emergency. It can be performed in a very short time in emergency even by a trainee general surgeon.^{13,14}

With perforated peptic ulcer being common presentation at emergency in Sandeman Provincial Hospital, it is worthwhile to define the success and complications of primary simple closure which is easier and less time consuming but of questionable efficacy.

Although Graham (omental) patch is a well-established technique, some researchers have proposed simple primary closure.¹³

MATERIALS AND METHODS

This study was conducted in Sandeman Provincial Hospital Quetta from April 2018 to April 2019. A 40 cases collected. All those patients who reported to emergency and accident department and outdoor patient department of SPH Quetta were included whom fulfilled the inclusion and exclusion criteria. Patients above 13 years with features of perforated duodenal ulcer on history, examination, investigations and surgical explorations were included while those patients unfit for general anesthesia or found to have peritonitis due to causes other than perforated duodenal ulcer on exploration were excluded. All the patients were

initially resuscitated with establishment of I/V line, correction of fluid and electrolyte imbalance, nasogastric suction, urinary catheterization and analgesic. A detailed history and thorough examination performed. Routine investigations, serum amylase electrolytes and creatinine, and an X-ray chest and abdomen were carried out. After initial resuscitation all patients were explored through a midline incision under general anesthesia. The perforation was exposed and pieces taken from its margins for histopathological examination. The perforations were closed by simple closure or by omental patch. Peritoneal toilet with 4 liters of normal saline was done.

Post-operatively the patients were monitored by temperature, pulse, B.P and intake output charting. Intravenous antibiotics i.e., Ceftriaxone 1gm BID, Gentamycin 80mg TDS Metronidazole 500mg/100ml TDS for five days. Analgesics Inj. Tramadol S.O.S and I/v Omeprazole 40 mg OD were also given.

Omeprazole, amoxicillin and clarithromycin were given to the patient for the 7-days as a *Helicobacter pylori* eradication therapy omeprazole was prescribed for 6 weeks.

During the post-operative period patients were closely monitored for the development of any complications. All the findings were noted in a proforma.

Data was analyzed by using SPSS version 17 on computer. Descriptive statistics like frequency, percentage and mean etc. were computed for data presentation.

Any statistical test of significance was not applicable for this descriptive type of study.

RESULTS

A significant number 35 (87.5%) patients presented and were operated within 24 hours of onset of symptoms. Five (12.5%) patients were presented late i.e., time of onset of symptoms of perforation was of more than 24 hours.

Operative findings of all 40 patients were found to have biliary peritonitis. In 36 (90%), the aspirated fluid was 500ml or more. Majority of 34 (85%) patients, the perforation was in the first part of the duodenum, anteriorly. Only 6 (15%) cases had a perforation in the pre-pyloric region of the stomach.

The average size of perforation was 0.75cm (range from 0.4 to 1.25cm). Only 4 (10%) patients had perforation more than 1cm.

Thirty-six patients underwent primary closure with single layer by interrupted 3/0 polyglycolic acid sutures. Four cases, where perforation was more than 1cm, underwent buttressing with omental patch.

The respiratory complication occurred in only 10 (25%) of patients, in which 9 (22.5%) suffered from respiratory tract infection pneumonia while 1 (2.5%) developed pulmonary embolism and expired on the 5th post-operative day. Wound infection was seen in 8

(20%) of the patients while these patients on the operative findings were all of them had more than one liter of peritoneal fluid on laparotomy. Only 2 (5%) cases had bile leak from the drains after 4th post-operative day. Both of them were re-explored on the 5th day, whereby a dehiscence of the repair-line was found and buttressed with omental patch.

Three patients each had thrombophlebitis and urinary tract infections. Both of these complications responded well to broad spectrum antibiotics without further sequelae.

The overall morbidity rate was 24 (60%), two cases with urinary tract infection also had atelectasis. Of these 24 patients, five were diagnosed to be diabetic. Mean hospital stay was 6.5 days (range from 4 – 10 days). Only four patients with extensive wound infection stayed longer than a week. The follow-up one month after surgery was of 38 (95%) that was satisfactory. Of the remaining 2, 1 patient expired on the 5th post-operative day and one never turned up for follow-up.

The overall mortality was 2.5%; only one patient expired due to pulmonary embolism.

Demographic data of the 40 cases 35 (87.5%) were male and 5 (12.5%) females. Male to female ratio 7:1 as shown in Fig-1.

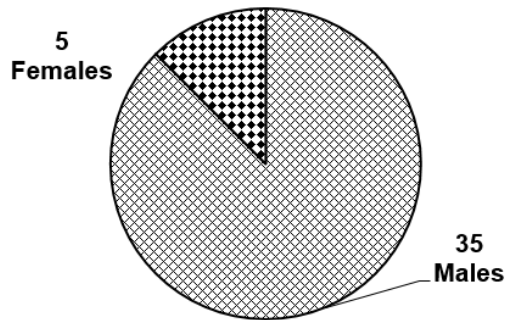


Figure No.1: Distribution of Sex

Age distribution the majority of patients 32 (80%) were of age ranging (30 – 50 years) the highest age incidence was in 3rd decade age distribution is depicted in Fig-2.

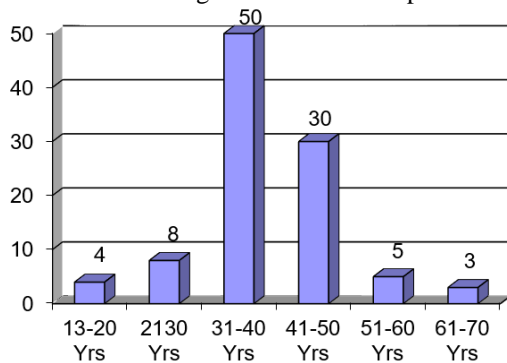


Figure No.2: Age Incidence

DISCUSSION

In this study majority of the patients were of age incidence ranging from 30 – 50 years with their highest age incidence in the 4th decade of life. In Pakistan the age incidence in a study by Mukhtar Mehboob in Quetta in 2000 has found most of his patients in their 3rd decade of life with a mean age of 31.4 years.¹⁵

In 1990 Waqar Uddin Ahmed reported a most of his patients in the 4th decade of life.¹⁶ In another study of Mathur in Rajasthan, India in 2016 patients between ages of 30-50 years were commonly affected.¹⁷ After all the age incidence in various parts of Pakistan and India is not much different from each other. While it is different our demographic profile compared to developed countries wherever the common of the patients are above 60 years It may be due to difference in the life style.¹⁸

In this study there were 35 (87.5%) male and 5 (12.5%) female patients with a male to female ratio of 7:1. It is 9:1 by Sushama surapaneni.¹⁹ and 7.8:1 by Waqaruddin¹⁶ in their study. It is mostly same in Pakistan while male-to-female ratio is much higher in the East than in the West a study performed by Lam.²⁰ This may be due to the increase use of etiological factors of duodenal ulcer by their females. In this study 35 (87.5%) patients presented during the first 24 hours of onset of pain in the abdomen and 5 (12.5%) patients presented late i.e., more than 24 hours of onset of pain. These patients were referred from the remote areas of province. Duration of perforation that is more elapsed time since perforation is a risk factor, in accordance with studies that more than 24 hours of delay in hospitalization can have an adverse effect on improvement of the disease.²¹

The late presentation in our set up is probably due to the poverty, misdiagnosis and long-distance areas to reach the hospital. In this study 85% patients had perforation on the anterior wall of the first part of duodenum and 15% patients had perforation in the prepyloric region. The average size of perforation was 0.75mm only 4 patients had perforation of more than 1cm size.

Most common site of perforation was in the first part of the duodenum reported (93.3%) perforation in the duodenum and (6.6%) in the prepyloric region.²²

Mukhtar Mahboob reported all patients to have perforation in the first part of duodenum on its anterior abdominal wall the median size of perforation was 4.5mm.¹⁵

Morbidity and mortality of duodenal ulcer perforation are also dependent on the site of perforation as gastric perforations has high lethality than duodenal and prepyloric perforations.²³ The major complications in case of this study was pneumonia, pulmonary embolisms, wound infection, thrombophlebitis, urinary tract infection and leakage of the perforation.

Respiratory tract infection was seen in 9 (22.5%) patients, 1 (2.5%) patient developed thromboembolism and wound infection and leakage of perforation was seen in 20% and 2.5% respectively. In a study of Mukhtar Mahboob, the main complications after simple closure with omental patch were wound infection and respiratory tract infection, which was 30% and 20% respectively.¹⁵ Azam M in 1995 reported 16.6% wound infection and fistula formation in 3.3%.²⁴ Chest infection and wound infections are more common in elderly patients and in patients having other comorbid like chronic chest diseases and diabetes mellitus. The mortality in this study was 2.5%. It is was due to pulmonary embolism. In another study of carried by Whysocki A the mortality of peptic ulcer is influenced by the age of the patient rather than the type of surgery.²⁵

CONCLUSION

In this study it was concluded that the patients of perforated duodenal ulcer had highest age incidence of 3rd decade with male female ratio of 7:1.

All the perforations were repaired by simple closure. Four cases closed by omental patch. Although the closure of perforation by omental patch is thought to be the procedure of choice but simple closure of ulcer perforation with thorough peritoneal toilet especially in anterior wall duodenal ulcer perforation has successful results. The main purpose of this surgery was, it takes minimal time, easy to be performed, it has low morbidity and mortality especially in the old year's patients.

we recommend the performance of simple closure for patients presenting with perforated duodenal ulcer. Such patients should be maintained on antisecretory drugs such as proton pump inhibitor until the H. pylori status is known. Because H. pylori infection in a proportion of patients may be eradicated by the course of peri-operative antibiotics, we should routinely perform gastroscopic examination two months after surgery to confirm healing of ulceration as well as to obtain antral biopsy specimens for determination of H. pylori status.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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