

A Review of 51 cases of Duodenal Perforation in Rohilkhand Region

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ABSTRACT

Introduction: Anterior duodenal perforations complicating peptic ulcer disease still account for a large number of surgical emergency admissions in developing countries. This study was carried out to document etiologies, clinical features and management of duodenal perforations and to share our experience of managing these moribund patients.

Material and methods: This prospective observational study included 51 patients of duodenal perforation admitted in a single surgical unit of Rohilkhand Medical College and Hospital, Bareilly during a one year period from March 2015 to February 2016. Demographic data, clinical presentation, radiological findings, laboratory reports, operative notes, surgical procedure performed, postoperative progress, complications, hospital stay and mortality notes were meticulously entered in a previously prepared proforma for this purpose. Proportional analysis of all relevant data was done using the SPSS software version 22.0.

Results: Peptic ulcer disease was the commonest cause of duodenal perforation in 49 (96.08%) patients. Males accounted for 80.39% and females for 19.61% patients. X-ray chest PA view erect was diagnostic of pneumoperitoneum in 78.34% patients. All peptic ulcer perforations were small < 1 cm in diameter on the anterior portion of the first part of the duodenum and were repaired by a Cellan Jones omental patch. There were two (3.93%) mortalities attributed to septicaemia.

Conclusion: Duodenal perforations still account for an important cause of surgical emergency in third world countries like ours. Indiscriminate use of NSAIDs, steroids, alcohol and tobacco addiction leads to peptic ulceration. Trauma accounts for the rest. They require early diagnosis and surgery for improved survival in these critically ill patients.

Keywords: duodenal perforation, pneumoperitoneum, surgical management

INTRODUCTION

Small bowel perforations are one of the commonest surgical emergencies in our region. The majority of all bowel perforations occur in the duodenum, peptic ulcer disease being responsible for most of them. Blunt and penetrating abdominal trauma account for nearly all of the remaining patients. Decreasing trends of duodenal peptic ulcer perforations reported in Western literature¹ is a direct fallout of rational use of Proton pump inhibitors and elimination of H Pylori infections. Unfortunately the same results have not been replicated in economically poor regions like ours where we report a high incidence of peptic ulcer disease perforations occurring in the anterior part of the first part of the duodenum. Posterior wall perforations presenting as haematemesis are rare. Early diagnosis, aggressive preoperative resuscitation and prompt surgical management of such patients is extremely challenging but can save lives of most of these critically ill patients. This study was carried out to review the common etiologies, presentations, diagnosis, treatment and factors influencing survival in duodenal perforations in our

rural, limited resource region of Rohilkhand, Uttar Pradesh, India.

MATERIAL AND METHODS

This prospective observational study was carried out on 51 patients of duodenal perforation admitted in the surgical emergency of a single surgical unit of Rohilkhand Medical College and Hospital, Bareilly during a one year period starting March 2015 to February 2016. Due consent was taken from all patients and ethical approval was obtained from the hospital ethical committee for conducting this study.

Only those patients whose diagnosis of duodenal perforation was confirmed on laparotomy were included in this study. We excluded those patients who had a recurrence of perforation and those who had previous duodenal ulcer surgery. The diagnosis was based on a history of chronic ingestion of pain killers, steroids, cigarette/beedi smoking, chronic alcoholism or trauma with severe epigastric pain, abdominal distension, fever, vomiting and obstipation. Examination findings of tachycardia, dehydration, masked liver dullness, abdominal guarding, board like rigidity feeble or absent bowel sounds also lent themselves in making an appropriate diagnosis. Confirmation of diagnosis was done on the basis of findings of free gas under the right hemidiaphragm on an erect X-Ray chest PA view or erect plain X-ray abdomen AP view. For those too ill to move a left lateral decubitus view with gas in the right lateral flank also evidenced pneumoperitoneum. Ultrasound findings of free air and peritoneal fluid along with bowel thickening were also considered in the diagnosis of bowel perforation as were the presence of bile in an ultrasound guided peritoneal diagnostic tap. CECT was selectively used in those patients whose diagnosis was still in dispute and those of abdominal trauma to exclude associated injuries. All patients had a complete haemogram, blood sugar, serum creatinine, serum electrolytes and a duly consented HBsAg, HCV and HIV testing. All patients received crystalloid infusion with Ringer lactate solution with the intent of achieving a urinary output of 0.5 ml/kg/hr monitored by a per urethral Foley's catheter. Nasogastric aspiration and a combination of Cefoperazone, Gentamycin and metronidazole administered intravenously were the additional procedures for all patients. Laparotomy was done by a midline incision under general, spinal or epidural anesthesia as per the discretion of the anesthetist. A thorough survey of the intraperitoneal

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How to cite this article: Sharad Seth, Keshav Kumar Agrawal. A review of 51 cases of duodenal perforation in rohilkhand region. International Journal of Contemporary Medical Research 2016;3(6):1806-1808.

cavity was done. Bile or intraperitoneal fluid was sent for culture and sensitivity. All peptic ulcer perforations were repaired by the Cellan Jones technique of omental patch repair whereas primary transverse duodenorrhaphy was carried out for traumatic duodenal perforations. Copious intraperitoneal lavage with normal saline was done to evacuate collected bile and food debris. The abdomen was closed in a single layer using number 1 prolene over a perforated abdominal tube drain placed close to the repaired perforation. Postoperatively the nasogastric tube was removed when the aspirate became minimal usually with passage of flatus on the third postoperative day. Abdominal drain was removed after 48 hours and Foley’s catheter between the third to fifth day. Skin sutures were removed between the 8th to the 10th postoperative day. All patients of peptic ulcer perforation received H.Pylori eradication therapy consisting of PPI / Amoxicillin 1g and Clarithromycin 500mg twice a day for 10 days. Demographic data, clinical presentation, radiological findings, laboratory reports, operative notes, surgical procedure performed, postoperative progress, complications, hospital stay mortality notes were meticulously entered in a previously prepared proforma for this purpose.

STATISTICAL ANALYSIS

Proportional analysis of all relevant data was done using the SPSS software version 22.0.

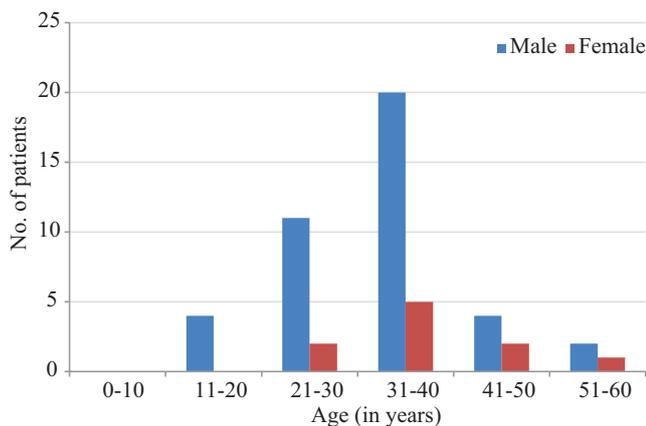


Figure-1: Age and sex distribution of duodenal perforations

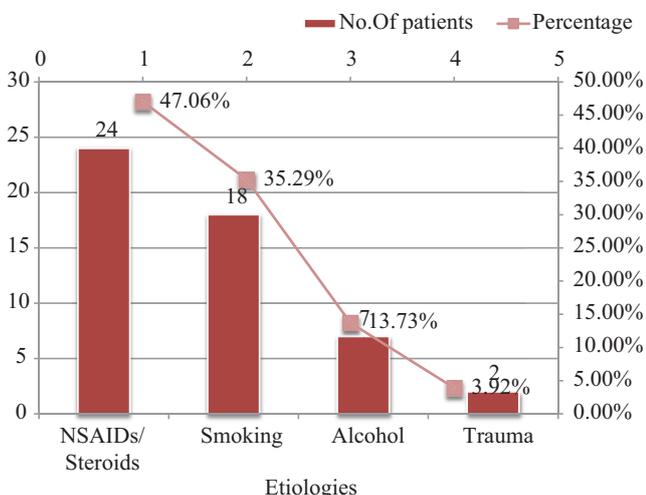


Figure-2: Etiologies of duodenal perforations

RESULTS

Peptic ulcer disease was the commonest cause of duodenal perforation in our study accounting for 49 (96.08%) patients. Only two (3.92%) patients were those of blunt abdominal trauma. The age incidence ranged from 11-60 years most of the patients being in the 31-40 year range. Males accounted for 41 (80.39%) patients and females for 10 (19.61%) patients (Figure-1). Peptic ulcers were attributed to NSAIDS/Steroid intake in 24 (47.06%) patients while smoking and alcohol were implicated in the rest (Figure-2). All patients belonged to a rural background. Pain in the epigastrium/ diffuse abdominal pain in 51 (100%) patients and abdominal distension in 49 (96.07%) patients were the commonest symptoms whereas tachycardia (94.11%), abdominal guarding and rigidity (94.11%) were the commonest signs elicited (Table-1). 35 (68.62%) patients presented within 24 hours of their catastrophe. X-ray chest PA view erect and X-ray abdomen erect were diagnostic of pneumoperitoneum in 44 (86.27%) patients. Ultrasonography and diagnostic peritoneal tap was positive in 40 (78.43%) patients. CECT was done only in three patients, two of abdominal trauma and one with an ambiguous diagnosis of perforation. All patients were operated within four hours of diagnosis. All peptic ulcer perforations were small < 1 cm in diameter on the anterior portion of the first part of the duodenum and were closed by a Cellan Jones omental patch. Only one patient (1.96%) developed a postoperative biliary leak with this procedure. Traumatic duodenal perforations occurred on the anterior wall of the second part of the duodenum and were repaired primarily by a transverse duodenorrhaphy. Post operative complications included Surgical site infection in 9 (17.64%), chest infections in six (11.76%)

Presenting symptoms	No. Of patients	Percentage of total
Pain in epigastrium/ diffuse abdominal pain	51	100%
Fever	18	35.29%
Nausea/vomiting	26	50.98%
Obstipation		29.41%
Abdominal distension	49	96.07%
Signs		
Tachycardia	48	94.11%
Dehydration	46	90%
Masking of liver dullness	18	35.29%
Abdominal guarding/rigidity	48	94.11%
Feeble or absent bowel sounds	42	82.35%

Table-1: Symptoms and signs in cases of duodenal perforations

	Number of patients	Percentage
Early Complications		
Wound dehiscence	4	7.84%
Surgical site infections	9	17.64%
Chest infections	6	11.76%
Paralytic Ileus	1	1.96%
Biliary leak	1	1.96%
Late Complications		
Incisional hernia	1	1.96%

Table-2: Postoperative Complications

and incisional hernia in one (1.96%) patient (Table-4). The average hospital stay was 10-13 days. There were two (3.93%) mortalities.

DISCUSSION

51 cases of duodenal perforations in a year constituted for a large number of emergency admissions in our surgical unit. We here discuss our strategy to manage these critically ill patients most of whom were saved by timely surgical intervention. Males in the age group 31-40 years were most commonly affected outnumbering females in the ratio 4.1:1 as also reported from another Indian study² but in complete contrast from a study in Norway³ where the male to female ratio was equal and most of the patients were above 50 years of age. Smoking, alcohol and NSAID abuse accounted for most of the cases due to peptic ulcer but probably more than one factor contributed to the disease as also reported in other studies.⁴ Tests for H.Pylori not being commonly available their exact contribution in the etiology of peptic ulcer in this study is not known. Abdominal pain, distension, tachycardia, abdominal guarding and rigidity were the commonest symptoms and signs on presentation as has been reported in most other studies.⁵ X-ray chest PA view erect revealed pneumoperitoneum in 86.27% patients similar to that reported by Bali et al⁶ whereas ultrasonography was diagnostic in 78.43% cases as also reported by Chakma et al.⁷ All patients were operated within four hours of diagnosis accounting for high survival rates. Other studies have also recorded high survivals for patients operated within 12 hours of developing epigastric pain.⁸ All peptic ulcer perforations were small < 1 cm in diameter on the anterior portion of the first part of the duodenum and were closed by a Cellan Jones omental patch. This is a simple and expeditious procedure which effectively seals the perforation.⁹ A primary transverse duodenorrhaphy was carried out for traumatic duodenal perforations as advocated in other studies.¹⁰ Surgical site infection (17.64%) was the commonest postoperative complication. Hospital stay ranged from 10-13 days as reported by others.¹¹ There were two (3.93%) mortalities attributed to septicaemia. Mortality rates of 6-14% have been reported in patients in whom surgery was carried out 24 hours after the patients first reported symptoms.¹² A study from Turkey has indicated an age > 60 years, shock at presentation and perforation > 0.5 cm in diameter as predictive of poor survivals.¹³ As most studies indicate that H.Pylori infection is usually synergistic with chronic NSAID use all peptic ulcer patients on discharge received eradication therapy with PPI/ Amoxicillin 1gm / and Clarithromycin 500 mg twice a day for 10 days as recommended in most studies.¹⁴ Till date we have not witnessed a single recurrence in this study group.

CONCLUSION

In our region the high incidence of tobacco and alcohol addiction amongst the rural folk coupled with indiscriminate use of NSAIDs and steroids by local practitioners accounts for the high incidence of duodenal perforations. Prompt diagnosis, aggressive resuscitation, early surgery and the quickly performed simple Cellan Jones omental patch repair results in high survival in these moribund patients.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 24-04-2016; **Published online:** 30-05-2016